2024-2025 Undergraduate Catalog

University of Central Missouri
Warrensburg, MO 64093

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University Operator 660-543-4111

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Warrensburg, MO 64093

Welcome to the University of Central Missouri Undergraduate Catalog!

UCM's online catalogs are designed to help you quickly locate and save details about the University's schools, degree programs, courses, campus information and policies.

President's Welcome and Board of Governors

Welcome

At the University of Central Missouri, your success is our top priority. Your admission to UCM represents our confidence in your ability to succeed and our commitment to partner with you by providing access to outstanding faculty, caring staff, excellent programs, immersive opportunities, and engaged learning. Along with your commitment to excel, our student success initiatives create for you the foundation and support to achieve your educational goals.

Your UCM experience also includes substantial opportunities for co-curricular and extracurricular involvement, such as internships with leading companies and organizations, study abroad and international study tour experiences, Fraternity and Sorority Life, discipline-based student organizations, theatre productions, music concerts, and Mules and Jennies athletic events, where our student-athletes have won numerous national championships in Division II.

Our commitment to you includes many initiatives designed to enhance your post-UCM success. These numerous opportunities include nationally-ranked academic programs that ensure exceptional preparation for whatever comes next, service-learning projects, the Undergraduate Research Symposium in which students present research findings in collaboration with faculty members, participation in regional and national academic competitions, and career fairs and other career preparatory services offered through the Office of Career and Life Design. We know you will also enjoy being part of a diverse campus setting that introduces you to people, cultures, and experiences that make you better prepared to serve in a global society - all part of our promise to provide an educational environment where you can experience what we live: Education for Service.

Our dedicated faculty and staff are committed to working close by with you in pursuit of an educational experience that will serve you well into the future. With your commitment and our resources, together we are Redefining What's Possible. Thank you for choosing UCM.

Sincerely,

Roger J. Best, Ph.D.
President, University of Central Missouri
@UCMPresident

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General Information

The Undergraduate Catalog

The University of Central Missouri Undergraduate Catalog contains a wealth of information for students, staff, and faculty members. Students should examine it carefully.

This catalog is a reliable guide for entering the university, reviewing available programs of study, selecting courses, and meeting graduation requirements. To the extent possible, the university will accept the degree/certificate requirements in it for an eight-year period.

Since the policies and programs of the university are constantly changing, no catalog can be completely up-to-date, even when it is published. Therefore, students should review their programs periodically with a Academic Success Advisor and with faculty advisors to allow for necessary changes.

Individual schools and degree programs may have policies and requirements that are more stringent than the general university policies.

Undergraduate students are subject to current administrative policies, procedures, and regulations of the university. The general policies and regulations listed in the 2024-2025 Undergraduate Catalog become effective fall 2024. Consult the *UCM Student Handbook* for other university policies.

The University

The University of Central Missouri is a comprehensive, public university dedicated to providing personalized higher education experiences for a diverse body of students. Through its commitment to service and excellence, UCM seeks to meet the educational needs of the region, with extended responsibility to meet state, national, and international needs through selected programs. The University of Central Missouri is located in Warrensburg, a west central Missouri community of 16,350, located 50 miles southeast of Kansas City at the junction of Highways 50 and 13. The campus is easily reached by automobile or AMTRAK.

Central Missouri has provided more than a century of service, having been founded in 1871 as the State Normal School for the Second Normal District of Missouri. Formal accreditation and continued growth led the campus to be recognized as Central Missouri State Teachers College in 1919, Central Missouri State College in 1946, Central Missouri State University in 1972 and the University of Central Missouri in 2006. UCM is an affirmative action EEO/ADA institution.

Including an airport and other special facilities, the university occupies more than 1,000 acres. The university offers over 150 graduate and undergraduate programs for over 14,000 students. UCM's facilities are exceptional - not only its modern classrooms, laboratories, technical developments, and residence halls, but also its airport, Pertle Springs Park, and recreational and sports areas.

With a university motto of "Education for Service," it is not surprising that the university's faculty members have earned a reputation for teaching excellence, on and off campus. They have also distinguished themselves as scholars, achieving recognition in academic and professional organizations, in addressing learned societies, in performing in music and the arts, and in writing many books and journal articles.

Mission Statement

The University of Central Missouri (UCM) disseminates knowledge that transforms students into leaders who possess the aptitudes, skills and confidence to succeed.

Approved by the UCM Board of Governors, April 2019

The UCM Community Creed

Choosing to become a citizen of the University of Central Missouri implies an acceptance of and willingness to contribute to the common goals and purposes of the community. The UCM Community Creed outlines the principles which guide the creation and maintenance of the desired community at UCM. The creed also provides a framework for individual behaviors which help build our vision.

As a member of the UCM community, I will join in building . . .

a **learning** community by striving for academic and personal excellence and by promoting the value of education and lifelong learning;

an **open** community by creating and maintaining effective channels of communication and by accepting and respecting individuals whose values, ideas, beliefs, and life experiences may be different from my own;

a **caring** community by seeking opportunities to serve and by supporting and affirming the well-being of others;

a **just** community by behaving in ways which are ethical, honest, equitable, trustworthy, civil and respectful;

a **disciplined** community by seeking to understand and fulfill personal responsibilities, by upholding university guidelines and by working toward self and community betterment;

a **celebrative** community by observing and honoring existing traditions and by seeking and creating opportunities to enrich and define UCM;

a **purposeful** community by helping to shape and achieve the common goals of UCM.

Accreditations

As set forth in Missouri Revised Statues Chapter 174 at 174.160, the University of Central Missouri has been assigned the authority to confer degrees.

The University of Central Missouri is accredited by the Higher Learning Commission (HLC). Contact The Higher Learning Commission, 230 South La Salle Street, Suite 7-500, Chicago, IL 60604, telephone 800-621-7440, https://www.hlcommission.org/.

In addition, UCM has earned the following specialized accreditations for these undergraduate-level programs:

- Art baccalaureates, National Association of Schools of Art and Design (NASAD)
- Automotive Technology Management, National Automotive Technicians Education Foundation (NATEF)
- Automotive Technology Management, Construction Management, Design and Drafting Technology, Electronics Technology, and Graphic Technologies baccalaureates, Association of Technology, Management, and Applied Engineering (ATMAE)
- Aviation Management and Professional Pilot baccalaureates, Aviation Accreditation Board International (AABI)
- Baccalaureate Social Work program, Council on Social Work Education (CSWE)
- Business baccalaureates, The Association to Advance Collegiate Schools of Business (AACSB) - International
- Career and Technology Teacher Education (Family Consumer Sciences area) baccalaureate, American Association of Family and Consumer Sciences (AAFCS)
- Chemistry, Physics, Biology, and Earth Science education baccalaureates, National Science Teachers Association (NSTA)
- Commission on English Language Program Accreditation (CEA)
- Computer Information Systems baccalaureate, accredited by the Computing Accreditation Commission of ABET, http://www.abet.org
- Computer Science (Computer Science option) baccalaureate, accredited by the Computing Accreditation Commission of ABET, http://www.abet.org
- Cybersecurity baccalaureate, accredited by the Computing Accreditation Commission of ABET, http://www.abet.org
- Dietetics baccalaureate, Accreditation Council for Education in Nutrition and Dietetics (ACEND) the accrediting agency for the Academy of Nutrition and Dietetics
- Elementary Education baccalaureate, Association for Childhood Education International (ACEI)
- Elementary Education baccalaureate, Early Childhood Education, National Association for the Education of Young Children (NAEYC)
- Engineering Technology baccalaureate, accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org
- Fashion: Textiles and Clothing in Business, American Association of Family and Consumer Sciences (AAFCS)
- Interior Design baccalaureate, Council for Interior Design Accreditation (CIDA)
- Mathematics education baccalaureate, National Council of Teachers of Mathematics (NCTM)
- Middle School-Junior High School baccalaureate, National Middle School Association (NMSA)
- Music baccalaureates, National Association of Schools of Music (NASM)
- Nursing baccalaureate programs, Commission on Collegiate Nursing Education (CCNE)
- Occupational Safety baccalaureate, accredited by the Applied and Natural Science Accreditation Commission of ABET, http://www.abet.org
- Occupational Safety and Health baccalaureate, accredited by the Applied Science Accreditation Commission of ABET, http://www.abet.org

- Public Relations baccalaureate, Certification in Education for Public Relations (CEPR)
- Social Studies baccalaureate in education, National Council for the Social Studies (NCSS)
- Special Education, baccalaureate in education, Council for Exceptional Children (CEC)
- Teacher Education baccalaureate programs, Council for the Accreditation of Educator Preparation (CAEP)
- Theatre baccalaureate programs, National Association of Schools of Theatre (NAST)

UCM has earned the following specialized accreditations for these graduate-level programs:

- Athletic Training graduate program, Commission on Accreditation of Athletic Training Education Programs (CAATE)
- Business graduate programs, The Association to Advance Collegiate Schools of Business (AACSB) - International
- Commission on English Language Program Accreditation (CEA)
- Clinical Mental Health / School Counseling Graduate Programs, Council for Accreditation of Counseling and Related Educational Programs (CACREP)
- Educational Leadership; Principal and Superintendent graduate programs, Educational Leadership Constituent Council (ELCC)
- Educational Technology graduate program, International Society For Technology in Education (ISTE)
- Industrial Hygiene graduate program, accredited by the Applied Science Accreditation Commission of ABET, http://www.abet.org
- Industrial Management graduate program, Association of Technology, Management, and Applied Engineering (ATMAE)
- Library and Information Services graduate programs, American Association of School Libraries (AASL)
- Literacy graduate program, International Literacy Association (ILA)
- Music graduate programs, National Association of Schools of Music (NASM)
- Nursing graduate programs, Commission on Collegiate Nursing Education (CCNE)
- Nutrition (Clinical Nutrition option), accredited by Accreditation Council for Education in Nutrition and Dietetics (ACEND) the accrediting agency for the Academy of Nutrition and Dietetics
- Occupational Safety Management graduate program, accredited by the Applied Science Accreditation Commission of ABET, http://www.abet.org
- Speech-Language Pathology master's program, Council on Academic Accreditation in Audiology and Speech-Language Pathology (CAA)
- Teacher Education graduate programs, Council for the Accreditation of Educator Preparation (CAEP)
- Technology graduate program, Association of Technology, Management, and Applied Engineering (ATMAE)

UCM has earned the following accreditation for Dual Credit/Enrollment Program:

- National Alliance of Concurrent Enrollment Partnerships (NACEP)

The university has institutional membership in:

- American Association of State Colleges and Universities
- Association of American Colleges and Universities
- Association of Governing Boards of Universities and Colleges
- Council for Opportunity in Education
- Council of Graduate Schools
- Council on Public Higher Education for Missouri
- Council on Social Work Education
- Council on Undergraduate Research
- Great Lakes Valley Conference
- Higher Learning Commission

- Institute of International Education
- International Association for Management Education
- International Relations Council
- International Technology and Engineering Educators Association
- Mid-America Intercollegiate Athletics Association
- Midwestern Association of Graduate Schools
- Missouri Academy of Science
- National Collegiate Athletic Association
- National Collegiate Honors Council
- National Council for Accreditation of Teacher Education
- The Renaissance Group

In addition, UCM has earned the following specialized distinctions:

- Chemistry baccalaureate, American Chemical Society (ACS) approved

Nondiscrimination/Equal Opportunity Statement

Nondiscrimination and Equal Opportunity Statement

Board of Governors Policy 1.2.150

Approved by the Board of Governors on September 19, 2014

The University of Central Missouri actively follows a policy of nondiscrimination in regard to age, race, color, religion, sex, sexual orientation, gender identity or expression, marital status, pregnancy or parental status, national origin, veteran status, genetic information, disability, and all other legally protected classes. This policy applies to educational programs and activities including athletics, instruction, grading, the awarding of student financial aid, recruitment, admission, employment, housing, placement and retention of students, faculty and staff. The university complies with applicable federal and state laws and regulations related to discrimination.

Persons having inquiries concerning the university's compliance with this policy or any laws and regulations prohibiting discrimination are directed to contact the following:

Office of Civil Rights, Kansas City Office:

Office for Civil Rights U.S. Department of Education
One Petticoat Lane
1010 Walnut Street, 3rd floor, Suite 320
Kansas City, MO 64106
Telephone: 816-268-0550
FAX: 816-268-0599; TDD: 800-877-8339
Email: OCR.KansasCity@ed.gov

For ADA/504 related questions please contact:

Cathy Seeley
The Director of Accessibility Services (ADA/504 Coordinator)
Accessibility Services, Union 222
University of Central Missouri, Warrensburg, Missouri 64093
660-543-4421

Toll free numbers for Relay Missouri are 711 or 800-735-2966 for TTY, and 866-735-2460 for voice callers. For further information on notice of non-discrimination, visit ED.gov at https://ocrcas.ed.gov/contact-ocr for the address and phone number of the office that serves your area, or call 1-800-421-3481.

No individual will be subject to any form of retaliation, discipline, or other adverse action for reporting conduct in violation of the university's nondiscrimination policy, assisting/cooperating in making a complaint, or assisting with the investigation of a complaint. Any individual who believes they have experienced or witnessed retaliation should immediately notify the appropriate member(s) of the administration as identified in this Statement.

Link to procedures:

- Discrimination and Harassment: Procedures for Reporting and Investigating Complaints
- UCM's Sexual Misconduct Grievance Process

Approved by the Board of Governors on February 21, 2001
Formatting updated August 1, 2007
Revised and approved by the Board of Governors on September 19, 2014
Reviewed July 28, 2017, no suggested revisions

Institutional and Financial Consumer Information

Federal law requires institutions of higher education, including the University of Central Missouri, to inform prospective students, faculty and staff of institutional and financial information. This information is available at https://www.ucmo.edu/consumer-information/index.php.

Pursuant to Missouri HB 1606 (2018), information regarding program lengths, costs, and students' median time-to-degree, as well as employment and wage outcomes, can be found at https://jobs.mo.gov/jobseeker/training-and-education. Employment and wage outcomes are limited to completers found employed in Missouri. Students not found as employed may also be working out-of-state, self-employed, or enrolled in continuing education. Additional information on programs and program outcomes may be found by searching at https://scorecard.mo.gov/Search.

Admissions

High School Students: Students admitted to UCM are expected to have completed a 24-unit Missouri core curriculum requirement, have a minimum 2.00 high school grade point average, and either have a 21 or higher on the ACT (or SAT equivalent) or an admissions index score of at least 100. Students applying under UCM's test-optional criteria are required to have a 2.75 GPA or greater. The admissions index score is obtained by combining high school class percentile rank and the national percentile rank of the ACT score. UCM superscores ACT and SAT scores, meaning that the highest subscore from all official ACT or SAT tests will be combined to calculate a new, super composite score. The ACT superscore is the average of the highest math, science, reading, and English subscores. The SAT superscore is calculated using the highest math score and the highest evidence-based reading and writing (EBRW) score from all SAT attempts. Applicants who do not meet regular admissions requirements, or UCM's test-optional requirements, will be considered on an individual basis. All admitted students will be assessed for the purpose of placement in reading, writing, and math courses which will provide an appropriate challenge for their level of preparedness and enhance their opportunity for success.

Test-Optional Admissions: UCM offers students the ability to be granted admission without the requirement of submitting ACT scores with their application. To be eligible for test-optional admission consideration, students must have a minimum of a 2.75 GPA following the 6th semester of their high school career. Students may elect to take the ACT for additional scholarship consideration if admitted test-optional, but an ACT score is not required for admission or attending UCM. Students admitted as test-optional are still eligible for UCM merit scholarships and are eligible for submitting ACT/SAT scores for increased scholarship value.

Superscore: The University of Central Missouri will superscore students' ACT scores. This means if a student takes the ACT more than once, the highest subscores are pulled from each test to make a new superscore. This method will be used for admission to the university, placement in reading/writing/math courses, and for the merit-based Red & Black Scholarship. High school students have until the June ACT of their senior year to take advantage of this. Students will need to provide all updated ACT scores to the UCM Admissions office before classes begin for the calculation to be made on their behalf.

Students who meet the following criteria are considered academically prepared for the opportunities available at Central Missouri: at least 24 units of college preparatory work, including these courses:

1. Four units of English with an emphasis on writing skills
2. Three units of mathematics (Algebra I and beyond)
3. Three units of science (one must be a laboratory course in biology, physics, or chemistry)
4. Three units of social science
5. One unit of fine arts
6. Three additional academic units including practical arts (1), physical education (1), health education (1/2) and personal finance (1/2)
7. Seven units of electives (2 units of a single foreign language are strongly recommended)

GED/HiSET Applicants: General Education Development (GED) test scores may be used as a basis for admission to the university. Beginning in 2014, the test to establish high school equivalency is the HiSET. (For more information see *GED Applications and HiSet Applications*, on this page below.)

From Other Colleges and Universities: Students who are in good academic standing (minimum 2.00) at other regionally accredited colleges and universities may apply for admission and transfer appropriate credit. Students are required to provide UCM with official copies of transcripts from all prior colleges and universities attended. Failure to disclose a transcript may result in dismissal from UCM. (See *Transfer Credit* in the *Types of Credits* section.)

International Applicants: All international students interested in applying to UCM must do so directly through the International Student Services (ISS) office (660-543-4092, WDE 1800). (See *International Student Admissions*.) Students covered under Deferred Action for Childhood Arrivals (DACA) should apply for admission through the Office of Undergraduate Admissions (660-543-4290, WDE 1400).

How to Apply

The Office of Undergraduate Admissions (660-543-4290, WDE 1400) must receive all admission applications and supporting documents (such as official transcripts) prior to the first day of class. Transcripts are considered official when they are sent directly from the sending school via mail (in a sealed envelope), fax, email, or approved electronic service such as the National Student Clearinghouse, Parchment, or eScript. Official transcripts must be sent from all prior institutions attended. Failure to disclose a transcript may result in dismissal from UCM.

During High School:

Graduating high school students who wish to enter the University of Central Missouri should apply for admission early in their senior year so that the admission process may be completed well in advance of enrollment. Each student should submit the following credentials to the Office of Undergraduate Admissions:

1. A completed application for admission
2. An official high school transcript mailed or sent electronically directly from the high school to the university Office of Undergraduate Admissions
3. American College Test (ACT)/SAT scores, including subscores and composite. Students applying for UCM's test-optional admissions are not required to submit ACT scores for admission.
4. If applicable, official transcripts from any colleges or universities where dual credit coursework was completed. These are not required for admission but are required before the end of the first semester of UCM attendance.

Admissions will make a decision based upon the 6th, 7th, or 8th (final) semester high school transcript and will permit enrollment for one semester. However, freshmen must provide a final high school transcript before being permitted to enroll in subsequent semesters.

Direct Admissions Programs: Select students are able to gain admission to Central Missouri through a Direct Admissions Program either through Central Missouri's partnerships with high schools or through external partners offering Direct Admission. Selected students through Direct Admissions are not required to submit an application to Central Missouri but may be required to provide additional documentation as necessary as determined by the Assistant Vice Provost for Admissions. Students are not required to submit transcripts to UCM upon initial admission but a final, official, high school transcript is still required for all new students starting that shows proof of high school graduation. Students admitted through Direct Admission are regularly admitted students holding all the same abilities and access as students admitted through the traditional process.

UCM Advantage Scholar Program: The UCM Advantage Scholar Program provides a unique opportunity to freshmen students who demonstrate promise but do not meet traditional admission criteria, or for new transfer students who meet specific requirements. This program provides students the experience of attending a four-year university with the individualized support needed to succeed. These students are provided one-on-one success coaching with peers in the Success Advising Center, as well as meeting often with their Academic Success Advisor. For more information about the program contact the Success Advising Center (660-543-4721, Union 128) or visit the UCM Advantage Scholars website.

After High School: Other students who have graduated from high school but have not attended a college/university should apply as early as possible. They should submit an application and a final high school transcript. Those applying within two years of high school graduation must also submit ACT or SAT scores, unless applying for UCM's test-optional admission.

GED Applications: Applicants should submit a completed application and official GED test results. A score of 2250 is required for admission. A score of 225 is required for students who took the GED prior to 2002. An ACT score of 21 is required for students who would have graduated from high school in the past two academic years. Students not meeting these requirements will have their applications reviewed on an individual basis.

HiSET Applications: Applicants should submit a completed application and official HiSET test results. A minimum score of 75 is required with scores of 15 in each of the five subtests. An ACT score of 21 is required for students who have graduated from high school in the past two academic years. Students not meeting these requirements will have their applications reviewed on an individual basis.

From Other Colleges and Universities:

Students who wish to transfer to Central Missouri from other regionally accredited colleges and universities should:

- submit a completed application form
- arrange to have an official transcript sent to the Office of Undergraduate Admissions from each college or university previously attended.

Post-baccalaureate students can be admitted after submitting a transcript showing an earned bachelor's degree, although all other transcripts must arrive before classes begin. Students from other colleges and universities who do not have an earned bachelor's degree must submit all transcripts before application processing begins. Failure to disclose a transcript may result in dismissal from UCM. Transfer students with less than 24 hours of earned, accepted, post-high school college credit must also submit an official high school transcript. If high school graduation occurred or should have occurred within the past two academic years official ACT scores must also be submitted

UCM posts and accepts all transfer grades (A-F) from official transcripts received by regionally accredited institutions. All course work will be posted under the UCM academic term that corresponds with the academic term at the transfer institution. These grades are counted in a student's cumulative GPA and are taken into consideration for academic standing calculations. "W" grades (withdrawals) are not posted to the UCM transcript and developmental or remedial work is evaluated on an
individual basis. Students who have testing credit (CLEP, AP, IB, etc.) applied to another school's transcript must submit original test scores to UCM's Testing Services Office (660-543-4919) for credit consideration at UCM. UCM's repeat policy, not the repeat policy of the transfer institution, will be applied to any course repeats. See details of the *Repeat Enrollment in Courses* policy in this catalog.

Admission requires students to be in good standing and to have a minimum grade point average of 2.00 (C). Any student who does not have a transfer GPA of 2.00 may be granted admission on academic probation. Central Missouri's Office of Undergraduate Admissions will make an admission decision upon receipt of official university transcript(s) and will permit enrollment for one semester. However, transfer students must provide the Office of Undergraduate Admissions (660-543-4290, WDE 1400) with final official transcript(s) from each university attended before being permitted to enroll in subsequent semesters. If transcripts are not submitted to UCM before subsequent semesters enrollment period opens, students will not be allowed to enroll until official transcripts are received, and processed, by Admissions.

Academic Renewal:

An academic renewal program is available for students who wish to exclude prior transfer work from their UCM record. This program is available only to new undergraduate transfer students and applies to domestic undergraduate transfer work. To qualify for this program, a student must not have been enrolled at any college or university for the previous six regular semesters (fall and spring) preceding application for admission. The following requirements apply to this program:

- Students may utilize the benefits of academic renewal once.
- Students who use the academic renewal program for transfer credits may not later/also use the program towards UCM credits. Students who have previously used the academic renewal program for UCM credits may not later/also apply the program to transfer credits.
- Once the academic renewal has been implemented, it cannot be rescinded.
- Coursework will be excluded by academic term, as determined by UCM credit acceptance procedures. All attempted credit from the selected terms will be excluded, including any earned credit.

- Coursework excluded does remain on the academic transcript but does not count in the grade point average.
- Any prior earned credit that is excluded will need to be repeated to count towards a degree requirement or if needed as a prerequisite course for enrollment in future courses.
- Academic renewal will not change "student type" (how a student is classified at UCM).
- A new transfer student may be required to petition for Transfer Credit Academic Renewal to be admitted, due to not meeting admissions requirements. Students who otherwise meet admissions requirements will not be required to, nor restricted from petitioning.
- Students must petition and be approved for Transfer Credit Academic Renewal through the Office of Undergraduate Admissions. Students may obtain petition paperwork from the Office of Undergraduate Admissions (660-543-4290, WDE 1400).
- Upon receipt of a completed petition, students will be required to participate in a meeting via phone or video conference with a staff member from the Office of Admissions. A decision regarding the petition will be made after this meeting.
- All appeals of this policy will be reviewed by the Assistant Vice Provost of Admissions.
- Petitions must be received by:
    - July 15 for fall admission
    - December 15 for spring admission
    - April 15 for summer admission

In addition to the requirements above, students should be aware of related financial aid and scholarship implications. Students should consult with the Student Financial Services Office (660-543-8266, WDE 1100) to understand any federal or state financial aid implications. Students who have received GI Bill® benefits at any institution should work with Military and Veteran Services (660-543-8776, UN 117). Any scholarship awards following Transfer Credit Academic Renewal will be determined by the awarding bodies.

International Applications: All international students interested in applying to UCM must do so directly through the International Student Services office (660-543-4092, WDE 1800). (See *International Student Admissions*.)

Exception to Admissions Policies: All requests for exception to undergraduate admissions policies must be presented to the Assistant Vice Provost of Admissions (660-543-4290, WDE 1400).

Readmission/Returning Students:

Students who have been away from UCM (not suspended or dismissed) for one regular semester (fall or spring) or longer need to submit a readmission application to the Office of Undergraduate Admissions. Students who do not attend during the summer semester do not need to reapply. No additional application fee is required. Students must submit transcripts from all colleges attended that are not yet on file. Failure to disclose a transcript may result in dismissal from UCM. After a review of the academic records, students will be notified as to whether they have been readmitted.

Students who have graduated from UCM and wish to return to pursue another undergraduate degree or teacher certification must reapply to UCM as a post-baccalaureate student. Students who have graduated from UCM and wish to return to take undergraduate courses for other reasons should reapply as a special credit student. No additional application fee is required.

Reinstatement: The reinstatement of students who have been suspended or dismissed from UCM is not automatic or guaranteed. Petitions for reinstatement are reviewed by the Success Advising Center (UN 128, 660-543-4721) in conjunction with the program coordinator of the degree program a student has selected for reinstatement. Students in the Intensive English Program (IEP) who wish to petition for reinstatement must contact the English Language Center at iep@ucmo.edu.

The reinstatement petition can be accessed in MyCentral in the Student Records and Registration portal. For the best selection of courses, students should submit a petition in March for summer or fall semester reinstatement and in October for spring semester reinstatement. Petitions will be considered through the following deadlines:

- Fall semester: July 15
- Spring semester: November 15
- Summer semester: April 15

The petition includes a written portion which should include an explanation of the circumstances that led to poor academic performance and an explanation of activities and plans which may lead to improved academic performance in the future. Other substantiating evidence may also be requested. No additional application fee is required. Students must submit transcripts from all colleges attended that are not already on file with UCM, even if classes are in progress. The petition for reinstatement will not be reviewed until all transcripts and an updated application are received by the Admissions office. After a review of the petition, academic records, and any other substantive evidence available, students will be notified of the reinstatement decision.

Students may petition for reinstatement as follows:

1. Students who have been suspended may petition for reinstatement after sitting out one fall or spring semester (summer session does not count as a semester for suspension purposes). Students who have been dismissed may petition for reinstatement after one calendar year.
2. A student with documented extenuating circumstances who has been suspended or dismissed may petition for immediate (or early) reinstatement. Petitions for early reinstatement may not be submitted via MyCentral. Students seeking Early Reinstatement should contact the dean of their college, or in the case of Open Option students, the Director of the Success Advising Center (UN 128, 660-543-4721) directly for consideration. Early reinstatement is rarely granted and only applies for extenuating circumstances for which supporting evidence can be provided.

Undergraduate Certificate Students

Students who are seeking only an undergraduate certificate (this does not include teacher certification) and not an undergraduate degree must still meet regular admissions requirements (see sections above). Students pursuing only a certificate are not eligible for financial aid.

Visiting High School Students

Seniors.

High school seniors who can meet their graduation requirements with less than a full load of classes may apply for admission to take one or more courses at Central Missouri if they can meet the following requirements:

1. Class rank in the upper half
2. Recommendation from counselor or principal
3. A plan for total class work not to exceed a full-time load
4. Released time to take university classes

The application process is the same as that for a full-time university student. (See How to Apply.)

Juniors. High school juniors may apply to take UCM classes during the summer before their senior year if (1) they rank in the upper half of their class and (2) are recommended by a counselor or principal. The application process is the same as that for a full-time university student (see How to Apply.) Students who wish to take classes prior to the summer before their senior year will be reviewed on an individual basis.

NOTE: A student pursuing a high school diploma is not eligible to receive federal or state financial aid for classes taken at the University of Central Missouri. Before any financial aid can be authorized, all high school graduation requirements must be met and the student must be fully accepted for admission to UCM.

Visiting College Students

A student currently attending another college or university is permitted to enroll at UCM as a visiting college student. Enrollment under this status is limited to one semester per academic year. To apply, students must submit the application for admission. For questions, please contact Online Learning and Engagement (HUM 410, 660-543-4984). Unofficial transcripts from the student's primary institution(s) are required.

At the completion of the course or courses at UCM, the visiting student should request that UCM's Registrar's Office (660-543-4900, WDE 1000) send an official transcript to the certifying institution. Courses taken at UCM for the purpose of transfer to another institution will apply toward hours on a degree or certificate at UCM should regular admission status be desired. These hours might not meet specific major, minor or general education requirements. The admission application and supporting documents must be received in the Office of Undergraduate Admissions prior to the first day of class to be considered for regular admission for that semester.

Visiting students are not eligible to receive federal or state financial aid from UCM, the "host" school. Financial assistance for which a visiting student may be eligible is processed and disbursed by the student's "home" school, the college or university at which the student has been admitted as degree seeking.

Senior Citizens

Missouri residents who are 65 years of age or older may enroll for courses without tuition payment. Persons seeking this scholarship shall provide documentation of age to Central Missouri and satisfy all other necessary entrance requirements including a completed application for admission. This enrollment is for non-credit (audit) purposes.

Enrollment will be allowed no sooner than five days prior to classes beginning and on a space-available basis only. Contact Online Learning and Engagement at 660-543-4984 (HUM 401/410) for further information.

Non-Degree Students

Students who do not fit into one of the student categories above and are simply interested in taking classes but not interested in pursuing a degree program may be admitted as a "special" student. This group of students would also include those students who already have earned a degree and wish to take additional classes for fun, to meet requirements for graduate/professional programs, or to earn alternative student teacher certification. Students who are a "special" student type and non-degree seeking are not eligible for financial aid. To apply, students must submit the application for admission. For questions, please contact Online Learning and Engagement (HUM 410, 660-543-4984). Unofficial transcripts from the student's prior institution(s) will be required if enrollment in courses with prerequisites is desired.

International Student Admissions

The Application Process All international students interested in applying to UCM must do so directly through the International Student Services (ISS) office. All questions regarding international admissions should be forwarded to ISS at 660-543-4092 or intladmit@ucmo.edu.

Applicants should apply online at giss.admissions.ucmo.edu/apply. International students are strongly encouraged to submit their online application and required supporting materials as early as possible. Individuals whose applications are complete before the deadlines listed below are given priority for processing.

Fall application deadlines:

- Students coming from their home county: June 1st
- F1 transfer students and other visa types: July 1st

Spring application deadlines:

- Students coming from their home county: October 1st
- F1 transfer students and other visa types: November 1st

Summer application deadlines: (for the following programs: Intensive English Program, Computer Science BS, Computer Information Systems & Information Technology BS, Big Data and Analytics BS)

- Students coming from their home county: March 1st
- F1 transfer students and other visa types: April 1st

International undergraduate applicants must submit the following items:

- Application for admission
- $75 (US dollars) non-refundable application fee
- Demonstration of English proficiency. Proficiency may be demonstrated by one of the following:
    - TOEFL exam score of 61 iBT*
    - IELTS Academic exam score 5.5*
    - Duoling score of 95
    - UCM English Proficiency Exam score of 61
    - International Baccalaureate English A (HL/SL) or English B (HL) grade of 5 + English B (SL) grade of 6+
    - An earned degree from a regionally accredited United States college or university with a cumulative undergraduate GPA of 2.0 or higher or a cumulative graduate GPA of 3.0 or higher on a 4.0 scale.
    - Earned at least 24 semester hours of regular university credit from an accredited United States college or university.
    - Graduated from an international WASC-accredited high school.
    - Applicants whose native language is English and who are citizens of a country where English is the official language will be considered as having fulfilled the minimum English requirement.

*Score requirements subject to change, at-home versions of EP exams are accepted

- Official Transcripts. All undergraduate applicants are required to upload unofficial transcripts to their student portal (created upon application submission) and submit official final transcripts to our office. These transcripts will be used for advisement purposes. Applicants with questions about credential evaluation requirements should contact the International Student Services office directly via email: intladmit@ucmo.edu
- Declaration of Financial Support. This document is required to demonstrate sufficient financial support. This document is found on the UCM website and is also emailed to applicants as a part of the application process.

- Official Bank Statement/Certification. This document is required as verification that adequate funds are currently and subsequently available to students in support of their tuition and living expenses while a student at UCM.
- The Declaration of Financial Support and Bank Statement should be sent to the International Student Services office at ISSS@ucmo.edu.

Submitting Official Test Scores: TOEFL scores must be submitted by Educational Testing Services (ETS) directly to the University of Central Missouri's Testing Center (testingservices@ucmo.edu). The ETS code for the University of Central Missouri is 6090. IELTS scores should also be sent electronically to UCM. The IELTS School Organization code for the University of Central Missouri is 136009. Duolingo scores should be sent to the University of Central Missouri. After submitting your English Proficiency score, please fill out the required form with Testing Services. IB English course scores or WASC accreditation will be evaluated upon receiving your transcript. In cases where electronic submissions of test scores are not possible, official scores may be sent directly by mail to:

University of Central Missouri
Testing Services
JCKL 1250
Warrensburg, MO 64093
USA

GPA Requirement: A minimum high school, and undergraduate if credit received, cumulative GPA of 2.00 or higher is required to be considered for admissions. Students must submit final official high school transcripts showing graduation, or other supporting documentation of a high school graduation equivalency. UCM does post and accept all undergraduate transfer grades (A-F). These grades are counted in a student's cumulative GPA and are taken into consideration for academic standing calculations.

Transfer Credit: Students who have testing credit (CLEP, AP, IB, etc.) applied to another school's transcript will have to submit original test scores to UCM's Testing Services Office (660-543-4919, JCKL 1250) for consideration for credit at UCM. UCM's repeat policy, not the repeat policy of the transfer institution, will be applied to any course repeats. See details of the Repeat Enrollment in Courses policy in this catalog.

English Language Institute: The English Language Institute (ELI), whose Intensive English Program is accredited by the Commission of English Language Program Accreditation (CEA), offers intensive instruction in English and short-term programs for English language studies. For students who do not meet UCM's English proficiency requirements, the Intensive English Program (IEP) provides courses to improve English language skills and become accustomed to a university setting in the United States. The courses are designed to help non-native speakers of English build on their existing language skills. The IEP offers courses at a variety of proficiency levels in reading, writing, listening, speaking, grammar, vocabulary, pronunciation, testing skills, American culture, and academic preparation. These courses are available for credit or may be taken as pass/fail, and do not count toward completion of an academic degree. Full-time status for UCM's Intensive English Program is 6 credit hours (20 contact hours) per 8-week session.

Intensive English Program to Degree Option: International applicants who meet minimum UCM entry requirements but do not meet minimum English proficiency requirements for regular UCM admission may be granted conditional admission. Conditionally admitted students must maintain full-time enrollment in UCM's Intensive English Program until the minimum TOEFL/IELTS requirement is met or the highest level of the Intensive English Program is successfully completed. Full-time status for UCM's Intensive English Program is 6 credit hours (20 contact hours) per 8-week session. Institutional TOEFL/IELTS results earned at other institutions are not valid at UCM. International students not meeting minimum UCM English proficiency requirements are not permitted to enroll in regular classes.

Orientation: All international students admitted to UCM for the first time are required to arrive on campus on a set date (typically 8-10 days prior to the first day of classes) for orientation and evaluation sessions. During the orientation sessions, additional testing may be required for any international student whose native language is not English. Depending upon evaluation results, students may be required to enroll in the Intensive English Program or in prerequisites for English Composition (ENGL 1020). Students also participate in a virtual orientation session (usually 4 weeks before classes start) and before arrival to campus.

Health Insurance: All F1 and J1 Visa international students are required to participate in the Student Health Insurance Program.

Immunizations: All students at the University of Central Missouri must have proof of two Measles, Mumps and Rubella (MMR) vaccinations. All students living in University Housing must have proof of Meningitis vaccination after the age of 16. All students must be screened in the United States for tuberculosis infection. All vaccinations and tuberculosis screening can be obtained during the Health Screening portion of orientation. Other testing may be required depending on pandemic or endemic diseases in the U.S. or the student's home country.

Financial Aid: Please note that international students do not typically qualify for US-based federal or state financial assistance unless designated as an eligible non-citizen or a permanent resident by the U.S. Citizenship and Immigration Services (USCIS) of the Department of Homeland Security (DHS). Documentation verifying the student's citizenship status may be required by the UCM Office of Student Financial Services (660-543-8266, WDE 1100)) to determine the student's eligibility for financial aid. Students admitted to UCM are eligible for scholarship consideration and/or continuation based upon meeting minimum criteria for Foundation Scholarships within the Scholarship Finder and/or the designated scholarship. More information regarding scholarships is available online at ucmo.edu/scholarships.

Planned Placement

The University of Central Missouri wants to ensure that all students are placed in academic courses for which the student is academically prepared. For this reason, Planned Placement criteria have been developed to make placement decisions that facilitate student success.

All students must be placed according to university policy. Placement testing is available to students wishing to challenge their placement to determine the preparedness of the student for college-level courses in reading, mathematics, and writing.

Students may also opt to begin in lower-level coursework. For example, a student with an ACT Math score of 26 does not have to enroll in MATH 1151 but may opt to take any lower-level math course. Students who would like to have their skills assessed before making a course choice are encouraged to do so.

English and math requirements vary by major. Students should follow the curriculum for their major as outlined in this catalog or consult with their Academic Success Advisor regarding course selection.

For more information about planned placement or skills assessment testing contact:

Testing Services
JCKL 1250
660-543-4919 or testingservices@ucmo.edu
ucmo.edu/offices/testing-services

Planned Placement criteria are as follows:

Students must enroll in and successfully complete:	**Test Optional**	**If they have an:**
English		
ENGL 1000 - Introduction to College Writing (3)	HS GPA ≤ 2.49 *placement may be adjusted based on Self-Placement Questionnaire	ACT English 15 or below SAT Evidence-Based Reading and Writing Section 390 or below SAT Writing and Language Test 22 or below Accuplacer Next-Gen Writing 236 or below A grade of C or better is required in ENGL 1000 to progress into ENGL 1020.
ENGL 1021 - Writing Workshop (3) Corequisite course: ENGL 1020 * ** Must take courses concurrently.*	2.5 ≤ HS GPA ≤ 2.99 *placement may be adjusted based on Self-Placement Questionnaire	ACT English 16-17 SAT Evidence-Based Reading and Writing Section 400-420 SAT Writing and Language Test 23-24 Accuplacer Next-Gen Writing 237-249

ENGL 1020 - Composition I GE (3)	HS GPA ≥ 3.0 *placement may be adjusted based on Self-Placement Questionnaire	ACT English 18 or above SAT Evidence-Based Reading and Writing Section 430 or above SAT Writing and Language Test 25 or above Accuplacer Next-Gen Writing 250-269 ENGL 1000 with a grade of C or better.
ENGL 1080 - Advanced Composition GE (3)	HS GPA ≥ 3.5 *placement may be adjusted based on Self-Placement Questionnaire	ACT English 26 or above SAT Evidence-Based Reading and Writing Section 590 or above SAT Writing and Language Test 33 or above Accuplacer Next-Gen Writing 270 or above Students in majors that require CTE 2060 as the second writing course should not opt for ENGL 1080.
Reading		
EDFL 1830 - Introduction to Academic Literacy (3)	HS GPA ≤ 2.6 AND Accuplacer Next-Gen Reading 261 or below	ACT Reading 18 or below SAT Evidence-Based Reading and Writing Section 360 or below SAT Reading Test 20 or below Accuplacer Next-Gen Reading 261 or below
Mathematics Non-Algebra Track		
ACST 1300R - Basic Statistics with Review GE (5) MATH 1520R - Practical Mathematics with Review GE (5)	HS GPA < 3.0 OR Algebra II with a grade of D or lower OR No Algebra II	ACT Math 21 or below SAT Math Section 540 or below SAT Math Test 26.5 or below Accuplacer Next-Gen QAS 240 or below Accuplacer Next-Gen AAF 220 or below
ACST 1300 - Basic Statistics GE (3) MATH 1520 - Practical Mathematics GE (3)	HS GPA ≥ 3.0 AND Algebra II with a grade of C or better	ACT Math 22 or above SAT Math Section 550 or above SAT Math Test 27.5 or above Accuplacer Next-Gen QAS 250 or above Accuplacer Next-Gen AAF 230 or above

Mathematics Algebra Track		
MATH 1010 - Fundamentals of Algebra (3)	HS GPA < 3.0 OR Algebra II with a grade of D or lower OR No Algebra II	ACT Math 16 or below SAT Math Section 430 or below SAT Math Test 21.5 or below Accuplacer Next-Gen QAS 249 or below Accuplacer Next-Gen AAF 219 or below A grade of C or better is required in MATH 1010 to progress into MATH 1101.
MATH 1070 - Algebra Essentials (4)	HS GPA < 3.0 OR Algebra II with a grade of D or lower OR No Algebra II	ACT Math 16 or below SAT Math Section 430 or below SAT Math Test 21.5 or below Accuplacer Next-Gen QAS 249 or below Accuplacer Next-Gen AAF 219 or below A grade of C or better in MATH 1070 will allow a student to progress into MATH 1111R.
MATH 1101 - Intermediate Algebra (3)	3.0 ≤ HS GPA < 3.5 AND Algebra II with a grade of C or better	ACT Math 17-21 SAT Math Section 440-540 SAT Math Test 22.5-26.5 Accuplacer Next-Gen QAS 250-300 Accuplacer Next-Gen AAF 220-239 A grade of C or better in MATH 1101 will allow a student to progress into general education level ACST or MATH courses.
MATH 1111R - College Algebra with Review GE (5)	3.0 ≤ HS GPA < 3.5 AND Algebra II with a grade of C or better	ACT Math 17 or above SAT Math Section 440 or above SAT Math Test 22.5 or above Accuplacer Next-Gen QAS 250 or above Accuplacer Next-Gen AAF 220 or above
MATH 1820 - Math for Middle School Teachers (3) *	HS GPA ≥ 3.0 AND	ACT Math 17-36 SAT Math Section 440-800

* *Please note MATH 1820 does not satisfy UCM's general education math requirement.*	Algebra II with a grade of C or better	SAT Math Test 22.5-40 Accuplacer Next-Gen QAS 250 or above Accuplacer Next-Gen AAF 220 or above
MATH 1111 - College Algebra GE (3) MATH 1112 - College Trigonometry (2) * * *Please note MATH 1112 does not satisfy UCM's general education math requirement.*	HS GPA ≥ 3.5 AND Algebra II with a grade of C or better	ACT Math 22 or above SAT Math Section 550 or above SAT Math Test 27.5 or above Accuplacer Next-Gen AAF 240 or above
MATH 1131 - Applied Calculus GE (3)	HS GPA ≥ 3.7 AND Algebra II with a grade of A or B	ACT Math 24 or above SAT Math Section 580 or above SAT Math Test 29 or above Accuplacer Next-Gen AAF 263 or above
MATH 1150 - Pre-Calculus Mathematics GE (5)	HS GPA ≥ 3.7 AND Algebra II with a grade of A or B	ACT Math 24-25 SAT Math Section 580-600 SAT Math Test 29-30 Accuplacer Next-Gen AAF 263-266 A grade of C or better in MATH 1150 will allow a student to progress into MATH 1151.
MATH 1151 - Calculus I GE (5)	HS GPA ≥ 3.7 AND Trigonometry or Precalculus with a grade of A or B	ACT Math 26 or above SAT Math Section 610 or above SAT Math Test 31 or above Accuplacer Next-Gen AAF 276 or above
Natural Sciences		
BIOL 1510 - Investigative Biology (4: 3 lecture, 1 lab)		ACT Math 22 or above SAT Math Section 550 or above SAT Math Test 27.5 or above

CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)	HS GPA ≥ 3.7 AND Algebra II with a grade of A or B	ACT Math 24 or above SAT Math Section 580 or above SAT Math Test 29 or above Accuplacer Next-Gen AAF 263 or above

UCM does not accept the Accuplacer "*Next-Gen Arithmetic*" test.

Test scores AND pre- or corequisite courses are required for course placement. Check program and degree requirements prior to enrolling.

Types of Credits

UCM Credit and Transfer Credit

There is no limit to the number of UCM or transfer credit hours applied to an undergraduate degree. Students must meet a minimum number of hours in residence at UCM for degree completion.

UCM Credit

UCM credits are hours earned through on-campus courses and online courses. This also includes courses completed at the UCM Lee's Summit campus and other UCM sites.

Dual Credit

Dual credit courses enable a high school student to simultaneously receive high school credit and college credit at a highly reduced tuition rate. Credits are transcribed both at the high school and at the college from which they are earned. UCM Dual credit can be earned on campus, in high schools throughout Missouri, online, through virtual learning, or from a transfer institution. Courses are taught by university professors, or by approved adjunct faculty, and follow the same content and rigor as UCM courses with the same titles. Dual credit grades do factor into UCM academic standing.

Information about UCM's dual credit program can be found online at ucmo.edu/dualcredit, by calling the Dual Credit Office at 660-543-4876 or in person (HUM 401).

Transfer Credit

Students are required to provide UCM with official copies of transcripts from all prior colleges and universities attended. This includes any international transfer institutions (see *International Transfer Credit* section). Failure to disclose a transcript may result in dismissal from UCM. In awarding transfer credit from Missouri institutions, Central Missouri follows the Credit Transfer Guidelines for Student Transfer and Articulation among MO College and Universities (Missouri CBHE, April 2013). Credit will be accepted from an accredited institution which is a candidate for accreditation, UCM recognizes the following accrediting bodies for the definition of "accredited institution:" Higher Learning Commission, Southern Association of Colleges and Schools, Middle States Commission on Higher Education, New England Commission of Higher Education, Northwest Commission on Colleges and Universities, and WASC Senior College and University Commission. Students who wish to appeal the decision of the University of Central Missouri in the articulation of transfer credit from another domestic, accredited institution of higher education may contact the Office of Undergraduate Admissions (WDE 1400, 660-543-4290). Questions about international transfer credit should contact the International Student Services Office (WDE 1800, 660-543-4092) directly via email at ISSS@ucmo.edu.

All undergraduate college-level coursework attempted at recognized accredited institutions (and appropriately accredited international institutions) and corresponding grades will be included on the UCM transcript of degree-seeking students. "W" grades (withdrawals) are not posted to the UCM transcript and developmental or remedial work is evaluated on an individual basis.

UCM does post and accept all college-level transfer grades (A-F). These grades are counted in a student's cumulative GPA and are taken into consideration for academic standing calculations. UCM's repeat policy, not the repeat policy of the transfer institution, will be applied to any course repeats. See details of the UCM Repeat Policy in this catalog.

Transfer credit will retain the leveling and credit hours total as designated by the original granting institution regardless of whether a UCM equivalent's leveling or credit hour total is different. All courses taken at a two-year college and any 1000/2000 level courses taken at a four-year institution will not be applicable toward upper-level hour (3000/4000 level) requirements, even if these courses are articulated as UCM upper-level courses or are used as substitutions for upper-level UCM courses. Quarter hour transfer courses will be converted to semester hours at the rate of 1 quarter hour = 2/3 semester hours.

Students who hold an Associate of Arts (A.A.), an Associate of Arts in Teaching (A.A.T.), a bachelor's degree from an appropriately accredited institution **in Missouri** (including post-baccalaureate UCM students), or who have met the Missouri 42-hour General Education Core requirements are considered to have met all 42 hours of Central Missouri's requirements in General Education except any major- or minor-specific General Education courses, including state law requirements, Section 170.011 RSMO Supp (1988) (the constitutions of Missouri and the United States) and HB 1528/Section 170.013 the Higher Education Civics Achievement Examination.

Students who hold one of the degrees mentioned above from an appropriately accredited institution **outside of Missouri** have met the Missouri 42-hour General Education Core requirements except any major- or minor-specific General Education courses but must pass an exam on the constitutions of Missouri and the United States and the Higher Education Civics Achievement Examination. The constitutions of Missouri and the United States test is offered online, at no cost by the School of Social Sciences and Languages (Wood 203). Testing information can be obtained by calling 660-543-8840. The Higher Education Civics Achievement Examination is offered online through Blackboard, at no cost by the UCM Testing Center (HUM 216). Testing information can be obtained by calling 660-543-4919.

Transfer students who have completed an A.A., A.A.T, a bachelor's degree from an appropriately accredited institution in the United States (including post-baccalaureate UCM students), or the Missouri 42-hour General Education Core must also complete any major- or minor-specific General Education courses. The state of Missouri requires certain General Education courses for teacher certification. These requirements are outlined for each teacher education major in Programs Alphabetically

For students with an associate's degree other than the A.A. or A.A.T. (such as the A.S.), the university reviews transcripts and accepts applicable credit on a course-by-course basis.

International Transfer Credit

International transfer credit of all levels (undergraduate and graduate) and for all students (domestic and international) is handled by the International Student Services Office (ISS). All non-US transcripts should be submitted to ISS for authentication and evaluation. Applicants with questions about transcript evaluations should contact ISS via email at GISS@ucmo.edu or by calling 660-543-4621.

Military Service-Related Transfer Credit

Military service-related credit is posted as transfer credit and does not count towards upper-level hours requirements. This credit is denoted with a grade of CR (credit) on the Central Degree Audit and UCM transcript. Military service-related credits are not limited to a particular number of hours awarded and do not count towards the 30 hours of maximum CR credit explained under *Other Types of Credit*.

Credits from the Community College of the Air Force (CCAF)
Students with CCAF credit should have official transcripts sent to the Office of Undergraduate Admissions (WDE 1400, 660-543-4290).

Credits from the Joint Services Transcript (JST)
Credits earned by service personnel in specialized training programs of the United States Army, Navy, Marines or Coast Guard under certain circumstances may be accepted. The guidebook published by the American Council on

Education (ACE) is used to determine the credit value. Official Joint Services Transcripts (JST) should be sent to the Office of Military and Veteran Services (UN 117, 660-543-8776) which will review and determine the appropriate credit, if applicable.

Elective Transfer Credit

Courses already determined to have UCM equivalents will be applied on the UCM transcript upon receipt of an official transcript from the credit granting institution. Accepted transfer courses that have no UCM equivalents will be deemed elective courses and appear with an ELCT course prefix on the Central Degree Audit and transcript. Any ELCT course accepted for more than 0 credit hours (e.g., not remedial or developmental) does count towards the degree hours but will require further evaluation to fulfill a particular major, minor, or general education course. To have an elective transfer course considered for articulation to one of UCM's courses, students may contact articulation@ucmo.edu.

For courses unable to be articulated, students may seek a course substitution. For substitutions in the General Education requirements, students should meet with their Academic Success Advisor (660-543-4721, UN 128). For major or minor requirements and General Education courses required by the major or minor, students should visit with the school chair of the major or minor to discuss possible substitutions.

Graduate-Level Credit

Courses completed at the graduate level cannot be applied to undergraduate degree programs* and may not be repeated for undergraduate credit. *Exceptions apply to some graduate-level courses for students enrolled in accelerated degree programs.

Other Types of Credit

Other types of credit include: credit for prior learning, credit by exam, credit for official certifications, licenses, and diplomas, and validated credit. Students must be currently enrolled as a degree or certificate seeking student at UCM to be awarded these types of credit. Credit will be posted after the enrollment period for the semester had ended (typically during the second week of the semester).

Students may count a combined total of 60 credit hours of SC and CR credits towards their degree. Each type of credit, SC and CR, is limited to 30 credits. Military service-related credits, as noted above, and credits from certain consortium programs (Radiologic Technology/Medical Laboratory Science) do not count towards the 30 hours of maximum CR credit.

These types of credit involve credit only and do not include a letter grade. Therefore, credit only has an impact on hours earned and not on grade point average. With the exception of some of the credits from certain consortium programs (Radiologic Technology/Medical Laboratory Science), credit earned from these types of experiences does not count towards residency hours or upper-level hours at UCM.

Credit for Prior Learning (CPL)

Credit for Prior Learning is an assessment completed by UCM faculty and staff to evaluate the student's knowledge and expertise acquired, outside of formal higher education. This evaluation is accomplished to 1) determine if the knowledge and experience warrants college-level credit and 2) meets the required course objectives. The American Council on Education (ACE) and the National College Credit Recommendations Services (NCCRS) evaluate courses and industry training to provide credit recommendations to institutions of higher learning. UCM is recognized as an ACE institution. This recognition means UCM will evaluate any course or training that has been ACE approved. This does not mean credit is granted but an evaluation will be conducted. Any and all credit awarded is determined by the

UCM faculty and administrative staff. Students interested in obtaining CPL should contact Online and Learning Engagements' Director of Academic Outreach (HUM 410, 660-543-8926) for guidance and assistance.

Credit by Exam

Credits by exam are based on nationally normed standardized exams (such as AP, IB, and CLEP). This type of credit is denoted with an SC on the Central Degree Audit and transcript.

Nationally Normed Standardized Exams

The following exams are those accepted for review at UCM for possible course credit. Tests marked by an asterisk (*) are administered by UCM's Testing Services.

- Advanced Placement (AP) (apstudent.collegeboard.org)
- *College Level Examination Program (CLEP) (clep.collegeboard.org)
- DANTES/DSST (getcollegecredit.com)
- International Baccalaureate (IB) (IBO.org)
- *Language Testing International (LTI) (https://www.languagetesting.com/lti-information/general-test-descriptions)
    - Oral Proficiency Interview (OPI)
    - Writing Proficiency Test (WPT)
- *Math-for-Credit exams (for MATH 1111 and MATH 1620

Requirements for Course Credit by Examination

- Only test scores obtained within the past 10 years are accepted.
- Not all exams have a course equivalent at UCM.
- Only official test score reports sent from the test company directly to Testing Services, JCKL 1250 will be reviewed. Please check with the testing company on how to send official scores.
- Exam scores sent prior to the students first semester will not be applied.
- Students eligible to receive course credit by examination must be actively attending classes at UCM and are responsible for notifying Testing Services at the Course Credit Request Form link. Please do not enroll in a course in which you anticipate receiving CLEP credit.
- Course credit by examination does not carry a letter grade and does not impact your grade point average. Course credit by examination placed on the transcript counts toward credit hours earned but not "enrolled hours" for a semester and may not be usable in a particular degree.
- Duplicate credit is not permitted. Students may not earn credit if they have previously earned a grade in the same course from UCM or another institution, as indicated on your transcript; or if credit has been earned via AP, DSST, IB exam or with a Biliteracy Certification.
- Required scores and course equivalents are determined by UCM academic department faculty and are subject to change, without notice, pending faculty review. Eligibility restrictions may apply. For details, contact your Academic Success Advisor, your faculty advisor or check the Undergraduate Catalog for information regarding the fulfillment of the General Education Program.
- Course credit by examination cannot be applied to upper-level hour requirements or in-residence hours.
- Course credit received by examination may or may not apply to a degree program.

- Students seeking course credit by examination when currently enrolled in the course must complete the exam prior to the 100% refund date for the course.

Course Credit by Examination from Other Institutions
Course credit by examination from other institutions is not automatically transferred to UCM. Review course credit by examination equivalencies on ucmo.edu/testingservices or contact Testing Services (testingservices@ucmo.edu or 660-543-4919, JCKL 1250) to determine if a course equivalent for the exam taken is available at UCM. If a course equivalent is available and the test score is less than 10 years old contact the test company to request an official score report be sent to Testing Services.

Credit for Official Certifications, Licenses, and Diplomas

In certain instances, academic schools will evaluate official certifications, licenses, and diplomas granted by fully accredited national and state boards and officially recognized professional organizations to determine whether undergraduate credit may be assigned by the Vice Provost for Academic Programs and Services toward the fulfillment of degree requirements in a major or minor. Appropriate university schools reserve the right to test competencies and performances in these areas and to determine the hours and the nature of the credit to be assigned, if any. Paperwork signed by the academic school chair, college dean, and Vice Provost for Academic Programs and Services will be submitted by the academic school to the Registrar's Office for processing. This type of credit is denoted with a CR on the Central Degree Audit and transcript.

Seal of Biliteracy

The Missouri Seal of Biliteracy is an award granted by a local district to recognize a student who has attained proficiency in English and one or more other world language(s) before high school graduation. The recognition of attaining biliteracy becomes a part of the high school transcript for these students and serves to certify attainment of biliteracy for the community, employers and universities. Students wishing to receive credit for the Biliteracy award should send their official scores to the Testing Center.

Validated Credit

A student can earn college credit by demonstrating specific competencies. These tests or measurements vary by school and are free to the student. Validated credit is an option within three areas of the General Education program: Composition (for ENGL 1020, if ENGL 1080 is passed with a grade of C or higher), Modern Foreign Language, and Mathematical Reasoning. See the appropriate school for more information. Validated credit is denoted with a CR on the Central Degree Audit and transcript.

Costs

Fees and Expenses

Housing, food service, and instructional fees are assessed for payment prior to the beginning of the semester. Rates are set by action of the Board of Governors and are subject to change. Information regarding fees and expenses is available from the Office of Student Financial Services (Ward Edwards 1100, 660-543-8266).

University Fees

Please refer to the Tuition and Fees section of the Student Financial Services website for the current fees.

Missouri Residency - Questions regarding Missouri residency should be directed to the Office of Undergraduate Admissions, Ward Edwards 1400 (660-543-4290 or admit@ucmo.edu).

Off Campus and Online Classes - Fees vary for courses offered off-site and using distance learning technologies. Refer to the Tuition and Fees section of the Student Financial Services website for the current fees.

Special Fees

The following fees are paid only for special purposes or because of certain conditions.

Graduation Fee (billed to all students during their final semester)	$50.00
Graduation Walk Early Fee	$50.00
Graduation Walk Late Fee (per each semester late)	$50.00
Early or late final examination fee per final (by permission)	$10.00
Transcript Review Fee for Teacher Certification	$35.00
Transcript (per official copy)	$10.00
Dale Carnegie First Transcript (subsequent are $10 each)	$50.00
Replacement or Duplicate Diploma	$25.00

Supplemental Course and Program Fees

Certain courses and programs require supplementary fees, materials, supplies, and activities at additional expense to the student. Additional fees can be found here.

Determination of Missouri Residency for Fee Purposes

The Missouri Department of Higher Education has issued regulations to be applied by Missouri universities to determine the resident status of students. This regulation is available at *6 Code of State Regulations 10-3.010*. The burden of proof in establishing residency rests with the student. Students who are legal minors or tax-dependents whose parents reside outside the state of Missouri are not eligible for resident fee-paying status. One can be classified as a resident for fee purposes immediately upon moving to the state if the move is to accept full-time employment (or if one is the dependent of someone who came to Missouri to accept full-time employment). In other situations, continuous domiciliary presence in the state for 12 months must be proven AND sufficient proof of intent to be domiciled in Missouri permanently must be provided. Residency is determined by each educational institution. Residency for attendance at a community college, obtaining a driver's license, or serving in the Missouri Guard will not necessarily mean a residency determination for fee purposes at UCM.

Applications and additional information are available for undergraduate students in the Office of Undergraduate Admissions (WDE 1400, 660-543-4290) and for graduate students in the International Student Services office (WDE1800, 660-543-4621).

Financial Responsibility

Students have the primary responsibility for paying all charges incurred due to class enrollment, room and board choices, and fines. Full payment due dates are published on the Office of Student Financial Services web site and on the student billing statement. Non-payment of charges or failure to make payment arrangements by the due date will result in additional fees being charged. The University assesses a 1.5% monthly payment plan fee based on the unpaid balance for charges previously billed but not paid in full. Collection costs are assessed if collection action becomes necessary. For additional information regarding the payment of charges, visit ucmo.edu/sfs.

Refund Policy

Reduced Load. Refunds of instructional fees for student-initiated reduction in class load will be processed after the third week of classes. Refund deadlines may vary per class based on the start and end dates of the course. Students should consult the dates available in MyCentral for the specific refund deadlines for each of their courses.

No refund of instructional fees will be made for student-initiated reduction in class load after the last day to drop with a 25% refund.

If a fee amount would be reduced due to load changes caused by failure of classes to materialize, class cancellation by the university, or from drops for the Enrollment Validation Policy, a full refund for that class will be made.

NOTE: A federal financial aid recipient who drops to less than half-time enrollment status should be aware that depending on his/her class attendance records, some or all the assistance credited to the student's UCM account for the semester may have to be reversed.

NOTE: Students participating in a Study Abroad program, when permitted to withdraw from a course, will not receive any refund.

The following refund schedule for instructional fees applies:

For fall and spring semester full-semester classes (16 weeks)*:

- Withdrawal during the first four days of classes: full refund
- Withdrawal during day five through day eight of classes: 50 percent refund
- Withdrawal during day nine through day twelve of classes: 25 percent refund

For fall and spring semester half-semester classes (8 weeks); summer 8-week (session S9K) and 12-week (session SFM) classes*:

- Withdrawal during the first three days of classes: full refund
- Withdrawal during day four through day six of classes: 50 percent refund
- Withdrawal during day seven through day nine of classes: 25 percent refund

For classes in any semester that are 7 weeks or less*:

- Withdrawal during the first two days of classes: full refund
- Withdrawal during the third day of classes: 50 percent refund
- Withdrawal during the fourth day of classes: 25 percent refund

For off-schedule classes*:

The refund (100%, 50%, and 25%) schedule for off-schedule classes depends on the course start and end dates. Students can find the deadlines for their courses online in MyCentral.

*Holidays, student breaks, and weekend days are not included in the refund schedules.

NOTE: In accordance with federal regulations and University guidelines, a financial aid recipient who officially or unofficially withdraws or drops below 12 hours from UCM may be required to repay some or all the scholarship, grant and loan assistance credited to his or her UCM account, based on the date of withdrawal and last date of class attendance/participation for the semester.

Refund Appeals. A student who has completely withdrawn from UCM (all classes in a semester) and believes that a refund greater than the established schedule states should be issued may submit a written request to the Office of Student Experience and Engagement (ADM 214, 660-543-4114). Students who have dropped one or more courses for a semester, but not all classes may use the refund petition form in MyCentral. The reasons and unusual circumstances believed to justify a larger refund must be outlined in the written request. All requests for refunds must be submitted within two weeks of the end of the semester for which the fees were paid.

If a special refund request is approved by any UCM office), any credit, or negative student account balance, generated because of the refund will be applied as follows:

1. Institutional Scholarships (if student did not achieve the required 12 credit hours that semester); then
2. Unsubsidized Loan; then
3. Subsidized Loan; then
4. Student

Student attendance must be confirmed by the Financial Aid Office for any federal aid for that term, or any aid could be returned to the Dept. of Education, per the existing regulations.

Withdrawal. Students who wish to withdraw from all classes in a semester after the last day to make schedule changes must contact the Office of Student Experience & Engagement (660-543-4114 or experience@ucmo.edu) for assistance. Staff will assist the student with tying up any loose ends with the university (housing, parking, fees, book returns, financial aid, etc.). International students must notify International Student Services (WDE 1800, 660-543-4092) prior to beginning the process of withdrawal from the university.

Financial Assistance

To help an individual reach his or her educational goals, the University of Central Missouri offers a variety of federal, state, and institutional grant, loan, and employment assistance, much of which is awarded based on a student's calculated financial need.

The Office of Student Financial Services annually processes over $73 million in assistance to 93 percent of the students who attend the university. Each student's family and economic situation is recognized as unique, and every financial aid application is examined on an individual basis. The number of applications for financial aid, however, almost always exceeds the total amount of assistance available. Therefore, it is very important for each applicant to:

- Apply by February 1st each year to be considered for state aid.
- Apply by April 1st each year to be considered for Supplemental Education Opportunity Grant and Federal Work Study.
- Comply with all financial aid instructions, policies, and requests for follow-up information and documents
- Contact the Office of Student Financial Services with any questions:

In person: Ward Edwards 1100
Telephone: 660-543-8266
Fax: 660-543-8080
Web site: ucmo.edu/sfs

Federal and state financial assistance may be used to help pay direct educational expenses, such as tuition/fees, books/supplies, and housing/meal plan charges, as well as variable living costs such as off-campus housing, food, transportation, childcare, and other personal costs related to attending UCM. In accordance with federal and state regulations, the responsibility for meeting these costs lies with the student and his or her family. Any other assistance received must be included and could impact a student's eligibility for federal aid. However, financial aid from one or more of the following programs can be awarded to supplement the family's financial contribution.

Types of Financial Aid

Grants (such as the Federal Pell Grant, Federal Supplemental Educational Opportunity Grant, and Access Missouri Grant) are types of assistance that normally do not have to be repaid.

Loans (such as the Federal Stafford Loan and Federal PLUS (parent) Loan) are types of low-interest loans that must be repaid, but not until after the student graduates, withdraws, or drops to less than half-time enrollment status.

Employment (such as Federal Work-Study) assistance enables a student to earn a portion of his or her educational resources through part-time work on-campus or off-campus. Information about available Federal Work-Study positions, as well as university-funded student employee positions, is available from the Office of Human Resources (ADM 101, 660-543-4255)

How to Apply

To apply for the above types of federal and state financial aid, a student must submit a **Free Application for Federal Student Aid (FAFSA)** each year. A student files the FAFSA online at fafsa.gov. There is no charge to apply.

After submitting the FAFSA, a financial aid applicant may be required to provide supporting documents or clarifying information to the UCM Office of Student Financial Services. If required to do so, the applicant will be contacted by UCM and should respond promptly.

Financial Need

A student's calculated need for federal and state financial assistance is determined by the federal processor from the FAFSA data (and supporting documents) provided by the student. Once this calculation has been completed, financial aid is awarded to help meet the individual's level of need. The student is then notified by email of his/her award package, which is accessible in the MyCentral portal. The notification process begins in December for UCM's earliest FAFSA applicants and continues throughout the year.

Scholarships

Over $7.0 million in merit-based scholarship aid is awarded annually to students who demonstrate academic excellence, leadership, special talents, or potential in a specific field of study. UCM also offers scholarships to non-Missouri residents.

Generally, to be considered for an undergraduate scholarship, a student must:

1. Be admitted to UCM as degree-seeking.
2. Meet minimum qualifying criteria.
3. Not be on academic probation.
4. Be enrolled as a full-time undergraduate student (12 or more credit hours)*. A Red & Black or Transfer scholarship recipient may enroll for less than 12 hours and be considered to receive a proportional amount of an award under the following conditions:
    - Be enrolled in a UCM-approved internship or be student teaching, or
    - Be a last-semester senior completing a bachelor's degree program.
5. Institutional funds that require the completion of 12 credit hours per term will be reduced or removed for that term if a student does not earn a minimum of 12 credit hours per semester, with the exceptions noted above. Also, if a student withdraws from a class which causes them to drop below 12 credit hours, a portion or all of scholarship for that term will be removed. The scholarship remains in place for subsequent terms as long as the student maintains the minimum requirements for Full Time status and GPA. Institutional scholarships have requirements in order to receive them, and if the requirements are not met (through a withdrawal, for example), then the scholarship will be reduced or removed.
6. Institutional scholarships/aid are not refundable. If a student's total institutional aid exceeds their direct institutional charges then the institutional aid will be reduced.

***Students must EARN a minimum of 12 undergraduate hours per semester at UCM.** For example, if a student drops from 12 hours to 9, then that student did not fulfill the minimum requirement for institutional scholarships and loses any applicable scholarship for that term. Courses with an "F" grade are considered earned for scholarship purposes.

TRANSFER SCHOLARSHIPS

Students who transfer to UCM with 23 credit hours or less are considered new freshmen for scholarships (i.e., Red & Black, Dual Credit, etc.), if otherwise eligible. For any students transferring with 24+ credit hours, they are considered Transfer students (i.e., President's Distinguished, President's, Deans', PTK, etc.) in determining their scholarship eligibility.

If a student is receiving federal aid and is the recipient of multiple scholarships, from the University of Central Missouri or other outside entities, the combined total may not exceed the cost of education at UCM. Some UCM Scholarships may also be adjusted or canceled if the student receives more gift aid than his/her Cost of Attendance, or if the recipient fraudulently misrepresents any information on a UCM document or engages in serious misconduct which warrants substantial disciplinary penalty.

For information about scholarships associated with specific majors, students should contact the academic school offering the program of study. For general undergraduate merit scholarship information, visit ucmo.edu/scholarships or the UCM Office of Student Financial Services (1100 Ward Edwards Building, 660-543-8266).

In addition to scholarships from the academic schools, privately funded scholarships are extremely important in helping students achieve their academic goals and inspiring them to become leaders in their community, state, and nation. Generous donors have advanced the university's academic excellence by establishing nearly 600 scholarships to help students at all levels: from high school graduates beginning college to undergraduate students working on bachelor's degrees and graduate students pursuing advanced study.

For information about scholarships available through the UCM Foundation, visit ucmo.edu/foundation/scholarships. The application deadline for most UCM Foundation scholarships is February 1. Students may apply for UCM Foundation scholarships at https://ucmo.academicworks.com/.

Other Assistance

Many scholarships from a wide variety of sources are awarded each year to undergraduate students. Information and applications are available at ucmo.edu/scholarships. Financial aid recipients should be aware, however, that receiving non-UCM or UCM financial aid or educational benefits can result in an adjustment to the federal aid that may have already been awarded and/or disbursed.

Midwest Student Exchange Program

The Midwest Student Exchange Program (MSEP) is an interstate initiative established by the Midwestern Higher Education Commission to increase the educational opportunities for students in its member states. The University of Central Missouri is an active participant. MSEP permits legal residents of Indiana, Minnesota, North Dakota, Ohio, and Wisconsin to enroll at UCM at a reduced rate of tuition. The number of MSEP recipients is limited, however, and is based on factors such as date of admission to UCM, ACT/SAT score, etc. Complete information about MSEP eligibility is available from the Office of Student Financial Services (Ward Edwards 1100, 660-543-8266) and can also be found at ucmo.edu/sfs/scholarships under the Transfer students heading or at msep.mhec.org.

Non-Resident Fee Credit

If a non-resident student pays income tax in Missouri or is in the legal custody of a parent who pays income tax in Missouri, a credit can be made against the non-resident student fees normally charged to the student. For information about this credit contact the UCM Office of Undergraduate Admissions (Ward Edwards 1400, 660-543-4290).

UCM Bound Out of State Scholarship

The UCM Bound Out of State Scholarship allows admitted students whose permanent residence is one of the following states to pay in-state tuition and fees for all classes on the main campus in Warrensburg. The eligible states are: Arkansas, Illinois, Iowa, Kansas, Kentucky, Nebraska, Oklahoma, Tennessee, Texas, New Mexico, Colorado, Wyoming, and South Dakota.

Satisfactory Academic Progress

Federal regulations require that every student who wishes to continue receiving financial aid must maintain satisfactory academic progress toward the completion of his or her degree or certification program. Satisfactory academic progress for financial aid purposes is defined as successfully completing at least two-thirds of the credit

hours attempted during a school year and is checked each May after all spring semester grades have been posted. Undergraduate students must maintain at least a 2.00 cumulative grade point average to remain eligible for federal assistance, which will be specifically reviewed after four semesters.

Undergraduate and Post-Bac students must complete their degrees within the following parameters:

- Undergraduate 180 hours
- Post Bac. students should be aware that certain state financial assistance programs may require a recipient to maintain more stringent standards of satisfactory academic progress.

Deadlines to file a SAP appeal are normally the last day of 100% Add/Drop for a given semester. Students can appeal later into the semester if they have an extenuating circumstance approved by the Financial Aid Office. If they appeal after this deadline, or if the appeal is not approved, they cannot receive aid for that semester. They can appeal for aid in the next semester, but an approval (if granted) cannot be retroactive to the prior semester.

Short-Term Loans

The University of Central Missouri realizes that many students are dependent upon federal financial assistance to satisfy the costs of attending UCM. However, it is important to have some personal money on hand when beginning classes each semester to help pay school related costs during the first week or two of classes not charged by UCM. If an emergency arises, a student can apply for short-term loan funds, against their anticipated refund, at the Office of Student Financial Services (1100 Ward Edwards Building). This assistance must usually be repaid within 60 days and is only available to students who have excess financial aid above their cost. A service charge of $10 is levied to borrow from the UCM Short-Term Loan Fund, but no interest is charged.

Veteran Services

The University of Central Missouri office of Military and Veteran Services assists veterans, service members, and dependents requiring services and benefits from the Veterans Administration, Military Tuition Assistance and any state or federal benefits. Students seeking to use benefits must contact our Military and Veteran Services office and fill out the Veterans Certification Request Form each semester they seek to use their benefits.

UCM is in compliance with the requirements of PL 113-146 the Veteran Access, Choice and Accountability Act of 2014, Section 702. UCM will waive all non-resident rates to uniformed service veterans and their qualified dependents covered under Section 702.

For recipients of Chapter 31 and Chapter 33 of the G.I. Bill® , the University will not impose any penalty, including the assessment of late fees, the denial of access to classes, libraries or other institutional facilities, or the requirement that a Chapter 31 or Chapter 33 recipient borrow additional funds to cover the individual's inability to meet his or her financial obligations to the institution due to the delayed disbursement of tuition or mandatory fees payment by the U.S. Department of Veterans Affairs. See Section 103 of the Veterans Benefits and Transition Act of 2018 for the chapter.

However, to qualify for this provision, such students may be required to:

- Produce the VA's Certificate of Eligibility (COE) by the second week of class;
- Provide a written request to be certified by submitting the Certification Request Form.

UCM is in compliance with providing in-state rates for VA beneficiaries.

Below is a list of programs that are currently not approved for VA funding at UCM:

- Alternative Certification Program

- Individualized Programs *Except BS and BA General Studies
- THRIVE Program
- Last 2 years of the Radiologic Technology Program is not funded by VA at UCM as it is completed at affiliates and their sites. Students will need to contact affiliate to see if it is approved for VA funding.

Academic Information

Undergraduate Appeals/Petitions

An undergraduate student may appeal certain decisions related to policy stated in the Undergraduate Catalog. The appeal process will vary depending on the situation. Administrative offices, schools and/or academic units will designate the individual(s) authorized to review the appeal. If the student is not satisfied with the appeal decision, the petition plus any additional information is again reviewed by the appropriate Director and forwarded to the next appropriate body for review.

To ensure compliance with federal and state laws, codes, regulations, and accreditation requirements, the following policies are not subject to appeal by the student:

- The minimum overall grade point averages (UCM, cumulative, major/minor, etc.) required to receive an undergraduate degree, certificate, major, or minor.
- The minimum overall number of semester credit hours required to receive an undergraduate degree or certificate.
- The minimum number of required semester credit hours taken at the 3000/4000 level at the University of Central Missouri to receive an undergraduate degree, certificate, major, or minor.
- The minimum number of semester credit hours completed in residence at UCM required to receive an undergraduate degree, certificate, major, or minor.

Credit Hours

Academic units are measured in credit hours. Most classes are worth three credit hours, but credit hours may vary from 0 to 5 or more depending on the course. A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is not less than: (a) one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester hour of credit or the equivalent amount of work over a different amount of time; or (b) at least an equivalent amount of work for other activities as established by the institution, including laboratory work, internships, practica, studio work, and other academic work leading toward the award of credit hours; or (c) institutionally established reasonable equivalencies for the amount of work as described above as represented by verifiable student achievement of intended learning outcomes.

Academic Load

The normal academic load per semester for an undergraduate student is 15 or 16 credit hours per semester. A full-time undergraduate student is one pursuing 12 or more credit hours per semester or 9 credit hours in the summer session (12 hours is required in the summer to be considered full-time for financial aid). Most of UCM's undergraduate degrees require 120 credit hours and may be completed in a four year time period if an average of 15 credit hours is earned per semester. Some programs require additional hours but may still be completed in four years with additional hours per semester or summer classes.

The maximum academic load for fall and spring semesters is 18 credit hours for freshmen and sophomores (less than 60 earned hours). Juniors and seniors (60 or more earned hours) in good academic standing may enroll in as many as 19 credit hours with the assistance of their Academic Success Advisor or the Registrar's Office. Freshmen/sophomores desiring to exceed 18 credit hours and juniors/seniors desiring to exceed 19 credit hours must have the overload approved by their major school chair, or the Director of the Success Advising Center (UN 128, 660-543-4721) if no major is declared. Students on academic probation may not enroll in more than 15 credit hours during any fall or spring semester or 12 credit hours during any summer semester of academic probation.

If students are enrolled for coursework at other institutions of higher education while concurrently enrolled at UCM, the total number of semester credit hours taken in any enrollment period may not exceed the maximum specified for a full-time, resident student at UCM.

International students must complete a minimum of 12 credit hours per semester. Please note that full-time status for UCM's Intensive English Program is 6 credit hours (20 contact hours) per 8-week session. The International Student Services Office (ISS) must approve concurrent enrollment for any international student prior to the beginning of each semester. To meet concurrent enrollment requirements, international students must be enrolled in a minimum of 6 semester hours of work at UCM and at least 6 semester credit hours of work at another SEVIS-approved higher education institution for a minimum total of 12 semester credit hours of work in a semester.

Summer Course Load Policy

The maximum course load is 12 credit hours for the entire summer semester. Undergraduate students may enroll for more than 12 hours with the approval of their major school chair, or if open options, the Director of the Success Advising Center. While UCM recognizes nine (9) hours as full-time status during the summer, twelve (12) hours is considered full-time for federal financial aid purposes (6 hours for graduate students).

International students are not required to enroll in summer hours unless they are in the first semester of their academic program at UCM. International students beginning their academic program in the summer must complete a minimum of nine credit hours for the entire summer semester. Please note that full-time status for UCM's Intensive English Program is 6 credit hours (20 contact hours) per 8-week session.

Class Attendance

Class participation and attendance are essential for student success. The University has no provisions whereby a student can enroll and receive credit at the University of Central Missouri without having attended and/or participated in class. This principle applies to all courses for which credit is awarded regardless of mode of delivery.

Students are expected to attend all lectures, seminars, laboratories, and fieldwork for each registered class and to complete all work assigned by the instructor for the course. Advance arrangements for unavoidable absences should be made with the instructor whenever possible. When absent for three days or more, a student may ask the Office of Student Experience and Engagement (660-543-4114, ADM 214) to send an informational note to his/her instructors. Neither absence, nor notification of absence, relieves the student of the responsibility for the fulfillment of all course requirements.

Make-up of missed course requirements due to extenuating circumstances shall be arranged between the instructor and the student upon the student's initiative. Instructors are required to allow the student the opportunity to earn full credit for missed work when a student is absent due to participation in approved university activities, university programs (that the student is required to attend), or when absence has been verified by the Office of Student Experience and Engagement. A student must contact the assigned instructor on the first day the student returns to class. Instructors may stipulate special attendance requirements in the course syllabus, as long as they do not conflict with the student's right to make up missed work as described above.

When absent due to extenuating circumstances such as documented medical issues, a death in the family, or military order, a student may ask the Office of Student Experience and Engagement to verify the absence. If the absence is verified, the student will be provided a written electronic notice which (s)he may distribute to faculty. It is the responsibility of the student to make the request within a reasonable time frame, distribute the documentation to faculty within two days of receiving it, and to make arrangements with faculty to make up all missed work.

The University Health Center (UHC) does not provide medical excuses and/or Time-In Time-Out slips to students for the purpose of being excused from class. When medically indicated, the health center may recommend a student not

attend class. Student Experience and Engagement will be contacted by UHC staff to communicate the recommended absence to the student's instructors.

To be eligible to receive federal and state financial aid, students must have a documented record of attendance in the classes for which they enroll. Registration for classes is, in itself, not sufficient to prove attendance. A student who receives or otherwise benefits from federal or state financial aid, but has no documented record of attendance in the class(es) for which (s)he is enrolled, is not eligible to have received/benefitted from the aid, and will be required to repay all the federal and state assistance credited to his/her UCM account for the semester. For information on return of federal funds, review the Student Financial Services policy.

Students who are not reported as absent during the Enrollment Validation period and never attended a course will receive an "F" grade and are financially responsible for the course. UCM does not have an administrative drop policy to remove students from courses after the Enrollment Validation period.

Classification of Students

Freshmen are defined as those students who have completed zero through 29.9 semester hours of college credit. Sophomores are those who have completed 30 through 59.9 semester hours. Juniors must have completed 60 through 89.9 semester hours. Seniors are defined as all students who have completed a minimum of 90 semester hours.

Field Trips

At times, field trips are planned in conjunction with course assignments. Students in classes for which such trips are planned are to be given sufficient advance notice to make necessary arrangements for absence from the campus. Field trips are not scheduled during final examination periods, nor can they be required by an instructor. Work missed in other classes may be made up, although instructors are not required to provide tutoring. All arrangements are subject to the limitations of university liability coverage.

When transportation is provided for the class, faculty may arrange for wheelchair accessible transportation by contacting Accessibility Services (Elliott Student Union 224, 660-543-4421).

Final Examinations

Final examinations are given at the end of each semester according to a published schedule. Permission to take an examination out of scheduled hours is granted only in special cases, with the approval of the instructor of the class and the Vice Provost for Student Experience and Engagement. A fee of $10 per final is charged for rescheduling of final examinations. Any student who has three final examinations scheduled on any one day may request permission to move one of the examinations to another day during the final examination period. There is no charge for this, but approvals must be secured as described above. Resolution of conflicting examination schedules, as well as arranging make-up examinations, must be made with class instructors.

Final Grades and Transcripts

Final grades can be reviewed online in MyCentral. A student number and password are required to access MyCentral. Grade reports are not mailed or e-mailed to students from UCM. Official transcripts can be ordered for a fee. Unofficial transcripts are available to currently enrolled students free of charge in MyCentral. Unofficial transcripts do not show degrees or certificates earned.

Central Degree Audit (DegreeWorks)

The Central Degree Audit (also called DegreeWorks) is the degree audit reporting system used at UCM. The Central Degree Audit produces a report that reflects a student's degree or certificate requirements in a given catalog year and degree or certificate program. It includes both transfer credit and UCM credit and shows a students' progress toward graduation. This report designates the number of credit hours earned, both cumulative and UCM grade point averages, and a listing of courses completed.

Students can access their Central Degree Audit in MyCentral.

In addition to the Central Degree Audit reflecting the student's current academic major(s) and minor(s) (if applicable), students may run a "what-if" degree audit as a way to explore how their current completed courses would apply to different majors, minors, or catalogs. The Central Degree Audit also has a feature called Plans. Students can work with their Academic Success Advisor to create a plan of study for graduation.

Degree audits will reflect the specific requirements for The Honors College for those students accepted into The Honors College. Honors students who take courses outside of the typical honors choices may need substitutions provided from The Honors College for the audit to reflect them properly.

Degree audits may include double majors and double minors. Students pursuing double degrees can view two different degree audits, one for each degree. Individualized major and minor curriculum is not reflected on degree audits. Students pursuing an individualized major or minor should use the Central Degree Audit for general university requirements and general education requirements and consult their individualized major/minor agreement for major/minor requirements.

Students should run a copy of their Central Degree Audit prior to enrollment in future semesters to see what requirements are remaining. After enrollment, a second degree audit should be run and saved to ensure that the courses scheduled fulfill degree requirements as expected.

Deviations from the major or minor requirements must be approved in writing by the school chair and submitted to the Office of the Registrar to be reflected on the Central Degree Audit.

Degree/Certificate Revocation Policy

It is the policy of the University of Central Missouri that a degree or certificate may be revoked when it is demonstrated by clear and convincing evidence that:

- A degree/certificate had been erroneously conferred when all requirements had not been satisfied at the time the degree or certificate was granted.
- A degree/certificate had been erroneously conferred as a result of an act of academic dishonesty.

The university president is charged with developing procedures to implement this degree/certificate revocation policy. The president, the provost, and the faculty will develop such procedures including the appropriate levels of procedural due process extended to the degree or certificate recipient.

Unauthorized Persons in Classrooms

Persons who are not officially enrolled in a course may not attend any class session without the prior consent of the instructor and the school chair. In unique situations, the instructor and the school chair may, at their discretion, approve a request for a child/guest to attend a class session. In these instances, the student is responsible for supervising the child/guest and for any inappropriate behavior.

Students who have a "U" grade (unfinished work) from a prior semester may finish only the portion of the course remaining. They may not sit through an entire course again in order to complete the unfinished work. Students who need to attend the entire class must re-enroll in the course and pay fees accordingly. An individual who wants to attend a class for no academic credit may do so by following the University's policy on auditing courses.

Academic Standards

Grading System

Only grades A through F impact grade point average. The grading system used in evaluating a student's work is as follows:

A - Work of marked excellence

B - Work of superior quality

C - Work of average quality

D - Work of minimal passing quality

F - Failure to do work of passing quality

CR* - Credit for Official Certifications, Licenses, Diplomas, Military Credit, Validated Credit, Prior Learning, and Work Experience (limited to 30 hours towards a degree, excluding military credit)

LD** - Designates a Late Drop of a course (but not the entire semester schedule), granted for extenuating circumstances after the published last day to withdraw

LW** - Designates a Late Withdrawal of a complete semester's schedule, granted for extenuating circumstances after the published last day to withdraw

NC - No credit granted for course (audit)

NR - No grade reported by instructor

P - Work of passing quality in a-pass/fail course (limited to 9 hours towards a degree)

SC* - Credit by examination (AP/IB/CLEP), etc. (limited to 30 hours towards a degree)

U - Course not completed for justifiable reasons, students may not graduate with a U on their record

W** - Course dropped during withdrawal period

* CR and SC credits do not count towards residency hours or upper-level hours requirements. Up to 30 hours of each type, CR and SC, may be applied to a degree program.

** For more information about withdrawal grades, refer to the Academic Calendar in this catalog or the *UCM Student Handbook*. Course withdrawal and refund dates can also be found in MyCentral in the Student Records and Registration tab, under Registration using the "Check Refund and Withdrawal Dates" link.

Grade Point Averages

In order to receive a degree or certificate, a student must earn a minimum grade point average of 2.00 (C) in each of the following areas:

1. All work attempted (cumulative GPA, includes transfer work)
2. All work attempted at Central Missouri (UCM GPA)

3. All work taken to satisfy major requirements at UCM
4. All work taken to satisfy minor requirements at UCM
5. All work taken to satisfy certificate requirements at UCM

Students must review their degree and major program for all minimum GPA requirements. Several degree programs specify grade standards that may apply to acceptance into a program and/or that must be maintained for graduation from a program. Such special standards are listed under the major programs in the curriculum section of this catalog.

UCM does not freeze grade point average upon graduation. Additional courses taken at the undergraduate level at UCM will continue to impact both the UCM and cumulative GPAs. Additional transfer work will only be applied to the UCM transcript after graduation if a second undergraduate degree program is being pursued at UCM.

Computation of Grade Point Average

In order to compute grade point average, total quality points earned are divided by total hours attempted. Each semester hour is assigned a grade point value as indicated below:

1. Each semester hour of A is assigned 4 quality points.
2. Each semester hour of B is assigned 3 quality points.
3. Each semester hour of C is assigned 2 quality points.
4. Each semester hour of D is assigned 1 quality point.
5. Each semester hour of F is assigned 0 quality points.
6. Each semester hour of CR, LD, LW, P, SC, or W is not considered.
7. Each semester hour of U and NR is not considered until a grade is assigned.

Academic Standing

Student academic standing is determined by both the cumulative GPA and the UCM GPA. Students can find their academic standing in MyCentral and on the Central Degree Audit. Academic standing is calculated at the end of each semester and students who are not in good standing are notified via campus email from the Registrar's Office.

Good Academic Standing
Undergraduate students who have both a 2.00 cumulative and UCM grade point average are in good academic standing and are eligible to enroll for classes.

Academic Probation
A student whose cumulative GPA or total UCM GPA drops below 2.00 will be placed on academic probation. A transfer student will be placed on academic probation at the time of admission if his/her cumulative GPA is less than 2.00. All students placed on academic probation may continue to enroll in classes. However, the following requirements and/or restrictions apply:

- New First Time - Undergraduate students placed on academic probation will be required to enroll in UNIV1620(1), Reset for College Success in their next enrolled semester. UNIV1620 is a course designed specifically to help students make necessary changes in their academic habits and develop an individualized success strategy to get back on course to succeed.
- Students on academic probation may not enroll in more than 15 semester hours during any fall or spring semester of academic probation. Summer enrollment is limited to 12 credit hours.
- All students placed on academic probation are highly encouraged to develop a strategy and create a plan to get back on course to succeed with assistance from their Academic Success Advisor.

Removal from Probation
A student placed on academic probation will continue on probation until the UCM GPA and the cumulative GPA are

2.00 or higher. When a student on academic probation raises their UCM GPA and their cumulative GPA to 2.00 or above, the student is removed from probation.

Academic Suspension
A student on academic probation will be suspended from Central Missouri at the conclusion of his/her next semester/enrollment period if his/her semester/enrollment period GPA is less than 2.00. A transfer student who was admitted on probation will be suspended from Central Missouri at the conclusion of his/her first semester/enrollment period if his/her semester/enrollment period GPA is less than 2.00. Academic suspension is for a period of one full semester (not including summer semester), after which students may petition for reinstatement. Reinstatement is neither automatic nor guaranteed. International students must contact the International Student Services office immediately upon suspension from the university.

Academic Dismissal
A student who has been reinstated from suspension and continued on probation but does not achieve a semester GPA of 2.00 or higher in a subsequent semester/enrollment period, will be dismissed. Academic dismissal is for a period of one calendar year, after which a student may petition for reinstatement. Reinstatement is neither automatic nor guaranteed. International students must contact the International Student Services office immediately upon dismissal from UCM.

Reinstatement. The reinstatement of students who have been suspended or dismissed from UCM is not automatic or guaranteed. Petitions for reinstatement are reviewed by the Success Advising Center (UN 128, 660-543-4721) in conjunction with the program coordinator of the degree program the student has selected for reinstatement. Students in the Intensive English Program (IEP) who wish to petition for reinstatement must contact the English Language Institute at iep@ucmo.edu.

The reinstatement petition can be accessed in MyCentral under the Reinstatement card. Students petitioning must also apply for admissions to the University for the same term in which they are petitioning. For the best selection of courses, students should submit a petition in March for summer or fall semester reinstatement, and in October for spring semester reinstatement. Petitions will be considered through the following deadlines:

Fall semester: July 15
Spring semester: November 15
Summer semester: April 15

- The petition includes a written portion which should include an explanation of the circumstances that led to poor academic performance, and an explanation of activities and plans which may lead to improved academic performance in the future. Other substantiating evidence may also be requested. No additional application fee is required. Students must submit transcripts from all colleges attended that are not already on file with UCM, even if classes are in progress. The petition for reinstatement will not be reviewed until all transcripts and updated application are received by the Admissions office. After a review of the petition, academic records, and any other substantive evidence available, students will be notified of the reinstatement decision. All reinstated students will be enrolled in UNIV1620(1), Reset for College Success, as prescribed by their Academic Success Advisor in their first reinstated semester. UNIV1620 is a course designed specifically to help students make necessary changes in their academic habits and develop an individualized success strategy to get back on course to succeed.

Students may petition for reinstatement as follows:

1. Students who have been suspended may petition for reinstatement after sitting out one fall or spring semester (summer session does not count as a semester for suspension purposes). Students who have been dismissed may petition for reinstatement after one calendar year.
2. A student with documented extenuating circumstances who has been suspended or dismissed may petition for immediate (or early) reinstatement. Petitions for early reinstatement may not be submitted via MyCentral. Students seeking Early Reinstatement should contact the Dean of their college or, in the case of Open Option students, the Director of the Success Advising Center (UN 128, 660-543-4721) directly for

consideration. Early reinstatement is rarely granted and only applies for extenuating circumstances for which supporting evidence can be provided.

Grade Requirements for Program Admission and Graduation

In addition to the general requirements applicable to all areas, several academic programs specify grade standards that may apply to program admission and/or graduation from a program. Such special standards are listed under the major programs in the curriculum section of this catalog.

Dean's List

To be eligible for the Dean's List, a student must be an undergraduate who earns 12 or more gradable semester hours of residence credit during the fall or spring semesters with a grade point average for the semester of 3.50 or above. During the summer semester a student must be enrolled in nine or more gradable semester hours and achieve a 3.50 or above grade point average. Unfinished (U) grades must be resolved before Dean's List designation can be determined.

Graduation with Honors

Graduation with honors is available for students seeking an undergraduate degree. Undergraduate certificates are not eligible for graduation with honors. To be eligible for graduation with honors, a student must have earned both cumulative and Central Missouri grade point averages of at least 3.50. Those with cumulative and Central Missouri grade point averages of 3.50 to 3.74 graduate with Cum Laude; 3.75 to 3.84 graduate with Magna Cum Laude; and 3.85 and above graduate with Summa Cum Laude. Should the Central Missouri and cumulative GPAs be in different categories, the lower designation of honors will be recognized. For the purpose of inclusion in the printed commencement program and for recognition at the commencement ceremony, honors will be calculated based on the prior semester's grade point averages, because the final semester grades are not turned in by faculty until after the commencement ceremonies. Final determination of graduation with honors will be determined, and reflected on the transcript and diploma, after final grades are calculated.

Grade Appeals

Students who wish to appeal a grade have until the mid-point of the semester following the semester that the grade was issued.

- For grades issued during the fall semester, the appeal must be made before the end of the eighth week of the spring semester.
- For grades issued during the spring semester, the appeal must be made before the end of the sixth week of the summer term.
- For grades issued during any summer session, the appeal must be made before the end of the eighth week of the fall semester.

These appeals should be directed to the instructor who taught the course in question. Please refer to the current *Grade Appeal Procedure* in the *UCM Student Handbook* for information regarding this procedure. This policy is not for reviewing instances where a student has been accused of cheating, plagiarism, or other academic dishonesty. Also not covered by this policy are grievances based on discrimination.

Academic Renewal

Undergraduate students returning to UCM after an absence of three (3) or more calendar years to complete an undergraduate degree or certificate may request academic renewal of prior UCM coursework. The renewal can apply to multiple semesters and will affect only courses taken at UCM prior to the absence. The following rules apply:

- Does not include transfer work. (There is a separate academic renewal policy for new transfer students at UCM. This policy can be found in the Admissions section of this catalog.)
- Academic renewal does not remove grades from the academic transcript. A notation on the transcript will indicate the academic renewal.
- Academic renewal of undergraduate courses will not be considered to raise grade point averages for admission into graduate programs.
- Any degree requirements met during the designated term(s) will need to be repeated.
- Credit hours forgiven by this policy cannot be used to meet any requirements (prerequisite, graduation, certification, etc).
- Once approved and processed cannot be rescinded.
- Cannot predict how other bodies (graduate school, law school, medical school, etc) will interpret UCM's policy.
- Request must be made no later than one semester prior to degree conferral.
- Final approval is made by the Vice Provost for Academic Programs and Services.
- A student cannot request UCM's academic renewal policy if a similar policy from another institution was approved.

Students who receive financial aid must meet with a Financial Aid Counselor in Student Financial Services (WDE 1100, 660-543-8266) to determine how Academic Renewal could impact federal or state financial aid. Awarding of scholarships after Academic Renewal will be determined by the awarding body. Students who have ever received GI Bill® benefits at any institution must contact Military and Veteran Services (UN 117, 660-543-8776) regarding the impact of Academic Renewal. Student athletes must contact the Senior Associate Athletic Director (660-543-4310) to determine how Academic Renewal impacts athletic eligibility and athletic scholarship.

Unfinished Work

Unfinished work is denoted with a U grade on the transcript. The U grade is intended for use either in extenuating circumstances beyond the student's control in the last few days of the semester (illness or death in the family) or if the course is of an individualized nature that requires completion time beyond one semester, e.g., thesis, research report, or similar investigation.

Students with a U grade do not re-enroll in the class during the subsequent or later semester. They simply make up the missing work from the prior semester, as arranged with the instructor. Students who need to attend the entire class again will be assigned a letter grade and must re-enroll and pay fees accordingly. Students who have more than one U grade are expected to reduce their course load accordingly to complete the unfinished work. It is the student's responsibility to contact his/her instructor concerning the removal of the U grade. Students may not graduate with a U grade on their record.

All U grades will be changed to F grades on the last class day of the subsequent semester if no other grade change has been submitted. Some courses, as designated by the academic schools, may carry the U grade for more than one semester if the course is of an individualized nature, e.g., thesis, research report, or similar investigation.

Extenuating circumstances: An instructor may report a semester grade of U when, for justifiable reasons, the student has not completed the work of the course. For example, if a student has an extenuating circumstance beyond their control during the last week of the course, an extension may be granted at the discretion of the instructor. The grade will remain a U until the instructor has assigned a new grade. If at the end of the next semester (Fall, Spring or Summer) a new grade has not been provided, the U becomes an F. While the grade change does not occur until the end of the semester, instructors may set earlier deadlines for completion of the missing coursework.

Courses of an individualized nature: Some courses, as designated by the academic schools, may carry the U grade for more than one semester if the course is of an individualized nature, e.g., thesis, research report, or similar investigation.

Enrollment Information

Changes in Class Schedules

Adding Classes
Students may make changes to class schedules using self-enrollment in MyCentral through the Drop and Add period*. Fall and spring full-semester courses (16-week) may be added through 11:59 p.m. on Thursday of the first week of classes. Fall and spring half-semester courses (8-week) may be added through 11:59 p.m. on Wednesday of the term. Courses may not be added after the Drop and Add period*, unless a late add is approved by the instructor and school chair of the course.

Dropping Classes
Students may make changes to class schedules using self-enrollment in MyCentral through the Drop and Add period* (through the first four days of the semester for full semester fall and spring courses; through the first three days of the semester for half-semester fall and spring courses). Courses dropped during this time will be given a full refund and will not be entered on the permanent record (transcript).

During the Withdrawal period* (fifth day of the semester through the 10th week of fall and spring semesters for full semester courses; fourth day of the semester through the 5th week of the course for half-semester fall and spring courses), a student may drop any class using self-enrollment in MyCentral. Students who have a hold on their account will not be able to process course drops in MyCentral and should see their Academic Success Advisor, academic school/department, or the Registrar's Office for assistance with the drop.

A grade of W will appear on the permanent record (transcript) if the course is dropped during the Withdrawal period* (fifth day of the semester through the 10th week of fall and spring semesters for full semester courses; fourth day of the semester through the 5th week of the course for half-semester fall and spring courses). A grade of W has no impact on grade point average but is reflected on the transcript. If a student has been found guilty of academic dishonesty, a grade of F will be recorded and will impact the grade point average.

Students may wish to consult with an Academic Success Advisor and/or the course instructor prior to dropping a course. International students must seek approval from International Student Services (WDE 1800, 660-543-4092) prior to dropping below a full course load of 12 semester credit hours during any semester. Withdrawal from a course during a Study Abroad program is not permitted during the last one-third of the period.

After the published last day to drop a course, a late withdrawal must be approved by the Registrar's Office. If the student is petitioning to withdraw late from all courses, the petition should be directed to the Office of Student Experience and Engagement. Late withdrawals are by petition only and are only approved for documented, extenuating circumstances (e.g., hospitalization, death in the family) that prevented the student from completing the course(s). If a late withdrawal petition is approved, a grade of LD will be assigned. If a complete withdrawal petition is approved through Student Experience and Engagement (ADM 214, 660-543-4114), a grade of LW will be assigned for every class. The instructors of any courses receiving a grade of LD or LW will be informed of the petition's approval. Grades of LD and LW will not impact the grade point average but will be reflected on the transcript.

*Some courses are offered on a variable schedule and are not on the half semester or full semester schedule. Course-specific add, refund, and withdrawal dates may be found in MyCentral.

Waitlisting a Class

Students who wish to enroll in a course that is full may opt to waitlist the course in MyCentral. Not all courses at UCM offer a waitlist option. For those classes that do not offer a waitlist, see the school chair over the course regarding enrollment. For full semester classes, the waitlist ends on the last day to add a class, this is the fourth day of a class. This is also the same day as the last day for a 100% refund for a class. The waitlist for half-semester classes ends on

the third day after the start of classes. During the summer semester, the waitlist ends on the last day to add a class for each of the unique summer sessions.

The waitlist is first come, first served. If a seat becomes available in a waitlisted course, the first person on the waitlist will automatically be enrolled in the course. An email is sent to the student university email account if a course is added from the waitlist. The waitlist will not enroll a student beyond the maximum allowed hours (typically 18 or 19). Nor will the waitlist allow a student to enroll if a time conflict exists between the student's schedule and the waitlisted course.

Students waitlisting a course assume responsibility for taking themselves off the waitlist if they no longer want to enroll in the course. Students are responsible for payment and grades in all classes in which they are enrolled. Find detailed instructions on how to use the waitlist online.

Withdrawal from the University

Students who wish to withdraw from all classes in a semester after the last day to make schedule changes must contact the Office of Student Experience & Engagement (660-543-4114 or experience@ucmo.edu) for assistance. Staff will assist the student with tying up any loose ends with the university (housing, parking, fees, book returns, financial aid, etc.). International students must notify International Student Services (WDE 1800, 660-543-4092) prior to beginning the process of withdrawal from the university. In the event a student fails to initiate this process, his/her withdrawal is not considered complete, grades of F will be recorded for failure to attend classes, and the student is responsible for all charges to their account.

Students seeking a complete withdrawal after the published last day to drop a course must petition Student Experience and Engagement (ADM 214, 660-543-4114). Late withdrawals are done by petition only and are only approved for documented, extenuating circumstances (e.g., hospitalization, death in the family) that prevented the student from completing the courses(s). If a late withdrawal petition is approved, a grade of LW will be assigned. A grade of LW will not impact the grade point average but will be reflected on the transcript.

Regulations governing credit for room and board payments are found in the housing agreement. See the Refund Policy for information on the credit of fees. A financial aid recipient who officially or unofficially withdraws from UCM may be required to repay some or all of the grant and loan assistance credited to his or her UCM account, based on the date of withdrawal and last date of attendance/participation for the semester, as reported by his or her instructors.

Students Called to Military Service

When a military student is called to active service or training, whether voluntarily or involuntarily, prior to the completion of the semester, that student must submit documentation to the Office of Student Experience and Engagement (660-543-4114, ADM 214) and will be eligible for either:

1. The awarding of a "W" in one or more courses and a complete refund of all tuition and incidental fees charged for those courses withdrawn for that semester, or
2. The awarding of a grade, including a "U", in the course or courses by completing assignments away from class that meet course objectives. For a grade, course assignments must be completed by the end of the semester.

If the student has been awarded a scholarship to be used to pursue an academic program and such person is unable to complete the academic term for which the scholarship is granted, that person shall be awarded that scholarship at any subsequent academic term, provided that the person returns to the academic program at UCM at the beginning of the next academic term after the completion of active military service.

If the student chooses the option described in subsection (1), such person may request that the official transcript indicate the courses from which such person has withdrawn and the reason for the withdrawal, or such person may

request that all course titles be expunged from such person's record. Choosing the option of a refund shall not affect the person's official academic record or standing at UCM.

If the student chooses the option described in subsection (2), such person shall complete the course work to the satisfaction of the course instructor and UCM. The grade of "U" shall be converted to a failing grade if the person does not apply to complete the course work within six months of discharge or release from active military service. In the event the person cannot comply for medical reasons related to the active military service, such person shall apply to complete the course work within three months of the end of the period of convalescence. Choosing subsection (2) shall not affect the person's official academic record or standing at UCM, unless the person fails to complete the course work.

Holds

Holds may be placed on student records when the university needs a student to meet particular requirements. Holds can prevent registration (course adds and drops) and block the release of transcripts, grades, or diplomas. Common holds include those for academic advising, financial issues, testing, and health center holds.

Students can check for holds in MyCentral and should contact the office that placed the hold to learn how to resolve the issue. Students should plan to have hold(s) removed prior to their enrollment access date.

Enrollment Validation Policy

Central Missouri enforces an enrollment validation policy. This policy applies to all online, hybrid, and face-to-face classes that begin the first week of classes. The policy also includes any online, hybrid, and face-to-face classes that begin during the first week of second-half semester classes and any of the classes during the five different summer sessions. Dual credit, 0-credit hour classes, internships/practica, thesis/special projects classes, and classes that are off-schedule are not included in this policy. For face-to-face classes, students must attend the first day of each class or have made prior arrangements with their instructors to secure their seat in the course. For online and hybrid classes, students must indicate their intent to attend the course in Blackboard. Students whose instructors report first-day absences will have those classes dropped from their schedule. Students who are not reported absent are responsible for their enrollment in courses including any fees incurred and grades earned. Financial aid recipients who do not attend classes may be required to repay some or all of the assistance credited to their UCM account for the semester.

Enrollment Verifications

Central Missouri has authorized the National Student Clearinghouse to provide enrollment verification certifications for students through MyCentral.

Student Self-Service enables Central Missouri students to print official enrollment verification certifications on demand via a secure student portal, MyCentral, at no charge. These certificates can be sent to health insurers, housing providers, or other organizations requiring proof of enrollment. Students can also check deferment forms and electronic notifications sent to lenders, view their enrollment history, obtain a list of student loan lenders and link to real-time loan information, and view enrollment verifications provided to student service providers at their request.

International students who require an Enrollment Verification should contact the Registrar's Office for assistance.

Repeat Enrollment in Courses

The repeat policy that is applied to repeated courses depends on the date of the final course attempt. Information on prior repeat policies can be found here. For courses repeated during the 2015 and future school years the following policy applies:

Students may repeat courses regardless of the original grade earned in the course. However, **the most current grade earned will be the only one calculated in the grade point average, even if it is not the highest grade**. For the repeat policy to be implemented, the UCM course must have the same prefix/number and course content. Courses which are repeatable for additional credit (as noted in the course description) such as Special Projects/Topics and Internships/Practica are not eligible for the repeat policy because the course content varies each semester. For courses repeated at transfer institutions, the course must articulate to the original UCM course that was completed.

All previous attempts will not factor into either the grade point average or earned hours (only the most current grade and hours, if applicable, will count), although **all prior grades will remain on the transcript as a matter of record**. *Students should check with school policies regarding course repeats which may be more stringent than the university policy*.

The following specific stipulations apply to the above repeat enrollment policy:

1. The UCM GPA includes only courses taken at UCM, however it can be impacted by courses originally taken at UCM and then repeated at another institution. **For courses taken at Central Missouri and then repeated at another institution,** the UCM GPA is not impacted by the new grade earned but will be affected by the discounting of the original UCM grade earned. Transfer course work does impact the cumulative GPA. In order for transfer coursework to be considered as a repeat for a UCM course, the transfer course must be articulated to the UCM course.
2. For the UCM repeat policy to be applied to transfer courses taken at two or more transfer institutions, each course from each institution must articulate to the equivalent UCM course.
3. **Credit hours for repeated courses will be counted only once (from the most recent attempt) in the number of course hours earned toward a degree or certificate**. If a student receives a passing grade followed by an F grade, no credit is given for the course and the course must be repeated again if needed for the degree.

In accordance with federal financial aid regulations, a student may receive federal assistance to repeat a class once for which a passing grade (defined as a "D" or better) has been previously earned. However, there is no limit on the number of times a student may receive federal assistance to repeat a class (if otherwise eligible to do so) for which a grade of "F" has previously been received.

The Pass/Fail Program

Pass/fail is a grading option that may be available to students instead of a traditional letter grade (A-F) under certain circumstances. One objective of pass/fail is to encourage students to experience courses they usually might avoid because of lack of confidence or initial competence. **Students may not opt to take courses in general education, major, or minor as pass/fail**. The following rules apply to courses taken for pass/fail:

1. Students may choose to take up to nine hours of **free electives** for pass/fail credit towards the hours required for graduation. A free elective is a course which is not a requirement or elective for the student's major or minor and is not used to satisfy General Education requirements. Study abroad credit and classes which are taught only as pass/fail are an exception to this and may count towards the major and minor credit if approved by the major/minor school.
2. Courses which are only offered as pass/fail and study abroad credits taken as pass/fail do not count toward the maximum of nine credit hours.
3. Upon enrollment students may designate the course or courses to be taken as pass/fail using self-enrollment. If pass/fail is not selected during the initial enrollment, students must designate pass/fail by the

end of the fifth week of classes or within the first 13 class days for half semester classes. A course designated as pass/fail may not be changed to a graded course after that date.

4. Students who take a class as pass/fail and earn an A, B, C or D will have a P (Pass) recorded on the transcript and the grade will not be calculated in the grade point average, but the credit hours will count towards earned hours. A student who fails will have an F (Fail) recorded on the transcript, and the F will be calculated in the grade point average. In cases of academic dishonesty, an F will be recorded at the discretion of the instructor.
5. A school may elect to offer a course for pass/fail credit only. Courses which are only offered as pass/fail do not count towards the maximum of nine credit hours. Courses that are offered only for pass/fail credit are designated in this catalog.
6. Students who plan to study at an institution outside the U.S. (UCM-sponsored Study Abroad) may elect to take all or none of the courses completed abroad as pass/fail credit or letter grade credit. Pass/fail credit must be approved before the study abroad experience. Students need permission to do study abroad coursework as pass/fail from their Academic Success Advisor for general education requirements or from their school chair for major/minor requirements. Courses taken for free choice electives do not require approval for pass/fail credit. If the student elects to take any courses (general education, major/minor, free choice elective) for pass/fail credit, he/she must provide written notification to the Study Abroad staff in the International Center before beginning the Study Abroad program. For enrollment changes while abroad, students have until the beginning of the fifth week abroad to notify the International Center of their intent to complete a course as pass/fail.
7. Study tours through Online Learning and Engagement are not exempt from the nine-hour maximum.

Auditing Courses

A student may audit a class for no grade and no credit. Acceptable performance, attitude and attendance as determined by the instructor in charge are expected. Regular fees and enrollment procedures are required. Courses taken as an audit must be so designated prior to the final date for changing class schedules as announced in the official calendar. Audited classes do not fulfill requirements for load consideration, nor do they count as part of a student's enrollment status for receiving federal or state financial aid, or VA educational benefits. Courses taken as an audit will not fulfill degree or certificate requirements and are noted on the transcript with a grade of NC (no credit). Students may audit a course for which they have already earned credit. Students may also audit a course and later take the course for credit.

Course Numbers

Courses offered at the undergraduate level are divided into five categories. In general, the following may be considered guidelines:

0000- level courses are primarily used for skills development and do not count as hours earned toward graduation. These hours also do not count for consideration of full-time status or factor into the calculation for Satisfactory Academic Progress (SAP) for financial aid purposes. Grades earned in these courses taken at UCM do factor into the GPA. Grades and hours from zero-level courses from transfer institutions are not posted to UCM transcripts and do not factor into the GPA.

1000- level courses are primarily for freshmen students.

2000- level courses are primarily for sophomore students and those students with required prerequisites or backgrounds.

3000- level courses are primarily for junior students and those students with required prerequisites or backgrounds.

level courses are primarily for senior students and those students with required prerequisites or backgrounds.

4000- Courses numbered at the 4000 level are offered only for undergraduate credit. A 4000-level course taken as undergraduate credit may not be applied or repeated as a 5000-level graduate credit.

5000- level courses are offered only for graduate credit.

6000- level courses are offered only for graduate credit and require 10 or more semester hours of graduate credit for enrollment.

Graduate-level courses cannot be applied to an undergraduate degree or certificate programs.

Co-Listed Courses

Co-listed courses are linked 4000- and 5000-level courses with different course numbers, but same course name, for either undergraduate credit or graduate credit and offered by the same instructor at the same time, place, and format. While students in both courses have distinct course objectives, assessments, and grading expectations, much of the course content is similar and both classes are functionally combined.

Co-listed courses taken for undergraduate credit may not be used to fulfill graduate degree requirements. Co-listed courses taken for graduate credit may not be used to fulfill undergraduate degree requirements unless the course is part of an accelerated degree program and is identified as such in the undergraduate curriculum. Graduate students should not enroll in a graduate dual listed course if they have previously completed the undergraduate course unless advised to do so by their graduate program coordinator.

Course Prerequisites

A student is expected to have satisfied prerequisites required of any course in which he/she is enrolled. Students without prerequisites should not enroll in these classes and may be dropped from the class if they do enroll.

Course prerequisites may be found within the course descriptions here and in MyCentral when searching for courses. In MyCentral, click on the five-digit course reference number (CRN) of the course and then the course title. Any prerequisites will show at the bottom of the page.

Students who wish to seek enrollment in a course without the prerequisites should contact the School Chairperson over the course for permission and/or enrollment assistance. Only the academic area offering the course may waive prerequisites.

Concurrent Enrollment for Seniors

(Undergraduate Enrollment in Graduate Courses)

NOTE: This policy does not apply to those students accepted into an accelerated undergraduate/graduate degree program.

Undergraduate students may take courses for graduate credit with the following stipulations:

- Must be within two semesters of degree completion
- Must have a minimum of 90 undergraduate credit hours earned
- Must have a minimum undergraduate cumulative grade point average of 3.00

- Limited to two semesters of enrollment in graduate courses before completing an undergraduate degree
- Maximum of 12 hours of graduate credit may be completed before admission to graduate program not to exceed 9 hours of graduate credit in one semester
- May enroll in a maximum of 16 credit hours per fall or spring semester and a maximum of 12 credit hours during the entire summer semester, including both undergraduate- and graduate-level courses
- Must submit an undergraduate application for graduation in MyCentral
- Must submit a graduate application for admission to the Graduate Studies
- Must complete a Petition for Concurrent Enrollment each semester

If approval is granted from the program and Graduate Studies office (WDE 1900, 660-543-4729), the student will be enrolled in the requested graduate courses. If a student enrolls in graduate credit courses during the last year of the baccalaureate degree, the student should be planning to complete the baccalaureate degree that year. A third semester of graduate enrollment while an undergraduate student will not be allowed.

Graduate-level courses cannot be applied to an undergraduate degree or certificate program (different rules apply for students in accelerated degree programs). Students will not be fully admitted into a graduate program until their undergraduate degree is completed and graduate program admission requirements are met.

NOTE: For the purpose of qualifying for federal financial aid, the student will be classified as undergraduate at the senior level. Students receiving financial aid should be aware that only those classes taken for undergraduate credit can be included when determining the student's enrollment status (full-time, half-time, etc.) to qualify for federal and state financial aid. A student may not receive financial aid to pay for graduate credit hours until they earn a Bachelor's Degree. Tuition for graduate courses will be at the graduate fee rate. Contact Student Financial Services (WDE 1100, 660-543-8266) for further information.

Degree/Certificate Requirements

Date of Catalog for Checking Degree or Certificate Requirements

Students are subject to current administrative, academic, and general policies and regulations. The *2024 Undergraduate Catalog* becomes effective fall semester 2024.

Students may use the *Undergraduate Catalog* as a basis for degree/certificate requirements issued for any semester including or following the date of his/her first enrollment in the university so long as it is dated not more than eight years prior to the date the degree or certificate is conferred. A student must attempt academic credit at UCM during the semester of the catalog chosen or have attended consecutive semesters at another regionally accredited institution of higher education in Missouri. Dual credit enrollment can count to establish catalog year, but students are encouraged to follow the most current catalog available when they begin regular enrollment at UCM. Students may change catalog term at any time during their enrollment, moving to an earlier or later catalog term, if they attempted hours during that term. Students considering changing catalog term should consult with their Academic Success Advisor. UCM follows the catalog agreement described in *Policies and Procedures for the Review of Academic Program Proposals: New Academic Programs, Off-Site Delivery of Existing Programs and Program Changes* (Missouri CBHE, April 1997). However, the university reserves the right to add, change, delete, and interpret policies at any time and to require these be met by those seeking degree/certificate candidacy and/or conferral.

General Education Requirements

See The General Education Program section of this catalog for a detailed description and course listing for the UCM General Education Program. The minimum number of required General Education semester credit hours for all students, regardless of their program of study, is 42. Some degree programs may require up to six additional hours of General Education depending on the math, science, and technology courses required.

In addition, some majors and minors have specific required General Education courses. If a major or minor requires specific General Education courses, they are listed in this catalog for each program and are marked with a "GE" symbol.

If student changes majors or minors from a program that does not require specific General Education courses to a program that does, a student may have to take additional credit hours in one or more of the defined areas of the General Education program if she/he has not taken the specific General Education course listed as a major or minor requirement. Transfer students must also meet all major and minor required general education courses, even if a prior degree or the Missouri 42-hour core (MOTR Core 42) has been completed.

Upper-Level Credit

Upper-level credit is coursework completed at the 3000 and 4000 level. Hours earned as SC or CR credit (AP/CLEP/IB/military credits/work experience/prior learning) do not count towards upper-level credit. Transfer credit will retain the leveling as designated by the original granting institution regardless of whether a UCM equivalent's leveling is different. All courses taken at a two-year college and any 1000/2000 level courses taken at a four-year institution will not be applicable toward upper-level hour (3000/4000 level) requirements, even if these courses are articulated to upper-level UCM courses or used as substitutions for upper-level UCM courses.

Candidates for a bachelor's degree must complete a minimum of:

- 30 total semester hours of upper-level credit
- 20 semester hours of upper-level credit must be earned at UCM
- 12 upper-level hours must be in the major subject, nine of these must be earned at UCM

- One upper-level hour must be in the minor subject earned at UCM

Hours in Residence

Residence requirements establish a minimum number of credit hours which must be earned from UCM. Online courses and courses which are offered off campus but through UCM do count towards residence hours. Hours earned as SC or CR credit (AP/CLEP/IB/military credits/work experience) do not count towards residence hours.

A candidate for any bachelor's degree must have earned the following minimum hours in residence at UCM:

- 30 hours overall
- 20 upper-level hours (3000/4000 level courses)
- 15 hours in the major
- 9 upper-level hours in the major
- 9 hours in the minor (if applicable)
- 1 upper-level hour in the minor (if applicable)
- the last 12 semester hours or any hours during the final semester required for the degree*

A candidate for any undergraduate certificate must have earned at least fifty percent of the certificate hours in residence at UCM.

*Students who have an extenuating circumstance during their final semester may petition to take some of their final hours off campus. The petition is available at https://www.ucmo.edu/current-students/office-of-the-registrar-and-student-records/internal-resources/shared/forms/ . The petition must include the institution where the course(s) will be completed, the course prefix/number at both UCM and the transfer institution, and the reason the student is unable to complete the course through UCM. If the course is part of a major or minor program, the appropriate UCM school will also have to approve the petition. Official transcripts from the transfer institution must be received prior to the deadline for UCM degree conferral. **The deadline to submit the petition is one month prior to the start of the semester during which coursework is to be taken.**

United States and Missouri Constitutions Requirement (State Law Requirement, Section 170.011)

Missouri state law requirement, Section 170.011 RSMO Supp (1988) requires that all students at public Missouri institutions have a course that teaches the constitutions of Missouri and the United States. Find more information about this requirement at moga.mo.gov/statutes/c100-199/1700000011.htm. The following courses in the UCM General Education program fulfill this requirement: HIST 1350, HIST 1351, HIST 1402 and POLS 1510 or POLS 2511 and are denoted with a "#" in the General Education course listing. These courses must be taken from institutions in the state of Missouri. Courses from out-of-state institutions which are articulated or substituted for these courses will not fulfill state law requirement Section 170.011 RSMO Supp (1988). Students who have one of these courses from out of state or who have already fulfilled all nine hours of Knowledge Area III in the general education program may fulfill this requirement by passing an exam on the constitutions of the United States and of Missouri. This test is offered online, at no cost by the School of Social Sciences and Languages (Wood 203). Testing information can be obtained by calling 660-543-8840.

Missouri Higher Education Civics Achievement Examination Requirement (State Law Requirement, Section 170.013)

Missouri state law requirement, Section 170.013 went into effect Fall 2019 for students pursuing a degree at any public Missouri institution and requires that all students shall successfully pass an examination on the provisions and

principles of American civics with a score of seventy percent or greater as a condition of graduation. The subject matter of the 50 question, multiple-choice test includes the US Constitution, the Bill of Rights, and other areas of government and American history. Students may fulfill this requirement by passing an exam offered in Blackboard or by providing proof on an official transcript of having passed the exam at another Missouri higher education institution. This test is offered online, at no cost. Students are encouraged to take and pass the test during their first semester at UCM. The test may be taken any number of times until a passing score of at least 70 percent is earned. When the test is passed the requirement will show as fulfilled on the Central Degree Audit and a notation will be added to the student's transcript. Students who have not passed the exam by the time they have reached 60 credit hours will have a hold on their account and be prevented from enrolling in future coursework until the exam is successfully passed. Questions about the content of the test may be referred to the School of Social Sciences and Languages (Wood 203, 660-543-8840). Information about the Blackboard Civics Exam cohort may be referred to Testing Services (testingservices@ucmo.edu, 660-543-4919).

Application for Graduation

An application for an undergraduate degree or certificate to be awarded must be submitted to the Registrar's Office using the form in MyCentral. Students should apply for graduation one semester prior to their intended graduation after enrollment has been completed for their last semester (October/November for spring/summer semester graduation and March/April for fall semester graduation). The student's Central Degree Audit should reflect that all remaining requirements are in progress. All curriculum substitutions (if applicable) should be received by the Registrar's Office prior to filing the application for graduation. Applying at this time ensures that students are made aware of any graduation deficiencies prior to the start of their graduation semester.

Graduation applications must be received by the Registrar's Office no fewer than six weeks before the date the degree is to be conferred for the student's name to be included in the printed commencement program. Only degree candidate names are included in the program. Certificate candidates are not included.

Students who fail to apply or apply for the incorrect term for graduation but are identified as meeting degree requirements by a UCM faculty or staff member will have their degree awarded. Students who meet degree requirements must be awarded their degree but are welcome to continue to enroll in additional classes after applying to the Undergraduate Admissions office as a post-baccalaureate student.

Degrees and certificates are conferred three times per year: May, August, and December at the end of each semester. Students who complete degree requirements prior to the end of a semester will not have their degrees awarded until the end of the semester. The Registrar's Office may confer degrees and certificates through the following deadlines (or the earliest preceding business day): January 15 (fall semester), May 31 (spring semester), and August 31 (summer semester). Students who fail to apply for graduation or complete all degree/certificate requirements by these dates will have their degree or certificate awarded at the end of the following semester if requirements are completed and an active graduation application is on file with the Registrar's Office. UCM will not back-date a degree.

All students are billed a one-time, non-refundable graduation fee per graduation semester of $50. Students who earn multiple degrees or certificates in different semesters will be billed each semester. Graduation charges will be placed on student accounts about six weeks before the conclusion of the student's final semester. This fee applies to all graduates and is not dependent upon ceremony participation.

UCM offer's commencement ceremonies two times a year for degree candidates: May and December. Commencement ceremonies are for degree candidates only; students earning only an undergraduate certificate do not participate in the ceremony. All summer degree candidates are invited to participate in the May ceremony if they are enrolled in all remaining requirements. Students who are unable to participate in the ceremony that corresponds with the semester of their graduation due to extenuating circumstances may petition to participate in a later ceremony up to a calendar year after their graduation date. An additional fee of $50 will be applied to the student's account for each semester after their original ceremony (summer graduates who wish to walk in the

December ceremony are not charged this fee). This fee will be applied during the term that they participate in a ceremony.

Questions about applying for graduation or commencement should be directed to the Registrar's Office in WDE 1000 (660-543-4914, graduation@ucmo.edu).

Participating in a Later Graduate Commencement Ceremony

Students with unusual, extenuating circumstances who are unable to attend the ceremony which corresponds with the semester that their degree is awarded may submit an Application to Participate in a Later Commencement Ceremony to the Registrar's Office. Ceremony participation may not occur more than one calendar year after a student's actual degree conferral, and once approved for a "late walk", students may not change the semester requested. To be considered to "walk late", students must already be approved for graduation during the term that they will be completing degree requirements. Students whose requests are approved will be charged a non-refundable $50 "walk late" fee per semester after the term of degree conferral. This fee is in addition to the regular $50 graduation fee that is applied to all students' accounts.

Academic Program Requirements

Degrees

A degree is a formal title conferred upon an individual for the completion of a program of study. Undergraduate degrees are called baccalaureate or bachelor's degrees. These terms can be used interchangeably. Central Missouri offers the following baccalaureate degrees:

- Bachelor of Arts (B.A.)
- Bachelor of Fine Arts (B.F.A.)
- Bachelor of Music (B.M.)
- Bachelor of Music Education (B.M.Ed.)
- Bachelor of Science (B.S.)
- Bachelor of Science in Business Administration (B.S.B.A.)
- Bachelor of Science in Education (B.S.Ed.)
- Bachelor of Social Work (B.S.W.)

General Requirements for All Baccalaureate Degrees

1. A baccalaureate degree must total a minimum of 120 semester hours. Some degree programs require more than 120 semester hours.
2. Students must earn a minimum of 30 semester hours from UCM.
3. The last 12 hours of the degree must be earned from UCM.
4. A baccalaureate must include a minimum of 30 semester hours of upper-level credit from an accredited four-year institution and a minimum of 20 of those hours must be completed at UCM.
5. A baccalaureate must include completion of the General Education Program as prescribed by the university. See *The General Education Program* in this section.
6. Students must achieve a grade point average of at least 2.00 in the cumulative GPA, UCM GPA, major, and minor (if applicable) GPA. Some degree programs require higher GPAs for graduation.

Specific Requirements for the Various Baccalaureates

Bachelor of Arts

1. A major for this degree normally shall be 30-43 semester hours.
2. Candidates for this degree who are seeking teacher certification must satisfy teacher education certification standards. See B.S.Ed. degree requirements on this page and *Teacher Education Policies and Procedures* in this catalog.
3. A modern language requirement shall be nine semester hours and may be met as follows:

- Completing nine semester hours of one modern language
- Completing six hours of one modern language **and** three hours of ENGL 2220, ML 2000, or an upper-level (or level three) modern language course

Students with previous study of a modern language in high school may be eligible to enroll in the second or third level of language courses at UCM. Students who earn a grade of C or higher will earn validated credit for the lower level class(es). For further information contact the Department of Modern Languages and Interdisciplinary Studies at 660-543-4780.

Students may alternately satisfy the B.A. language requirement and/or gain General Education Humanities credits by attaining a proficiency rating of Intermediate Mid on an ACTFL Oral Proficiency Interview (OPI). Non-native speakers of English are understood to fulfill the spirit of the requirement through their English coursework, provided that they can show proof of native proficiency in another language (Advanced proficiency rating on an OPI). Students wishing to fulfill the requirements in this way must pay for their own examinations. Contact Testing Services at 660-543-4919, for more information.

Bachelor of Fine Arts

This is a professional performance degree available through the School of Visual and Performing Arts.

1. A major for this degree normally shall be 61-88 semester hours.

Bachelor of Music

This is a professional performance degree available through the School of Visual and Performing Arts.

1. A major for this degree normally shall be 77-88.5 semester hours.

Bachelor of Music Education

This is a professional education degree available through the School of Visual and Performing Arts. Students planning to obtain teacher certification should see *Teacher Education Policies and Procedures*.

1. A major for this degree normally shall be 63.5-68.5 semester hours.
2. Professional education courses for this degree shall be 25-35 semester hours.
3. A candidate for this degree must have a minimum grade point average of 3.00 in specified content courses, a grade point average of 3.00 and no grade below a C in designated professional education courses.
4. All students receiving this degree must obtain minimum scores on the area specialty test to be eligible for teacher certification (HB463). Not obtaining the prescribed minimum score does not preclude receiving the degree. *Teacher Education Policies and Procedures* in this catalog.

Bachelor of Science

1. A major for this degree normally shall be 30-80 or more semester hours.
2. Candidates for this degree who are seeking teacher certification must satisfy teacher education certification standards. See B.S.Ed. degree requirements on this page and *Teacher Education Policies and Procedures* in this catalog.

Bachelor of Science in Business Administration

1. A major for this degree normally shall be 60-77 semester hours.
2. A minimum of 50 percent of the major hours must be earned at UCM.
3. Candidates for this degree must achieve a minimum cumulative grade point average of 2.25 for graduation (2.65 for accountancy majors and 2.40 for finance majors).

Bachelor of Science in Education

Students planning to obtain teacher certification should see *Teacher Education Policies and Procedures* in this catalog.

1. A major for this degree shall be in a certifiable area and normally shall be 36-64 semester hours except in those instances where certification requirements exceed this amount.
2. A minor for this degree normally shall be 18-24 semester hours.
3. Professional education courses for this degree shall be 25-35 semester hours.
4. A candidate for this degree must have a minimum grade point average of 3.00 in specified content courses, a grade point average of 3.00 and no grade below a C in designated professional education courses.
5. All students receiving this degree must obtain a minimum score on the appropriate exit test to be eligible for teacher certification (HB463). Not obtaining the prescribed minimum score does not preclude receiving the degree. Students with double majors in education normally must plan to take tests in and student teach in both areas. Students should check with Clinical Services and Certification (LOV 2170) to clarify student teaching expectations for double majors.

Bachelor of Social Work

This is a professional degree available through the Department of Human Services.

1. The major for this degree normally shall be 51 semester hours.
2. A cumulative grade point average of 2.00 is required for admission to the program. Students in this major must earn a grade of C or better in all required major courses.
3. Candidates for this degree must successfully complete a 40-hour volunteer observation experience in a social service agency during the first semester as a major, and a 480-hour field practicum experience in the final semester.

Accelerated Bachelor's/Master's Degrees

Accelerated Bachelor's/Master's degree programs at the University of Central Missouri provide well-prepared, advanced students, the opportunity to utilize graduate courses for required or elective courses in an undergraduate degree program, and then subsequently count those same courses as fulfilling graduate requirements in a related graduate program.

The program will begin after a student is admitted. Students can enroll in graduate courses only after the junior year (90 earned hours).

A minimum of 30 graduate credit hours must be earned to complete the Master's degree, while the undergraduate program will require a minimum of 120 credit hours of both undergraduate and graduate courses.

Depending on the program, up to 12 hours of graduate coursework may be taken during the senior year and counted to meet both the Bachelor's and Master's degree requirements. Students complete the remaining graduate coursework in the fifth year. Students may not enroll in additional graduate courses until the undergraduate degree is completed.

Students can take a maximum of 6 hours of graduate credit per semester during the senior year, and 3 hours over the summer if available, with no more than 16 total credit hours of both undergraduate and graduate coursework in a single semester.

Upon completion of the undergraduate portion, the student will then be classified as a graduate student. Students are awarded a Bachelor's degree as soon as those degree requirements are completed, and are then admitted as candidates for the Master's degree. Students are awarded the Master's degree when all graduate requirements are completed. If a student withdraws from the university and stops enrolling in coursework following completion of the

Bachelor's degree and later wants to return, they will have to apply to the regular graduate program and no prior coursework may be applied.

Please note: enrollment may affect eligibility for financial aid and scholarships, please contact the Student Financial Services office at 660-543-8266 if you have any questions. For the purposes of financial aid and scholarships, students are considered to be at the undergraduate level until the Bachelor's degree is awarded. Students will be considered graduate level after the Bachelor's degree is awarded and the student is only taking graduate level courses. Students are eligible for graduate assistantships after receiving a Bachelor's degree.

Double Degrees

Students may earn more than one degree, if desired. This is often referred to as a double degree or dual degree program. The degrees can either be the same type (e.g., two B.S. degrees) or of different types (e.g., a B.F.A. and a B.S.E.). Students must meet the unique requirements of each degree (including required minors, specified General Education courses, etc.). There are no additional requirements for the double degree option. Each degree may be from a different catalog year, if needed. Students who earn both degrees in the same semester will pay one graduation fee. Students who earn the degrees in different semesters will pay the graduate fee each semester.

Students may not earn a double degree with the same major name (e.g., students cannot earn both a B.A. and a B.S. degree with a history major). Students may pursue more than one option/area under a major, but they must be earned concurrently and only one degree will be awarded. The exception to earning more than one degree with the same name is when one of the degrees is a B.S.E. (e.g., students may earn both a B.S. in Mathematics and a B.S.E. degree in Mathematics). A minor used to satisfy a degree requirement for one degree may not be in the same subject as a major used in a different degree program if the two degrees are earned concurrently. The same minor may not count on more than one degree.

Majors

A major is a primary field of specialized study. UCM majors range from 30-88 credit hours. Majors are tied to specific degrees. Some majors may be offered with multiple degree programs. For example, the history major is available as both a B.A. degree or a B.S. degree. Students may declare, change, or delete a major by meeting with their Academic Success Advisor.

General Requirements for a Major

1. A major must require a minimum of 30 semester hours.
2. A minimum of 15 semester hours of a major's program requirements must be completed through Central Missouri. Some majors require additional major hours at UCM for graduation.
3. A minimum of 12 upper-level hours must be included in a major program. At least nine of these 12 upper-level hours must be completed through Central Missouri.
4. Courses taken to fulfill major requirements must be taken for a standard letter grade and may only be taken as pass/fail if that is the only way the course is offered.
5. Students must achieve a grade point average of at least 2.00 in the major. Some majors require higher major grade point averages for graduation.

Double Majors

Students may earn more than one major if desired. The two majors must be tied to the same degree type and the student must follow the curriculum from the same catalog year for each major. For example, a student can pursue a double major in management and marketing, as they are both B.S.B.A. degrees. Upon completion, the student earns

two majors with one degree. Students must meet the unique requirements of each major. If one or both majors requires a minor, the minor requirement will be waived because of the double major (minors are only waived in the case of double majors, not for double degrees). There are no additional requirements for the double major option.

Students pursuing a double major also have the option of completing a double degree. Each degree may be from a different catalog year, if needed. Students who wish to opt for the double degree will apply for graduation separately for each degree. Students must meet the unique requirements of each major. There are no additional requirements for the double degree option.

Major Options and Areas

Some majors offer Options or Areas that provide additional specialization or focus within a major. Options are those content areas that have gained approval from the Missouri Department of Higher Education (MDHE) and are listed on their official program inventory. Options will appear on official transcripts and diplomas. Areas (sometimes also noted as specializations, concentrations, etc.) are those content areas that are internal UCM designations and have not gained approval from the Missouri Department of Higher Education (MDHE). Areas will not appear on official transcripts or diplomas. Students may pursue more than one option/area under a major, but they must be earned concurrently and only one degree will be awarded.

Minors

A minor is a secondary field of specialized study. UCM minors range from 15-34 credit hours. Some programs require minors as part of the degree program. See specific program requirements in this catalog. A minor may not be earned independently from a degree or added onto a transcript after graduation. Students may follow a minor curriculum from a different catalog term than their major curriculum, as long as the student is eligible for that catalog term. Students may pursue more than one minor if desired. Students may not concurrently major and minor in the same subject area. Students may return to UCM and earn a major in a subject area in which a minor was previously earned. Students may not return to UCM and earn a minor in a subject area in which a major was previously earned. Find a listing of the minors offered by UCM here. Students may declare, change, or delete a minor by meeting with their Academic Success Advisor (UN 128, 660-543-4721).

General Requirements for a Minor

1. A minor must require a minimum of 15 semester hours.
2. Although the university does not require the completion of a minor for a degree, some programs do require a minor. Carefully read the program requirements for specific majors.
3. A minimum of nine hours of a minor program must be completed through Central Missouri.
4. At least one upper-level hour must be included in the minor program and completed at Central Missouri.
5. Courses taken to fulfill minor requirements must be taken for a standard letter grade and may only be taken as pass/fail if that is the only way the course is offered.
6. Students must achieve a grade point average of at least 2.00 in the minor.

Undergraduate Certificates

An undergraduate certificate is a course of study in a specialized subject area. Certificate programs range from 12 to 21 credit hours. Some certificate programs may be completed in one semester. These programs range from 12-15 credit hours. Other certificate programs are one-year programs and contain between 16 and 21 credit hours. Fifty percent of the coursework for a certificate must be earned at UCM to fulfill residence hours. Courses taken to fulfill certificate requirements must be taken for a standard letter grade and may only be taken as pass/fail if that is the only way the course is offered.

An undergraduate certificate may be earned independently or in conjunction with a degree program. A student pursuing an undergraduate certificate may seek admission to a degree program simultaneously or at a later date. Students may pursue certificates and majors in the same academic area. Coursework used for a certificate may also be used towards an undergraduate degree. Students must earn a 2.00 or higher grade point average in the coursework required for the undergraduate certificate, in the UCM GPA, and the cumulative GPA. Latin honors are not awarded for certificate programs. Students who earn only a certificate or earn a certificate before/after earning a degree, are not recognized in the commencement ceremony. Only degree recipients participate in the commencement ceremony.

Course Overlap

In the instance of a double degree or double major program, courses required in both degrees or majors may count in both programs. In the instance of a major and minor or double minor, courses required in both may count in both programs. Limitations to this policy may be enforced by the schools/programs. Refer to school/program information in this catalog for restrictions.

Students pursuing a double degree program where a minor(s) is required may not receive a major and minor in the same subject area. In addition, if both majors in a double degree program require minors, each must have a unique minor. Students completing a double major (one degree) do not need to complete a minor.

Teacher Certification

UCM, accredited by (CAEP) the Council for the Accreditation of Education Preparation, offers both courses and programs at the graduate-level that meet the requirements for certain teaching certificates issued by the Missouri Department of Elementary and Secondary Education. All students seeking teacher certification should check specific program requirements listed in this catalog and with the graduate program advisor.

Authority has been granted to the university by the State Board of Education in Missouri to recommend students for certification who are qualified to teach or serve as administrators in the public schools of Missouri as well as in other states. Any student seeking initial certification or additional certification as a result of completing graduate courses or a graduate degree should contact the Director of Clinical Services and Certification at the University of Central Missouri (Lovinger 2170, 660-543-8441, clinicalsvs@ucmo.edu).

The General Education Program Information

The General Education Program at UCM is an essential component of all undergraduate degree programs. It allows students to cultivate fundamental intellectual and practical skills. The requirements are designed to improve students' ability to communicate, think critically, solve real-world problems, and adapt to a changing world by learning to think in different contexts. General education cultivates social and civic responsibility to help students become lifelong learners and contributing members of society.

The philosophy of general education is not unique to UCM. UCM's General Education Program is based on a model developed by the Association of American Colleges and Universities (AAC&U) called *Liberal Education and America's Promise* (LEAP). LEAP is organized around essential learning outcomes for all students regardless of their chosen field of study. For more information on LEAP, see aacu.org/leap.

This philosophy is the foundation for UCM's General Education mission statement:

The General Education program at the University of Central Missouri serves student need and the public interest by ensuring students have strong foundational skills by providing a broad, enriched academic experience that both complements and supports their study within specialized disciplines.

UCM's General Education Outcomes

Ten outcomes establish the knowledge base and skills for all UCM graduates. The UCM General Education Program Outcomes include:

- **Global Learning** - Students will examine and analyze current and historical phenomena that shape both local and global communities.
- **Intercultural Knowledge** - Students will identify, analyze, and evaluate diverse cultural perspectives.
- **Ethical Reasoning** - Students will identify, analyze, and evaluate diverse ethical perspectives.
- **Civic Responsibility** - Students will demonstrate knowledge of civic responsibility and capacity for active participation in a democratic society.
- **Written Communication** - Students will demonstrate clear and effective expression of ideas in writing using multimodal channels.
- **Oral Communication** - Students will demonstrate proficiency in oral discourse across settings, purposes, and audiences.
- **Information Literacy** - Students will demonstrate the ability to locate, organize, evaluate, and synthesize information from a variety of sources to make informed decisions.
- **Quantitative Literacy** - Students will apply quantitative reasoning to analyze problems and draw reasonable and appropriate inferences.
- **Inquiry & Analysis** - Students will demonstrate critical and creative thought and/or expression with sensitivity to context.
- **Scientific Inquiry** - Students will examine and apply the scientific methods to analyze and explain natural phenomena.

Policies Concerning the UCM General Education Program

The Faculty Senate General Education Committee is charged with the development and interpretation of policies concerning the General Education Program.

General Policies Governing UCM General Education

The minimum number of required General Education semester credit hours for all students, regardless of their program of study, is 42. Some degree programs may require up to six additional hours of General Education depending on the math, science, and technology courses required.

Courses taken to fulfill General Education requirements may not be taken on the pass/fail basis. Students who have fulfilled all General Education requirements in a specific area may elect to take additional General Education courses as free elective hours in the same area on the pass/fail basis.

Placement and Prerequisites for General Education Classes

Placement into Writing I, Reading, Mathematics, and some Science courses is based on planned placement. Students who do not meet Planned Placement requirements for enrollment in such courses will be required to complete prerequisite coursework. Courses which require planned placement are marked with a "+" in the general education course listing. Some Fine Arts courses may require an audition or placement assessment for enrollment. These courses are marked with an "^".

United States and Missouri Constitutions Requirement (State Law Requirement, Section 170.011)

Missouri state law requirement, Section 170.011 RSMO Supp (1988) requires that all students at public Missouri institutions have a course that teaches the constitutions of Missouri and the United States. Find more information about this requirement at moga.mo.gov/statutes/c100-199/1700000011.htm. The following courses in the UCM General Education program fulfill this requirement: HIST 1350, HIST 1351, HIST 1402, and POLS 1510 or POLS 2511 and are denoted with a "#" in the General Education course listing. These courses must be taken from institutions in the state of Missouri. Courses from out-of-state institutions which are articulated or substituted for these courses will not fulfill state law requirement Section 170.011 RSMO Supp (1988). Students who have one of these courses from out of state or who have already fulfilled all nine hours of Knowledge Area III in the general education program may fulfill this requirement by passing an exam on the constitutions of the United States and of Missouri. This test is offered online, at no cost by the School of Social Sciences and Languages (660-543-8840, Wood 203). Testing information can be obtained by calling 660-543-8840.

Missouri Higher Education Civics Achievement Examination Requirement (State Law Requirement, Section 170.013)

Missouri state law requirement, Section 170.013 went into effect Fall 2019 for students pursuing a degree at any public Missouri institution and requires that all students shall successfully pass an examination on the provisions and principles of American civics with a score of seventy percent or greater as a condition of graduation. The subject matter of the 50 question, multiple-choice test includes the US Constitution, the Bill of Rights, and other areas of government and American history. Students may fulfill this requirement by passing an exam offered in Blackboard or by providing proof on an official transcript of having passed the exam at another Missouri higher education institution. This test is offered online, at no cost. Students are encouraged to take and pass the test during their first semester at UCM. The test may be taken any number of times until a passing score of at least 70 percent is earned. When the test is passed, the requirement will show as fulfilled on the Central Degree Audit and a notation will be added to the student's transcript. Students who have not passed the exam by the time they have reached 60 credit hours will have a hold on their account and be prevented from enrolling in future coursework until the exam is successfully
passed. Questions about the content of the test may be referred to the School of Social Sciences and Languages (Wood 203, 660-543-8840). Testing information can be obtained by calling the Testing Center at 660-543-4919.

Transfer Students and General Education

Transfer Students with a degree or the 42-hour core (MOTR CORE 42) from Missouri institutions. Students who transfer to UCM with an Associate of Arts (A.A.) degree, an Associate of Arts in Teaching (A.A.T.) degree, or a bachelor's degree from an appropriately regionally accredited institution in Missouri, or have met the Missouri 42-hour General Education Core (MOTR CORE 42) requirements are considered to have met UCM's 42-hour general education program, state law requirement Section 170.011 RSMO Supp (1988) with the exception of any specific general education courses required by the student's major/minor.

Transfer Students with a degree from out-of-state institutions. Students who transfer to UCM with an Associate of Arts (A.A.) degree, an Associate of Arts in Teaching (A.A.T.) degree, or a bachelor's degree from an appropriately regionally accredited institution outside of the state of Missouri are considered to have met UCM's 42-hour general education program with the exception of any specific general education courses required by the major/minor and state law requirement Section 170.011 RSMO Supp (1988). These students must fulfill state law requirement Section 170.011 RSMO Supp (1988) by either successfully completing a course at UCM in General Education denoted with a "#" or by passing an exam on the constitutions of the United States and Missouri offered by Department of Government, Law, and International Affairs (Wood 203, 660-543-8840).

Transfer students without a degree or the Missouri 42-hour core. Students who transfer from an out-of-state institution without a degree will have their courses evaluated on a course-by-course basis for UCM's general education program. Courses from out-of-state institutions which are articulated or substituted for history or social/behavioral science courses that fulfill state law requirement Section 170.011 RSMO Supp (1988) will not fulfill this requirement. Students in this situation may fulfill this requirement by either successfully completing a course at UCM in the General Education denoted with a "#" or by passing an exam on the constitution of the United States and of Missouri offered by Department of Government, Law, and International Affairs (Wood 203, 660-543-8840). Students who transfer from an in-state institution without a degree or the Missouri 42-hour General Education Core (MOTR CORE 42) requirements will have their courses evaluated on a course-by-course basis for both the UCM general education program and the Missouri Higher Education Core Transfer Curriculum (CORE 42).

Eligibility for CORE 42 completion instead of University of Central Missouri General Education is determined by using the following criteria:

- Student transferred to UCM in the Spring 2019 semester or later from a Missouri public college or university.
- Student has earned 12 or more transferable hours at a Missouri public college or university following graduation from high school (credits from Dual Credit pre-High School graduation do not count in eligibility).

CORE 42 - Missouri Higher Education Core Transfer Curriculum

CORE 42 is a statewide transferable general education lower-division core curriculum of 42 semester credit hours among all Missouri's public Institutions of Higher Education (IHE). The courses are designed to ensure that all graduates from Missouri IHE possess a common core of college-level competencies, skills, and knowledge. Completion of all 42 semester credit hours will result in completion of general education at any Missouri IHE. Upon completion of this CORE 42, a student may submit a request through the Office of the Registrar for a CORE 42 notation to be entered on the student's transcript. If the student then transfers to another participating school in the state, the receiving institution will accept the CORE 42 as equivalent to their own general education block. In a similar manner, if a student transfers to UCM with certification of CORE 42 from another Missouri IHE, the student will not be required to take any of the UCM's General Education requirements unless they are required for a student’s program (degree, major, or minor).

Major Required General Education Classes

Some majors require specific General Education courses. Such courses are listed in this catalog for each program.

If a student changes majors or minors from a program that does not require specific General Education courses to a program that does, a student may have to take additional credit hours in one or more of the defined areas of the General Education program if she/he has not taken the specific General Education course listed as a major or minor requirement. This applies to transfer students as well, even if a prior degree or the Missouri 42 hour core has been completed.

Honors Students and General Education

Students who participate in The Honors College Program and then choose to leave that program will be allowed to use courses taken to complete Honors General Education requirements in the non-honors general education. For example, students who completed six hours of modern foreign language as part of the Honors Program will be allowed to continue to use the extra three hours of language in place of the Fine Arts requirement. If a major or minor requires a particular general education course in a category, the honors substitution will not be honored.

The General Education Program Requirements

The General Education Program Requirements

For policy and general information visit The General Education Program Information page.

The General Education Program Requirements

The minimum number of required General Education semester credit hours for all students, regardless of their program of study, is 42. Some degree programs may require up to six additional hours of General Education depending on the math, science, and technology courses required.

Courses taken to fulfill General Education requirements may not be taken on the pass/fail basis. Students who have fulfilled all General Education requirements in a specific area may elect to take additional General Education courses as free elective hours in the same area on the pass/fail basis.

Some General Education selections listed on these pages may be limited by major/minor choice. Check the major/minor listing in the catalog for specific General Education requirements within the major/minor.

A Guide to Symbols Used in General Education

+ Planned placement required for enrollment

^ Audition or placement assessment required for enrollment

Course fulfills state law requirement Section 170.011 RSMO Supp (1988) (US/Missouri Constitutions)

GE Denotes a general education course when listed in other parts of this catalog.

Foundational Skills Areas 11-12 Hours

Four courses must be taken to fulfill this area: one Writing I, one Writing II, one Managing Information (2-3 credits), and one Communication course. Some students may exceed the 11 credit hour minimum depending on course selection and major-required Managing Information courses.

Writing I - 3 Credit Hours

Choose One Course From the Following:

- ENGL 1020 - Composition I GE (3) +
- ENGL 1080 - Advanced Composition GE (3) + *

Note:

+Eligibility for enrollment in this course is based on university planned placement guidelines.

*Students who earn a grade of C or higher in ENGL 1080 will be awarded an additional 3 hours of special credit (CR) for ENGL 1020 and will have fulfilled the six hours of writing requirement in general education. Students who earn a grade of D in ENGL 1080 may either opt to repeat the course or enroll in CTE 2060/ENGL 1030 to fulfill the six hours of writing requirement in general education.

Writing II - 3 Credit Hours

Choose One Course From the Following*:

- CTE 2060 - Technical Writing GE (3)
- ENGL 1030 - Composition II GE (3)

Note:

*Students who earn a grade of C or higher in ENGL 1080 will be awarded an additional 3 hours of special credit (CR) for ENGL 1020 and will have fulfilled the six hours of writing requirement in the general education. These students will not have to enroll in CTE 2060 or ENGL 1030.

Communication - 3 Credit Hours

Choose One Course From the Following:

- COMM 1000 - Public Speaking GE (3)
- COMM 1050 - Communication in Practice GE (3)
- MKT 1401 - Professional Speaking and Presentation GE (3)
- THEA 1100 - Oral Interpretation GE (3)

Managing Information - 2-3 Credit Hours

Choose One Course From the Following:

- ART 1610 - Web Languages GE (3)
- CIS 1600 - Business Information Management GE (3)
- CTE 1210 - Managing Information Using Computer Applications GE (2)
- GEOS 2300 - Our Digital Earth GE (3)
- LIS 1600 - University Library and Research Skills GE (2)

Knowledge Areas 28 Hours

Knowledge Area I - Arts, Humanities, Language and Literature: 9 Hours

Three courses must be taken to fulfill this area: one Literature, one Fine Arts, and one additional course (see listing below). UCM graduates will demonstrate knowledge of the world in which we live by acquiring knowledge and appreciation of and/or participation in the creation or performance of literature, languages, and the arts using the standards of evidence and reasoning appropriate to the humanities and the arts.

Fine Arts - 3 Credit Hours

Choose Three Hours From the Following:

Note: There is a limit of three (3) credit hours of Performance courses indicated with a ^ symbol that can be applied to the Arts, Humanities, Language and Literature Knowledge Area and overall General Education hours.

- ART 1800 - Ideas and the Visual Arts GE (3)
- ART 1815 - Art History Survey I GE (3)
- ART 1825 - Art History Survey II GE (3)
- ART 1835 - Global Arts and Culture GE (3)
- DANC 2100 - Dance Appreciation GE (3)
- MUS 1005 - Marching Band GE (0-1) (3) ^
- MUS 1010 - Symphonic Band GE (0-1) (3) ^
- MUS 1055 - Collegiate Choir GE (0-1) (3) ^
- MUS 1081 - Jazz Ensemble 2 GE (0-1) (3) ^
- MUS 1210 - Experiencing Music GE (3)
- MUS 1220 - The Evolution of a Popular Art: An Introduction to Rock Music GE (3)
- MUS 1225 - Music of the World's Cultures GE (3)
- MUS 1281 - History and Development of Jazz GE (3)
- MUS 4010 - Symphonic Wind Ensemble GE (0-1) (3) ^
- MUS 4025 - University Symphony Orchestra GE (0-1) (3) ^
- MUS 4050 - University Concert Choir GE (0-1) (3) ^
- MUS 4081 - Jazz Ensemble 1 GE (0-1) (3) ^
- THEA 2400 - Discovering Theatre GE (3)

Literature - 3 Credit Hours

Choose One Course From the Following:

- ENGL 2010 - Introduction to Reading Poetry and Drama GE (3)
- ENGL 2020 - Introduction to Reading Fiction GE (3)
- ENGL 2205 - Introduction to American Literature GE (3)
- ENGL 2215 - Introduction to British Literature GE (3)
- ENGL 2220 - Introduction to World Literature GE (3)

Additional Courses for Knowledge Area I - 3 hours

Choose one additional course from the Literature or Fine Arts categories above or one course below from Languages or Humanities. If an additional Fine Arts course is chosen, it must be a three-credit hour course from the Fine Arts list above.

Languages:

High school coursework completed or placement examination determines the level of a student's initial enrollment in elementary and intermediate foreign language courses. For more information contact Department of Modern Languages and Interdisciplinary Studies (Wood 203, 660-543-8840).

- CHIN 1701 - Elementary Chinese I GE (3)
- CHIN 1702 - Elementary Chinese II GE (3)
- FREN 1201 - Elementary French I GE (3)

- FREN 1202 - Elementary French II GE (3)
- FREN 2201 - Intermediate French I GE (3)
- FREN 2202 - Intermediate French II GE (3)
- GER 1301 - Elementary German I GE (3)
- GER 1302 - Elementary German II GE (3)
- GER 2301 - Intermediate German GE (3)
- GER 2302 - Intermediate German II GE (3)
- ML 1040 - Special Projects in Modern Languages GE (1-3) (3)
- SPAN 1601 - Elementary Spanish I GE (3)
- SPAN 1602 - Elementary Spanish II GE (3)
- SPAN 2601 - Intermediate Spanish I GE (3)
- SPAN 2602 - Intermediate Spanish II GE (3)

Humanities:

- COMM 3000 - Film Appreciation GE (3)
- PHIL 1000 - Introduction to Philosophy GE (3)
- PHIL 1410 - Critical Thinking GE (3)
- PHIL 2300 - Ethics GE (3)
- GSS 1050 - Women's Voices GE (3)

Knowledge Area II - Natural and Mathematical Sciences: 10 hours

10 hours; Three courses must be taken to fulfill this area: Two Science courses from different disciplines, one with a Laboratory, and one Mathematics. Some students may exceed the 10 credit hour minimum depending on course selection and major-required science and mathematics courses.

Natural Sciences - 7 Credit Hours

Natural Science with a Lab - 4-5 Credit Hours

- BIOL 1003 - Introduction to the Sciences: Ecology GE (3) * AND BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab) *
- BIOL 1004 - Introduction to the Sciences: Ecology GE (4: 3 lecture, 1 lab) **
- BIOL 1005 - Introduction to Environmental Science GE (3) * AND BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab) *
- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab) **
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
- GEOS 1114 - Weather and Climate GE (4: 3 lecture, 1 lab)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)

Note:

*Courses must be taken together in the same semester.

**Students who have earned credit in BIOL 1004 in the Science with a Laboratory category are not eligible for credit in BIOL 1003 in the Science without a Lab category. Students who have earned credit in CHEM 1104 in the Science with a Laboratory category are not eligible for credit in CHEM 1103 in the Science without a Lab category.

Natural Science Non-Lab - 3 Credit Hours

- ANTH 1810 - Human Prehistory GE (3)
- BIOL 1003 - Introduction to the Sciences: Ecology GE (3)
- BIOL 1005 - Introduction to Environmental Science GE (3)
- BIOL 2010 - Human Biology GE (3)
- BIOL 2510 - Basic Genetics GE (3)
- CHEM 1103 - Introduction to the Sciences: Chemistry GE (3)
- GEOS 1100 - Physical Geography GE (3)
- PHYS 1103 - Introduction to the Sciences: Physics GE (3)

Mathematical Sciences - 3 Credit Hours

Choose One Course From the Following:

- ACST 1300 - Basic Statistics GE (3) +
- ACST 1300R - Basic Statistics with Review GE (5)
- MATH 1111 - College Algebra GE (3) +
- MATH 1111R - College Algebra with Review GE (5) +
- MATH 1131 - Applied Calculus GE (3) +
- MATH 1150 - Pre-Calculus Mathematics GE (5) +
- MATH 1151 - Calculus I GE (5) +
- MATH 1520 - Practical Mathematics GE (3) +
- MATH 1520R - Practical Mathematics with Review GE (5) +

Note:

+Eligibility for enrollment in this course is based on university planned placement guidelines.

Knowledge Area III - History and Social/Behavioral Sciences: 9 hours

Three courses must be taken to fulfill this area: one HIST or POLS course to fulfill the US/Missouri constitutions requirement Section 170.011 RSMO Supp (1988) and six additional hours of Social/Behavioral Sciences. These courses are marked with a "#".

UCM graduates will demonstrate an ability to comprehend, evaluate, and analyze aspects of the human experience through an understanding of history and the social and behavioral sciences and the standards of evidence that create knowledge within those frameworks. Students will learn substantive content as well as the relevant evaluative process of reasoning, evidence, and argument.

United States and Missouri Constitutions Requirement (State Law Requirement, Section 170.011)
Within the nine hours required in Knowledge Area III, all students must select a course which fulfills state law requirement Section 170.011 RSMO Supp (1988). These courses are marked with a "#". These courses must be taken from institutions in the state of Missouri. Courses from out of state institutions which are articulated or

substituted for these courses will not fulfill state law requirement Section 170.011 RSMO Supp (1988). Students who have one of these courses from out of state or who have already fulfilled all nine hours of Knowledge Area III may fulfill this requirement by passing an exam on the constitutions of the United States and of Missouri offered by Department of Modern Languages and Interdisciplinary Studies (Wood 203, 660-543-8840).

US/Missouri Constitution - 3 Credit Hours

Choose One Course From the Following:

- HIST 1350 - History of the United States to 1877 GE (3) #
- HIST 1351 - History of the United States from 1877 GE (3) #
- HIST 1402 - History of the Modern World GE (3) #
- POLS 1510 - American Government GE (3) #
- POLS 2511 - State Government GE (3) #

Social/Behavioral Sciences - 6 Credit Hours

Choose Two Courses From the Following:

Select six (6) credit hours. The hours can include additional coursework from among the US/Missouri Constitution courses or the Social/Behavioral Sciences course.

- ANTH 1820 - Cultural Anthropology GE (3)
- HDFS 1010 - Individual and Family Relationships GE (3)
- CJ 1000 - Introduction to Criminal Justice GE (3)
- COMM 1200 - Introduction to Mass Communication GE (3)
- COMM 2000 - Media Literacy GE (3)
- CS 1000 - Computers and Modern Society GE (3)
- CTE 2000 - Technology and Society GE (3)
- ECEL 2110 - Diversity and Social Justice GE (3)
- ECON 1010 - Principles of Macroeconomics GE (3)
- ECON 1011 - Principles of Microeconomics GE (3)
- EDFL 2240 - Educational Psychology GE (3)
- FIN 1820 - Personal Finance GE (3)
- GEOG 2212 - World Geography GE (3)
- HIST 1350 - History of the United States to 1877 GE (3) #
- HIST 1351 - History of the United States from 1877 GE (3) #
- HIST 1400 - History of the Early World GE (3)
- HIST 1402 - History of the Modern World GE (3) #
- HLTH 1100 - Personal Health GE (3)
- IS 1000 - Introduction to International Studies GE (3)
- POLS 1510 - American Government GE (3) #
- POLS 2511 - State Government GE (3) #
- POLS 2520 - Political Cultures of the World GE (3)
- POLS 2530 - World Politics GE (3)
- PSY 1100 - General Psychology GE (3)
- PSY 3220 - Life-Span Development GE (3)
- SOC 1800 - Introduction to Sociology GE (3)

- GSS 2000 - Intersections: Gender, Race, Class GE (3)
- GSS 2050 - Sexuality, Identity & Social Action GE (3)

Elective Area 3 Hours

Select three hours from any of the Areas above.

The Honors College Program

The Honors College at the University of Central Missouri (UCM) is designed to enrich the educational careers of highly motivated, creative, and dynamic undergraduate students on campus. The core mission of The Honors College is to support an inclusive environment that stimulates critical thinking, interdisciplinary problem-solving, and intellectual curiosity, and a global perspective. These factors will ultimately cultivate a student and faculty community of forever learners. This charge is in direct congruence with UCM's larger mission of "disseminating knowledge that transforms students into leaders who possess the aptitudes, skills, and confidence to succeed" & its core values of learning, community, diversity, service, opportunity, and excellence.

In conjunction with the National Collegiate Honors Council guidelines, our mission is accomplished through opportunities available only to Honors College students that are, "measurably broader, deeper, or more complex than comparable learning experiences typically found at institutions of higher education." Such opportunities include:

- Early enrollment privileges as the first students allowed to register for classes
- Up to $2,000 in grants for study abroad and research/creative activities
- Honors-only study and social spaces in Achauer House
- Small, honors-only general education course sections and colloquia capped at 15 students with experiential learning opportunities funded by The Honors College & taught by distinguished UCM faculty
- Honors-only events, including professional development and graduate school readiness activities
- Transcript and graduation recognition
- Leadership opportunities through the Honors College Student Association
- Access to university leadership and high-achieving Honors College alumni
- One-on-one advisement from Honors College faculty and staff, including external scholarship preparation

Admission Criteria

The Honors College considers applications for admission from first-time incoming Freshmen, transfer students, and current UCM students. The requirements for each group are detailed below, but all students should apply on The Honors College website.

First-time, Incoming Freshmen

To be considered for admission to The Honors College, first-time incoming freshmen must first be admitted to UCM and fulfill two of the four entry requirements:

- A minimum unweighted high school GPA of 3.5.
- An ACT minimum score of 25.
- A student-led product addressing how the applicant embodies the mission of the UCM Honors College. The product can take many forms based on the student's area of study, including, but not limited to: a traditional written essay (around 500 words), a multimedia presentation, and/or a theatrical/artistic performance.
- A letter of recommendation that can speak to how the applicant embodies the mission of the UCM Honors College.

Transfer Students

To be considered for admission to The Honors College, transfer students must first be admitted to UCM and fulfill two of the four entry requirements:

- A minimum cumulative OR content college GPA of 3.25, whichever is higher.
- An ACT minimum score of 25.

- A student-led product addressing how the applicant embodies the mission of the UCM Honors College. The product can take many forms based on the student's area of study, including, but not limited to: a traditional written essay (around 500 words), a multimedia presentation, and/or a theatrical/artistic performance.
- A letter of recommendation that can speak to how the applicant embodies the mission of the UCM Honors College.

Current Students

To be considered for admission to The Honors College, current UCM students must fulfill two of the four entry requirements:

- A minimum cumulative OR content college GPA of 3.25, whichever is higher.
- An ACT minimum score of 25.
- A student-led product addressing how the applicant embodies the mission of the UCM Honors College. The product can take many forms based on the student's area of study, including, but not limited to: a traditional written essay (around 500 words), a multimedia presentation, and/or a theatrical/artistic performance.
- A letter of recommendation that can speak to how the applicant embodies the mission of the UCM Honors College.

Maintenance Requirements

- All current Honors College students must maintain a 3.25 or higher cumulative OR content GPA, whatever is higher. Students who fall below a 3.25 cumulative AND content GPA for 2 consecutive semesters will be dropped from The Honors College.
- Students who are dropped from The Honors College, can apply for reinstatement if their cumulative OR content GPA returns to a 3.25 or higher.
- Students who are dropped from The Honors College, can also submit an appeal. This appeal can involve any of the following: evidence of other Honors College-related credentials outside of GPA (e.g. leadership in campus activities), a documented hardship (e.g. death in the family), a letter of recommendation from a faculty member who can speak to academic competency outside of GPA. Appeals will be reviewed by the Honors College Advisory Board and may involve a follow up interview. The appeal form can be found on The Honors College website.

Required Honors Courses

HONR 3000 - Honors Colloquium (3)

Honors-only colloquiums are taught by our Faculty Fellows, who are distinguished UCM faculty, as selected through a highly competitive application process. Fellows are highly active in their scholarship and/or creative work, bringing this advanced level of expertise to their classes. Colloquiums represent the pinnacle of that expertise and are selected based on their ability to appeal to a wide range of students with specific experiential learning components. Topics have included Psychology of Time, Women and Crime, The Forensic Psychology of Witness ID, The End of the World, Famous/Infamous Missourians, Shakespeare and Popular Culture, and Microbes in Food, The Holocaust in the Media. Current sections can be found on The Honors College website. A UCM-sponsored study abroad course (3-credit hours or more) can replace this requirement for those students who have not already used this substitution for the Knowledge Area I general education language requirement (see The Honors College website for the substitution form).

HONR 4000 - Honors Project (1-6)

HONR 4000 is an independent study course, which serves as a capstone research or creative project, as pursued under the supervision of a UCM faculty mentor. Honors projects come in all formats and represent all disciplines, but

universally exemplify the cumulation of your studies at UCM. A minimum of 3 credit hours is required for all Honors College students, but students may complete these credits over multiple semesters. Students are also allowed to register for up to 6 credit hours of HONR 4000 should the project require it. Meeting times are determined by the faculty member and student. All honors projects require an approved proposal, which can be accessed on The Honors College website, and must be submitted by the first week of classes in which the student wishes to register. Students are also allowed a budget for their project, which provides material support for a broad array of items depending on the discipline and project. These items include, but are not limited to, materials, equipment, software, and travel for conferences, workshops, or fieldwork.

The Honors College is here to support students as they advance through the process and as such, has created several resources to help with project development. Please access the honors project FAQs available here for more information. Honors College faculty and staff are also available to guide students in all stages of the project.

General Education Program Requirements

Honors College students are required to fulfill one of their general equation requirements through an Honors College-only section within any knowledge area. These sections are not necessarily more difficult, but instead are smaller and more "hands-on." Courses are taught by distinguished UCM faculty, who are active in their respective disciplines, and bring this special knowledge to the classroom. Honors-only general education sections are selected based on the course's experiential learning components and their ability to appeal to a wide variety of majors behind the topical area. Although contingent on the semester, offerings have included American Government, Basic Genetics, Global Arts and Culture, & Introduction to Geology. Current sections can be found on The Honors College website.

Knowledge Area I

Honors College students have two options for their Knowledge Area I general education requirement.

Option 1

Students take one Literature, one Fine Arts, and one Language Course (not an additional Literature, Fine Arts Class, or Humanities) for their Knowledge Area I general education requirements.

Option 2

Students take one Literature, one Fine Arts, and one additional Literature, Fine Arts or Humanities course for their Knowledge Area I general education requirements AND participate in an UCM-sponsored (3-credit hours or more) study abroad program. This option is only available to students who have not already substituted study abroad for HONR 3000.

For more information contact:

The Honors College
Phone: 660-543-4633
Email: thehonorscollege@ucmo.edu
Website: ucmo.edu/thehonorscollege

Additional Academic Opportunities

Open Option Program

UCM welcomes students who are undecided on a program of study and want to keep their options open. Students who are unsure about what academic program best fits them may choose to be an Open Option student. This program is intended to ensure students are progressing toward the completion of a degree while they are actively exploring their academic options. Some of the services available to assist Open Option students are:

- Specialized assistance in academic success advising: Academic Success Advisors will aid students in selecting courses to keep them progressing toward graduation, even though they are unclear about their academic direction.
- Individualized Career Counseling: Academic Success Advisors credentialed in career counseling help students explore their options, narrow their focus, and methodically make a major decision. These advisors utilize today's most valid and reliable resources available to assist students with their decision-making process.
- Exploring Majors and Careers (UNIV 1410): This is a one-credit-hour career development course designed to introduce students to a wide range of academic programs and career options. Special emphasis is given to an exploration of self through the use of career assessments and individual career counseling sessions, as well as individual and group activities, discussions, and interviews specifically designed to facilitate a methodical approach to assist students with identifying "right fit" career options and the academic paths that lead to those options.
- Informational Interviewing and Job Shadowing: Career Development Coordinators in the Career and Life Design Center have access to over 8,000 individual employer and alumni contacts that can be utilized by students to learn more about specific career paths and the desired academic programs that lead to those options.

The Open Option program is not designed to be a long-term academic status or program. It is designed to be a bridge between being unsure and confidently deciding on an academic program. At UCM, we are committed to helping every student make continuous and steady progress toward graduation, and to successfully graduate in a program best suited to him/her as an individual. To that end, the following rules apply to individuals who choose to be Open Option students:

- First-Time, Full-Time Students (FTFT). FTFT students will be enrolled in UNIV 1410, Exploring Majors and Careers, and will need to reach a decision/declare their major by the time they have earned 30 credit hours, or before enrolling in their third semester (whichever comes first).
- Continuing Students. Continuing students, who are in an academic program and have determined that program no longer a fit, may change their status to Open Option. Students in this category with 30 or more credit hours will need to decide on an academic program prior to enrollment in the semester following their status change to Open Option. Students with less than 30 credit hours earned should refer to the FTFT rules above.
- New Transfer Students and Readmitted Students. New students transferring into UCM, as well as UCM students who are coming back after a break in their college career, may choose to enter UCM as Open Option students. These students will be enrolled in UNIV 1410, Exploring Majors and Careers. Students in this category with 30 or more credit hours earned, will need to decide on an academic program during their first semester, prior to their enrollment for the subsequent semester. By taking active steps to explore and decide on a major before accumulating 30 or more hours of credit, students greatly improve their chances of making timely progress toward graduation.

For more information about the Open Option Program at UCM, or to make an appointment with a Student Success Advisor that specializes in career counseling, students should contact the Success Advising Center (Elliott Student Union 128, 660-543-4721).

Pre-Professional Education

UCM programs take an active role in preparing students for admission to professional schools in the following areas:

- Medicine
- Dentistry
- Veterinary Medicine
- Physical Therapy
- Occupational Therapy
- Optometry
- Pharmacy
- Chiropractic Medicine
- Physician's Assistant
- Engineering
- Molecular Biology/Molecular Technology

Students wishing to pursue pre-professional programs are assigned to an appropriate faculty advisor whose job it is to mentor the advisees:

- by helping them plan and prepare a program of study.
- by assisting them to prepare for appropriate post-baccalaureate admissions tests, e.g., MCAT, DAT, GRE, administered by national agencies. The faculty advisor shares pertinent information and resources of such tests, i.e., topics covered in the tests with the advisee. Many professional schools use the results of such tests as important criteria for admission.
- by emphasizing the importance of General Education in analytical and critical thinking, which is also evaluated in the written portions of some post-baccalaureate admission tests.
- by communicating the competitive nature of admission to the professional schools and the necessity of an "achiever's attitude" in the classroom.
- by providing student handbooks which summarize the admissions process to a professional school, e.g., *The Pre-Med Handbook*.
- by sponsoring student clubs in pre-professional fields (e.g., The Para-Medico Club, The Pre-Vet Club, The Tri-Beta Honor Society, etc.), and coordinating meetings between student organizations and professional school admissions officers.
- by encouraging hands-on student participation in profession-related work outside the classroom (e.g., volunteering or working in a health care facility).
- by polishing the communication skills of student applicants for professional school interviews.

In addition, programs offer courses and research opportunities in many contemporary branches of the sciences, e.g., molecular biology, physiology, microbiology, cell biology, and biochemistry. These courses and research experiences provide students with the necessary investigative and critical thinking skills to prepare them for advanced degree programs, or as entry-level scientists in the pharmaceutical and biotechnology industries.

Pre-Law

While the American Bar Association does not recommend any particular undergraduate major to prepare for law school, a student should major in an area that is both personally satisfying and provides the basic skills necessary to be successful in law school.

Students interested in preparing for law school should consult a pre-law advisor from the following list:

- Dr. Benecia Carmack, Department of Criminal Justice and Criminology

- Dr. Steven Popejoy, Department of Marketing, Public Relations, and Sport Management
- Dr. Jim Staab, Department of Modern Languages and Interdisciplinary Studies

These advisors assist students in choosing courses and/or professors that will assist in developing the following skills and values:

- Analytical and Problem-Solving Skills
- Critical Reading Abilities
- Writing Skills
- Oral Communication and Listening Skills
- Research Skills
- Organizational Abilities and Management Skills
- Valuing Service to Others and Promoting Justice

Individualized Majors and Minors

Individualized majors and minors allow students to create an academic program that is personalized to meet their educational and career goals. Students may request an individualized undergraduate major or minor not listed in the *Undergraduate Catalog* but consisting of courses offered herein. An individualized program requires thoughtful planning and collaboration with the school chair of the individualized major or minor. School chairs have the right to deny an individualized major or minor that is not based on these principles. An individualized major or minor may include coursework across various disciplines, but must satisfy all the following:

- All General Education Program requirements must be met.
- All university minimum requirements for a baccalaureate degree must be met.

The students' program includes a signed statement indicating they accept full responsibility for the proposal and understands that the individualized program may not be accepted or recognized by institutions other than UCM. Upon final approval of the individualized major or minor program, the student is notified by the Vice Provost's Office and a copy of the approved program is filed with the Registrar's Office.

UCM offers two types of individualized major and minor programs: Named programs and a General Studies program. The two programs have some curricular differences explained below.

Types of Individualized Majors and Minors

1. **Named Individualized Major or Minor.** Some examples of named programs are: "Art History"; "Criminal Psychology". The diploma and transcript will read, for example: Art History: Individualized Major. The following criteria must be met for a Named Individualized Major or Minor:
- Must include a minimum of 40 credit hours and Named individualized minors must include a minimum of 20 credit hours.
- Students pursuing a second major, minor, or degree in addition to the Named Individualized major or minor may overlap courses in the Named program with the other existing major or minor program.
2. **General Studies Individualized Major or Minor.** The General Studies major is intended to serve as a degree completion program for students with advanced earned hours. The diploma and transcript will read, for example: General Studies: Individualized Major. General Studies is not available as a double or second degree, major, or minor. The following criteria must be met for a General Studies major or minor:
- Students may only declare a General Studies major or minor after earning 85 cumulative credit hours.
- A General Studies major must contain a minimum of 43 credit hours. A General Studies minor must contain a minimum of 21 credit hours.

- The General Studies major is comprised of four areas: Arts and Humanities (12 hours, 3 upper level), Social and Behavioral Sciences (9 hours, 3 upper level), Science, Technology, and Mathematics (10 hours), and a Concentration Area (12 hours, 6 upper level).
- Overlap with General Education is allowed in this program with the exception of courses used to fulfill the core writing competency requirements (ENGL 1020, ENGL 1030, ENGL 1080, and CTE 2060) and courses used to complete the mathematics requirement of the General Education Program.
- Students in major programs that require a minor and are interested in the General Studies minor will work with a success advisor to create a 21-credit-hour minor plan.

How to Declare an Individualized Major or Minor

1. **Named Individualized Major or Minor**. The student must select a faculty member to serve as a mentor to develop a proposed plan of study. The faculty member must be from the college where the majority of the courses in the individualized major or minor were taken. After the plan is created with a faculty member, it must also be approved by the school chair, the dean of that college, the Office of the Registrar, and the Vice Provost for Academic Programs and Services (in this order).
2. **General Studies Individualized Major or Minor**. Only students with at least 85 earned hours will be considered for a major in General Studies. Applications for a minor in General Studies will only be considered for students pursuing majors which require a minor. After this interview, the student will meet with a success advisor in Online Learning and Engagement (660-543-8480) to develop the General Studies major or minor plan. After the plan is created with a success advisor, it must also be approved by the Office of the Registrar and the Vice Provost for Academic Programs and Services (in this order).

Student Rights and Responsibilities

Philosophy of Academic Standards

To maintain standards which foster an atmosphere of academic excellence:

Central Missouri retains students who, through periodic university-administered assessment and evaluation, meet or exceed established university academic standards.

Central Missouri grants degrees and/or certificates to students who fulfill prescribed program requirements and meet or exceed the minimum academic standards established by the university and the state of Missouri.

Central Missouri assesses former students to determine to what extent the university experience has helped them attain an intellectual orientation by which they can develop, throughout their lifetimes, the capacity for self-improvement, career achievement, and responsible living in a free society.

Student Responsibility

Central Missouri, through action of the faculty, administration, and Board of Governors, establishes and maintains requirements for its various degrees and certificates. These requirements must be completed before a degree or certificate is granted. The staff of the university will assist students in understanding and meeting these requirements, but the individual student is responsible for fulfilling them. Therefore, it is important for each student to be familiar with the requirements pertaining to the degree or certificate being sought and to remain informed throughout the period of enrollment. The Academic Success Advisor, faculty advisors, and Registrar's Office can be of assistance in this process.

The approved method of communication between the university and students is through the use of the campus email system. Each student is assigned a campus email address (Example: abc12340@ucmo.edu). Students are responsible for checking this email account regularly. Many offices no longer send paper mailings. Information regarding deadlines, grades, holds, graduation status, and academic standing are no longer sent by paper mail.

In addition to email, students are responsible for reading messages posted to their account in MyCentral in the form of both Campus Announcements and Personal Announcements. Campus Announcements are general notices sent to all students on campus and may not apply to each student. Personal Announcements are directed towards a particular student or a small group of students.

Academic Honesty and Plagiarism

Academic honesty is a prerequisite for academic achievement; all members of the academic community are expected to act in accordance with this principle. The university recognizes plagiarism as a serious academic offense. The university's policy on academic honesty may be found in the *UCM Student Handbook*. Students must be aware that the consequences of violating standards of academic honesty are extremely serious and costly and may result in the loss of academic and career opportunities. Students found to have committed violations against academic honesty face removal from university classes and degree/certificate programs, and/or suspension from the university.

Family Educational Rights and Privacy Act

Central Missouri adheres to the federal Family Educational Rights and Privacy Act (FERPA). Information about the act can be found at https://www2.ed.gov/policy/gen/guid/fpco/ferpa/index.html. Additional information can be found on

the Registrar's Office web page at https://www.ucmo.edu/current-students/office-of-the-registrar-and-student-records/ferpa2/.

UCM faculty and staff, under the rules of FERPA, will not release academic information about a student to anyone unless written permission is granted from the student.

This includes but is not limited to:

- Grades (student progress reports or final grades, grades on assignments/tests)
- Grade point averages (cumulative, UCM, major, minor)
- Academic Transcripts
- Central Degree Audit Reports
- Course schedules (including classes enrolled in, number of credit hours enrolled in)
- Course assignments and tests

The above items are never released to agencies or persons outside the university without the written consent of the student. Students who wish to give consent for the release of their academic information may fill out an Authorization to Release Educational Records form with the Office of the Registrar in the Ward Edwards Building, Suite 1000 (660-543-4900, registrar@ucmo.edu).

Directory information is not generally considered harmful or an invasion of privacy if disclosed. The university does not sell student directory information; however, unless a student requests in writing to the contrary, federal law permits the university to release the following directory information to the public without the student's consent:

- Name
- Mailing and permanent address
- Telephone numbers
- Email addresses
- Photo
- Date and place of birth
- County, state, or U.S. territory from which the student originally enrolled
- Major field of study
- College
- Class (junior, senior, etc.) (but not particular number of hours earned)
- Enrollment status (full-time, part-time, etc.) (but not particular number of hours or classes enrolled in)
- Participation in officially recognized activities and sports
- Weight and height of members of athletic teams
- Dates of attendance and anticipated date of graduation
- Degrees/certificates and awards received
- The most recent previous educational agency or institution attended by the student
- Honors information (graduation with honors, not GPA or grades or Honors College membership)

Directory information does not include:

- Social security numbers
- Ethnicity/race/nationality/religion
- Gender
- Parent name and address

Students who wish to suppress public access to their directory information can do so by filling out a *Request to Suppress Directory Information* form and submitting it to the Office of the Registrar in the Ward Edwards Building, Suite 1000. Doing this will remove the student from the online UCM directory which displays only student name and campus e-mail address. Suppressing public access to directory information also means that student names will not

be released for Dean's List designations in local newspapers, inclusion in the printed Commencement Program and online graduation lists, or inclusion in lists requested for club participation, employment, or awards.

GDPR (General Data Protection Regulation)

The General Data Protection Regulation (GDPR) is a legal framework that sets guidelines for the collection and processing of personal information of individuals within the European Union (EU). The EU put these guidelines into effect on May 25, 2018 to replace and enhance previous legislation that regulated privacy. The GDPR affords individuals certain rights as to how their data is used and processed, and may give them rights to access, correct, or delete their data. The GDPR may apply to some personal information held by the University because, in some circumstances, we engage in activities that collect or process the personal data of individuals residing in the EU, such as EU resident applicants and students, or students studying abroad in the EU.

All UCM students will review the GDPR Consent Form prior to enrollment in their next semester. All UCM faculty and staff will review this information every fall semester in MyCentral.

Learn more about the GDPR on the European Commission website.

A list of the Countries of the European Union (EU)

Amendment of Education Records

1. If a student believes the education records relating to the student contain information that is inaccurate, misleading, or in violation of the student's rights of privacy, he or she may ask the university to amend the record by contacting the University Registrar.
2. The university shall decide whether to amend the record as requested within a reasonable time after the request is received.
3. If the university decides not to amend the record as requested, the University Registrar shall inform the student of its decision and of his or her right to a hearing under The Family Educational Rights and Privacy Act.

NOTE: The amendment of education records is NOT the process used for a grade appeal. Please refer to the current *Academic Appeal Procedure* in the *UCM Student Handbook* for information regarding this procedure.

Application for Exception Procedure

All requests for an exception to undergraduate academic university policies and procedures will be processed through the Office of the Registrar. Please refer to the current *Exception Procedure* in the *UCM Student Handbook* for information regarding this procedure.

Vehicles on Campus

Because parking space is limited, the university asks that students who can arrange other transportation not bring vehicles to campus. To park in student lots, students may buy parking permits at Parking Services (306 Broad Street). However, parking permits are limited by the number of parking spaces and may not be available for purchase. Accessible parking permits are available at the standard student rate when medical verification is presented to Parking Services (306 Broad Street) or Accessibility Services (Elliott Student Union 224).

Students may get complete information on parking and operating motor vehicles on campus by picking up a copy of *The University of Central Missouri Parking and Traffic Regulations* at Parking Services, or contacting Parking Services toll free at 800-873-8577.

Tobacco

UCM is a tobacco-free campus to promote the health of the university community, to preserve and protect university property, and to provide a respectful, clean, and safe environment to study, work, and learn. This policy encompasses all tobacco products (traditional cigarettes, e-cigarettes, pipes, cigars, hookah, water pipes, and all other forms of smoke-generating products, chew snus, snuff, etc.) or any nicotine delivery method not approved by the U.S. Food and Drug Administration as nicotine replacement therapy.

Tobacco use is prohibited in all university-owned, leased, or controlled buildings and residences. Tobacco use is also prohibited in all outdoor areas of UCM campus; however, tobacco use is allowed in personal vehicles, at the Keth Memorial Golf Course, and in designated parking lots during designated events such as commencement, sporting, or performing arts events. Students, faculty, and employees will be provided, upon request, assistance with identifying tobacco cessation resources, including free information and access to low-cost referral programs, through appropriate campus resources determined by UCM.

University of Central Missouri Drug-Free Schools and Workplace Statement

The University has established and is committed to enforcing clear policies that promote an educational environment free from the abuse of alcohol and other substances.

The University complies with federal regulations that require an alcohol and drug testing program for safety sensitive positions. The University expects students, employees, visitors, and organizations to adhere to state statutes prohibiting individuals under the age of 21 from drinking or having alcohol in their possession. Drinking or possession of alcoholic beverages is prohibited in University buildings and residence halls except in those places where an explicit exception has been granted.

The University also expects students, employees, and visitors to comply with laws that govern the possession, use, distribution, and sale of alcohol and illicit drugs. Anyone found to be in violation of such laws shall be subject to all applicable criminal penalties, as well as disciplinary action in accordance with applicable policies of the University of Central Missouri.

Students under the age of 21 are reminded it is unlawful to use fictitious identification for purchasing alcohol. Health risks associated with the use of illicit drugs and alcohol include, but are not limited to, addiction, accidents as a result of impaired judgment and ability, overdose, damage to internal organs or a developing fetus, and unpredictable or violent behavior. Information on referral and assistance with alcohol or drug-related problems is available from the Counseling Center (660-543-4060), University Health Center (660-543-4770), or Human Resources (660-543-4255).

Housing

In support of UCM's Learning to a Greater Degree, UCM requires first-year and sophomore students under the age of 21 to reside on campus as part of a two-year residency requirement. Freshmen and sophomores are also required to have specified meal plans. Brand new transfer students with <48 UCM accepted credit hours are also required to reside on campus. After one semester, transfers (due to change in student status to continuing student) must meet 60 hours or 21 years of age in order to continue to be exempt from the residency requirement.

Students may submit a request for exemption based on the following: current active duty military service, on-campus residency for two academic years, residing with a parent or grandparent within a 65 mile driving distance of Warrensburg, or a newly admitted transfer student with 48 or more UCM accepted credit hours. Further details on the process and how to be approved can be found at http://ucmo.edu/housingforms

On-Campus Housing

The University of Central Missouri provides a variety of on-campus housing opportunities. Living on campus is a great choice and an integral part of the complete college experience. With a broad spectrum of opportunities designed to complement your academic endeavors, you'll be part of a community where you can grow and experience life independently, yet have support to help you excel on campus.

Arranging for Housing

Contact the Office of University Housing, L23 Ellis Complex, or call 660-543-4515 for information or questions. Our website contains lots of relevant information including housing options and services: ucmo.edu/housing.

Residence hall assignments are made according to the agreement date. A deposit of $100 must accompany the application. Apartments will require an additional deposit of $100 or $200 (depending on location) prior to occupancy. This deposit may be forfeited for late cancellation, damage to university property, outstanding account or other agreement violations.

Students who need housing accommodations for any other disability-related reason should email the Office of Accessibility Services at access@ucmo.edu or visit ucmo.edu/access.

Residence Halls

Residence halls are located on the east and west sides of campus. Students may choose from a variety of housing options. More information on residence hall options can be found at ucmo.edu/residencehallliving.

Incoming First-year students (under 21 years) are assigned to first-year floors. These environments are carefully designed to help acclimate the new student to the UCM campus. Special staffing, educational and social activities, academic involvement, student government, and access to a variety of campus resources create an environment where student success is emphasized.

Students with 30 or more UCM-accepted credit hours or those over 21 years old may live in upper-class housing. Residence hall accommodations offer the student convenience, opportunities for involvement, and a variety of choices. Residence hall agreements are for a full academic year. Single rooms are limited and available at an additional cost.

In the residence halls, students in each pair (suite) of rooms share a private bath. Each student room has wired and wireless Internet access. All rooms are furnished with two desks, two twin-XL twin beds/mattresses, two chairs, blinds, a chest of drawers and a mirror. Residents may bring additional items to make their rooms more home-like. Our packing list can be found at ucmo.edu/movein. Residents have ready access to washers and dryers with no additional cost. Mail is delivered regularly to the main desk at each residence hall. Lounge areas and recreation facilities are open to all residents. Residence hall study areas provide a quiet place for reading and study.

The university tries to honor student preferences in housing assignments. Room changes will be permitted beginning on designated dates during the first part of each semester. Housing agreements for students who do not check-in are canceled after 5 p.m. on the first day of classes unless students have made arrangements to arrive late.

Upper-class/Graduate/Family Housing Apartments

Furnished apartments are available for upper-class students. A University apartment application along with a $100 deposit ($50 is refundable) is required to be placed on the waiting list. Apartments are assigned off waiting lists. University apartment agreements are for the academic year. To reside in an apartment over the summer, a student must either be enrolled for summer classes or pre-enrolled for the subsequent fall semester. The rental rate for the furnished apartments includes all utilities, Internet (including wireless), and laundry facilities within the building. Find out more information at ucmo.edu/apartmentliving.

Unfurnished apartments are available for students who are married, parents with children living with them full time, a graduate student, or an undergraduate student who is 20 years of age or 60 credit hours. A university apartment application along with a $100 deposit ($50 is refundable) is required to be placed on the waiting list and all apartments are assigned off of the waiting lists. University apartment agreements are for the academic year. To reside in an apartment over the summer, a student must either be enrolled for summer classes or pre-enrolled for the subsequent fall semester. The rental rate for the unfurnished apartments includes water, sewer, trash, Internet (including wireless), and laundry facilities in the complex area. Students are responsible for gas and electric service. Find out more information at ucmo.edu/apartmentliving.

Meals

Students may choose from a variety of meal plan options. First and second year students are required to be on specific meal plans. Full-meal service is available daily. The Elliott Union provides additional on-campus dining retail options. The food service accommodates students with special dietary needs. Learn more about Sodexo at ucmo.sodexomyway.com

Insurance and Safety

The Department of Public Safety and the Office of University Housing work together to provide a safe campus environment. However, the university is not responsible for loss of, or damage to, personal property. Parents and/or students are urged to arrange privately for insurance coverage of personal property.

Study Abroad

UCM strongly believes that students should gain a global perspective with their educational experience. In order to facilitate this goal, the Study Abroad Office offers opportunities to study internationally and earn credits that count toward virtually every program of study at UCM. The mission of the Study Abroad Program at UCM is to provide high quality opportunities that are convenient, affordable, and aligned with the demands of a globalized society. At UCM, every student can study abroad affordably, gain a valuable global perspective, and still graduate in 4 years. More information about the Study Abroad Program can be obtained from the Center for Global Education in Elliott Union 302. Students can also visit ucmo.edu/studyabroad or call 660-543-4195.

General Information about the Study Abroad Program

1. In order to study abroad, students must be in good academic standing and have completed at least 24 credit hours of college experience. There are also options for graduate students.

2. The Study Abroad Office offers 3 types of programs:

    - Exchange Programs: UCM partners with over 20 institutions worldwide to offer high-quality academic programs in our high-demand fields of study. Students pay UCM tuition and earn UCM credit.

    - 3rd Party-Providers: UCM works with trusted providers like ISA and ISEP to provide students with opportunities to study in over 300 institutions located in 65 countries. Students pay a program fee that usually includes tuition and earn credits that are transferable to UCM.

    - Short-Term Faculty-Led Programs: Students can travel abroad with a UCM faculty director and fellow UCM students and participate in courses specially designed to enhance international experiences, foster critical thinking, and engage cultural differences.

3. Students can study abroad for one semester, a full academic year, or over the summer, spring, or winter breaks.

4. Additionally, the Study Abroad Office supports academic service-learning abroad, independent research abroad, international internships and co-curricular experiences abroad that incorporate academic content.

5. The Study Abroad office reviews student transcripts from abroad and submits course equivalencies to the Registrar, usually within 3 months of returning.

6. Students should be aware that studying abroad in their final semester of study will likely delay graduation.

7. Students who plan to study on a UCM-sponsored Study Abroad program may elect to take the courses completed abroad as pass/fail or letter grade credit, and any degree requirement substitutions will require approval if pass/fail is desired.

8. In most cases, students maintain a full-time course load while participating in Fall or Spring Study Abroad.

9. UCM students are eligible to receive an International Studies Grant of up to $1000. Additional Foundation scholarships for study abroad are offered through UCM Scholarship Finder: https://ucmo.academicworks.com/. Information about these and other scholarship opportunities is available at the Study Abroad office.

10. Students participating in a Study Abroad program, when permitted to withdraw from a course, will not receive any refund from UCM.

In order to participate in the UCM Study Abroad Program, please:

1. Attend a Study Abroad 101 information session to learn about the online application process, specific opportunities, costs, grants and scholarships, course equivalencies, travel, passport and visa information, and much more.
2. Research UCM study abroad options online by clicking "MyCGE" at ucmo.edu/cge.
3. Meet with a study abroad advisor to discuss your academic needs, financial considerations, and receive passport, visa and health/safety and travel advising.
4. Consult your academic or program advisor.
5. Consult Student Financial Services.
6. Apply to the program of your choice online by clicking "MyCGE" at ucmo.edu/cge.
7. If applicable, apply at that program's website.
8. Attend a study abroad Pre-Departure Orientation.
9. If applicable, attend a Visa Workshop and learn how to obtain a visa.
10. Purchase airfare, acquire a visa if needed, and pack light!
11. Be sure to maintain academic progress abroad.
12. Lastly, enjoy your study abroad experience!

Social Opportunities

A college education is more than what happens in the classroom. At UCM, students are encouraged to participate in a variety of activities outside of the classroom that create a well-rounded educational experience. Getting involved on campus gives students the opportunity to develop interpersonal and leadership skills that will serve them throughout their lives.

Student Activities

From participating in Student Activities events to membership in a fraternity or sorority, UCM has it all! There are many things for students to do on campus including dances, plays, films, concerts, bowling, and being involved in clubs, intramural sports and student government. Taking part in social, cultural and athletic events provides students with many opportunities to learn about themselves, other people and the world in which they live.

Student Organizations

More than 200 registered student organizations exist at Central Missouri. Students are able to affiliate with academic honoraries, school organizations, religious organizations, sports teams, and special interest groups. Research indicates a positive correlation between involvement and student academic success; one such experience is involvement in student organizations. Participation in student organizations offers a means to apply classroom learning, explore career choices, gain leadership experience and make valuable contacts.

For information, visit the Office of Student Activities, Elliott Student Union 217. To see a list of organizations and descriptions go to the Office of Student Activities Web page ucmo.edu/osa.

Fraternity and Sorority Life

Fraternities and sororities are a special type of student organization that many students choose to join while at Central Missouri. Greek Life offers students the opportunity to develop academic, leadership, and organizational skills, participate in community service, and make lifelong friends. Students join fraternities and sororities through a process called recruitment which typically occurs at the beginning of each semester. Friendship, fun, scholarship, community service, and school spirit - Greek Life has it all! For more information, visit the Office of Greek Life located in Panhellenic Hall, call 660-543-8121 or visit them online at ucmo.edu/GreekLife.

Intercollegiate Athletics and Organized Sports

Central Missouri offers three general classes of organized activities in athletics and sports: intercollegiate athletics, intramural sports, and sports clubs.

Intercollegiate Athletics
Central Missouri belongs to the 14-member Mid-America Intercollegiate Athletics Association (MIAA) and the National Collegiate Athletic Association (NCAA), Division II.

Varsity sports for women are basketball, bowling, cross-country, golf, indoor track, outdoor track, softball, soccer, and volleyball. For men, they are baseball, basketball, cross-country, football, golf, indoor track, outdoor track, and wrestling. (Visit the Office of Intercollegiate Athletics, Jerry M. Hughes Athletics Center, Room 203, for information.)

The Athletic Committee, composed of faculty and students from all parts of the university, advises the intercollegiate athletics program.

Intramural Sports
An extensive intramural program gives university students, faculty, and staff many opportunities to take part in competitive and non-competitive activities at low cost. Team and individual activities are available for men, women, and co-recreational groups. Among these are badminton, basketball, billiards, bowling, golf, racquetball, rifle and pistol shooting, soccer, softball, swimming, table tennis, tennis, touch football, track, volleyball, wrestling, and many others. (Visit the Office of Student Activities, Student Recreation and Wellness Center or call 660-543-8595 for information.)

Sports Clubs
Sports clubs give students an opportunity to participate in sports which are not included in the university's intercollegiate program. Club activities may be intramural (all participants being Central Missouri students) or extra-mural (competition with teams from outside the university). The university funds club sports but assumes no liability for them. (See the Office of Student Activities, Student Recreation and Wellness Center in Garrison or call 660-543-8595 for information.)

Volunteer Services

Volunteer Services is available for students to match their skills and interests with the community. It is a way for students to utilize their skills and talents to help others give back to the community. There are many benefits to becoming involved in volunteer services. Students may utilize the volunteer services office to explore ways to continue their service work from past experiences. They will participate in service areas that are related to academic topics. Students will enhance their leadership skills by participating in service which offers them a sense of accomplishment. Some students will become involved in volunteer services when student organizations seek involvement in service projects within the community. Volunteer Services also promotes a responsibility to give back to society and helps students achieve a lifetime commitment to service and helping others. For more information about Volunteer Services visit Elliott Union 217 or ucmo.edu/volunteer.

Recreation Facilities

Jerry M. Hughes Athletics Center
The Jerry M. Hughes Athletics Center located just west of Audrey J. Walton Stadium, seats up to 10,000 in its arena and provides recreational facilities for students, faculty, and the community. Its basketball area accommodates four courts, five volleyball courts, and a six-lane, 220-yard indoor track. It also has three indoor handball/racquetball courts, a weight room, the Roger Denker Wresting Facility, conference rooms, and an activity area.

Pertle Springs
Historic Pertle Springs Park is located one mile south of the main UCM campus on South Holden Street. Pertle Springs is a 300-acre recreational, instructional, and biological research area for UCM students and the community to enjoy. Keth Memorial Golf Course and the Audrey J. Walton Clubhouse are both located in the park. Housed within the Walton Clubhouse is a full-service golf shop and Traditions Restaurant, UCM's newest banquet and dining facility. The golf course is open daily to the general public and features 18 holes of golf, multiple practice greens, and a driving range with indoor hitting facilities. Student rates make Keth Memorial Golf Course a great place to relax and enjoy a round of golf with friends! Other popular activities on the wooded grounds include biking, fishing, hiking, and picnicking, as well as use of the UCM Observatory. Pertle Springs is open year round.

The Union Bowling Center
The Union Bowling Center (UBC) is located in the Elliott Student Union. The recently updated 10-lane facility hosts many campus and off-campus groups. The UBC is home to the Jennies Bowling Team and the Men's Bowling Club. The center is open daily, approximately 360 days of the year. Special event reservations are welcome and more information is available by calling 660-543-4375. The UBC also rents inflatable games and casino equipment to interested student organizations. Cru5h™ is located next to the UBC and is open for breakfast and lunch, and serves as the late night dining option on campus.

Recreational Programs
At UCM, we work hard and play hard. Our recreational programs have something to meet everyone's needs. Intramural sports offer a wide range of individual and team activities including flag football, softball, volleyball, basketball, and soccer. Contact the Intramural Office at 660-543-8643, or visit the Student Recreation and Wellness Center.

Shooting Range
The UCM Shooting Range is located east of Warrensburg at the Agriculture and Conservation Education Center at the Prussing Farm. The facility includes a 3,000-square-foot learning center for educational activities and social functions, three trap shooting ranges, and one skeet range. The UCM Shooting Range is open to students, faculty, and staff, as well as the general public. Contact the Student Recreation and Wellness Center (660-543-8643) for information about the shooting range.

Student Recreation and Wellness Center
The Student Recreation and Wellness Center has many opportunities for students, alumni, faculty, staff, and retirees, to recreate. The 69,000-square-foot facility houses an indoor track, six basketball courts, three weight equipment areas, three dance/fitness rooms, and a climbing wall. Beverage and food items are available at Einstein Bros Bagels®.

Other Facilities
Other campus facilities include eight acres of recreational and practice fields west of the Audrey J. Walton Stadium, a 400-meter track in the football stadium, a play field southeast of Diemer Hall, and the South Recreational Complex.

Five city parks are located within walking distance of campus. Knob Noster State Park, located 10 miles east of UCM, offers picnic areas, family/group camping grounds, hiking trails, and fishing/kayaking opportunities.

Services and Facilities

Academic Success Advisement

ucmo.edu/success

Academic success advisors passionately support students as they seek the best possible education at UCM. As an ongoing interactive process, advisors will empower students to establish realistic goals, achieve academic success, and encourage lifelong learning. The Center's goal is to serve students equitably and holistically, building strong relationships to achieve academic success!

Degree seeking students are assigned an Academic Success Advisor based on their major. Students will also be assigned an Academic Success Coach, who is a peer mentor that is a currently enrolled student at UCM. New students are strongly encouraged to meet their assigned advisor several times during their first year.

Students can find the name and email address of their assigned academic success advisor, and other members of their success team such as Financial Aid Counselors in MyCentral (Student tab, Records and Registration, in the Student Profile block). International students are also assigned an international advisor from the International Student Services office.

Success Advising Center

Elliott Student Union 128

660-543-4721

Accessibility Services (ADA/504)

Elliott Student Union 224; 660-543-4421; fax 660-543-4724
access@ucmo.edu; ucmo.edu/access

The Office of Accessibility Services (OAS) provides students and visitors with disabilities with the services necessary to achieve equal opportunities while at UCM. At the student's request, OAS will work with faculty, Housing, Facilities and other campus programs to provide opportunities for persons with disabilities. Examples of the disabilities included are learning disabilities, attention deficit disorder, orthopedic and mobility issues, mental health, vision, hearing and health issues such as migraines, seizures, HIV, IBS, and diabetes.

Students seeking accommodations will need to provide OAS with recent professional documentation of the disability. The documentation will need to be on a professional letterhead and should provide the diagnosis, the nature of the impairment, if it is permanent or long term, and how it affects the student. Accommodations depend upon the disability and documentation, and may include testing services, text in alternative format, sign language interpreters, or other services. Each semester students must contact OAS if they want to utilize accommodations and have instructors notified of accommodations for the new semester. For more information see the OAS Web site or contact OAS.

Airport

Max B. Swisher Skyhaven Airport; 660-543-4921
ucmo.edu/skyhaven

UCM owns and operates the Max B. Swisher Skyhaven Airport, located three miles west of Warrensburg on Highway 50. It includes 402 acres of land, a 4,200-foot lighted runway with a full-length parallel taxiway; a 2,800-foot lighted

runway; and buildings for administration, maintenance, and other uses. The airport is a teaching laboratory for the university and a community airport serving the Warrensburg area.

Assessment

Ward Edwards 1908; 660-543-8855
ucmo.edu/assessment

Assessment is an integral part of the continuous process of learning and development, with the purpose of enhancing a student's total university experience. Assessment uses well-defined outcomes and criteria, employing multiple measures. All students are required to participate in UCM's assessment program. This assessment may include periodic measurements of student intellectual and personal growth through examinations/assessments in general education, intellectual skills or the major field of study, and various opinion surveys. A description of the major goals and components of Central Missouri's Quality Improvement Program (CQIP) can be found at ucmo.edu/testingservices.

Major Field Assessment
Each academic program establishes the conditions and requirements for assessment of its majors. All students are encouraged to contact faculty within their program to determine the policy, practice, and standards for assessment in their major field.

Surveys
In addition to standardized and locally developed assessments in general education and the major field, Central Missouri utilizes a variety of opinion surveys designed to measure student perceptions of their experiences at UCM, both academic and non-academic. The information derived from assessment activities is used to facilitate student learning and development, to promote faculty and staff growth and to improve the quality of academic and non-academic programs, services and facilities.

Career and Life Design Center

Ward Edwards 1200; 660-543-4985
careers@ucmo.edu; ucmo.edu/career

The Career and Life Design Center provides assistance to students in developing a highly personalized career development plan. Each academic program has a designated Career Development Coordinator who is an expert on the job market and career options for that particular field of study. They are also highly skilled in coaching students to prepare them for the pursuit of their chosen profession.

Services in the Career and Life Design Center include:

- Individualized Career Development Coaching
- Resume & Cover Letter Assistance
- Practice Interviewing
- Job Postings & Resume Referrals
- Student Employment Assistance
- Internship & Job Search Strategy Development
- Career Workshops, Events, Expos, & other on-campus Recruiting Opportunities
- Career Readiness Course

Career and Life Design Center services are optional, but students are encouraged to use them for exploring and selecting major and career options, and for developing their personal career development plan. *Please note that no course, program, certificate, and/or degree available at the UCM carries with it a promise, real or implied, of*

immediate or eventual employment within the specific areas covered, or in any other area. Although a comprehensive set of services is offered through the Career and Life Design Center, taking advantage of these opportunities and gaining employment remain the student's responsibility.

Center for Global Education

Elliott Student Union 302; 660-543-4195; fax 660-543-4201

The Center for Global Education consists of two areas, Study Abroad and the English Language Institute.

Study Abroad

https://ucmo.edu/studyabroad

UCM students who wish to study abroad and gain credit on short or long-term programs are encouraged to visit the Center for Global Education and inquire about UCM Study Abroad programs. Placement opportunities exist in institutions in more than 65 countries. Students must work through the Study Abroad office in order to ensure credit transfer and apply financial aid to their study abroad experiences.

English Language Institute

https://ucmo.edu/eli

UCM's English Language Institute (ELI) offers an academic Intensive English Program and professional language training and short-term cultural programming for students at the University of Central Missouri. It is our goal to provide English language learners the skills they need to be successful at the university, in their careers, or in specialized language programs. The ELI is housed together with the Center for Global Education in Elliott Student Union 302. ELI is a unit of the School of English and Philosophy .

Center for Teaching and Learning

James C. Kirkpatrick Library 1340; 660-543-8528
http://library.ucmo.edu/ctl Email: mccormick@ucmo.edu
Facebook: UCMCTL; Twitter: @UCM_CTL

The Center for Teaching and Learning (CTL) advances the University's mission by encouraging and supporting the advancement of instruction and the scholarship of teaching and learning. Professional development for faculty is provided in many ways - both online and in-person. CTL seeks to integrate sound teaching practices with current instructional technology to foster faculty growth and excellence.

Central Regional Professional Development Center

232 Foster-Knox; 800-762-4146
centralrpdc@ucmo.edu; ucmo.edu/rpdc

The CRPDC is the primary operating agency of the Central Professional Development Consortium. The center's mission is to provide information and resources in proven instructional and administrative practices which promote quality instruction in the classroom, overall school improvement and school-linked services for youth and their families. The center offers professional development opportunities, including inservices and workshops, to practicing

teachers and administrators, designed to address needs in all areas, particularly in science, math, technology, reading, and writing.

Chapel

The Alumni Memorial Chapel, funded by donations from individuals and organizations, was built in 1956 in memory of Central Missouri students who served in World War II and the Korean War. The chapel seats 200 in the sanctuary, has a meeting room for 20 people, and contains a complete kitchen/dining area in the undercroft. Private gifts funded the chapel's refurbishment and establishment of the Earl A. Webb Sr. Study. Another gift funded the attached Danforth Chapel, which contains six kneeling benches and is open to the public during the day. In the fall of 1994, a bronze sculpture titled "Guardian," which is a memorial to all men and women who have served the country in armed services, was placed near the entrance of the Danforth Chapel. The chapel is used by UCM students as a meeting place for social and religious organizations, choir practice, initiation ceremonies, group testing, parties, and weddings. Students also use it for individual or group meditation and communion.

Child Care Centers

The university supports one childcare center on campus. The center is in the back of the Foster-Knox Apartment Building and is licensed with the Missouri Department of Health and Senior Services.

The Child Care Center has adopted Creative Curriculum when planning activities and experiences for the children. Daily care routines are planned according to the age and development of the children within the classrooms.

The childcare center provides care for children six weeks to 10 years old. Enrollment is determined from a waiting list. To place a child on a waiting list, schedule a tour, or to learn more about the Campus Child Care Center call 660-543-4605 for Foster-Knox.

Counseling Center

660-543-4060
ucmo.edu/cc

The Counseling Center is committed to supporting UCM's mission by helping students reach their full potential. Students who are experiencing distress or other difficulties that are interfering with functioning may make an appointment to speak with one of the clinicians.

We provide an initial consultation where we hear about your concerns and offer recommendations. These may include brief individual, couple, or group counseling; in-person and online Mental Fitness workshops; or online resources. If our services are not appropriate to your needs, we will direct you to services that are.

See the Counseling Center website for more information and resources, including ULifeline (self-screening instruments and mental health information), Ask.Listen.Refer. (suicide prevention training), and Mental Fitness Online (on-demand workshops on popular topics).

The Counseling Center is dedicated to providing a safe atmosphere for all students regardless of age, sex, gender identity, gender expression, sexual orientation, race, color, national origin, religion, marital status, socioeconomic background, veteran status, or disability.

What to do if you believe another student is in danger of attempting suicide:

If you think someone is in immediate danger of attempting suicide, call Public Safety (911 or 660-543-4123).

Or if you believe someone you know may possibly be suicidal, talk to one of the following:

- Dr. Corey Bowman, Associate Vice President of Student Experience and Engagement, 660-543-4114 or Administration Building, Suite 214.
- Counseling Center at 660-543-4060.
- The UCM Crisis Support Line: 660-543-8008 (available 24 hours a day).
- Public Safety at 660-543-4123 or 306 Broad Street (available 24 hours a day).
- A readily available university employee, such as Housing staff, a faculty member, student organization advisor, or any other University employee with whom you are familiar.

The national suicide prevention lifeline, 1-800-273-TALK, is available 24 hours daily to anyone in suicidal crisis or emotional distress. Call or Text 988, or Chat at 988lifeline.org.

For the national Crisis Text Line, text HOME to 741741.

Criminal Justice Institute

660-543-4950; fax 660-543-8306
cjinst@ucmo.edu; School of Public Services

The Criminal Justice Institute, housed within the Department of Criminal Justice and Criminology, strives to bridge the gap between policy makers, academia, and the field of criminal justice on issues and concerns to the criminal justice profession and to influence criminal justice policy and practice by providing research, information, and assistance. The Institute accomplishes this through delivering information to the criminal justice community in the form of accurate, affordable, and pertinent training. Students benefit from the Institute's work through unique educational opportunities that improve the quality of their degree. By interacting with experts students become effective, professional members of the criminal justice career field. Events sponsored by the Criminal Justice Institute include an on-campus symposium with varying topics from police worn body cameras to raising awareness about sexual assault to issues in juvenile justice as well as tailored training opportunities such as Warden Peer Training or Police Liability as requested by local agencies.

Dining Services

660-543-4012
ucmo.sodexomyway.com
Facebook: Sodexo at University of Central Missouri
Twitter and Instagram: @DiningUCM

Dining by Sodexo is committed to providing an enjoyable, service-focused, nutritious, and innovative dining experiences that meet the ever-changing needs of the UCM campus community. Sodexo strives to provide customers with great menus, quality and the service they deserve. Sodexo offers both resident and retail dining.

Keep up to date with all Dining by Sodexo - menus, nutrition information, special events and notices by following us on social media or our mobile friendly website (see above).

Resident Dining. On the UCM campus we have two Resident Dining Centers, Westside Market in Todd Hall, and Ellis Dining Center, which both feature an all-you-can-eat format. Both Dining Centers accept meal plans, Dining Dollars, Central Cash, credit and debit cards, and cash.

Both resident dining centers offer Simple Servings, a concept that provides safe and appetizing food choices for those with food allergies, gluten intolerance, or those who prefer "simple" foods. Simple Servings eliminates the eight ingredients that account for 90% of all food allergy reactions, available in both dining centers seven days a week.

Retail Dining. We offer a variety of retail locations across campus. These establishments accept Dining Dollars, On Campus Dining Dollars, Central Cash, credit cards, debit cards, and cash. Options include:

The Crossing - Starbucks® and Spin Pizza®

The Elliott Student Union - Chick-fil-A®, Starbucks®, AFC Sushi, CRU5H™, The Grid™, and Taco Bell®

Einstein Bros Bagels® located in the James C. Kirkpatrick Library and the Student Recreation and Wellness Center

Traditions at Pertle Springs - Full-service restaurant overlooking the final hole of Mules National Golf Club

Distance Learning

660-543-4984
http://ucmo.edu/ucmonline

Distance Learning at the University of Central Missouri encompasses Internet-based, electronically delivered education via online and interactive television (I-TV). Online Learning and Engagement manages, schedules, coordinates, and assists in marketing all distance education courses and degree programs. Appropriate student services, including library resources, financial assistance, an online writing lab, academic advising, and technical support are provided to meet the additional needs of the distance learner.

Elliott Student Union

660-543-4052
ucmo.edu/union

Facebook, Twitter and Instagram @UCMElliott Union

The Elliott Student Union is centrally located on the main campus and serves as the "living room" for the campus community. The Elliott Student Union includes dining facilities, including Cru5h fun food & drink, Chick-fil-A®, Taco Bell™, SubConnection™, AFC Sushi®, and Starbucks™, meeting space, a computer lab, a DVD rental kiosk, a U.S. Bank branch, ATMs, student organization offices, study lounges, and quiet areas. It is often used for social functions, student activities, and other programs. The union also houses student services offices that include: the OneCard office, Dining Services/Catering, International Center, Student Government Association, Meeting and Conference Services, and the Office of Accessibility Services. The Elliott Student Union features an Information Desk that provides campus-wide information to students, staff, faculty and guests.

Graduate Studies

The personnel in the Graduate Studies office seek to provide quality services to support graduate education and research at UCM. In conjunction with other offices and committees this office coordinates the review of graduate curriculum and policies. Additional functions of this office include providing scholarly funding through research grants and travel provisions, and promoting graduate student and program visibility. The Graduate Studies office handles all processes associated with Graduate Assistantships on campus including the orientation process for new GAs. This office also reviews the following graduate student petitions: enrollment overloads, exceptions to the eight-year curriculum rule, and the reinstatement of academically ineligible students. The Graduate Studies office also administers thesis review and submittal and offers thesis workshops. The office is located in Ward Edwards 1900.

Graduate Studies	660-543-4729

Graduate Studies (fax) 660-543-8874

Health Promotion

600 S. College St., 660-543-8947

healthpromotion@ucmo.edu; ucmo.edu/healthpromo

The Office of Health Promotion at UCM helps students learn, grow, and thrive through education about, and engagement in, health-promoting and risk-reducing behaviors. Using sound data and best practices, we work to put the power of prevention in the hands of our students.

Some of our services include:

Online prevention education courses: We believe you should have the opportunity to learn in a safe and civil environment, make informed choices regarding alcohol and drugs, and know how to respond to the choices of those around you. These free online courses provide you with important prevention skills and strategies to help promote respectful relationships and a safer and healthier environment at UCM, as well as many UCM-specific supportive resources.

The Sexual Violence Prevention course is required for all new students, and an enrollment hold is placed if it's not completed by the day enrollment opens for the following semester.

Care to Act: This multi-level violence prevention strategy is focused on encouraging a culture of care on our campus and includes an online pre-matriculation course, a bystander intervention training program, and community-level violence prevention elements, and is focused on the areas of interpersonal violence, substance misuse, bias and discrimination, and mental health/suicidality.

Safe Zone: Safe Zone workshops at UCM offer information on LGBTQIA+ identities, terminology, ally development, and ways to support LGBTQIA+ students on our campus. We invite anyone in the UCM community to attend a Safe Zone workshop and become a Safe Zone ally, including staff, faculty, graduate assistants, and students.

Presentations: Interactive educational programs for classrooms, residence halls, student organizations, and more. Topics include alcohol and other drugs, mental health, sense of belonging, and interpersonal violence.

Assistance with prevention-related research: We're happy to help both undergraduate and graduate students with their research into interpersonal violence, alcohol and drugs, mental health, and other prevention-related topics.

Institute for Public Safety

200 Ming Street; 660-543-4090
mosafetycenter.com
Facebook: Central Missouri Police Academy; Twitter: @ucmpa

The Institute for Public Safety (IPS), a division of the Missouri Safety Center, develops and sponsors select in-service training courses for public safety professionals including law enforcement, firefighters, safety and emergency medical service providers.

IPS is also home to the Central Missouri Police Academy (CMPA). The CMPA is licensed by the Missouri Department of Public Safety's Peace Officer Standards and Training (POST) program as a Licensed Basic Training Center that exceeds POST's basic training requirements for a Class A Peace Officer License. Upon graduation from the academy, and passing the POST test, students are eligible to be licensed Peace Officers.

Institute for Rural Emergency Management

660-543-4971; fax 660-543-4482
ucmo.edu/irem

The Institute for Rural Emergency Management (IREM), a division of the Missouri Safety Center (MSC), at the University of Central Missouri was established in June 2005. IREM meets a demonstrated need for technical assistance in rural communities, to include mitigating, preparing for, responding to and recovering from emergencies and disasters. UCM is the only university in the U.S. to create a community outreach center focused on the emergency management needs of rural America, which are distinct from the needs of urban and suburban communities.

IREM gathers best practices from successful rural projects and develops guidelines and targeted information to distribute to elected officials and community leaders. In rural areas human resources are often limited, so IREM provides supervised student interns and researchers to complete vital projects, implement new programs, and deliver training workshops and exercises.

International Student Services

Ward Edwards 1800; 660-543-4621; fax 660-543-4778
GISS@ucmo.edu; ucmo.edu/graduate

The Graduate and International Student Services (ISS) office offers master's programs, education specialist programs, cooperative doctorate programs and various graduate certificates. A separate catalog is available for the graduate-level programs.

KMOS-TV

University of Central Missouri's Broadcasting Services, KMOSTV, serves close to one million residents in west and central Missouri.

The station is a working laboratory for scores of UCM students - providing employment opportunities and on-the-job experiences that augment a student's academic achievements.

KMOS-TV is a member of the Public Broadcasting Service, presenting PBS national programming as well as producing a variety of local productions relevant to the needs and interests of central Missourians. The television station broadcasts four separate digital channels: 6.1 is a full schedule of nationally acclaimed PBS prime-time and children's programming and award-winning local productions in High Definition; Channel 6.2 (Create) is lifestyle and how-to programs; 6.3 (MHz Worldview) features international news and drama; and channel 6.4 presents family-friendly PBS Kids programming around the clock.

Learning Commons

JCK Library 3160, 660-543-8972
learningcommons@ucmo.edu; ucmo.edu/learningcommons

The Learning Commons, located on the third floor of the JCK Library, houses Tutoring Services, the Writing Center, Supplemental Instruction sessions, and the Test Prep Center. This collaborative learning environment offers students a comfortable place to work, study, and receive individualized assistance. Computer access is also available.

Tutoring Services
JCK Library 3160, 660-543-8972
learningcommons@ucmo.edu; ucmo.edu/learningcommons

Tutoring Services, located in the Learning Commons, is the central location for free academic assistance and tutoring. The center offers individualized help for many courses including all levels of mathematics. The tutoring schedule is available online or by contacting the Learning Commons.

Writing Center
JCK Library 3160, 660-543-8972 or 660-543-4367
writingcenter@ucmo.edu; ucmo.edu/ae/writing
OWL (Online Writing Lab): ucmo.edu/ae/writing/owl.cfm

The Writing Center, located in the Learning Commons, offers free one-on-one writing instruction and assistance with any paper or writing assignment from first-year courses through graduate theses. The Writing Center has walk-in hours and the availability of appointments. Students may also submit papers through OWL (Online Writing Lab), our online writing service and receive feedback through email.

Supplemental Instruction
JCK Library 3160, 660-543-8972
ucmo.edu/ae/courses/si.cfm

The Supplemental Instruction (SI) program, located in the Learning Commons, offers weekly structured group study sessions for challenging courses. SI sessions are facilitated by trained peer leaders who excelled in the course, and are open to all students enrolled in the supported course. Check with the course instructor to find out if SI is available for a specific course and section.

Test Preparation Center
JCK Library 3160, 660-543-8972
learningcommons@ucmo.edu; ucmo.edu/learningcommons

The Test Prep Center provides electronic and print resources to help students prepare for most exams. Whether you need general suggestions about preparing for you next course exam or plan to take a standardized exam, the Test Prep Center can provide that support. Students can learn what to expect, how to prepare, and be able to practice sample questions for their upcoming exam.

Library Services

James C. Kirkpatrick Library; 660-543-4154
http://library.ucmo.edu
Facebook: JCKLibrary; Instagram: @jcklibrary

The James C. Kirkpatrick Library serves as the major information source on campus, providing a wide range of student and faculty-centered services supporting the University's instructional, reasearch, and public service programs. As an essential component of education and research at UCM, Library Services faculty and staff offer access to a wealth of items (digital and print), along with expert personnel to assist patrons in achieving their academic and scholarly goals.

Services

- On and off-campus access to electronic resources, including journals, books, multidisciplinary databases, and other research materials
- On-campus access to print books and journals
- Library instruction, workshops, subject guides, and tutorials

- Research assistance (in-person and virtual) from subject experts is available both individually and via group sessions
- Extended hours for librarian chat services
- PC laptop checkout
- Accessible tables, study carrels, and computers
- More than 160 computers are located throughout the library
- More than 44 study rooms for individual and group use
- Active learning classrooms
- Einstein Bros. Bagels Express®, housed on the first floor of the building, offers beverages and snacks.

UCM's distance learners are encouraged to communicate with the library regarding services that meet their special needs. Telephone, email, and chat services are all available options for communication with Library Services faculty, librarians, and staff.

Meeting and Conference Services

Elliott Student Union 301; 660-543-4342; fax 660-543-8469
ucmo.edu/meetings

Students may reserve university space for student organization and personal use. Depending on the use of the space charges may or may not apply. All space rental requests must be submitted to Meeting and Conference Services. To reserve space, students should submit event requests 10 business days prior to the event at ucmo.edu/scheduleevent. A confirmation will be sent by email which will include room assignment, event times, set-up requests, audio-visual equipment needs and any charges that apply.

Military and Veteran Services

Elliott Student Union 117; 660-543-8776
ucmo.edu/vets

The Office of Military and Veteran Services is a part of the university's presidential military and veterans' service initiative to better serve our active-duty service members, reservists, guardsmen, veterans and their dependents as students at UCM. UCM offers a Military Tuition Package to eligible students who utilize military tuition assistance and/or the GI Bill® for their tuition and are enrolled as degree seeking-students. UCM also offers a discounted undergraduate tuition rate to our currently serving service members. The Military and Veterans Success Center (MVSC) provides a one-stop, full-service resource center to assist the military affiliated student population. The MVSC has computers with CAC readers, a quiet study lab, individual and group study areas, as well as a family room and dedicated staff to assist students with their educational pursuit. Staff assist veterans, service members, and dependents requiring services and benefits from the Veterans Administration, Military Tuition Assistance and any state or federal benefits. The Student Veterans Organization (SVO) provides an opportunity for active-duty service members, reservists, guardsmen, veterans and their dependents to become involved with their student peers and participate in social and campus activities as one voice. The SVO assists its members with becoming acclimated to campus, providing guidance on campus resources as well as an interactive support system.

Missouri Safety Center

660-543-4830; fax 660-543-4482
mosafetycenter.com; Facebook: MissouriSafetyCenter

Established July 1, 1967, the Missouri Safety Center (MSC) proves the benefits of combining an academic school with a training center, creating a hybrid unit dedicated to the safety and welfare of all citizens. As noted in its mission

statement, "To promote safety in Missouri and the nation," the MSC strives to prevent injury and death through education, training, research, public service, and publications. The MSC's three distinct divisions are: The Division of Transportation Safety (DTS), The Institute for Public Safety (IPS) and the Institute for Rural Emergency Management (IREM).

Located just south of the main campus, the MSC's Division of Transportation Safety is housed in the Highway Safety Instructional Park at 1200 South Holden Street. This unique 14-acre highway safety training facility hosts many of the center's programs and features an advanced driving track, skid pad and off-road track for dirt bike and ATV training, as well as the Missouri breath alcohol training laboratory.

The MSC's Institute for Public Safety is located at 200 Ming Street near the main campus. The IPS develops and sponsors select basic and in-service training courses for professionals in public safety. The IPS's goal is to provide innovative, experiential learning opportunities tailored to the needs of regional public safety organizations. The IPS also manages the Central Missouri Police Academy (CMPA). The CMPA is licensed by the Missouri Department of Public Safety's Peace Officer Standards and Training (POST) program as a Licensed Basic Training Center that exceeds POST's basic training requirements for a Class A Peace Officer License.

The MSC's Institute for Rural and Emergency Management, located in Humphrey's Building, Suite 200, was established in 2005 to assist rural communities with mitigating, preparing for, responding to and recovering from emergencies and disasters. The MSC also prepares graduates for the growing emergency management field through a Bachelor of Science degree in Crisis and Disaster Management or a specialized certificate available entirely online or on campus. Students who participate in this program may concentrate in the areas of emergency management, emergency services management, hazardous materials, or business continuity. This degree program addresses the need within the state of Missouri for technically educated emergency management professionals.

Non-Traditional Student Services

Elliott Student Union 217; 660-543-4007
https://www.ucmo.edu/current-students/student-experience/office-of-student-activities/#

Non-Traditional Student Services is a resource office for Central Missouri's students who are age 24 and over, have a gap of five or more years since high school, are married, single, have children, or are a veteran. This office provides information, support, advocacy, and referrals to campus and community support services. The office has information about non-traditional scholarships, housing, child care, and tutoring or other skill enhancers.

Office of Sponsored Programs & Research Integrity

Administration 315; 660-543-4264
Sponsored Programs: ucmo.edu/osp
IRB and IACUC: researchreview@ucmo.edu

The Office of Sponsored Programs & Research Integrity oversees programs that guide UCM in its research, scholarly activity, and creative endeavors. The office disseminates information about funding opportunities, assists in proposal development/submission; and oversees award management, budgeting, reporting, and compliance.

Research Involving Human Subjects
To protect the health and safety of human subjects involved in research, all research projects involving the use of human subjects must be in compliance with federal regulations. All projects involving human subjects in research must be approved in advance by the UCM Human Subjects Review Committee which serves as the Institutional Review Board (IRB).

Research Involving Animals
Federal law requires that all research projects involving the use of selected mammals and birds be conducted in a

manner that ensures humane treatment of animals. All such projects must be approved in advance by the UCM Institutional Animal Care and Use Committee.

Office of Technology

Ward Edwards 0800; 660-543-4357 (HELP)
tsc@ucmo.edu; ucmo.edu/ot

The Office of Technology provides general oversight and support of technology resources across campus, that includes, but is not necessarily limited to, workstations (desktops, laptops, tablets, mobile devices, etc.), classroom technologies, enterprise and departmental applications, unified communications, cell phones, network infrastructure (data, voice, and video), servers, storage arrays, network connectivity (wired and wireless), Internet connectivity, identity management, and general and targeted user support. The Office of Technology is composed of four teams that work together to support the technology needs and requirements of UCM's students, faculty, staff, administrative, and other campus constituents.

Application Systems
Application Systems has oversight of enterprise and departmental systems to include design, development, implementation, maintenance, and support of enterprise and departmental systems. Banner system modules and the many layered applications that link to any of the Banner systems is a dominant focus of the Applications Systems team. In addition, Applications Systems has oversight and operational responsibility for enterprise database engines and the data contained in those databases. The Application Systems team works closely with functional offices and individuals to plan, coordinate, execute, support, and maintain the various applications that are core to the Banner environment along with systems and applications that have a direct or indirect interface to the Banner database. The Application Systems team also has a wide scope of responsibilities for the implementation and technical support of non-Banner enterprise and departmental systems and applications.

Infrastructure Services
Infrastructure Services has oversight of enterprise and departmental servers and storage, core systems for network connectivity, authentication, security and data retention. The Infrastructure Service team has responsibility for the network infrastructure that provides data, voice, video, and Internet access and connectivity to the UCM campus. Duties and activities include design, implementation, engineering, deployment, support, and maintenance of aforementioned systems. The Infrastructure Services team is responsible for network traffic, wired and wireless connectivity, Internet access, remote access, and telecommunications. The Infrastructure Service team supports classroom technology resources that provide interactive, application-based software and hardware in support of the academic learning environment. Infrastructure
Services also has the responsibility for the network operations center where critical physical servers, storage, and core network equipment is located.

Technology Operations
Technology Operations is responsible for departmental budgets, technology operations, and providing administrative support to Office of Technology departments. Technology Operations takes direction from the AVP IT / CIO and supports the overall operations of the Office of Technology to include such duties as, budget planning and forecasting, oversight of hardware and software contracts and licensing, assist with human resources activities, equipment inventory, telephone support services, accounts and access services, oversight of fiscal operations, and conducting other duties to support the overall operations of the Office of Technology.

Technology Support Services
Technology Support Services has oversight of end-user technology resources across campus that includes deployment, support, and maintenance of workstations, laptops, handheld devices, tablets, printers, copiers, etc., utilized by UCM students, faculty, staff, and administration in the many diversified workplaces across campus. Technology Support Services provides first-line support to the UCM user community via the Technology Support Center to include conducting basic troubleshooting, processing user requests for services, and answering general questions about campus technology. Students can reach the Technology Support Center by calling 660-543-4357,

visiting Ward Edwards 0200, or by email (tsc@ucmo.edu). TSC phones are answered 24/7. When Technology Support Services staff members are not on site, an answering
service representative will take a message for a call back the next business day. If immediate service is required, Technology Support Services personnel will be paged for immediate response.

Online Learning and Engagement

660-543-4984; fax 660-543-8333
extcampus@ucmo.edu; ucmo.edu/es

With the cooperation of Central Missouri's academic schools, Online Learning and Engagement administers courses and degree programs off campus and online. Online Learning and Engagement also coordinates summer sessions, workforce development programs, workshops, non-credit courses, contract training, high school dual credit courses, continuing education units (CEUs), and entrepreneurial courses.

Public Safety

660-543-4123 (or 911 for emergencies); fax 660-543-4163
ucmo.edu/ps

The Department of Public Safety includes University Police, Access Control, Environmental Health and Safety, and Parking Services. It is located at 306 Broad St. and is open 24 hours daily, 365 days per year. For emergencies on campus, dialing 911 from the university phone system will reach the Department of Public Safety. Dialing 911 from a cell phone will connect the caller to Johnson County Central Dispatch.

Publications

The following publications are produced and distributed by the University of Central Missouri:

- *UCM Today,* a quarterly magazine for alumni and friends of the university published by University Relations and the Office of Alumni Relations and Development
- *The Muleskinner,* a weekly campus newspaper published by the Department of Communication and Digital Media Production student staff.

Registrar and Student Records

Ward Edwards 1000; 660-543-4900; fax 660-543-8400
registrar@ucmo.edu; ucmo.edu/registrar

The Office of the Registrar and Student Records maintains the official student records of UCM. The Registrar's Office is responsible for maintaining accurate records of student enrollments and grades. The Registrar's Office provides official transcripts, maintains degree audit reports, and evaluates students for graduation requirements. Enrollment and degree verification certificates are available in MyCentral for currently enrolled students and through the National Student Clearinghouse for former students.

Transcripts
There are two types of academic transcripts - unofficial and official. Currently enrolled students have access to unofficial transcripts in MyCentral. Official transcripts can be ordered for a fee.

An academic transcript shows a history of all courses taken, grades received, and hours earned. If a UCM degree or certificate is earned the degree or certificate, date conferred, and majors and minors will be listed on the transcript. The UCM official transcript includes student legal name, UCM student number, and birth month and date. Social security number is not included on the transcript for security reasons.

Diplomas and Certificates
Upon graduation all students receive a diploma or certificate. Diplomas and certificates will not be released until all financial obligations to the university are paid. The cost of the diploma and/or certificate is included in the graduation fee. Diplomas include the degree earned, major(s), and academic honors (if applicable). Minors are not listed on diplomas. Certificates include the name of the certificate earned. If the student earned a double degree (not double major) or more than one certificate, a diploma/certificate will be provided for each degree/ certificate. Students earning a double major will receive one diploma which lists both majors.

Student Experience and Engagement

Administration 214; 660-543-4114; fax 660-543-8114
ucmo.edu/student

The Office of Student Experience and Engagement coordinates a wide variety of student services and programs. These services and programs are designed to help students have a safe and supportive collegiate experience, develop a sense of personal responsibility and experience personal growth, acquire essential skills to thrive as emerging citizens and leaders, understand their role and responsibility within a larger community, identify personal values, appreciate differences, and adapt to a diverse society. The office assists students, their families and visitors to better understand and access these services as they apply to their needs and situation.

Student Financial Services

Ward Edwards 1100; 660-543-8266; fax 660-543-8080
ucmo.edu/contactsfs (for email inquiries)
ucmo.edu/sfs

The Office of Student Financial Services administers a wide variety of federal, state, and UCM scholarship, grant, loan, and employment programs, all of which provide funds to help eligible students satisfy the educational and living expenses of attending UCM. Knowledgeable staff members are available to assist students and their families with all aspects of applying for financial assistance.

Testing Services

JCKL 1250; 660-543-4919; fax 660-543-8757
testingservices@ucmo.edu; ucmo.edu/offices/testing-services

Testing Services serves as the repository of official score reports, provides information and administers national, state, and locally developed tests, as well as supports and coordinates Central Missouri's Quality Improvement Program (CQIP). Testing Services is a member of the National College Testing Association (NCTA) and the Consortium of College Testing Centers. Testing Services adheres to NCTA Professional Standards and Guidelines.

Official Score Report Policy

- Official score reports are required to be on file for a student to meet admission and/or other program requirements.
- Only score reports that are sent from the test company directly to Testing Services are considered official.

- The University of Central Missouri retains and uses scores obtained within the past 10 years. ACT scores accepted at the time of admission may be no older than five years.
- To protect confidentiality and privacy, score reports are not available by telephone, fax, email, Internet, or proxy.
- An official ID containing the candidate's photo and signature is required for most services.

Test Registration
There are several ways to register for various tests:

- Registration for some tests, including the Accuplacer Placement test, is available via MyCentral or go to www.registerblast.com/ucmo. Select the test day and time, and complete the online registration process as directed.
- Registration for some tests, including CLEP, MEGA, MoGEA (teacher education), and FAA exams, must be completed directly through the testing company.
- Test fees and administration fees are automatically billed to the UCM student's financial account unless paid directly to the testing company.
- For candidates not enrolled at UCM, only cash, money order or credit/debit card payments can be accepted, except for test fees paid directly to the testing company. Utilizing a credit/debit card incurs an additional $2.50 processing fee.
- Test candidates are not fully registered until Testing Services confirms receipt of fees and seat availability.

Test Cancellation
Candidates are obligated to test on their scheduled date and time. To maintain reasonable test administration fees, a no-show fee of $15 may be applied to the UCM student's financial account, unless Testing Services is notified of a change at least 24 hours in advance or proof of a university-approved absence is provided.

Test Accommodations
In compliance with the American Disability Act, accommodated testing is provided upon completion of the procedures outlined by the test company or by following the steps below two weeks prior to your scheduled testing date:

- Register with UCM's Office of Accessibility Services (Union 222, www.ucmo.edu/access).
- Contact OAS and authorize permission to share accommodations with Testing Services.
- Follow up to ensure Testing Services has received your accommodations and that they can be met on the designated date/time.

TRIO Ronald E. McNair Postbaccalaureate Achievement Program (McNair Scholars Program)

HUM 127, 660-543-8830; fax 660-543-4829
mcnairscholars@ucmo.edu; https://www.ucmo.edu/offices/mcnair-scholars-program/

The McNair Scholars Program, a federally funded TRIO program, serves undergraduates in their junior and senior years to prepare for doctoral study. Students who meet government eligibility requirements and are selected for the program participate in activities including seminars, faculty mentoring, and the opportunity for a paid summer research internship.

UCM Alumni Foundation

Elliott Student Union, Smiser Alumni Center, 660-543-8000
alumni@ucmo.edu, giving@ucmo.edu; ucmo.edu/foundation

The UCM Alumni Association and UCM Foundation joined together in 2015, combining their volunteer boards and developing new committees and strategies to reach more aggressive goals in terms of alumni engagement and financial support of the university's mission. The UCM Alumni Foundation now operates under the central mission "to cultivate, manage and distribute resources in support of the University of Central Missouri." As the university's official nonprofit organization, the UCM Alumni Foundation solicits and manages donors' gifts to benefit both specific areas as well as the university's greatest needs. Scholarships are one of the largest areas where gifts make an impact benefiting learning to a greater degree. Other areas where the organization makes an impact include reunions, Homecoming, Mule Nation alumni events, the UCM Magazine and Distinguished Alumni Awards.

UCM Lee's Summit

660-543-8228; 816-347-1612; fax 816-347-9574
summit@ucmo.edu; ucmo.edu/summit

The UCM Lee's Summit location is an off-campus site whose mission is to serve adult learners in the Greater Kansas City metropolitan area. UCM Lee's Summit is located within the Summit Technology Campus near the junction of Missouri highways 50 and 470. The 40,000 square foot facility features multi-use classrooms and seminar rooms equipped with state-of-the-art technology, interactive television rooms, computer labs, and conference rooms. Offerings included undergraduate certificate programs, completion degrees, graduate certificate and degree programs. UCM Lee's Summit also serves as a resource to the community for professional and workforce development.

UCM Whiteman Air Force Base

660-543-4464;660-281-6355
wafb@ucmo.edu; ucmo.edu/whiteman

The UCM Whiteman Air Force Base (UCM-WAFB) location is an off-campus site whose mission is to serve military and military-affiliated individuals in continuing their education. UCM-WAFB is located within the Professional Development Center on WAFB. The facility features a recently upgraded classroom to allow for virtual instruction and a dedicated student computer lab. Offerings include select undergraduate degrees and industry recognized certifications through MyCAA. UCM-WAFB also serves as a resource center for military and military-affiliated individuals needing assistance applying to the university, academic advising, and tuition assistance.

University of Central Missouri Prussing Farm

The 260-acre University of Central Missouri Prussing Farm, a teaching unit of the Agriculture program that utilizes the latest in agriculture technology, provides laboratory experience for students in agriculture classes and work opportunities for students interested in hands-on experience. The newest additions to the farm are a two-classroom Agriculture and Conservation Building and a trapshooting range with skeet overlay funded by a grant from the Missouri Department of Conservation. Additional teaching/research facilities are a mature orchard, greenhouse complex with dwarf orchard, and research plots on campus and at the 100-acre Agricultural Research Farm on Mitchell Street. Agriculture research, funded by the university, private industry, and the Natural Resources Conservation Service is carried on by faculty and students at these facilities.

University Health Center

600 S. College St., 660-543-4770; fax 660-543-8222
uhc@ucmo.edu; ucmo.edu/uhc

The University Health Center (UHC), located just south of the Elliott Student Union, is the place to go when you're sick, injured, or need medication, a physical, or prevention services.

Clinical Services: The UHC offers acute care, laboratory services, immunizations, and a Medication Clinic to students and is staffed by nurse practitioners. Appointments are required.

Mandatory Immunization Requirements: Students must provide evidence of two (2) vaccinations for immunity against measles, mumps, and rubella (MMR), and completion of the Student Tuberculosis Screening Form. As of July 1, 2015 the State of Missouri requires all students living in university housing to have one dose of quadrivalent meningococcal vaccine (MCV-4 or MPSV-4) after their 16th birthday. For instructions on how to upload your vaccination records and complete the TB Screening Form please visit this page.

Health Insurance: All students attending UCM should have adequate health insurance coverage and university policy requires that all international students have health insurance coverage. Please see the "Student Health Insurance" section on the main University Health Center webpage for more information.

University Store - The Crossing

114 W. South Street; 660-543-4227
ucmbookstore.com

University Store -The Crossing is located just north of Vernon Kennedy Field/Walton Stadium at 114 W. South Street. University Store-The Crossing sells an assortment of officially licensed UCM clothing and souvenirs. Convenience store items are available in our adjoining store, Mule Stop. Online orders for emblematic merchandise are accepted at our Web site, ucmbookstore.com . University Store-The Crossing is open fall and spring semesters Monday through Friday, 9:00 am to 6:00 pm; Saturday, 9:00 am to 3:00 pm and Sunday during the fall semester, 12 noon to 5:00 pm. Summer hours are Monday through Friday, 9:00 am to 5 pm; Saturday 9:00 am to 3:00 pm.

Welch-Schmidt Center for Communication Disorders

Martin 34; 660-543-4993; fax 660-543-8234
ucmo.edu/comdisorders/about/center.cfm

UCM has a comprehensive speech-language and hearing clinic in the Welch-Schmidt Center for Communication Disorders. Undergraduate and graduate student clinicians, supervised by Missouri-licensed and American Speech-Language-Hearing Association (ASHA)-certified faculty of the Department of Human Services, provide prevention, assessment, and treatment services to students, faculty, and members of the community who may exhibit difficulties in articulation, voice, swallowing, stuttering, language, literacy, hearing disorders, and foreign accent.

The Center has treatment rooms with two-way mirrors, video and audio monitoring; an early childhood preschool for children with speech and language disorders who are between the ages of two and one half and five years; a speech acoustics and physiology lab that provides instrumentation for rigid and flexible endoscopy vocal fold visualization, air-flow/pressure and acoustic measurement of the voice; four audiologic suites where hearing evaluations, impedance audiometry, otoacoustic emissions, and video otoscopy are performed; an Augmentative and Alternative Communication (AAC) lab; Scottish-Rite Early Language and Literacy Lab; and a Functional Communication Clinic (FCC). The hearing aid laboratory is equipped with the latest technology for the fitting and dispensing of hearing instruments.

Students have available a variety of current assessment and treatment materials and a student clinician workroom complete with workstations. The center collaborates with the university English Language Center for a unique service-learning opportunity for student clinicians by providing accent reduction therapy for those international students enrolled in the Intensive English Program (IEP). With the support of the Scottish-Rite, the Center is also able to provide literacy evaluations and treatment to children and adults.

Students, faculty, staff and their immediate families with speech sound errors, autism, aphasia, or other communication deficits may use the center's services at reduced fees. The Center welcomes self-referrals and referrals from university faculty and staff, the University Health Center, and community health and educational agencies.

Programs by College/School/Department

University of Central Missouri

General Studies, BA (42-986)

The General Studies major is intended to serve as a degree completion program for students with advanced earned hours. The diploma and transcript will read, for example: General Studies: Individualized Major. General Studies is not available as a double or second degree, major, or minor. The following criteria must be met for a General Studies major:

- Students may only declare a General Studies major or minor after earning 85 cumulative credit hours.
- A General Studies major must contain a minimum of 43 credit hours. A General Studies minor must contain a minimum of 21 credit hours.
- The General Studies major is comprised of four areas: Arts and Humanities (12 hours, 3 upper level), Social and Behavioral Sciences (9 hours, 3 upper level), Science, Technology, and Mathematics (10 hours), and a Concentration Area (12 hours, 6 upper level).
- Overlap with General Education is allowed in this program with the exception of courses used to fulfill the core writing competency requirements (ENGL 1020, ENGL 1030, ENGL 1080, and CTE 3060) and courses used to complete the mathematics requirement of the General Education Program.

General Studies, BS (43-987)

The General Studies major is intended to serve as a degree completion program for students with advanced earned hours. The diploma and transcript will read, for example: General Studies: Individualized Major. General Studies is not available as a double or second degree, major, or minor. The following criteria must be met for a General Studies major:

- Students may only declare a General Studies major or minor after earning 85 cumulative credit hours.
- A General Studies major must contain a minimum of 43 credit hours. A General Studies minor must contain a minimum of 21 credit hours.
- The General Studies major is comprised of four areas: Arts and Humanities (12 hours, 3 upper level), Social and Behavioral Sciences (9 hours, 3 upper level), Science, Technology, and Mathematics (10 hours), and a Concentration Area (12 hours, 6 upper level).
- Overlap with General Education is allowed in this program with the exception of courses used to fulfill the core writing competency requirements (ENGL 1020, ENGL 1030, ENGL 1080, and CTE 3060) and courses used to complete the mathematics requirement of the General Education Program.

College of Arts, Humanities, and Social Sciences

The College of Arts, Humanities, and Social Sciences
Martin 126
660-543-4364
Fax 660-543-8006
ucmo.edu/cahss

The College of Arts, Humanities, and Social Sciences is comprised of:

- Department of English
- Department of Communication and Digital Media Production
- School of Visual and Performing Arts
- Department of Modern Languages and Interdisciplinary Studies

School of Visual and Performing Arts

The School of Visual and Performing Arts is comprised of:

- Art and Design
- Music
- Theatre and Dance

All music, music education, and theatre majors must apply for formal admission to the Bachelor of Music (BM), Bachelor of Music Education (BME), and Bachelor of Fine Arts in Theatre (BFA) programs. Students are required to audition for a committee of applied faculty in the desired performance area and meet all university and department admissions requirements. Students will not be accepted into these programs or allowed to enroll in major coursework until all admissions requirements have been met.

Courses offered in Art and Design may be defined as Studio courses. Studio courses are intended as the point of integration for all other coursework and educational experiences. They are intended to teach critical thinking and create an environment where students are taught to question in order to create better art/design. Studio courses are defined by an emphasis on monitored practice and collaborative learning practices.

NOTE: The School of Visual and Performing Arts works in collaboration with the College of Education to offer a degree in Secondary Education, BSE (41-695) - Speech Communication and Theatre Option (E362) (120 hours).

Art History Minor (689) (21 hours)

Minor for a Bachelor's Degree

Minor Requirements: 21 Semester Hours

- ART 1815 - Art History Survey I GE (3)
- ART 1825 - Art History Survey II GE (3)
- ART 1835 - Global Arts and Culture GE (3)

Electives from the Following: 12 Semester Hours

- ANTH 3850 - Globalization and Culture (3)
- ANTH 4835 - Anthropological Study Tour (3)
- ANTH 4860 - Museum Science (3)
- ART 3221 - Art in Theory: Contemporary Practice (3)
- ART 3680 - History of Graphic Design (3)
- ART 3800 - History of Furniture and Interiors I (3)
- ART 3850 - History of Furniture and Interiors II (3)
- ART 4010 - Special Projects in Art (0-3)

- ART 4850 - Twentieth Century Art and Architecture (3)
- ART 4860 - Contemporary Art and Design (3)
- ART 2215 - History of Photography (3)

Art Minor (484) (24 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 24 Semester Hours

- ART 1110 - Observational Drawing (3)
- ART 1315 - Foundation I (3: 0 lecture, 3 lab)
- ART 1835 - Global Arts and Culture GE (3)
- Elective in Art (12) - At least one elective must be an upper-level course.

- ART 1815 - Art History Survey I GE (3)
  OR
- ART 1825 - Art History Survey II GE (3)

Art, BSE (41-260) (124 hours)

Major, Bachelor of Science in Education Degree

Certification to teach art in grades K-12.

The graduate with a Bachelor of Science in Education degree in Art will use the knowledge and skills obtained in these programs to:

- Utilize reflective critical and creative thinking to produce innovative and skillful art and design work that integrates historical and contemporary art and design practice and theory.
- Effectively communicate and support artistically sensitive interpretations and evaluations of acclaimed and diverse historical and contemporary art and design works.
- Exhibit evidence of an understanding of the professional practices, safe and sustainable processes, and ethical standards for employment and long-term success in the graduate's degree program career field.

Sophomore Review: During the sophomore year or after transferring from another institution, all candidates for art degrees will present a portfolio of work to be reviewed by the faculty for acceptance into their Art & Design major program.

Senior Review: During the senior year, all candidates for art degrees will present an exhibition of representative work to be reviewed by the faculty and invited outside professionals as partial graduation approval.

Art, BSE (41-260) (4 Year Guide)

Major Requirements: 64 Semester Hours

- ART 1110 - Observational Drawing (3)
- ART 1120 - Color and Wet Media Drawing (3)

- ART 1211 - Photography I (3)
- ART 1315 - Foundation I (3: 0 lecture, 3 lab)
- ART 1325 - Foundation II (3: 0 lecture, 3 lab)
- ART 1815 - Art History Survey I GE (3)
- ART 1825 - Art History Survey II GE (3)
- ART 1835 - Global Arts and Culture GE (3)
- ART 2412 - Ceramics I (3)
- ART 2420 - Sculpture I (3)
- ART 2511 - Painting I (3)
- ART 2610 - Introduction to Graphic Design and Illustration (3)
- ART 2710 - Introduction to Printmaking (3)
- ART 3209 - Figure Construction (3)
- ART 3221 - Art in Theory: Contemporary Practice (3)
- ART 3314 - Fibers (3)
- ART 3911 - Art Education Foundations and Literacy (2) +
- ART 3915 - Methods of Teaching Art I: Media and Curriculum (2) +
- ART 4915 - Methods of Teaching Art II: Management and Assessment (3) +

- ART 4850 - Twentieth Century Art and Architecture (3)
  OR
- ART 4860 - Contemporary Art and Design (3)

- Upper-level (3000/4000) courses in studio art in one of the following areas: ceramics, drawing, fibers, illustration, painting, photography, printmaking, sculpture, watercolor. (6)

Professional Education: 33 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDFL 4210 - Introduction to Content Area Literacy (2)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- FLDX 3000 - Field Experience in the Content Area (1)
- FLDX 4970 - Field Experience II in the Content Area (1)
- PSY 3220 - Life-Span Development GE (3)

Student Teaching Semester: 12 Semester Hours

- ART 4920 - Methods of Teaching Art III: Student Teaching Seminar (3)
- FLDX 4468 - Student Teaching I (1-12) (4)
- FLDX 4495 - Student Teaching Elementary I (1-12) (5)

General Education Requirements: 27 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ART 1815 - Art History Survey I GE (3)
- ART 1825 - Art History Survey II GE (3)
- ART 1835 - Global Arts and Culture GE (3)
- EDFL 2240 - Educational Psychology GE (3) +
- PSY 3220 - Life-Span Development GE (3) +

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

Minimum Total: 124 Semester Hours

+ Course requires a grade of C or better.

Dance Minor (863) (22 hours)

Minor for a Bachelor's Degree

The graduate with a Bachelor's degree with a minor in Dance will use the knowledge and skills obtained in the program to:

- Communicate and collaborate effectively in the interactive and creative process of dance.
- Demonstrate a working knowledge of the historical, cultural, and stylistic dimensions of dance.
- Demonstrate technical proficiency in the areas of dance.
- Form, communicate, and defend value judgements about quality and aesthetics of dance.

Sophomore Review: On a specified day, each individual sophomore theatre major, minor, or transfer student confers with the collective Theatre & Dance faculty to assess student progress at an approximate mid-point in the student's undergraduate career. During this review, students have the opportunity to present their resume/headshot, goal statement and website/portfolio to the Theatre & Dance faculty for feedback. Students receive oral and written assessment. All written assessments are kept in the student's file in the Theatre & Dance Office.

Minor Requirements: 22 Semester Hours

Electives from the following: 4 Semester Hours

- DANC 1110 - Modern Dance I (2) (Spring only)
- DANC 1120 - Ballet Dance I (2)
- DANC 1130 - Tap Dance I (2) (Fall only)
- DANC 1140 - Jazz Dance I (2)

Required Minor Courses: 18 Semester Hours

- DANC 3210 - Musical Theatre Dance (3) (Spring only)
- DANC 4210 - Choreography I (3) (Fall only)
- DANC 2100 - Dance Appreciation GE (3)

- DANC 3110 - Modern Dance II (2) (Spring Even Years)
- DANC 3120 - Ballet Dance II (2) (Fall only)
- DANC 3130 - Tap Dance II (2) (Spring Odd Years)
- DANC 3140 - Jazz Dance II (2) (Fall only)
- THEA 4300 - Professional Practices (1-6) (1)

Graphic Design, BFA (47-324) (124 hours)

Major, Bachelor of Fine Arts Degree

The graduate with a Bachelor of Fine Arts degree in Graphic Design will use the knowledge and skills obtained in these programs to:

- Utilize reflective critical and creative thinking to produce innovative and skillful art and design work that integrates historical and contemporary art and design practice and theory.
- Effectively communicate and support artistically sensitive interpretations and evaluations of acclaimed and diverse historical and contemporary art and design works.
- Exhibit evidence of an understanding of the professional practices, safe and sustainable processes, and ethical standards for employment and long-term success in the graduate's degree program career field.

Sophomore Review: During the sophomore year or after transferring from another institution, all candidates for art degrees will present a portfolio of work to be reviewed by the faculty for acceptance into their Art & Design major program.

Senior Review: During the senior year, all candidates for art degrees will present an exhibition of representative work to be reviewed by the faculty and invited outside professionals as partial graduation approval.

Graphic Design, BFA (47-324) (4 Year Guide)

Major Requirements: 90 Semester Hours

- ART 1110 - Observational Drawing (3)
- ART 1120 - Color and Wet Media Drawing (3)
- ART 1211 - Photography I (3)
- ART 1315 - Foundation I (3: 0 lecture, 3 lab)
- ART 1325 - Foundation II (3: 0 lecture, 3 lab)
- ART 1610 - Web Languages GE (3)
- ART 1620 - Web Graphics (3)
- ART 1815 - Art History Survey I GE (3)
- ART 1825 - Art History Survey II GE (3)
- ART 2610 - Introduction to Graphic Design and Illustration (3)
- ART 2620 - Typography (3)
- ART 2710 - Introduction to Printmaking (3)
- ART 3221 - Art in Theory: Contemporary Practice (3)
- ART 3620 - Graphic Design 1A (3)
- ART 3630 - Graphic Design 1B (3)
- ART 3640 - Graphic Design 2A (3)
- ART 3650 - Graphic Design 2B (3)
- ART 3680 - History of Graphic Design (3)
- ART 4610 - Interactive Design (3)

- ART 4620 - Graphic Design 3A (3)
- ART 4630 - Graphic Design 3B (3)

- ART 2412 - Ceramics I (3)
  OR
- ART 2420 - Sculpture I (3)

- ART 2511 - Painting I (3)
  OR
- ART 3510 - Watercolor (3)

- ART 4850 - Twentieth Century Art and Architecture (3)
  OR
- ART 4860 - Contemporary Art and Design (3)

- Elective in ART (3)

Electives from the Following: 15 Semester Hours

- ART 1203 - iPhoneography (3)
- ART 1230 - Digital Imaging (3)
- ART 3201 - Photography II (3)
- ART 3110 - Drawing in the Expanded Field (3)
- ART 3209 - Figure Construction (3)
- ART 3210 - Life Drawing (3)
- ART 3211 - Photography III (3)
- ART 3511 - Painting II (3)
- ART 3513 - Painting II: Plein Air (3)
- ART 3515 - Painting II: Figure (3)
- ART 3625 - Illustration Techniques (3)
- ART 3635 - Illustration Concepts (3)
- ART 3710 - Introduction to Screenprinting (3)
- ART 3720 - Print Media & Narrative Structures (3)
- ART 4010 - Special Projects in Art (0-3)
- ART 4211 - Photography IV (3)
- ART 4434 - Creative Bookbinding (3)
- ART 4511 - Painting III (3)
- ART 4513 - Painting III: Plein Air (3)
- ART 4515 - Painting III: Figure (3)
- ART 4600 - Graphic Design Internship (1-6)
- ART 4625 - Advanced Illustration I (3)
- ART 4635 - Advanced Illustration II (3)
- ART 4850 - Twentieth Century Art and Architecture (3)
- ART 4860 - Contemporary Art and Design (3)
- COMM 1630 - Web Content and Promotion Strategies (3)
- COMM 2410 - Multimedia Production (3)
- COMM 2412 - Introduction to Digital Video (3)
- COMM 4120 - Motion Graphics and Effects (3)

- ART 2511 - Painting I (3)
  OR
- ART 3510 - Watercolor (3)

General Education Requirements: 34 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ART 1610 - Web Languages GE (3)
- ART 1815 - Art History Survey I GE (3)
- ART 1825 - Art History Survey II GE (3)

Minimum Total: 124 Semester Hours

Interior Design, BFA (47-261) (124 hours)

Major, Bachelor of Fine Arts Degree

Graduation Policies for Interior Design

1. All interior design majors are required to pass Sophomore Review in order to continue in the degree program.
2. All interior design majors are required to participate in the Art and Design Senior Show.
3. All Interior design majors are required to maintain a grade point average of 2.25 for all credit hours earned at UCM or elsewhere and attain a grade point average of 2.50 for all course work in the major.

The graduate with a Bachelor of Fine Arts degree in Interior Design will use the knowledge and skills obtained in these programs to:

- Utilize reflective critical and creative thinking to produce innovative and skillful art and design work that integrates historical and contemporary art and design practice and theory.
- Effectively communicate and support artistically sensitive interpretations and evaluations of acclaimed and diverse historical and contemporary art and design works.
- Exhibit evidence of an understanding of the professional practices, safe and sustainable processes, and ethical standards for employment and long-term success in the graduate's degree program career field.

Interior Design, BFA (47-261) (4 Year Guide)

Major Requirements: 88 Semester Hours

- ART 1110 - Observational Drawing (3)
- ART 1120 - Color and Wet Media Drawing (3)
- ART 1300 - Interior Design Drafting I (3)
- ART 1315 - Foundation I (3: 0 lecture, 3 lab)
- ART 1325 - Foundation II (3: 0 lecture, 3 lab)
- ART 1825 - Art History Survey II GE (3)
- ART 1835 - Global Arts and Culture GE (3)
- ART 2300 - Interior Design Drafting II (3)
- ART 2305 - Interior Design Presentation Techniques (3)

- ART 2310 - Interior Design Studio I (3)
- ART 2320 - Building Systems and Sustainability (3)
- ART 2330 - Interior Design Studio II (3)
- ART 2340 - Materials, Methods and Specifications (3)
- ART 2350 - Interior Design Building Codes and Regulations (3)
- ART 2360 - Interior Design Environmental Systems (3)
- ART 3221 - Art in Theory: Contemporary Practice (3)
- ART 3320 - Professional Practice for Interior Design I (1)
- ART 3330 - Interior Design Studio III (3)
- ART 3340 - Interior Detailing and Furniture Design (3)
- ART 3350 - Construction Documentation for Interior Design (3)
- ART 3800 - History of Furniture and Interiors I (3)
- ART 3850 - History of Furniture and Interiors II (3)
- ART 4310 - Interior Design Internship (1-3) (1)
- ART 4320 - Professional Practice for Interior Design II (2)
- ART 4340 - Interior Design Studio IV (3)
- ART 4350 - Interior Design Thesis I (3)
- ART 4360 - Interior Design Thesis II (3)
- ART 4850 - Twentieth Century Art and Architecture (3)
- Electives with an ART prefix (6)

- MGT 3320 - XBOB eXperience Based Organizational Behavior (3)
  OR
- ESE 3710 - Entrepreneurial Business Planning (3)

General Education Requirements: 36 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ART 1825 - Art History Survey II GE (3)
- ART 1835 - Global Arts and Culture GE (3)
- CTE 2060 - Technical Writing GE (3)

Minimum Total: 124 Semester Hours

Music Education, BME (45-4440) (129.5-132.5 hours)

Major, Bachelor of Music Education Degree

The graduate with a Bachelor of Music Education degree will use the knowledge and skills obtained in the program to:

- Interpret and analyze music through historical, cultural, and theoretical study.
- Perform, improvise, and create in individual and collaborative settings with technique, musicality, and artistry.
- Apply current pedagogical and administrative techniques of music at elementary and secondary school levels.

- Demonstrate functional piano performance skills.

Music Core Requirements: 49.5 Semester Hours

- MUS 1000 - Recital Attendance (0) (7 semesters)
- MUS 1111 - Theory I (3) *
- MUS 1112 - Theory II (3)
- MUS 1121 - Aural Training I (1)
- MUS 1122 - Aural Training II (1)
- MUS 1225 - Music of the World's Cultures GE (3)
- MUS 1480 - Fundamentals of Music Technology (2)
- MUS 1501 - Piano Class I (1)
- MUS 1502 - Piano Class II (1)
- MUS 2111 - Theory III (3)
- MUS 2112 - Theory IV (3)
- MUS 2121 - Aural Training III (1)
- MUS 2122 - Aural Training IV (1)
- MUS 2300 - Fundamentals of Conducting (3)
- MUS 2501 - Piano Class III (1)
- MUS 2502 - Piano Class IV (1)
- MUS 3212 - Music of the Common Practice Era (3)
- 1000 level major lessons (4)
- 3000 level major lessons (4.5)
- MUS 4060 - Senior Recital (1-2) (0)

- MUS 3211 - Early Music (3)
  OR
- MUS 3213 - Music Since 1900 (3)

Ensembles: 7 Semester Hours

BME majors are expected to be in a major large instrumental or vocal ensemble during every semester up to their student teaching semester, with a minimum of seven (7) separate semesters to include:

Woodwind, Brass & Percussion Students:

4 Combined Semester Hours in

(up to 2 total semester hours of MUS 1081, MUS 4081 & MUS 4025, may be applied toward degree)

- MUS 1010 - Symphonic Band GE (0-1)
- MUS 4010 - Symphonic Wind Ensemble GE (0-1)
- MUS 1081 - Jazz Ensemble 2 GE (0-1)
- MUS 4081 - Jazz Ensemble 1 GE (0-1)
- MUS 4025 - University Symphony Orchestra GE (0-1)

3 Semester Hours in

- MUS 1005 - Marching Band GE (0-1) (3)

String Students:

1 Semester Hour in

- MUS 1097 - String Ensemble (0-1) (1)

6 Semester Hours in

- MUS 4025 - University Symphony Orchestra GE (0-1) (6)

Vocal Students:

7 Combined Semester Hours in

- MUS 1055 - Collegiate Choir GE (0-1)
- MUS 4050 - University Concert Choir GE (0-1)

Note:

Keyboard & Guitar majors must choose band or orchestra as their major large ensemble. Guitar majors may apply up to two (2) semester hours in MUS 4088 toward their major large ensemble requirements.

Music Education Courses: 14 Semester Hours

- MUS 3308 - Marching Band Techniques (1)
  OR
- MUS 4320 - Methods of Teaching Middle School Music (2)

- MUS 3310 - Choral Conducting (3)
  OR
- MUS 3320 - Instrumental Conducting and Rehearsal Techniques (3)

- MUS 4115 - Instrumentation (3)
  OR
- MUS 4230 - Choral Literature (3)

- MUS 4130 - Choral Arranging (2)
  OR
- MUS 4381 - Jazz Pedagogy (2)

Choose Electives in Music Education: 4-5 Semester Hours

Students focusing on instrumental music education will not take the course corresponding to their major applied instrument.

- MUS 1701 - String Class (1)
- MUS 2631 - Diction for Singers I (1)
- MUS 2632 - Diction for Singers II (1-2)
- MUS 2801 - Woodwind Class I (1)
- MUS 2802 - Woodwind Class II (1)
- MUS 2901 - Brass Class I (1)
- MUS 2902 - Brass Class II (1)
- MUS 2950 - Percussion Class (1)
- MUS 4600 - Vocal Pedagogy (2)

Professional Education Requirements: 33 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDFL 4210 - Introduction to Content Area Literacy (2)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- FLDX 4970 - Field Experience II in the Content Area (1)
- MUS 3305 - Methods of Teaching Elementary School Music (3)

- MUS 3306 - Methods of Teaching Instrumental Music (2-3) (3)
  OR
- MUS 3315 - Choral Techniques (3)

- HDFS 1220 - Child and Adolescent Development (3)
  OR
- PSY 2220 - Child and Adolescent Psychological Development (3)
  OR
- PSY 3220 - Life-Span Development GE (3)

Student Teaching Semester: 12 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (4)
- FLDX 4495 - Student Teaching Elementary I (1-12) (5)
- MUS 4310 - Methods of Teaching Music (2)
- MUS 4350 - Secondary Field Experience II (1)

General Education Requirements: 33-36 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- EDFL 2240 - Educational Psychology GE (3)
- MUS 1225 - Music of the World's Cultures GE (3)

- HIST 1350 - History of the United States to 1877 GE (3)

OR

- HIST 1351 - History of the United States from 1877 GE (3)

- MUS 1005 - Marching Band GE (0-1) (if chosen)
- MUS 1010 - Symphonic Band GE (0-1) (if chosen)
- MUS 1055 - Collegiate Choir GE (0-1) (if chosen)
- MUS 1081 - Jazz Ensemble 2 GE (0-1) (if chosen)
- MUS 4010 - Symphonic Wind Ensemble GE (0-1) (if chosen)
- MUS 4050 - University Concert Choir GE (0-1) (if chosen)
- MUS 4081 - Jazz Ensemble 1 GE (0-1) (if chosen)
- PSY 3220 - Life-Span Development GE (3) (if chosen)

Minimum Total: 129.5-132.5 Semester Hours

* This course has a prerequisite not listed in the program if admission by examination is not sufficient.

Note: MUS 1210 - Experiencing Music GE (3) cannot be counted in the Music Degree Major courses or General Education courses for this degree.

Music Minor (483) (24 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 24 Semester Hours

- MUS 1000 - Recital Attendance (0) (4 semesters)
- MUS 1111 - Theory I (3) *
- MUS 1112 - Theory II (3)
- MUS 1121 - Aural Training I (1)
- MUS 1122 - Aural Training II (1)
- MUS 3212 - Music of the Common Practice Era (3)

- MUS 3211 - Early Music (3)
  OR
- MUS 3213 - Music Since 1900 (3)

- Major instrument or voice (4)
- Major large ensemble (4)
- Approved electives (2)

Note:

*This course has a prerequisite not listed in the program if admission by examination is not sufficient.

Music, BA (42-436) (120 hours)

Major, Bachelor of Arts Degree

The graduate with a Bachelor of Arts degree in music will use the knowledge and skills obtained in the program to:

- Interpret and analyze music through historical, cultural, and theoretical study.
- Perform, improvise, and create in individual and collaborative settings with technique, musicality, and artistry.
- Relate music to disciplines in the humanities, social sciences, sciences, and/or business and professional studies.

Major Requirements: 50-54 Semester Hours

Core Requirements: 27 Semester Hours

- MUS 1000 - Recital Attendance (0) (5 semesters)
- MUS 1111 - Theory I (3) *
- MUS 1112 - Theory II (3)
- MUS 1121 - Aural Training I (1)
- MUS 1122 - Aural Training II (1)
- MUS 1225 - Music of the World's Cultures GE (3)
- MUS 1480 - Fundamentals of Music Technology (2)
- MUS 3212 - Music of the Common Practice Era (3)
- MUS 3213 - Music Since 1900 (3)
- Major instrument or voice, 1000 level (4)
- Chamber or Large ensemble (4)

Performance Elective: 7 semester hours

Select an additional seven credits from the following:

- Major instrument or voice, 3000 level
- Chamber or Large Ensemble

Note: B.A. students are required to pass the Sophomore Exam.

Composition Elective: 3 semester hours

Select ONE of the following:

- MUS 2141 - Composition I (3)
- MUS 4190 - Electronic Music Composition (3)

Improvisation Elective: 2-3 semester hours

Select ONE of the following:

- MUS 2180 - Jazz Improvisation I (2)
- MUS 3211 - Early Music (3)

Capstone Course: 1-3 semester hours

Select ONE of the following:

- MUS 4000 - Special Projects in Music (0-3) (1-3)
- MUS 4060 - Senior Recital (1-2) (1)
- MUS 4430 - Seminar in Music Technology (2-3)

Music Electives: 10-11 semester hours

Note: MUS 1100 - Fundamentals of Music (3) can be counted as an elective in this degree program.

General Education Requirements: 39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- MUS 1225 - Music of the World's Cultures GE (3)

- MUS 1005 - Marching Band GE (0-1) (if chosen)
- MUS 1010 - Symphonic Band GE (0-1) (if chosen)
- MUS 1055 - Collegiate Choir GE (0-1) (if chosen)
- MUS 1081 - Jazz Ensemble 2 GE (0-1) (if chosen)
- MUS 4010 - Symphonic Wind Ensemble GE (0-1) (if chosen)
- MUS 4025 - University Symphony Orchestra GE (0-1) (if chosen)
- MUS 4050 - University Concert Choir GE (0-1) (if chosen)
- MUS 4081 - Jazz Ensemble 1 GE (0-1) (if chosen)

Note:

MUS 1210 - Experiencing Music GE (3) cannot be counted in the Music Degree Major courses or General Education courses.

Modern Language Requirement: 9 Semester Hours

Refer to Bachelor's Degree Requirements section for fulfillment options.

Free Electives: 18-22 Semester Hours

Minimum Total: 120 Semester Hours

*This course has a prerequisite not listed in the program if admission by examination is not sufficient.

Music, BM (44-472) - Music Technology and Commercial Music Option (MU08) (120 hours)

Major, Bachelor of Music Degree (44-472)

The graduate with a Bachelor of Music degree will use the knowledge and skills obtained in the program to:

- Interpret and analyze music through historical, cultural, and theoretical study, and communicate findings in discipline-specific formats.
- Perform, improvise, and create in individual and collaborative settings with technique, musicality, and artistry.
- Integrate current technology and software applications in the study and practice of music and the sonic arts.
- Demonstrate functional piano performance skills.

Music, BM (44-472) - Music Technology and Commercial Music Option (MU08) (4 Year Guide)

Major Core Requirements: 30 Semester Hours

- MUS 1000 - Recital Attendance (0) (7 semesters)
- MUS 1111 - Theory I (3) *
- MUS 1112 - Theory II (3)
- MUS 1121 - Aural Training I (1)
- MUS 1122 - Aural Training II (1)
- MUS 1225 - Music of the World's Cultures GE (3)
- MUS 1480 - Fundamentals of Music Technology (2)
- MUS 2111 - Theory III (3)
- MUS 2112 - Theory IV (3)
- MUS 2121 - Aural Training III (1)
- MUS 2122 - Aural Training IV (1)
- MUS 3212 - Music of the Common Practice Era (3)
- MUS 3213 - Music Since 1900 (3)
- MUS 4040 - Music Business Practices (3)

Music Technology and Commercial Music Option Requirements: 51-53 Semester Hours

- MUS 1220 - The Evolution of a Popular Art: An Introduction to Rock Music GE (3)
  OR
- MUS 1281 - History and Development of Jazz GE (3)

- MUS 4450 - Internship in Music (1-6) (3)
- Major instrument or voice, 1000-level (4 semesters, 60-minute lessons, must also pass sophomore exam) (8)
- Major large instrumental or vocal ensemble (4)

Electives in Music Scholarship, Composition, and Arranging from the following: 12 Semester Hours

- MUS 2141 - Composition I (3)
- MUS 3141 - Composition II (3) (May be repeated)
- MUS 3211 - Early Music (3)

- MUS 4101 - Counterpoint I (3)
- MUS 4115 - Instrumentation (3)
- MUS 4125 - Form and Analysis (3)
- MUS 4185 - Jazz-Commercial Arranging (3)
- MUS 4186 - Advanced Jazz-Commercial Arranging (2-3) (May be repeated)
- MUS 4190 - Electronic Music Composition (3)

Focus: Select 20 Semester Hours

- MUS 2180 - Jazz Improvisation I (2)
- MUS 2181 - Jazz Improvisation II (2)
- MUS 2300 - Fundamentals of Conducting (3)
- MUS 2400 - Sound Reinforcement and Music Production (3)
- MUS 2410 - Digital Audio Production (3)
- MUS 3060 - Junior Recital (1)
- MUS 3061 - Junior Jazz Recital (1)
- MUS 4181 - Advanced Jazz Improvisation (2-3) (May be repeated)
- MUS 4195 - Creative Software Design (3)
- MUS 4400 - Audio for X (3)
- MUS 4410 - Electronic Music Production Techniques (3)
- MUS 4450 - Internship in Music (1-6) (1-3)
- MUS 4470 - Advanced Audio Production (3)
- COMM 4130 - Audio for Digital Cinema (3)
- Major instrument or voice, 3000-level (0-12)
- Additional major large ensemble or Jazz-Rock Combo (0-4)

Capstone Course: 1 - 3 Semester Hours

- MUS 4060 - Senior Recital (1-2)
  OR
- MUS 4061 - Senior Jazz Recital (1-2)
  OR
- MUS 4430 - Seminar in Music Technology (2-3)

Note:

Keyboard Competency is demonstrated by passing MUS 2502 - Piano Class IV (1) with a grade of B or better, or passing the piano proficiency examination.

General Education Requirements: 33-36 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- MUS 1225 - Music of the World's Cultures GE (3)

- MUS 1220 - The Evolution of a Popular Art: An Introduction to Rock Music GE (3)

OR

- MUS 1281 - History and Development of Jazz GE (3)

- MUS 1005 - Marching Band GE (0-1) (if chosen)
- MUS 1010 - Symphonic Band GE (0-1) (if chosen)
- MUS 1055 - Collegiate Choir GE (0-1) (if chosen)
- MUS 1081 - Jazz Ensemble 2 GE (0-1) (if chosen)
- MUS 4010 - Symphonic Wind Ensemble GE (0-1) (if chosen)
- MUS 4025 - University Symphony Orchestra GE (0-1) (if chosen)
- MUS 4050 - University Concert Choir GE (0-1) (if chosen)
- MUS 4081 - Jazz Ensemble 1 GE (0-1) (if chosen)

Free Electives: 1-6 Semester Hours

Minimum Total: 120 Semester Hours

*This course has a prerequisite not listed in the program if admission by examination is not sufficient.

Note: MUS 1210 - Experiencing Music GE (3) cannot be counted in the Music Degree Major courses or General education courses for this degree.

Music, BM (44-472) - Performance Option (MU09) (120 hours)

Major, Bachelor of Music Degree (44-472)

The graduate with a Bachelor of Music degree will use the knowledge and skills obtained in the program to:

- Interpret and analyze music through historical, cultural, and theoretical study, and communicate findings in discipline-specific formats.
- Perform, improvise, and create in individual and collaborative settings with technique, musicality, and artistry.
- Demonstrate pedagogical, technological, and entrepreneurial skills needed for the freelance economy.
- Demonstrate functional piano performance skills.

Major Core Requirements: 30 Semester Hours

- MUS 1000 - Recital Attendance (0) (7 semesters)
- MUS 1111 - Theory I (3) *
- MUS 1112 - Theory II (3)
- MUS 1121 - Aural Training I (1)
- MUS 1122 - Aural Training II (1)
- MUS 1225 - Music of the World's Cultures GE (3)
- MUS 1480 - Fundamentals of Music Technology (2)
- MUS 2111 - Theory III (3)
- MUS 2112 - Theory IV (3)
- MUS 2121 - Aural Training III (1)
- MUS 2122 - Aural Training IV (1)
- MUS 3212 - Music of the Common Practice Era (3)

- MUS 3213 - Music Since 1900 (3)
- MUS 4040 - Music Business Practices (3)

Performance Option: Applied Study and Ensembles: 54 Semester Hours

- MUS 2300 - Fundamentals of Conducting (3)
- MUS 3060 - Junior Recital (1)
- MUS 3211 - Early Music (3)
- MUS 4060 - Senior Recital (1-2) (1)

- MUS 4101 - Counterpoint I (3)
  OR
- MUS 4115 - Instrumentation (3)
  OR
- MUS 4185 - Jazz-Commercial Arranging (3)

- MUS 4125 - Form and Analysis (3)

- MUS 4240 - String Instrument Literature and Pedagogy (2)
  OR
- MUS 4245 - Woodwind Instrument Literature and Pedagogy (2)
  OR
- MUS 4250 - Brass Instrument Literature and Pedagogy (2)
  OR
- MUS 4255 - Percussion Literature and Pedagogy (2)
  OR
- MUS 4511 - Piano Pedagogy I - The Beginner (3)
  OR
- MUS 4600 - Vocal Pedagogy (2)

- Major instrument or voice, 1000 level (8)
- Major instrument or voice, 3000 level (12)
- Major large ensemble (6)
- Small instrumental ensembles or Opera Theatre (2)

Electives in Music: 9-10 Semester Hours

Note:

Keyboard Competency is demonstrated by passing MUS 2502 - Piano Class IV (1) with a grade of B or better, or passing the piano proficiency examination.

General Education Requirements: 36-39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- MUS 1225 - Music of the World's Cultures GE (3)

- MUS 1005 - Marching Band GE (0-1) (if chosen)
- MUS 1010 - Symphonic Band GE (0-1) (if chosen)
- MUS 1055 - Collegiate Choir GE (0-1) (if chosen)
- MUS 1081 - Jazz Ensemble 2 GE (0-1) (if chosen)
- MUS 4010 - Symphonic Wind Ensemble GE (0-1) (if chosen)
- MUS 4025 - University Symphony Orchestra GE (0-1) (if chosen)
- MUS 4050 - University Concert Choir GE (0-1) (if chosen)
- MUS 4081 - Jazz Ensemble 1 GE (0-1) (if chosen)

Minimum Total: 120 Semester Hours

* This course has a prerequisite not listed in the program if admission by examination is not sufficient.

Note: MUS 1210 - Experiencing Music GE (3) cannot be counted in the Music Degree Major courses or General Education courses for this degree,

Speech Communication and Theatre Minor (BSE) (363) (21 hours)

Minor, Bachelor of Science in Education Degree (363)

Elementary education majors 1-6 may use this as an area of concentration.

Sophomore Review: On a specified day, each individual sophomore theatre major, minor, or transfer student confers with the collective Theatre & Dance faculty to assess student progress at an approximate mid-point in the student's undergraduate career. During this review, students have the opportunity to present their resume/headshot, goal statement and website/portfolio to the Theatre & Dance faculty for feedback. Students receive oral and written assessment. All written assessments are kept in the student's file in the Theatre & Dance Office.

Minor Requirements: 21 Semester Hours

- THEA 1500 - Acting (3)
- THEA 1600 - Stagecraft (3: 3 lecture, 0 lab)
- THEA 2700 - Directing (3)
- COMM 2330 - Teamwork and Group Dynamics (3)
- COMM 2340 - Argumentation and Debate (3)
- COMM 3101 - Essential Communication Concepts (3)
- Elective in THEA or COMM (3)

Studio Art, BFA (47-263) (120 hours)

Major, Bachelor of Fine Arts Degree

The graduate with a Bachelor of Fine Arts degree in Studio Art will use the knowledge and skills obtained in these programs to:

- Utilize reflective critical and creative thinking to produce innovative and skillful art and design work that integrates historical and contemporary art and design practice and theory.
- Effectively communicate and support artistically sensitive interpretations and evaluations of acclaimed and diverse historical and contemporary art and design works.
- Exhibit evidence of an understanding of the professional practices, safe and sustainable processes, and ethical standards for employment and long-term success in the graduate's degree program career field.

Sophomore Review: During the sophomore year or after transferring from another institution, all candidates for art degrees will present a portfolio of work to be reviewed by the faculty for acceptance into their Art & Design major program.

Senior Review: During the senior year, all candidates for art degrees will present an exhibition of representative work to be reviewed by the faculty and invited outside professionals as partial graduation approval.

Studio Art, BFA (47-263) Ceramics Area (4 Year Guide)

Studio Art, BFA (47-263) Illustration Area (4 Year Guide)

Studio Art, BFA (47-263) Painting Area (4 Year Guide)

Studio Art, BFA (47-263) Printmaking Area (4 Year Guide)

Studio Art, BFA (47-263) Sculpture Area (4 Year Guide)

Studio Art, BFA (47-263) Photography Area (4 Year Guide)

Major Requirements: 81-84 Semester Hours

Core Art Courses: 54 Semester Hours

- ART 1110 - Observational Drawing (3)
- ART 1120 - Color and Wet Media Drawing (3)
- ART 1211 - Photography I (3)
- ART 1315 - Foundation I (3: 0 lecture, 3 lab)
- ART 1325 - Foundation II (3: 0 lecture, 3 lab)
- ART 1815 - Art History Survey I GE (3)
- ART 1825 - Art History Survey II GE (3)
- ART 2412 - Ceramics I (3)
- ART 2420 - Sculpture I (3)
- ART 2511 - Painting I (3)
- ART 2710 - Introduction to Printmaking (3)
- ART 3221 - Art in Theory: Contemporary Practice (3)
- ART Electives (12) including ART 4010 Special Projects in Art

Choose Two of the following Art History Courses: 6 Semester Hours

- ART 1835 - Global Arts and Culture GE (3)
- ART 3680 - History of Graphic Design (3)
- ART 3800 - History of Furniture and Interiors I (3)
- ART 4850 - Twentieth Century Art and Architecture (3)
- ART 4860 - Contemporary Art and Design (3)

Select One of the Following Areas of Specialization: 27-30 Semester Hours

Area 1 - Sculpture (AR01): 30 Semester Hours

- ART 3110 - Drawing in the Expanded Field (3)
- ART 3209 - Figure Construction (3)
- ART 3420 - Sculpture II (3)
- ART 3440 - Sculpture III (3)
- ART 3916 Studio Core One **and/or** ART 4420 Sculpture IV (12)
- ART 4020 - Studio Seminar (3)
- ART 4916 - Studio Core Two (3)

Area 2 - Painting (AR02): 30 Semester Hours

- ART 3110 - Drawing in the Expanded Field (3)
- ART 3209 - Figure Construction (3)
- ART 3511 Painting II **and/or** ART 3513 Painting II: Plein Air **and/or** ART 3515 Painting II: Figure (9)
- ART 3916 Studio Core One **and/or** ART 4511 Painting III **and/or** ART 4513 Painting III: Plein Air **and/or** ART 4515 Painting III: Figure (9)
- ART 4020 - Studio Seminar (3)
- ART 4916 - Studio Core Two (3)

Area 3 - Ceramics (AR03): 30 Semester Hours

- ART 3110 - Drawing in the Expanded Field (3)
- ART 3209 - Figure Construction (3)
- ART 3412 - Ceramics II (3) (9)
- ART 3916 Studio Core One **and/or** ART 4412 Ceramics III (9)
- ART 4020 - Studio Seminar (3)
- ART 4916 - Studio Core Two (3)

Area 4 - Printmaking (AR04): 30 Semester Hours

- ART 3110 - Drawing in the Expanded Field (3)
- ART 3209 - Figure Construction (3)
- ART 3710 - Introduction to Screenprinting (3)
- ART 3720 - Print Media & Narrative Structures (3)
- ART 3731 - Beyond the Frame: Printmaking in the Expanded Field (3)
- ART 3741 - Print Media, Advocacy & Activism in Contemporary Practice (3)
- ART 4020 - Studio Seminar (3)
- ART 4720 - A Seat At The Table: Printmaking, Visual Identity, and Professional Development (3)
- ART 4730 - Printmaking Independent Studio (1-3) (3)
- ART 4916 - Studio Core Two (3)

Area 5 - Illustration (AR05): 27 Semester Hours

- ART 2610 - Introduction to Graphic Design and Illustration (3)
- ART 2620 - Typography (3)
- ART 3110 - Drawing in the Expanded Field (3)
- ART 3209 - Figure Construction (3)
- ART 3625 - Illustration Techniques (3)
- ART 3635 - Illustration Concepts (3)
- ART 4020 - Studio Seminar (3)
- ART 4625 - Advanced Illustration I (3)
- ART 4635 - Advanced Illustration II (3)

Area 6 - Photography (AR06): 30 Semester Hours

- ART 2610 - Introduction to Graphic Design and Illustration (3)
- ART 3201 - Photography II (3)
- ART 3211 - Photography III (3)
- ART 3916 - Studio Core One (3)
- ART 4020 - Studio Seminar (3)
- ART 4211 - Photography IV (3)
- ART 4916 - Studio Core Two (3)
- COMM 2412 - Introduction to Digital Video (3)
- COMM 3450 - Digital Video Editing (3)
- MKT 3450 - Digital Marketing (3)

General Education Requirements: 33-36 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ART 1815 - Art History Survey I GE (3)
- ART 1825 - Art History Survey II GE (3)

- ART 1835 - Global Arts and Culture GE (3) (if chosen)

Free Electives: 0-6 Semester Hours

Minimum Total: 120 Semester Hours

Theatre Minor (365) (23 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

The graduate with a Bachelor's degree with a minor in Dance will use the knowledge and skills obtained in the program to:

- Communicate and collaborate effectively in the interactive and creative process of theatre.

- Demonstrate a working knowledge of the historical, cultural, and stylistic dimensions of theatre.
- Demonstrate technical proficiency in the areas of acting, design and technology.
- Form, communicate, and defend value judgments about quality and aesthetics in works of theatre.

Sophomore Review: On a specified day, each individual sophomore theatre major, minor, or transfer student confers with the collective Theatre & Dance faculty to assess student progress at an approximate mid-point in the student's undergraduate career. During this review, students have the opportunity to present their resume/headshot, goal statement and website/portfolio to the Theatre & Dance faculty for feedback. Students receive oral and written assessment. All written assessments are kept in the student's file in the Theatre & Dance Office.

Minor Requirements: 23 Semester Hours

- THEA 1100 - Oral Interpretation GE (3)
- THEA 1400 - Script Analysis (3)
- THEA 1500 - Acting (3)
- THEA 1600 - Stagecraft (3: 3 lecture, 0 lab)
- THEA 2700 - Directing (3) (Spring only)
- THEA 4300 - Professional Practices (1-6) (2) (Fall/Spring)

- THEA 4400 - Literature and History of the Theatre I (3) (Fall only)
  OR
- THEA 4420 - Literature and History of the Theatre II (3) (Spring even years only)

- Theatre Electives (3)

Theatre, BA (42-364) (120 hours)

Major, Bachelor of Arts Degree

The graduate with a Bachelor of Arts in Theatre degree will use the knowledge and skills obtained in the program to:

- Communicate and collaborate effectively in the interactive and creative process of theatre.
- Demonstrate a working knowledge of the historical, cultural, and stylistic dimensions of theatre.
- Demonstrate technical proficiency in the areas of acting, design and technology.
- Form, communicate, and defend value judgments about quality and aesthetics in works of theatre.

Sophomore Review: On a specified day, each individual sophomore theatre major, minor, or transfer student confers with the collective Theatre & Dance faculty to assess student progress at an approximate mid-point in the student's undergraduate career. During this review, students have the opportunity to present their resume/headshot, goal statement and website/portfolio to the Theatre & Dance faculty for feedback. Students receive oral and written assessment. All written assessments are kept in the student's file in the Theatre & Dance Office.

Senior Exit Review: On a specified day in their final semester, each graduating senior confers with the collective Theatre & Dance faculty to assess student progress at the end of the student's undergraduate career. Before the review, the student will submit a written essay based on writing prompts from the faculty reflecting on their time at UCM. During the review, students receive feedback on their Senior Showcase performance/portfolio, resume, website and essay from the Theatre & Dance faculty and discuss future plans after graduation. Students receive oral and written assessment. All written assessments are kept in the student's file in the Theatre & Dance Office.

Theatre, BA (42-364) (4 Year Guide)

Major Requirements: 53 Semester Hours

- THEA 1000 - Production Practicum (0) (6 semesters)
- THEA 1010 - Introduction to Theatre & Dance (1)
- THEA 1400 - Script Analysis (3)
- THEA 1500 - Acting (3)
- THEA 1510 - Stage Movement (3)
- THEA 1520 - Stage Voice (3)
- THEA 1600 - Stagecraft (3: 3 lecture, 0 lab)
- THEA 1610 - Stage Make-up (3)
- THEA 1700 - Stagecraft II (3: 3 lecture, 0 lab)
- THEA 2610 - Design Fundamentals (3)
- THEA 2700 - Directing (3)
- THEA 3630 - Studio Theatre I (1)
- THEA 4300 - Professional Practices (1-6) (8)
- THEA 4310 - Principles of Theatre Management (3)
- THEA 4400 - Literature and History of the Theatre I (3)
- THEA 4420 - Literature and History of the Theatre II (3)
- THEA 4730 - Studio Theatre II (1)
- THEA 4800 - Playwriting (1-3) (3)

- THEA 3600 - Scene Design (3)
  OR
- THEA 3610 - Costume Design (3)
  OR
- THEA 3620 - Lighting Design (3)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- THEA 1100 - Oral Interpretation GE (3)

Modern Language Requirement: 9 Semester Hours

Refer to Bachelor's Degree Requirements section for fulfillment options.

Free Electives: 16 Semester Hours

Minimum Total: 120 Semester Hours

Theatre, BFA (47-366) (120 hours)

Major, Bachelor of Fine Arts Degree

The graduate with a Bachelor of Fine Arts degree in Theatre will use the knowledge and skills obtained in the program to:

- Communicate and collaborate effectively in the interactive and creative process of theatre.
- Demonstrate a working knowledge of the historical, cultural, and stylistic dimensions of theatre.
- Demonstrate technical proficiency in the areas of acting, design and technology.
- Form, communicate, and defend value judgments about quality and aesthetics in works of theatre.

Sophomore Review: On a specified day, each individual sophomore theatre major, minor, or transfer student confers with the collective Theatre & Dance faculty to assess student progress at an approximate mid-point in the student's undergraduate career. During this review, students have the opportunity to present their resume/headshot, goal statement and website/portfolio to the Theatre & Dance faculty for feedback. Students receive oral and written assessment. All written assessments are kept in the student's file in the Theatre & Dance Office.

Senior Exit Review: On a specified day in their final semester, each graduating senior confers with the collective Theatre & Dance faculty to assess student progress at the end of the student's undergraduate career. Before the review, the student will submit a written essay based on writing prompts from the faculty reflecting on their time at UCM. During the review, students receive feedback on their Senior Showcase performance/portfolio, resume, website and essay from the Theatre & Dance faculty and discuss future plans after graduation. Students receive oral and written assessment. All written assessments are kept in the student's file in the Theatre & Dance Office.

Theatre, BFA (47-366) Performance Area (4 Year Guide)

Theatre, BFA (47-366) Design/Technology Area (4 Year Guide)

Theatre, BFA (47-366) Musical Theatre Area (4 Year Guide) Begin Even Numbered Year

Theatre, BFA (47-366) Musical Theatre Area (4 Year Guide) Begin Odd Numbered Year

Major Requirements: 69-78 Semester Hours

Core Requirements: 25 Semester Hours

- THEA 1000 - Production Practicum (0) (6 semesters)
- THEA 1010 - Introduction to Theatre & Dance (1)
- THEA 1500 - Acting (3)
- THEA 1600 - Stagecraft (3: 3 lecture, 0 lab)
- THEA 1610 - Stage Make-up (3)
- THEA 1700 - Stagecraft II (3: 3 lecture, 0 lab)
- THEA 2700 - Directing (3)
- THEA 4300 - Professional Practices (1-6) (8)
- THEA 4910 - Senior Showcase (1)

Select 1 of the 3 Areas: 43-53 Semester Hours

Area 1 - Performance (3661): 44 Semester Hours

- THEA 1400 - Script Analysis (3)
- THEA 1510 - Stage Movement (3)
- THEA 1520 - Stage Voice (3)
- THEA 2610 - Design Fundamentals (3)
- THEA 3500 - Advanced Scene Study (3)
- THEA 4310 - Principles of Theatre Management (3)

- THEA 4400 - Literature and History of the Theatre I (3)
- THEA 4420 - Literature and History of the Theatre II (3)
- THEA 4500 - Advanced Acting (3)
- THEA 4510 - Period Acting Styles (3)
- THEA 4710 - Advanced Directing (3)
- THEA 4730 - Studio Theatre II (1)
- DANC 1140 - Jazz Dance I (2)

- DANC 1110 - Modern Dance I (2)
  OR
- DANC 1120 - Ballet Dance I (2)

Select from the Following Design/Technology Courses: 6 Semester Hours

- THEA 2620 - Costume Construction (3: 3 lecture, 0 lab)
- THEA 2630 - Drafting for the Theatre (3)
- THEA 3600 - Scene Design (3)
- THEA 3610 - Costume Design (3)
- THEA 3620 - Lighting Design (3)
- THEA 3630 - Studio Theatre I (1) (3)
- THEA 4600 - Advanced Technical Theatre (3: 3 lecture, 0 lab)
- THEA 4610 - Advanced Stage Lighting and Sound (3)
- THEA 4620 - Period Research (3)

Area 2 - Design/Technology (3662): 46 Semester Hours

- THEA 1400 - Script Analysis (3)
- THEA 2610 - Design Fundamentals (3)
- THEA 2620 - Costume Construction (3: 3 lecture, 0 lab)
- THEA 2630 - Drafting for the Theatre (3)
- THEA 3600 - Scene Design (3)
- THEA 3610 - Costume Design (3)
- THEA 3620 - Lighting Design (3)
- THEA 3630 - Studio Theatre I (1)
- THEA 4310 - Principles of Theatre Management (3)
- THEA 4400 - Literature and History of the Theatre I (3)
- THEA 4420 - Literature and History of the Theatre II (3)
- THEA 4600 - Advanced Technical Theatre (3: 3 lecture, 0 lab)
- THEA 4610 - Advanced Stage Lighting and Sound (3)
- THEA 4620 - Period Research (3)

Select from the Following Performance Courses: 6 Semester Hours

- THEA 1510 - Stage Movement (3)
- THEA 1520 - Stage Voice (3)
- THEA 3500 - Advanced Scene Study (3)
- THEA 4500 - Advanced Acting (3)

- THEA 4510 - Period Acting Styles (3)
- THEA 4710 - Advanced Directing (3)
- DANC 1110 - Modern Dance I (2)
- DANC 1120 - Ballet Dance I (2)
- DANC 1130 - Tap Dance I (2)
- DANC 1140 - Jazz Dance I (2)

Area 3 - Musical Theatre (3663): 53 Semester Hours

- THEA 1510 - Stage Movement (3)
- THEA 1520 - Stage Voice (3)
- THEA 4430 - American Musical Theatre History (3)
- THEA 4510 - Period Acting Styles (3)
- THEA 4810 - Musical Theatre Laboratory (3)
- DANC 1130 - Tap Dance I (2)
- DANC 1140 - Jazz Dance I (2)
- DANC 3130 - Tap Dance II (2)
- DANC 3140 - Jazz Dance II (2)
- DANC 3210 - Musical Theatre Dance (3)
- DANC 4210 - Choreography I (3)
- MUS 1100 - Fundamentals of Music (3)
- MUS 1111 - Theory I (3)
- MUS 1121 - Aural Training I (1)
- MUS 1501 - Piano Class I (1)
- MUS 1502 - Piano Class II (1)
- MUS 1610 - Voice I (1-2) (4)
- MUS 3610 - Voice II (1.5-3) (3)
- MUS 4015 - Opera Theatre (0-1) (1)

Select from the Following Dance Courses: 4 Semester Hours

- DANC 1110 - Modern Dance I (2)
- DANC 1120 - Ballet Dance I (2)
- DANC 3110 - Modern Dance II (2)
- DANC 3120 - Ballet Dance II (2)

Select from 1 to 3 of the Following Music Courses: 3 Semester Hours

- MUS 1055 - Collegiate Choir GE (0-1) (1)
- MUS 3070 - Women's Choir (0-1) (1)
- MUS 3077 - Vocal Jazz Ensemble (0-1) (1)
- MUS 4050 - University Concert Choir GE (0-1) (1)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- THEA 1100 - Oral Interpretation GE (3)

Free Electives: 0-9 Semester Hours

Minimum Total: 120 Semester Hours

Department of Communication and Digital Media Production

Mission Statement

Within the framework of academic freedom, the Department of Communication and Digital Media Production is committed to quality teaching guided by the goals and outcomes approved for every degree program offered within the school. As faculty, we are committed to guiding students toward the achievement of course goals and student outcomes through a strong theoretical approach appropriately applied through practical hands-on experiences. We recognize the link between research, scholarship and creative activities and encourage student collaboration. Our commitment to our students is to teach appropriate skills, but even more so to produce analytical, creative and responsible individuals. We view education as a collaborative effort between teacher and student, as we seek to learn from and inspire one another in the pursuit of life-long learning. Ultimately, it is our desire to prepare our graduates for successful employment in a variety of fields and to empower them to become productive members of society.

Communication Minor (349) (21 hours)

Minor for a Bachelor's Degree (349)

UCM does not confer teacher certification for this minor.

Students majoring in any Communication degree are not eligible to take this minor.

Minor Requirements: 21 Semester Hours

+Course requires a grade of C or better.

- COMM 2010 - Interpersonal Communication (3)
- COMM 2330 - Teamwork and Group Dynamics (3)

- COMM 1000 - Public Speaking GE (3) +
  OR
- COMM 1050 - Communication in Practice GE (3)

- COMM 2320 - Foundations of Rhetorical Theory (3)
  OR
- COMM 2380 - Workplace Communication (3)
  OR
- COMM 3101 - Essential Communication Concepts (3) +

- Electives in COMM (9)

Communication Studies, BS (43-602) (120 hours)

Major, Bachelor of Science Degree

Mission Statement

Communication Studies is committed to preparing graduates to communicate effectively and excel at examining the role of messages in various types of human relationships, organizations, cultures and social institutions. We promote life-long learning by preparing graduates who have developed their ability to think critically, speak and write exceptionally and analyze and interpret messages creatively.

Program Outcomes

The graduate with a Bachelor of Science degree in Communication Studies will use the knowledge and skills obtained in the program to demonstrate all of the following:

- Demonstrate a general knowledge and application of communication theory;
- Demonstrate ability to critique and apply various research methods and/or approaches;
- Demonstrate preparedness for professional life and/or further academic study.

Admission

Students entering the University of Central Missouri to pursue a degree in Communication Studies B.S. or Digital Media Production B.S. should indicate their intentions to become a major of one of these programs at the time of their first enrollment. Each of the programs has degree-specific admission requirements. See information about each of the degrees for those requirements.

Course Work

1. A student may not graduate with a degree in a communication major in which the grade of record for any required communication course is an F. The student must receive a grade of C or better in the following courses if required in their major or minor program of study: COMM 1100, COMM 3100, and COMM 3101 A maximum of six semester hours may be counted toward a degree where the student receives a D for communication courses not on the list above. These reflect Communication minimums. Each degree program may have additional graduation requirements.
2. Course substitutions for catalog requirements may be made only upon approval of the program faculty advisor or school chair.
3. Some production or writing courses require participation in activities outside of the class meeting hours. Students should be prepared to participate in these activities that sometimes include assignments in conjunction with the campus media.
4. Some lecture courses require attendance at school colloquia and/or other University presentations. Students should be prepared to participate in these assignments as a part of their degree program.

An option in Speech Communication and Theatre is offered: Secondary Education, BSE (41-695) - Speech Communication and Theatre Option (E362) (120 hours)

Admission Policies

1. See Communication guidelines for admissions policies.

Graduation Policies

1. Course substitutions for course requirements may be made only by your faculty advisor or school chair.
2. In order to graduate with a degree in Communication Studies, a student must obtain at least a 2.0 cumulative grade-point average.
3. Students must complete the Senior Capstone (COMM 4350) in order to graduate.

Communication Studies Major, B.S. Degree (43-602) 4 Year Guide

Major Requirements: 43 Semester Hours

Core Requirements: 10 Semester Hours

- COMM 1100 - Communication Pathways (1) +
- COMM 2000 - Media Literacy GE (3)
- COMM 3100 - Communication Analytics and Insights (3) +
- COMM 3101 - Essential Communication Concepts (3) +

Communication Studies: 21 Semester Hours

- COMM 2010 - Interpersonal Communication (3)
- COMM 2350 - Intercultural Communication (3)
- COMM 2380 - Workplace Communication (3)
- COMM 4320 - Influence in Society (3)
- COMM 4350 - Professional Communication (3)

Select from the Following: 6 Semester Hours

- COMM 1500 - Writing Across the Media (3)
- COMM 2330 - Teamwork and Group Dynamics (3)
- COMM 2410 - Multimedia Production (3)
- COMM 2700 - Dale Carnegie: Effective Communication and Human Relations (3)
- COMM 4333 - Social Media Strategies (3)
- COMM 4785 - Internship in Speech Communication (1-6)

Select from the Following: 12 Semester Hours

- COMM 1500 - Writing Across the Media (3)
- COMM 1630 - Web Content and Promotion Strategies (3)
- COMM 2330 - Teamwork and Group Dynamics (3)
- COMM 2340 - Argumentation and Debate (3)
- COMM 2370 - Special Topics in Communication Studies (1-3)
- COMM 2410 - Multimedia Production (3)
- COMM 2700 - Dale Carnegie: Effective Communication and Human Relations (3)
- COMM 3320 - Communication of Social Movements (3)
- COMM 3325 - Nonverbal Communication (3)
- COMM 3730 - Conflict Management (3)
- COMM 4200 - Special Topics in Mass Media (1-9)
- COMM 4235 - Media Promotions (3)

- COMM 4270 - Family Communication (3)
- COMM 4280 - Mass Media and Society (3)
- COMM 4285 - Women and Minorities in Media (3)
- COMM 4300 - Special Projects in Speech Communication (1-3)
- COMM 4330 - Theories of Interpersonal Communication (3)
- COMM 4333 - Social Media Strategies (3)
- COMM 4335 - Gender Communication (3)
- COMM 4340 - Rhetorical Analysis and Society (3)
- COMM 4370 - Special Topics in Communication (1-3)
- COMM 4390 - Contemporary Communication (3)
- COMM 4780 - Communication Leadership and Practice in Organizations (3)
- COMM 4781 - Strategic Communication Audits (3)
- COMM 4785 - Internship in Speech Communication (1-6)

General Education Requirements: 39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)

- COMM 2000 - Media Literacy GE (3)

Free Electives: 38 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Corporate Communication Minor (556) (21 hours)

Minor for a Bachelor's Degree (556)

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- COMM 2330 - Teamwork and Group Dynamics (3)
- COMM 2380 - Workplace Communication (3)
- COMM 3730 - Conflict Management (3)
- COMM 4350 - Professional Communication (3)
- COMM 4780 - Communication Leadership and Practice in Organizations (3)
- COMM 4781 - Strategic Communication Audits (3)

Elective from the Following: 3 Semester Hours

- COMM 3315 - Improving Listening Abilities (3)
- COMM 3325 - Nonverbal Communication (3)
- COMM 3327 - Improving Interviewing Skills (3)
- MGT 3325 - Business Communication (3)
- MKT 3450 - Digital Marketing (3)

Digital Media Production Minor (575) (21 hours)

Minor for a Bachelor's Degree

Please see the Department of Communication and Digital Media Production for updates regarding this program.

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- COMM 1500 - Writing Across the Media (3)
- COMM 1519 - Media Aesthetics (3)
- COMM 2410 - Multimedia Production (3)
- COMM 2411 - Audio Production (3)
- COMM 2412 - Introduction to Digital Video (3)
- 3000 or 4000 level COMM course in DMP (6)

Digital Media Production, BS (43-604) (120 hours)

Major, Bachelor of Science Degree

Please see the Department of Communication and Digital Media Production for updates regarding this program.

Mission Statement

The Digital Media Production major is a professional program that prepares graduates to be engaged with the principles of life-long learning in this media-saturated society. The graduate will have the skills to succeed and lead in an ever-changing global media landscape.

Program Outcomes

The graduate with a Bachelor of Science degree in Digital Media Production will use the knowledge and skills obtained in the program to:

- Demonstrate proficiency in producing written media.
- Demonstrate proficiency in producing visual media.
- Demonstrate proficiency in producing sound media.
- Demonstrate knowledge of digital media law and ethics.

Course Work

1. The student must receive a grade of C or better in the following courses if required in their major or minor program of study: COMM 3100 and COMM 3101. A maximum of six semester hours may be counted toward a degree where the student receives a D for communication courses not on the list above. These reflect Communication minimums.
2. Course substitutions for catalog requirements may be made only upon approval of the program faculty advisor or department chair.
3. Some production or writing courses require participation in activities outside of the class meeting hours. Students should be prepared to participate in these activities that sometimes include assignments in conjunction with the campus media.

Admission Policies

The DMP faculty recommends that students meet with their faculty advisor before registering for classes each semester.

Digital Media Production, BS (43-604) (Area 1: Radio and Podcasting) (4 Year Guide)

Digital Media Production, BS (43-604) (Area 2: Cinematic Arts) (4 Year Guide)

Digital Media Production, BS (43-604) (Area 3: Live Studio and Sports Production) (4 Year Guide)

Digital Media Production, BS (43-604) (Area 4: Journalism) (4 Year Guide)

Major Requirements: 54 Semester Hours

Core Requirements: 7 Semester Hours

- COMM 1100 - Communication Pathways (1)
- COMM 3100 - Communication Analytics and Insights (3) +
- COMM 3101 - Essential Communication Concepts (3) +

Digital Media: 28 Semester Hours

- COMM 1500 - Writing Across the Media (3)
- COMM 1519 - Media Aesthetics (3)
- COMM 2410 - Multimedia Production (3)
- COMM 2411 - Audio Production (3)
- COMM 2412 - Introduction to Digital Video (3)
- COMM 3120 - Career Readiness for Digital Media Production (1)
- COMM 3450 - Digital Video Editing (3)
- COMM 4565 - Corporate and Freelance Production (3)
- Upper-Level COMM Electives (6)

Student Media Practicum: 1 Semester Hour

Select 1 hour of Practicum.

- COMM 3201 - Muleskinner Practicum (1-3) (1)
- COMM 3202 - KMOS Practicum (1-3) (1)
- COMM 3203 - UCM Radio-The Beat Practicum (1-3) (1)
- COMM 3204 - CTV Practicum (1-3) (1)

Internship or Additional Practicum Experience: 3 Semester Hours

Select a total of 3 credit hours in Internship or additional Practicum experience.

- COMM 3200 - Digital Media Practicum (1-3)
- COMM 3201 - Muleskinner Practicum (1-3)
- COMM 3202 - KMOS Practicum (1-3)
- COMM 3203 - UCM Radio-The Beat Practicum (1-3)
- COMM 3204 - CTV Practicum (1-3)
- COMM 4295 - Digital Media Production Internship (1-6) (1-3)

Choose One of the Following Areas: 15 Semester Hours

Area 1 - Radio and Podcasting (DM01)

- COMM 3220 - Performance for the Media (3)
- COMM 4100 - Podcasting and Radio Production (3)
- COMM 4130 - Audio for Digital Cinema (3)
- MUS 2400 - Sound Reinforcement and Music Production (3)
- MUS 2410 - Digital Audio Production (3)

Area 2 - Cinematic Arts (DM02)

- COMM 3050 - Cinematography (3)
- COMM 3275 - Screenwriting (3)
- COMM 3475 - Multicam Studio Production (3)
- COMM 4120 - Motion Graphics and Effects (3)
- COMM 4412 - Narrative Production (3)

Area 3 - Live Studio and Sports Production (DM03)

- COMM 3220 - Performance for the Media (3)
- COMM 3475 - Multicam Studio Production (3)
- COMM 3561 - Sports Production (3)
- COMM 4100 - Podcasting and Radio Production (3)
- COMM 4435 - Advanced Multicam Production (3)

Area 4 - Journalism (DM04)

- COMM 1520 - Introduction to Digital Journalism (3)
- COMM 3500 - Multiplatform Journalism Storytelling (3)

- COMM 3520 - Publication and Production Editing (3)

- COMM 3220 - Performance for the Media (3)
  OR
- COMM 4100 - Podcasting and Radio Production (3)
  OR
- COMM 4120 - Motion Graphics and Effects (3)

- COMM 4250 - Digital Media Law, Ethics and Diversity (3)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements.

Free Electives: 24 Semester Hours

Minimum Total: 120 Semester Hours

+ COMM 3100 and COMM 3101 must be completed with a grade of C or better to receive the B.S.- Digital Media Production degree.

Sport Communication Minor (883) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- COMM 1500 - Writing Across the Media (3)
- COMM 3540 - Sports Reporting (3)
- COMM 3561 - Sports Production (3)
- COMM 4160 - Advanced Sports Broadcasting (3)
- SM 1100 - Introduction to Sport Management (3)
- SM 3210 - Sport and Media (3)
- SM 4400 - Sport Communication (3)

Strategic Communication for Leaders Certificate (10-566) (12 hours)

Certificate

Required Courses: 12 Semester Hours

- COMM 2700 - Dale Carnegie: Effective Communication and Human Relations (3)
- COMM 4700 - Dale Carnegie: High Impact Presentations (1)

- COMM 4780 - Communication Leadership and Practice in Organizations (3)
- COMM 4781 - Strategic Communication Audits (3)
- MGT 3300 - Dale Carnegie Leadership Training for Managers (2)

Web Media Certificate (10-639) (15 hours)

Foundation Skills Areas: 9 Semester Hours

- ART 1620 - Web Graphics (3) (Summer Online)
- COMM 1630 - Web Content and Promotion Strategies (3)

- ART 1610 - Web Languages GE (3) (Summer Online)
  OR
- NET 1610 - Principles of Web Media (3)

Knowledge Emphasis: 6 Semester Hours

Choose from a menu of courses hosted by:
Art & Design, Communications, and The School of Technology, Graphic Arts program.

- ART 4610 - Interactive Design (3)
- COMM 2410 - Multimedia Production (3)
- COMM 4120 - Motion Graphics and Effects (3)
- NET 2620 - Web Media Applications (3)
- NET 2630 - Web Authoring (3)

Department of English

https://www.ucmo.edu/englphil/

Department of English
Martin 336
660-543-4425
ucmo.edu/englphil

An option in English is offered: Secondary Education, BSE (41-695) - English Option (E311) (120 hours)

Creative Writing Minor (490) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- ENGL 2050 - Creative Writing (3)
- ENGL 3051 - Intermediate Poetry Writing (3)

- ENGL 3052 - Intermediate Fiction Writing (3)
- ENGL 4051 - Advanced Poetry Writing (3)
- ENGL 4052 - Advanced Fiction Writing (3)

Electives from the Following: 6 Semester Hours

- ENGL 4053 - Advanced Creative Nonfiction Writing (3)
- ENGL 4054 - Practicum in Editing and Publishing (3)
- ENGL 4055 - Writing Genre Fiction (3)
- ENGL 4056 - Special Topics in Creative Writing (3)
- ENGL (must be at the 3000 or 4000 level) (3-6)

- COMM 3275 - Screenwriting (3)
  OR
- THEA 4800 - Playwriting (1-3)

English Minor (2009) (24 hours)

Minor for a Bachelor's Degree

Except for a Bachelor of Science in Education Degree.

Minor Requirements: 24 Semester Hours

- ENGL 2010 - Introduction to Reading Poetry and Drama GE (3)
- ENGL 2020 - Introduction to Reading Fiction GE (3)
- ENGL 4360 - Shakespeare (3)

Select One Course from Each of the Following Areas: 15 Semester Hours

Area 1

- ENGL 4310 - Chaucer (3)
- ENGL 4330 - Renaissance English Writers (3)
- ENGL 4340 - Old and Middle English Literature (3)
- ENGL 4390 - Special Topics in Medieval and Renaissance Literature (3)

Area 2

- ENGL 4450 - The Age of Milton (3)
- ENGL 4460 - Wits and Satirists: 1660-1800 (3)
- ENGL 4490 - Special Topics in 17th and 18th Century Literature (3)
- ENGL 4620 - Early American Literature (3)

Area 3

- ENGL 4500 - Nineteenth Century English Novel (3)
- ENGL 4510 - Romantic Poets and Essayists (3)
- ENGL 4540 - Victorian Poetry (3)
- ENGL 4590 - Special Topics in 19th Century Literature (3)
- ENGL 4610 - American Renaissance (3)
- ENGL 4640 - American Realists and Naturalists (3)

Area 4

- ENGL 4700 - British Fiction 1890 to Present (3)
- ENGL 4710 - Modern American Fiction (3)
- ENGL 4720 - Modern British Poetry (3)
- ENGL 4730 - Modern American Poetry (3)
- ENGL 4790 - Special Topics in 20th and 21st Century Literature (3)

Area 5

- ENGL 4560 - British Women Writers (3)
- ENGL 4660 - Women Writers of the United States (3)
- ENGL 4670 - Ethnic American Literature (3)
- ENGL 4680 - African American Literature (3)
- ENGL 4690 - Special Topics in Traditionally Underrepresented Literature (3)
- ENGL 4750 - Postcolonial Literature (3)

English Minor (BSE) (305) (24 hours)

Minor, Bachelor of Science in Education Degree

Minor Requirements: 24 Semester Hours

- ENGL 2010 - Introduction to Reading Poetry and Drama GE (3)
- ENGL 2020 - Introduction to Reading Fiction GE (3)
- ENGL 3110 - English Grammar (3)
- ENGL 3840 - Composition and Evaluation (3)

Elective from the Following: 3 Semester Hours

- ENGL 4670 - Ethnic American Literature (3)
- ENGL 4680 - African American Literature (3)

Select 1 Course from 3 of the Following 4 Areas: 9 Semester Hours

Area 1

- ENGL 4310 - Chaucer (3)

- ENGL 4330 - Renaissance English Writers (3)
- ENGL 4340 - Old and Middle English Literature (3)
- ENGL 4390 - Special Topics in Medieval and Renaissance Literature (3)

Area 2

- ENGL 4450 - The Age of Milton (3)
- ENGL 4460 - Wits and Satirists: 1660-1800 (3)
- ENGL 4490 - Special Topics in 17th and 18th Century Literature (3)
- ENGL 4620 - Early American Literature (3)

Area 3

- ENGL 4500 - Nineteenth Century English Novel (3)
- ENGL 4510 - Romantic Poets and Essayists (3)
- ENGL 4540 - Victorian Poetry (3)
- ENGL 4590 - Special Topics in 19th Century Literature (3)
- ENGL 4610 - American Renaissance (3)
- ENGL 4640 - American Realists and Naturalists (3)

Area 4

- ENGL 4700 - British Fiction 1890 to Present (3)
- ENGL 4710 - Modern American Fiction (3)
- ENGL 4720 - Modern British Poetry (3)
- ENGL 4730 - Modern American Poetry (3)
- ENGL 4790 - Special Topics in 20th and 21st Century Literature (3)

English, BA (42-303) (120 hours)

Major, Bachelor of Arts Degree

The graduate with a Bachelor of Arts in English degree will use the knowledge and skills obtained in the program to:

- Use the methods and techniques of literary study to develop the skills of close reading and literary analysis.
- Write with clarity, originality, grammatical correctness, proper usage, and logic (demonstrating rhetorical skills necessary for successful communication).
- Accomplish primary and secondary research, incorporating the results into formal written presentations with an understanding of appropriate critical approaches.
- Understand the relationship between works of literature and the historical/cultural contexts in which they were written.
- Demonstrate a knowledge of literary periods, approaches, genres, and major works.

English, BA (42-303) (4 Year Guide)

Major Requirements: 39 Semester Hours

- ENGL 2010 - Introduction to Reading Poetry and Drama GE (3)

- ENGL 2020 - Introduction to Reading Fiction GE (3)
  OR
- ENGL 2205 - Introduction to American Literature GE (3)
  OR
- ENGL 2215 - Introduction to British Literature GE (3)

Select Literature Track or Creative Writing Track: 33 Semester Hours

Literature Track: 33 Semester Hours

- ENGL 3240 - Critical Approaches to Literature (3)
- ENGL 4360 - Shakespeare (3)

Select One Course from Each of the Two Following Areas: 6 Semester Hours

Area 1

- ENGL 4310 - Chaucer (3)
- ENGL 4330 - Renaissance English Writers (3)
- ENGL 4340 - Old and Middle English Literature (3)
- ENGL 4390 - Special Topics in Medieval and Renaissance Literature (3)
- ENGL 4450 - The Age of Milton (3)
- ENGL 4460 - Wits and Satirists: 1660-1800 (3)
- ENGL 4490 - Special Topics in 17th and 18th Century Literature (3)

Area 2

- ENGL 4120 - Language and Culture (3)
- ENGL 4560 - British Women Writers (3)
- ENGL 4660 - Women Writers of the United States (3)
- ENGL 4670 - Ethnic American Literature (3)
- ENGL 4680 - African American Literature (3)
- ENGL 4690 - Special Topics in Traditionally Underrepresented Literature (3)
- ENGL 4750 - Postcolonial Literature (3)

Select from the Following: 9 Semester Hours

- ENGL 3040 - Advanced Rhetoric (3)
- ENGL 3110 - English Grammar (3)
- ENGL 3120 - History of English Language (3)
- ENGL 4061 - Advanced Technical Writing and Copy Editing (3)
- ENGL 4110 - Linguistics (3)
- ENGL 4500 - Nineteenth Century English Novel (3)

- ENGL 4510 - Romantic Poets and Essayists (3)
- ENGL 4540 - Victorian Poetry (3)
- ENGL 4560 - British Women Writers (3)
- ENGL 4590 - Special Topics in 19th Century Literature (3)
- ENGL 4610 - American Renaissance (3)
- ENGL 4620 - Early American Literature (3)
- ENGL 4640 - American Realists and Naturalists (3)
- ENGL 4700 - British Fiction 1890 to Present (3)
- ENGL 4710 - Modern American Fiction (3)
- ENGL 4720 - Modern British Poetry (3)
- ENGL 4730 - Modern American Poetry (3)
- ENGL 4790 - Special Topics in 20th and 21st Century Literature (3)

Upper-Level ENGL Electives: 12 Semester Hours

- 3000 or 4000 Level ENGL Courses (12)

Creative Writing Track: 33 Semester Hours

- ENGL 2050 - Creative Writing (3)
- ENGL 3051 - Intermediate Poetry Writing (3)
- ENGL 3052 - Intermediate Fiction Writing (3)
- ENGL 3053 - Intermediate Creative Nonfiction (3)
- ENGL 4054 - Practicum in Editing and Publishing (3)

Select from the Following Courses: 3 Semester Hours

- ENGL 4051 - Advanced Poetry Writing (3)
- ENGL 4052 - Advanced Fiction Writing (3)
- ENGL 4053 - Advanced Creative Nonfiction Writing (3)

Select One Course from Each of the Three Following Areas: 9 Semester Hours

Area 1

- ENGL 4310 - Chaucer (3)
- ENGL 4330 - Renaissance English Writers (3)
- ENGL 4340 - Old and Middle English Literature (3)
- ENGL 4360 - Shakespeare (3)
- ENGL 4390 - Special Topics in Medieval and Renaissance Literature (3)
- ENGL 4450 - The Age of Milton (3)
- ENGL 4460 - Wits and Satirists: 1660-1800 (3)
- ENGL 4490 - Special Topics in 17th and 18th Century Literature (3)
- ENGL 4500 - Nineteenth Century English Novel (3)
- ENGL 4510 - Romantic Poets and Essayists (3)
- ENGL 4540 - Victorian Poetry (3)
- ENGL 4590 - Special Topics in 19th Century Literature (3)

- ENGL 4620 - Early American Literature (3)
- ENGL 4640 - American Realists and Naturalists (3)

Area 2

- ENGL 4700 - British Fiction 1890 to Present (3)
- ENGL 4710 - Modern American Fiction (3)
- ENGL 4720 - Modern British Poetry (3)
- ENGL 4730 - Modern American Poetry (3)
- ENGL 4790 - Special Topics in 20th and 21st Century Literature (3)

Area 3

- ENGL 4560 - British Women Writers (3)
- ENGL 4660 - Women Writers of the United States (3)
- ENGL 4670 - Ethnic American Literature (3)
- ENGL 4680 - African American Literature (3)
- ENGL 4690 - Special Topics in Traditionally Underrepresented Literature (3)
- ENGL 4750 - Postcolonial Literature (3)

Upper-Level ENGL Electives: 6 Semester Hours

- 3000 or 4000 Level ENGL Courses (6)

General Education Requirements: 36 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ENGL 2010 - Introduction to Reading Poetry and Drama GE (3)

- ENGL 2020 - Introduction to Reading Fiction GE (3)
  OR
- ENGL 2205 - Introduction to American Literature GE (3)
  OR
- ENGL 2215 - Introduction to British Literature GE (3)

Modern Language Requirement: 9 Semester Hours

Refer to Bachelor's Degree Requirements section for fulfillment options.

Free Electives: 36 Semester Hours

Minimum Total: 120 Semester Hours

Professional and Technical Writing Certificate (10-664)

Required Courses: 12 Semester Hours

- CTE 2060 - Technical Writing GE (3)
- ENGL 3110 - English Grammar (3)
- ENGL 4061 - Advanced Technical Writing and Copy Editing (3)
- ENGL 4062 - Professional and Technical Writing Practicum (3)

Technical Writing Minor (631) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- CTE 2060 - Technical Writing GE (3)
- ENGL 3110 - English Grammar (3)
- ENGL 4061 - Advanced Technical Writing and Copy Editing (3)
- ENGL 4062 - Professional and Technical Writing Practicum (3)

Electives from the Following: 9 Semester Hours

- ART 1610 - Web Languages GE (3)
- ART 1620 - Web Graphics (3)
- COMM 2410 - Multimedia Production (3) *
- ENGL 3040 - Advanced Rhetoric (3)
- FAME 1010 - Digital PreMedia Fundamentals (3)
- NET 1610 - Principles of Web Media (3)

Department of History

History Minor (422) (18 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 18 Semester Hours

Choose 6 credits from the following:

- HIST 1350 - History of the United States to 1877 GE (3)
- HIST 1351 - History of the United States from 1877 GE (3)
- HIST 1400 - History of the Early World GE (3)
- HIST 1402 - History of the Modern World GE (3)

Upper-Level (3000/4000) electives in HIST: 6 Semester Hours

Any HIST elective: 6 Semester Hours

History, BA (42-420) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Arts Degree

The graduate with a Bachelor of Arts in History degree will use the knowledge and skills obtained in the program to:

- Describe historical events and chronology to demonstrate content knowledge, including investigating change over time and the diversity of human experiences.
- Analyze and interpret primary and secondary sources to identify patterns and evaluate evidence used in historical interpretations.
- Produce and present an analytical, argument-driven research paper or research project based upon original research in primary and secondary sources.

History Major, B.A. Degree (42-420) 4 Year Guide

Major Requirements: 39 Semester Hours

C or better required in all major coursework.

Core Requirements: 15 Semester Hours

- HIST 1350 - History of the United States to 1877 GE (3)
- HIST 1351 - History of the United States from 1877 GE (3)
- HIST 1400 - History of the Early World GE (3)
- HIST 1402 - History of the Modern World GE (3)
- HIST 4500 - Senior Capstone in History (3)

History Electives: 24 Semester Hours

- History 2xxx (3)
- History 3xxx (3)
- American History 33xx/43xx (6)
- World History 34xx/44xx (3)
- Non-Western World History 2xxx/3xxx/4xxx including HIST 4452 or HIST 4453 (3)
- History 2xxx/3xxx/4xxx (6)

General Education Requirements: 30 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

C or better required for HIST courses.

- HIST 1350 - History of the United States to 1877 GE (3)
- HIST 1351 - History of the United States from 1877 GE (3)
- HIST 1400 - History of the Early World GE (3)
- HIST 1402 - History of the Modern World GE (3)

Modern Language Requirement: 9 Semester Hours

Refer to Bachelor's Degree Requirements section for fulfillment options.

Free Electives: 42 Semester Hours

Minimum Total: 120 Semester Hours

Accelerated Program Notes:

The Accelerated model for this program is designed for the MA History.

Students may apply to the program after completing ninety (90) credit hours at UCM. Once admitted, students take up to 12 credits of graduate-level work their senior year and receive retroactive undergraduate credit upon successful completion.

Courses that an accelerated student may be eligible to include as overlap between the undergraduate and graduate programs:

HIST 5300 Missouri History (3) (HIST 4300)

HIST 5307 American Colonial History 1607-1763 (3) (HIST 4307)

HIST 5309 The African-American in American History (3) (HIST 4309)

HIST 5311 Revolution and Republic (3) (HIST 4311)

HIST 5314 Jacksonian America (3) (HIST 4314)

HIST 5315 The Civil War and Reconstruction (3) (HIST 4315)

HIST 5316 The American Military Experience (3) (HIST 4316)

HIST 5317 The Jazz Age and the Great Depression (3) (HIST 4317)

HIST 5318 The Gilded Age and Progressive Era (3) (HIST 4318)

HIST 5320 History of the American West (3) (HIST 4320)

HIST 5322 US History Since 1945 (3) (HIST 4322)

HIST 5324 Truman and Civil Rights (3) (HIST 4324)

HIST 5327 African-American Women, Gender, and Girlhood (3) (HIST 4327)

HIST 5328 History of Flight (3) (HIST 4328)

HIST 5330 The United States and World War II (3) (HIST 4330)

HIST 5337 Nature's Nation: American Environmental History (3) (HIST 4337)

HIST 5340 Public History (3) (HIST 4340)

HIST 5410 Women in America (3) (HIST 4310)

HIST 5411 The Renaissance and Age of Exploration (3) (HIST 4411)

HIST 5412 Wars of Reformation and Religion (3) (HIST 4412)

HIST 5414 The Age of the French Revolution and Napoleon (3) (HIST 4414)

HIST 5415 Revolutionary Europe (3) (HIST 4415)

HIST 5416 Europe in Crisis: 1900-Present (3) (HIST 4416)

HIST 5423 Rule Britannia!: The Making and Eclipse of a Great Power (3) (HIST 4423)

HIST 5431 Modern Germany (3) (HIST 4431)

HIST 5432 Nazi Germany and the Holocaust (3) (HIST 4432)

HIST 5442 The Soviet World (3) (HIST 4442)

HIST 5451 Imperial Spain 1469-1714 (3) (HIST 4451)

HIST 5452 Modern Latin America (3) (HIST 4452)

HIST 5453 History of Mexico (3) (HIST 4453)

HIST 5461 The Rise of Chinese Civilization (3) (HIST 4461)

HIST 5462 The Rise of Japanese Civilization (3) (HIST 4462)

HIST 5463 Modern China (3) (HIST 4463)

HIST 5464 Modern Korea (3) (HIST 4464)

HIST 5471 The African Diaspora (3) (HIST 4471)

HIST 5472 African History (3) (HIST 4472)

HIST 5473 History of South Africa (3) (HIST 4473)

HIST 5491 Special Projects in World History (1-6) (HIST 4491)

HIST 5551 Special Projects in American History (1-6) (HIST 4351)

History, BS (43-421) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science in History degree will use the knowledge and skills obtained in the program to:

- Describe historical events and chronology to demonstrate content knowledge, including investigating change over time and the diversity of human experiences.
- Analyze and interpret primary and secondary sources to identify patterns and evaluate evidence used in historical interpretations.
- Produce and present an analytical, argument-driven research paper or research project based upon original research in primary and secondary sources.

History Major, B.S. Degree - 120 hours 4 Year Guide

Major Requirements: 39 Semester Hours

Core Requirements: 15 Semester Hours

C or better required in all major coursework.

- HIST 1350 - History of the United States to 1877 GE (3)
- HIST 1351 - History of the United States from 1877 GE (3)
- HIST 1400 - History of the Early World GE (3)
- HIST 1402 - History of the Modern World GE (3)
- HIST 4500 - Senior Capstone in History (3)

History Electives: 24 Semester Hours

- History 2xxx (3)
- History 3xxx (3)
- American History 33xx/43xx (6)
- World History 34xx/44xx (3)
- Non-Western World History 2xxx/3xxx/4xxx including HIST 4452 or HIST 4453 (3)
- History 2xxx/3xxx/4xxx (6)

General Education Requirements: 30 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

C or better required for HIST courses.

- HIST 1350 - History of the United States to 1877 GE (3)
- HIST 1351 - History of the United States from 1877 GE (3)
- HIST 1400 - History of the Early World GE (3)
- HIST 1402 - History of the Modern World GE (3)

Free Electives: 51 Semester Hours

Minimum Total: 120 Semester Hours

Accelerated Program Notes:

The Accelerated model for this program is designed for the MA History.

Students may apply to the program after completing ninety (90) credit hours at UCM. Once admitted, students take up to 12 credits of graduate-level work their senior year and receive retroactive undergraduate credit upon successful completion.

Courses that an accelerated student may be eligible to include as overlap between the undergraduate and graduate programs:

HIST 5300 Missouri History (3) (HIST 4300)

HIST 5307 American Colonial History 1607-1763 (3) (HIST 4307)

HIST 5309 The African-American in American History (3) (HIST 4309)

HIST 5311 Revolution and Republic (3) (HIST 4311)

HIST 5314 Jacksonian America (3) (HIST 4314)

HIST 5315 The Civil War and Reconstruction (3) (HIST 4315)

HIST 5316 The American Military Experience (3) (HIST 4316)

HIST 5317 The Jazz Age and the Great Depression (3) (HIST 4317)

HIST 5318 The Gilded Age and Progressive Era (3) (HIST 4318)

HIST 5320 History of the American West (3) (HIST 4320)

HIST 5322 US History Since 1945 (3) (HIST 4322)

HIST 5324 Truman and Civil Rights (3) (HIST 4324)

HIST 5327 African-American Women, Gender, and Girlhood (3) (HIST 4327)

HIST 5328 History of Flight (3) (HIST 4328)

HIST 5330 The United States and World War II (3) (HIST 4330)

HIST 5337 Nature's Nation: American Environmental History (3) (HIST 4337)

HIST 5340 Public History (3) (HIST 4340)

HIST 5410 Women in America (3) (HIST 4310)

HIST 5411 The Renaissance and Age of Exploration (3) (HIST 4411)

HIST 5412 Wars of Reformation and Religion (3) (HIST 4412)

HIST 5414 The Age of the French Revolution and Napoleon (3) (HIST 4414)

HIST 5415 Revolutionary Europe (3) (HIST 4415)

HIST 5416 Europe in Crisis: 1900-Present (3) (HIST 4416)

HIST 5423 Rule Britannia!: The Making and Eclipse of a Great Power (3) (HIST 4423)

HIST 5431 Modern Germany (3) (HIST 4431)

HIST 5432 Nazi Germany and the Holocaust (3) (HIST 4432)

HIST 5442 The Soviet World (3) (HIST 4442)

HIST 5451 Imperial Spain 1469-1714 (3) (HIST 4451)

HIST 5452 Modern Latin America (3) (HIST 4452)

HIST 5453 History of Mexico (3) (HIST 4453)

HIST 5461 The Rise of Chinese Civilization (3) (HIST 4461)

HIST 5462 The Rise of Japanese Civilization (3) (HIST 4462)

HIST 5463 Modern China (3) (HIST 4463)

HIST 5464 Modern Korea (3) (HIST 4464)

HIST 5471 The African Diaspora (3) (HIST 4471)

HIST 5472 African History (3) (HIST 4472)

HIST 5473 History of South Africa (3) (HIST 4473)

HIST 5491 Special Projects in World History (1-6) (HIST 4491)

HIST 5551 Special Projects in American History (1-6) (HIST 4351)

Department of Modern Languages and Interdisciplinary Studies

Department of Modern Languages and Interdisciplinary Studies

Languages Statement of Policy

A placement examination determines the level of a student's initial enrollment in elementary and intermediate language courses. Degree seeking students who enroll in a higher level language course and complete with a C or better may be eligible for validated credit.

Eligibility for Validated Credit:

Course Enrolled and Completed	Minimum Grade	Validated Credit Courses	Total Credit Hours
FREN 1202	C	FREN 1201	6
FREN 2201	C	FREN 1201, FREN 1202	9
FREN 2202	C	FREN 1201, FREN 1202, FREN 2201	12
GER 1302	C	GER 1301	6
GER 2301	C	GER 1301, GER 1302	9

GER 2302	C	GER 1301, GER 1302, GER 2301	12
SPAN 1610	C	SPAN 1601	6
SPAN 1602	C	SPAN 1601	6
SPAN 2601	C	SPAN 1601, SPAN 1602	9
SPAN 2602	C	SPAN 1601, SPAN 1602, SPAN 2601	12
SPAN 1612	C	SPAN 1611	6
SPAN 2611*	C	SPAN 1611, SPAN 1612	9
SPAN 2612*	C	SPAN 1611, SPAN 1612, SPAN 2611	12

Note: Other restrictions may apply. Students may not receive validated credit for SPAN 1601/1602/2601/2602 and SPAN 1611/1612/2611/2612. For further information, contact the Chair of the Department of Modern Languages and Interdisplinary Studies.

* Students who wish to receive the Spanish for Healthcare Professionals Certificate must complete SPAN 2611 and SPAN 2612.

Africana Studies Minor (323) (15 hours)

Minor for a Bachelor's Degree

Minor Requirements: 15 Semester Hours

- AS 1000 - Introduction to Africana Studies (3)
- HDFS 1450 - Valuing Differences: Discovering Common Ground (1)

- AS 4000 - Special Projects in Africana Studies (3-9) (2)
  OR
- ISP 4000 - Study Abroad (1-18) (2)

Select from the Following: 9 Semester Hours*

Arts

- ART 1815 - Art History Survey I GE (3)
- ART 1825 - Art History Survey II GE (3)
- ART 1835 - Global Arts and Culture GE (3)
- COMM 2010 - Interpersonal Communication (3)
- COMM 4285 - Women and Minorities in Media (3)
- DANC 1110 - Modern Dance I (2)
- DANC 1130 - Tap Dance I (2)
- DANC 1140 - Jazz Dance I (2)

- ENGL 4680 - African American Literature (3)
- GSS 1050 - Women's Voices GE (3)
- GSS 3100 - Gender, Literature, and Pop Culture (3)
- ML 4244 - Cross-Cultural Cinema (3)
- MUS 1225 - Music of the World's Cultures GE (3)
- MUS 1281 - History and Development of Jazz GE (3)

History and Culture

- ANTH 1810 - Human Prehistory GE (3)
- ANTH 1820 - Cultural Anthropology GE (3)
- ANTH 3850 - Globalization and Culture (3)
- GEOG 3310 - Geography of Africa (3)
- HIST 4309 - The African-American in American History (3)
- HIST 4327 - African American Women, Gender, and Girlhood (3)
- HIST 4471 - The African Diaspora (3)
- HIST 4472 - African History (3)
- HIST 4473 - History of South Africa (3)

Issues

- CJ 1000 - Introduction to Criminal Justice GE (3)
- CJ 4020 - Crime, Justice and Social Diversity (3)
- COMM 1200 - Introduction to Mass Communication GE (3)
- ECEL 2110 - Diversity and Social Justice GE (3)
- GSS 2000 - Intersections: Gender, Race, Class GE (3)
- GSS 4810 - Special Projects in Gender & Sexuality Studies (1-6)
- HDFS 4520 - Multicultural Study and Approaches with Families (3)
- POLS 3551 - Race and Ethnic Politics in the United States (3)
- POLS 4581 - Civil Rights and Liberties (3)
- PSY 4330 - Multicultural Psychology (3)
- SOC 1830 - Social Problems (3)
- SOC 2845 - Social Inequality and Social Justice (3)
- SOC 3825 - Race and Ethnic Relations (3)

* Additional electives approved at the discretion of the program coordinator

Gender & Sexuality Studies, BS (43-8852) (120 Hours)

Major, Bachelor of Science in Gender & Sexuality Studies Degree

The graduate with a Bachelor of Science in Gender & Sexuality Studies will use the knowledge and skills obtained in the program to:

- Describe differing assumptions about gender and sexuality and the effect on the individual and society using an intersectional framework.
- Assess gender and sexuality issues from an interdisciplinary perspective.

- Utilize knowledge of gender and sexuality to participate in civic and community decision-making and activism.
- Demonstrate an understanding of past and present feminist and queer intellectual production and social justice activism.
- Demonstrate the ability to complete an advanced and interdisciplinary research and/or activist project.

Gender & Sexuality Studies, BS (43-8852) (4 Year Guide)

Major Requirements: 36 Semester Hours

Required Courses: 18 Semester Hours

- GSS 1050 - Women's Voices GE (3)
- GSS 2000 - Intersections: Gender, Race, Class GE (3)
- GSS 2050 - Sexuality, Identity & Social Action GE (3)

- GSS 3000 - Sex & Society (3)
  OR
- GSS 3100 - Gender, Literature, and Pop Culture (3)

- GSS 4850 - Feminist and Queer Theories (3)
- GSS 4900 - Gender & Sexuality Studies Practicum (1-3) (3)

Electives from the following: 18 Semester Hours

- GSS 4000 - Internship (3)
- GSS 4810 - Special Projects in Gender & Sexuality Studies (1-6)
- ANTH 4820 - Anthropology of Gender (3)
- CJ 4020 - Crime, Justice and Social Diversity (3)
- CJ 4403 - Sexual Assault and the Criminal Justice System (3)
- CJ 4920 - Gender and Crime (3)
- COMM 3320 - Communication of Social Movements (3)
- COMM 4285 - Women and Minorities in Media (3)
- COMM 4335 - Gender Communication (3)
- ECEL 2110 - Diversity and Social Justice GE (3)
- ENGL 2270 - Fiction by Women Around the World (3)
- ENGL 4560 - British Women Writers (3)
- ENGL 4660 - Women Writers of the United States (3)
- HDFS 1450 - Valuing Differences: Discovering Common Ground (1)
- HDFS 4220 - Sexuality Across the Lifespan (3)
- HDFS 4850 - Family Policy and Advocacy (3)
- HIST 4310 - Women in America (3)
- HIST 4327 - African American Women, Gender, and Girlhood (3)
- ML 4244 - Cross-Cultural Cinema (3)
- NUR 4030 - Human Sexuality (2)
- POLS 3553 - Women and Politics (3)
- PSY 4140 - Psychology of Human Sexuality (3)
- PSY 4320 - Psychology of Women (3)

- SOC 4866 - Outsiders and Outcasts (3)
- SOC 4870 - Gender, Sexuality, & Inequality (3)

General Education Requirements: 30-33 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- GSS 1050 - Women's Voices GE (3)
- GSS 2000 - Intersections: Gender, Race, Class GE (3)
- GSS 2050 - Sexuality, Identity & Social Action GE (3)

- ECEL 2110 - Diversity and Social Justice GE (3) (if chosen)

Free Electives: 51-54 Semester Hours

Minimum Total: 120 Semester Hours

Gender and Sexuality Studies Minor (8851) (18 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

A student with a minor in Gender and Sexuality Studies will be able to:

- Describe differing assumptions about gender and sexuality and the effect on the individual and society.
- Assess gender and sexuality issues from an interdisciplinary perspective.
- Apply understandings of gender and sexuality to the major field of study.
- Utilize knowledge of gender and sexuality to participate in civic and community decision-making.

Minor Requirements: 18 Semester Hours

- GSS 4850 - Feminist and Queer Theories (3)

Select 2 Courses: 6 Semester Hours

- GSS 1050 - Women's Voices GE (3)
- GSS 2000 - Intersections: Gender, Race, Class GE (3)
- GSS 2050 - Sexuality, Identity & Social Action GE (3)

Electives: 9 Semester Hours

Choose any nine (9) credits from the list below. Some courses may have prerequisites.

- ANTH 4820 - Anthropology of Gender (3)

- CJ 4403 - Sexual Assault and the Criminal Justice System (3)
- CJ 4920 - Gender and Crime (3)
- COMM 4270 - Family Communication (3)
- COMM 4285 - Women and Minorities in Media (3)
- COMM 4335 - Gender Communication (3)
- ECEL 2110 - Diversity and Social Justice GE (3)
- ENGL 2270 - Fiction by Women Around the World (3)
- ENGL 4560 - British Women Writers (3)
- ENGL 4660 - Women Writers of the United States (3)
- ENGL 4750 - Postcolonial Literature (3)
- GSS 1050 - Women's Voices GE (3)
- GSS 2000 - Intersections: Gender, Race, Class GE (3)
- GSS 2050 - Sexuality, Identity & Social Action GE (3)
- GSS 3000 - Sex & Society (3)
- GSS 3100 - Gender, Literature, and Pop Culture (3)
- GSS 4000 - Internship (3)
- GSS 4810 - Special Projects in Gender & Sexuality Studies (1-6)
- GSS 4900 - Gender & Sexuality Studies Practicum (1-3) (3-6)
- HDFS 1450 - Valuing Differences: Discovering Common Ground (1)
- HDFS 4220 - Sexuality Across the Lifespan (3)
- HDFS 4850 - Family Policy and Advocacy (3)
- HIST 4310 - Women in America (3)
- HIST 4327 - African American Women, Gender, and Girlhood (3)
- HLTH 4320 - Teaching Sexuality Education in the School (3)
- NUR 2020 - Health: The Women's Perspective (2)
- NUR 4030 - Human Sexuality (2)
- POLS 3553 - Women and Politics (3)
- PSY 4140 - Psychology of Human Sexuality (3)
- PSY 4320 - Psychology of Women (3)
- SOC 2854 - Changing Families (3)
- SOC 4866 - Outsiders and Outcasts (3)
- SOC 4870 - Gender, Sexuality, & Inequality (3)

Modern Languages Minor (569) (21 hours)

Minor for a Bachelor's Degree

Minor Requirements: 21 Semester Hours

Must include at least one upper-level (3000/4000) course to meet graduation requirements.

- 21 hours of ONE language beyond Elementary I (21)

Note: If a student pursues the SPAN courses for completion of the minor a student may only apply credit for SPAN 1602 /SPAN 2601 /SPAN 2602 or SPAN 1612 /SPAN 2611 /SPAN 2612

Modern Languages, BA (42-574) - Language and Culture Option (ML01) (120 hours)

Major, Bachelor of Arts Degree

The graduate with a Bachelor of Arts in Modern Languages will use the knowledge and skills obtained in the program to:

- Use the target language orally and in writing in a variety of informal and formal situations
- Comprehend a variety of authentic materials in the target language for personal and/or professional use
- Demonstrate knowledge of linguistic elements, pronunciation and intonation, grammar, forms of discourse, and vocabulary to satisfy a variety of everyday tasks
- Engage in socially appropriate forms of communication
- Demonstrate an understanding of the target cultures in their geographical and historical contexts, including perspectives, practices and products.

Modern Languages, BA (42-574) - Language and Culture Option (ML01) (4 Year Guide)

Major Requirements: 39 Semester Hours

- ML 4050 - Language in the Professions (3)
- 36 hours of ONE language beyond Elementary I (36)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements.

Modern Language Requirement: 9 Semester Hours

- This requirement is fullfilled by courses in the major.

Free Electives: 39 Semester Hours

Minimum Total: 120 Semester Hours

Modern Languages, BA (42-574) - Professional Applications Option (ML02) (120 hours)

Major, Bachelor of Arts Degree

The graduate with a Bachelor of Arts in Modern Languages will use the knowledge and skills obtained in the program to:

- Use the target language orally and in writing in a variety of informal and formal situations
- Comprehend a variety of authentic materials in the target language for personal and/or professional use
- Demonstrate knowledge of linguistic elements, pronunciation and intonation, grammar, forms of discourse, and vocabulary to satisfy a variety of everyday tasks
- Engage in socially appropriate forms of communication
- Demonstrate an understanding of the target cultures in their geographical and historical contexts, including perspectives, practices and products.

Modern Languages, BA (42-574) - Professional Applications Option (ML02) Criminal Justice Concentration (4 Year Guide)

Modern Languages, BA (42-574) - Professional Applications Option (ML02) Marketing Concentration (4 Year Guide)

Modern Languages, BA (42-574) - Professional Applications Option (ML02) Public Relations Concentration (4 Year Guide)

Major Requirements: 66 Semester Hours

Professional Applications Option

- 33 hours of ONE language beyond Elementary II (33)
- Select ONE Concentration listed (33)

Criminal Justice Concentration: 33 Semester Hours

- CJ 1000 - Introduction to Criminal Justice GE (3)
- CJ 3006 - Corrections (3)
- CJ 3010 - Policing a Democratic Society (3)
- CJ 3020 - Comparative Justice Systems (3)
- CJ 3300 - Criminal Law and Procedure (3)
- CJ 4503 - Criminology (3)
- CJ 4602 - Internship in Criminal Justice (1-6) (3)

- ML 4050 - Language in the Professions (3)
  OR
- ML 4244 - Cross-Cultural Cinema (3) ***

Electives in Criminal Justice: 9 Semester Hours

9 Semester Hours in Criminal Justice

Note:

*** Requires approval of the program coordinator

Marketing Concentration: 33 Semester Hours

- MKT 3405 - Principles of Marketing (3)
- MKT 3430 - Professional Sales (3)
- MKT 3435 - Internship in Marketing (1-6) (6)
- MKT 3480 - Consumer Behavior (3)
- MKT 4460 - International Marketing (3) **
- MGT 3315 - Management of Organizations (3)

- ML 4050 - Language in the Professions (3)
  OR

- ML 4244 - Cross-Cultural Cinema (3) ***

Electives from the Following: 9 Semester Hours

- BLAW 2720 - Legal Environment of Business (3)
- ECON 1010 - Principles of Macroeconomics GE (3)
- MKT 3410 - Retail Management (3)
- MKT 3420 - Principles of Advertising (3)
- MKT 3450 - Digital Marketing (3)
- MKT 4410 - Advanced Professional Sales (3)
- MKT 4454 - Sports Marketing (3)

Note:

** Departmental consent required

*** Requires approval of the program coordinator

Public Relations Concentration: 33 Semester Hours

- COMM 2010 - Interpersonal Communication (3)
- COMM 2350 - Intercultural Communication (3) **
- COMM 3100 - Communication Analytics and Insights (3)
- POLS 4520 - Principles of International Development (3)
- PR 1600 - Orientation to PR (3)
- PR 2620 - Principles of Public Relations (3)
- PR 3610 - Writing and Editing (3)
- PR 3620 - Strategic Planning and Research for PR (3)
- PR 4605 - Public Relations Internship (1-3) (3)
- PR 4670 - Strategic Crisis Communication (3)

- ML 4050 - Language in the Professions (3)
  OR
- ML 4244 - Cross-Cultural Cinema (3) ***

Note:

** Instructor consent required

*** Requires approval of the program coordinator

General Education Requirements: 39-42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CJ 1000 - Introduction to Criminal Justice GE (3) (If Criminal Justice Concentration)
- ECON 1010 - Principles of Macroeconomics GE (3) (If chosen in Marketing Concentration)

Modern Language Requirement: 9 Semester Hours

- This requirement is fullfilled by courses in the major.

Free Electives: 12-15 Semester Hours

Minimum Total: 120 Semester Hours

Modern Languages, BA (42-574) - Teacher Education Option (ML03) (120 hours)

Major, Bachelor of Arts Degree

The graduate with a Bachelor of Arts in Modern Languages will use the knowledge and skills obtained in the program to:

- Use the target language orally and in writing in a variety of informal and formal situations
- Comprehend a variety of authentic materials in the target language for personal and/or professional use
- Demonstrate knowledge of linguistic elements, pronunciation and intonation, grammar, forms of discourse, and vocabulary to satisfy a variety of everyday tasks
- Engage in socially appropriate forms of communication
- Demonstrate an understanding of the target cultures in their geographical and historical contexts, including perspectives, practices and products.
- Teach essential elements of the target language at elementary and/or secondary school levels.

Teacher Education Policies

Modern Languages, BA (42-574) - Teacher Education Option (ML03) (4 Year Guide)

Major Requirements: 33 Semester Hours

Teacher Education Option*

*See Teacher Education for more information on Certification requirements, Admission to the Teacher Education Program, and Admission to the Professional Education Semester/Student Teaching.

- 33 hours of ONE language beyond Elementary II (33)
- ML 4054 - Methods of Teaching Foreign Languages (3)

Professional Education Requirements: 33 Semester Hours

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDFL 4210 - Introduction to Content Area Literacy (2)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- EDFL 4971 - K-12 Content Area Literacy (1)
- EDFL 4973 - Classroom Management in Content Areas (1)
- EDFL 4974 - Content Specific Assessment (1)

- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- FLDX 3000 - Field Experience in the Content Area (1)
- FLDX 4970 - Field Experience II in the Content Area (1)
- PSY 3220 - Life-Span Development GE (3)

Student Teaching Semester: 12 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (6)
- FLDX 4496 - Student Teaching Elementary II (1-12) (6)

General Education Requirements: 39-42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- EDFL 2240 - Educational Psychology GE (3)
- POLS 1510 - American Government GE (3)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

Modern Language Requirement: 9 Semester Hours

- This requirement is fullfilled by courses in the major.

Free Electives: 9-39 Semester Hours

Minimum Total: 120 Semester Hours

Spanish for Healthcare Professionals Certificate (10-633) (12 hours)

Certificate

Required Courses: 12 Semester Hours

- SPAN 1611 - Elementary Spanish I for Healthcare Professionals (3)
- SPAN 1612 - Elementary Spanish II for Healthcare Professionals (3)
- SPAN 2611 - Intermediate Spanish I for Healthcare Professionals (3)
- SPAN 2612 - Intermediate Spanish II for Healthcare Professionals (3)

World Languages and Cultures Minor (573) (21 hours)

Minor for a Bachelor's Degree

Minor Requirements: 21 Semester Hours

Students must take courses in 3 different languages.

- One course in one language (CHIN, FREN, GER, SPAN, ML) (3)
- Two courses in a second language (CHIN, FREN, GER, SPAN, ML) (6)
- Four courses in a third language (FREN, GER, SPAN, ML) (12) +

+ Must include at least one upper-level (3000/4000) course. Options include a class in the language, or ML 4244 Cross-Cultural Cinema.

Note:

Non-native speakers of English may count 3000 or 4000 level English courses as one of their three languages.

Native speakers of languages offered in the Department of Modern Languages and Interdisciplinary Studies must substitute 3000-level English courses in lieu of courses in their language.

*Must include at least one upper-level (3000/4000) course to meet graduation requirements.

Department of Government, Law, and International Affairs

The Department of Government, Law, and International Affairs collaborates with the Department of Management and Department of Criminal Justice and Criminology to offer the Legal Studies Minor (555) (21 hours).

Global Security Studies Minor (641)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor

Minor Requirements: 20-21 Semester Hours

- POLS 3527 - Security in the 21st Century (3)
- POLS 3531 - Five Wars of Globalization (3)

- IS 1000 - Introduction to International Studies GE (3)
  OR
- POLS 2530 - World Politics GE (3)

Electives from the Following: 11-12 Semester Hours

Two rules apply when choosing electives:

1. no more than 6 hours from any one discipline
2. at least 6 hours must be upper-level

- CJ 4444 - Terrorism (3)
- CJ 4488 - Homeland Security (3) *
- CYBR 1800 - Introduction to Cybersecurity (3)

- GEOS 4220 - Geographic Information Systems I (3)
- GEOS 4221 - Geographic Information Systems II (3)
- GEOS 4280 - Natural Disasters (3)
- HIST 4432 - Nazi Germany and the Holocaust (3)
- HIST 3416 - Europe in Crisis: 1900-Present (3)
- MS 1110 - Introduction to the Army (2)
- MS 2500 - History of the US Army (3)
- POLS 3526 - Oil, Water, and Security (3)
- POLS 3530 - International Organizations (3)
- POLS 4530 - International Law (3)
- POLS 4531 - American Foreign Policy (3)
- POLS 4533 - The Israeli-Palestinian Conflict (3)

Note:

*This course has a prerequisite not listed in the program; see specific class listing in the catalog for additional requirements.

International Justice Minor (855) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- CJ 3020 - Comparative Justice Systems (3)
- CJ 4444 - Terrorism (3)
- POLS 3530 - International Organizations (3)
- POLS 3598 - International Human Rights (3)
- POLS 4530 - International Law (3)

Electives in Criminal Justice/Geography/Political Science/Sociology: 6 Semester Hours

- CJ 2405 - International Policing (3)
- CJ 4703 - International Juvenile Justice (3)
- SOC 3885 - Globalization (3)

- POLS 3522 - Global Asia: Politics, Trade and Security (3)
  OR
- POLS 3524 - Middle East Politics (3)
  OR
- POLS 3525 - Politics in Europe (3)
  OR
- POLS 4520 - Principles of International Development (3)
  OR

- GEOG 4270 - World Political Geography (3)

- Three credit hours may be granted for study in a UCM approved program or study tour in a foreign country which focuses on the justice structures of the country (3)

International Studies Minor (489) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- Modern (foreign) Language (3)
- IS 1000 - Introduction to International Studies GE (3)

Core Elective: 3 Semester Hours

- POLS 2520 - Political Cultures of the World GE (3)
- POLS 2530 - World Politics GE (3)
- POLS 3531 - Five Wars of Globalization (3)
- SOC 3885 - Globalization (3)

Content Electives: 6 Semester Hours

Must include at least 3 upper-level (3000/4000) hours. Students may take any two courses across the following three content course categories.

* May not be taken as both a core and content elective.

Global Society & Culture

- ANTH 3850 - Globalization and Culture (3)
- ART 4850 - Twentieth Century Art and Architecture (3)
- GEOG 2212 - World Geography GE (3)
- HIST 1402 - History of the Modern World GE (3)
- POLS 2530 - World Politics GE (3) *
- POLS 3531 - Five Wars of Globalization (3) *
- SOC 2810 - Culture and Society (3)
- SOC 2845 - Social Inequality and Social Justice (3)
- SOC 3885 - Globalization (3) *

Human Rights, Peace & Justice

- CJ 2405 - International Policing (3)
- CJ 3020 - Comparative Justice Systems (3)
- CJ 4444 - Terrorism (3)

- HIST 4412 - Wars of Reformation and Religion (3)
- POLS 3526 - Oil, Water, and Security (3)
- POLS 3527 - Security in the 21st Century (3)
- POLS 3530 - International Organizations (3)
- POLS 3598 - International Human Rights (3)
- POLS 4530 - International Law (3)
- POLS 4531 - American Foreign Policy (3)

International Development, Trade & Diplomacy

- AGRI 2130 - Global Agriculture (3)
- ECON 1011 - Principles of Microeconomics GE (3)
- ECON 4050 - Comparative Economic Systems (3)
- INDM 4010 - Current Issues in Industry (3)
- POLS 2520 - Political Cultures of the World GE (3) *
- POLS 2535 - Model United Nations (3)
- POLS 3521 - Political Economy of Developing Nations (3)
- POLS 3530 - International Organizations (3)
- POLS 4511 - Public Policy (3)
- POLS 4520 - Principles of International Development (3)

Area Studies Electives: 6 Semester Hours

- GEOG 4235 - Geography of the Former Soviet Union (3)
- HIST 3416 - Europe in Crisis: 1900-Present (3)
- HIST 3442 - The Soviet World (3)
- HIST 4414 - The Age of the French Revolution and Napoleon (3)
- HIST 4415 - Revolutionary Europe (3)
- HIST 4423 - Rule Britannia!: The Making and Eclipse of a Great Power (3)
- HIST 4431 - Topics in German History (3)
- HIST 4432 - Nazi Germany and the Holocaust (3)
- HIST 4461 - The Rise of Chinese Civilization (3)
- HIST 4462 - The Rise of Japanese Civilization (3)
- HIST 4463 - Modern China (3)
- ML 4040 - Special Projects in Foreign Language (1-3)
- POLS 3522 - Global Asia: Politics, Trade and Security (3)
- POLS 3524 - Middle East Politics (3)
- POLS 3525 - Politics in Europe (3)
- POLS 4533 - The Israeli-Palestinian Conflict (3)
- Other GEOG Special Topics Area Studies

Note: ISP 4000 Study Abroad may fulfill 1-12 hours of Content and Area Studies Electives.

International Studies, BA (42-563) (120 hours)

Major, Bachelor of Arts Degree

The graduate with a Bachelor of Arts degree in International Studies will use the knowledge and skills obtained in the program to:

- Apply the discipline's theories, approaches, and methods to analyze and interpret global issues.
- Develop strategies and solutions to address pressing global issues.
- Exhibit sensitivity and respect for other cultures as well as an ability to operate with civility in a complex, diverse, and globalized world.

International Studies, BA (42-563) (4 Year Guide)

Major Requirements: 33 Semester Hours

Core Requirements: 15 Semester Hours

- IS 1000 - Introduction to International Studies GE (3)
- IS 3000 - International Studies in Practice (3)
- IS 4950 - Senior Seminar (3)

- POLS 2520 - Political Cultures of the World GE (3)
  OR
- POLS 2530 - World Politics GE (3)

- POLS 3531 - Five Wars of Globalization (3)
  OR
- SOC 3885 - Globalization (3)

Content Courses: 12 Semester Hours

At least six (6) semester hours must be at the 3000 or 4000 level.

Global Society & Culture

- ANTH 3850 - Globalization and Culture (3)
- ART 4850 - Twentieth Century Art and Architecture (3)
- GEOG 2212 - World Geography GE (3)
- HIST 1402 - History of the Modern World GE (3)
- POLS 2530 - World Politics GE (3) *
- POLS 3531 - Five Wars of Globalization (3) *
- SOC 2810 - Culture and Society (3)
- SOC 2845 - Social Inequality and Social Justice (3)
- SOC 3885 - Globalization (3) *

Human Rights, Peace & Justice

- CJ 2405 - International Policing (3)
- CJ 3020 - Comparative Justice Systems (3)
- CJ 4444 - Terrorism (3)
- HIST 4412 - Wars of Reformation and Religion (3)

- POLS 3526 - Oil, Water, and Security (3)
- POLS 3527 - Security in the 21st Century (3)
- POLS 3530 - International Organizations (3)
- POLS 3598 - International Human Rights (3)
- POLS 4530 - International Law (3)
- POLS 4531 - American Foreign Policy (3)

International Development, Trade and Diplomacy

- AGRI 2130 - Global Agriculture (3)
- ECON 1011 - Principles of Microeconomics GE (3)
- ECON 4050 - Comparative Economic Systems (3)
- INDM 4010 - Current Issues in Industry (3)
- POLS 2520 - Political Cultures of the World GE (3) *
- POLS 2535 - Model United Nations (3)
- POLS 3521 - Political Economy of Developing Nations (3)
- POLS 3530 - International Organizations (3)
- POLS 4511 - Public Policy (3)
- POLS 4520 - Principles of International Development (3)

  * May not count as both a core and content course.

Area Studies Courses: 6 Semester Hours

- GEOG 4235 - Geography of the Former Soviet Union (3)
- HIST 3416 - Europe in Crisis: 1900-Present (3)
- HIST 3442 - The Soviet World (3)
- HIST 4414 - The Age of the French Revolution and Napoleon (3)
- HIST 4415 - Revolutionary Europe (3)
- HIST 4423 - Rule Britannia!: The Making and Eclipse of a Great Power (3)
- HIST 4431 - Topics in German History (3)
- HIST 4432 - Nazi Germany and the Holocaust (3)
- HIST 4461 - The Rise of Chinese Civilization (3)
- HIST 4462 - The Rise of Japanese Civilization (3)
- HIST 4463 - Modern China (3)
- ML 4040 - Special Projects in Foreign Language (1-3)
- POLS 3522 - Global Asia: Politics, Trade and Security (3)
- POLS 3524 - Middle East Politics (3)
- POLS 3525 - Politics in Europe (3)
- POLS 4533 - The Israeli-Palestinian Conflict (3)
- GEOG Special Topic Area Studies (3)

General Education Requirements: 36 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- IS 1000 - Introduction to International Studies GE (3)

- POLS 2520 - Political Cultures of the World GE (3)
  OR
- POLS 2530 - World Politics GE (3)

Modern Language Requirement: 9 Semester Hours

Refer to Bachelor's Degree Requirements section for fulfillment options.

International Experiences

International studies majors are encouraged to participate in one or more of the following:

- A study abroad program. ISP 4000 may fulfill 1-12 hours of content and area studies electives.
- An internship.
- A service-learning program. Schedule a meeting with the program coordinator for information about the various opportunities available.

Free Electives: 42 Semester Hours

Minimum Total: 120 Semester Hours

Middle Eastern Studies Minor (637) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- POLS 3524 - Middle East Politics (3)

- IS 1000 - Introduction to International Studies GE (3)
  OR
- POLS 2520 - Political Cultures of the World GE (3)

Select 4 electives from the following: 12 Semester Hours

- CJ 4444 - Terrorism (3)
- GEOG 3314 - Geography of North Africa/Southwest Asia (3)
- POLS 3526 - Oil, Water, and Security (3)
- POLS 4533 - The Israeli-Palestinian Conflict (3)
- POLS 4590 - Special Projects in Political Science (1-6) (3) (with instructor approval)

Political Science Minor (427) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- POLS 1500 - Introduction to Politics (3)
- POLS 1510 - American Government GE (3)

Political Science Electives: 15 Semester Hours

Must include at least nine hours of upper-level (3000/4000) courses to meet graduation requirements.*

*Excludes: POLS 4601 Senior Seminar in Political Science.

Political Science, BA (42-425) (120 hours)

Major, Bachelor of Arts Degree

The graduate with a Bachelor of Arts degree in Political Science will use the knowledge and skills obtained in the program to:

- Demonstrate knowledge and understanding of core concepts, ideologies, and theories in Political Science
- Analyze, conduct, and critically assess scholarly research in Political Science
- Communicate effectively about politics in both written and oral forms

Political Science, BA (42-425) (4 Year Guide)

Major Requirements: 33 Semester Hours

Core Requirements: 12 Semester Hours

- POLS 1500 - Introduction to Politics (3)
- POLS 1510 - American Government GE (3)
- POLS 3560 - Research Methods in Political Science (3)
- POLS 4601 - Senior Seminar in Political Science (3)

Electives from One of the Following Areas: 12 Semester Hours

At least six (6) semester hours must be at the 3000 or 4000 level.

Area 1 - American Politics, Public Law, and Theory

- POLS 1244 - Workshop in Politic Science (1-3)
- POLS 2511 - State Government GE (3)
- POLS 2540 - Survey of Political Theory (3)
- POLS 2570 - Public Administration (3)
- POLS 2580 - Public Law and the Judicial Process (3)

- POLS 3541 - Contemporary Political Theory (3)
- POLS 3550 - Public Opinion and Mass Media (3)
- POLS 3551 - Race and Ethnic Politics in the United States (3)
- POLS 3552 - Political Parties and Interest Groups (3)
- POLS 3581 - Trial Advocacy (3)
- POLS 4511 - Public Policy (3)
- POLS 4530 - International Law (3)
- POLS 4552 - Legislative Politics (3)
- POLS 4555 - The American Presidency (3)
- POLS 4571 - Municipal Administration (3)
- POLS 4572 - Federalism and Intergovernmental Relations (3)
- POLS 4573 - Administrative Law (3)
- POLS 4580 - American Constitutional Law (3)
- POLS 4581 - Civil Rights and Liberties (3)
- POLS 4583 - First Amendment (3)
- POLS 4590 - Special Projects in Political Science (1-6)
- POLS 4591 - Internship in Political Science (1-6)
- POLS 4592 - Problems in National, State or Local Government (1-3)

Area 2 - International and Regional Politics

- POLS 2520 - Political Cultures of the World GE (3)
- POLS 2530 - World Politics GE (3)
- POLS 2535 - Model United Nations (3)
- POLS 3521 - Political Economy of Developing Nations (3)
- POLS 3522 - Global Asia: Politics, Trade and Security (3)
- POLS 3524 - Middle East Politics (3)
- POLS 3525 - Politics in Europe (3)
- POLS 3526 - Oil, Water, and Security (3)
- POLS 3527 - Security in the 21st Century (3)
- POLS 3530 - International Organizations (3)
- POLS 3531 - Five Wars of Globalization (3)
- POLS 3553 - Women and Politics (3)
- POLS 3598 - International Human Rights (3)
- POLS 4520 - Principles of International Development (3)
- POLS 4531 - American Foreign Policy (3)
- POLS 4533 - The Israeli-Palestinian Conflict (3)
- POLS 4590 - Special Projects in Political Science (1-6)
- POLS 4591 - Internship in Political Science (1-6)

Area Electives: 9 Semester Hours

- Select three (3) courses from the area above not chosen for the main area of concentration except POLS 1244, POLS 4590, POLS 4591 and POLS 4592. At least six (6) semester hours must be at the 3000 or 4000 level.

General Education Requirements: 30-39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- POLS 1510 - American Government GE (3)

- POLS 2511 - State Government GE (3) (if chosen)
- POLS 2520 - Political Cultures of the World GE (3) (if chosen)
- POLS 2530 - World Politics GE (3) (if chosen)

Modern Language Requirement: 9 Semester Hours

Refer to Bachelor's Degree Requirements section for fulfillment options.

Free Electives: 39-48 Semester Hours

Minimum Total: 120 Semester Hours

Political Science, BS (43-426) (120 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Political Science will use the knowledge and skills obtained in the program to:

- Demonstrate knowledge and understanding of core concepts, ideologies, and theories in Political Science
- Analyze, conduct, and critically assess scholarly research in Political Science
- Communicate effectively about politics in both written and oral forms

Political Science, BS (43-426) (4 Year Guide)

Major Requirements: 33 Semester Hours

Core Requirements: 12 Semester Hours

- POLS 1500 - Introduction to Politics (3)
- POLS 1510 - American Government GE (3)
- POLS 3560 - Research Methods in Political Science (3)
- POLS 4601 - Senior Seminar in Political Science (3)

Electives from One of the Following Areas: 12 Semester Hours

At least six (6) semester hours must be at the 3000 or 4000 level.

Area 1 - American Politics, Public Law, and Theory

- POLS 1244 - Workshop in Politic Science (1-3)
- POLS 2511 - State Government GE (3)

- POLS 2540 - Survey of Political Theory (3)
- POLS 2570 - Public Administration (3)
- POLS 2580 - Public Law and the Judicial Process (3)
- POLS 3541 - Contemporary Political Theory (3)
- POLS 3550 - Public Opinion and Mass Media (3)
- POLS 3551 - Race and Ethnic Politics in the United States (3)
- POLS 3552 - Political Parties and Interest Groups (3)
- POLS 3581 - Trial Advocacy (3)
- POLS 4511 - Public Policy (3)
- POLS 4530 - International Law (3)
- POLS 4552 - Legislative Politics (3)
- POLS 4555 - The American Presidency (3)
- POLS 4571 - Municipal Administration (3)
- POLS 4572 - Federalism and Intergovernmental Relations (3)
- POLS 4573 - Administrative Law (3)
- POLS 4580 - American Constitutional Law (3)
- POLS 4581 - Civil Rights and Liberties (3)
- POLS 4583 - First Amendment (3)
- POLS 4590 - Special Projects in Political Science (1-6)
- POLS 4591 - Internship in Political Science (1-6)
- POLS 4592 - Problems in National, State or Local Government (1-3)

Area 2 - International and Regional Politics

- POLS 2520 - Political Cultures of the World GE (3)
- POLS 2530 - World Politics GE (3)
- POLS 2535 - Model United Nations (3)
- POLS 3521 - Political Economy of Developing Nations (3)
- POLS 3522 - Global Asia: Politics, Trade and Security (3)
- POLS 3524 - Middle East Politics (3)
- POLS 3525 - Politics in Europe (3)
- POLS 3526 - Oil, Water, and Security (3)
- POLS 3527 - Security in the 21st Century (3)
- POLS 3530 - International Organizations (3)
- POLS 3531 - Five Wars of Globalization (3)
- POLS 3553 - Women and Politics (3)
- POLS 3598 - International Human Rights (3)
- POLS 4520 - Principles of International Development (3)
- POLS 4531 - American Foreign Policy (3)
- POLS 4533 - The Israeli-Palestinian Conflict (3)
- POLS 4590 - Special Projects in Political Science (1-6)
- POLS 4591 - Internship in Political Science (1-6)

Area Electives: 9 Semester Hours

- Select three (3) courses from the area above not chosen for the main area of concentration except POLS 1244, POLS 4590, POLS 4591, and POLS 4592. At least six (6) semester hours must be at the 3000 or 4000 level.

General Education Requirements: 30-39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- POLS 1510 - American Government GE (3)

- POLS 2511 - State Government GE (3) (if chosen)
- POLS 2520 - Political Cultures of the World GE (3) (if chosen)
- POLS 2530 - World Politics GE (3) (if chosen)

Free Electives: 48-57 Semester Hours

Minimum Total: 120 Semester Hours

Department of Sociology, Anthropology, and Social Studies

Anthropology Minor (424) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

The graduate with a Bachelor's degree that includes a Minor in Anthropology will use the knowledge and skills obtained in the minor program to:

- Students master an understanding of how and why human beings evolve and adapt both biologically and culturally.
- Students master an understanding of current cultural diversity in the world and the impact of globalization on contemporary non-western populations.
- Students incorporate and apply their knowledge of anthropological methods, theories, and practices in an integrative experience (study abroad, internship, fieldwork or directed research).
- Students develop skills relevant to the profession of anthropology through the preparation of research designs, abstracts, grant proposals, case study analyses, oral presentations, posters and essays.

Minor Requirements: 21 Semester Hours

*Must include at least one upper-level (3000/4000) course to meet graduation requirements.

- ANTH 1810 - Human Prehistory GE (3)
- ANTH 1820 - Cultural Anthropology GE (3)
- Electives in ANTH (15) *

Anthropology, BS (43-635) (120 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Anthropology will use the knowledge and skills obtained in the program to:

- Master an understanding of how and why human beings evolve and adapt both biologically and culturally.
- Master an understanding of current cultural diversity in the world and the impact of globalization on contemporary non-western populations.
- Incorporate and apply their knowledge of anthropological methods, theories, and practices in an integrative experience (study abroad, internship, fieldwork or directed research).
- Develop skills relevant to the profession of anthropology through the preparation of research designs, abstracts, grant proposals, case study analyses, oral presentations, posters and essays.

Anthropology, BS (43-635) (4 Year Guide)

Major Requirements: 42 Semester Hours

C or better required in all major coursework.

- ANTH 1810 - Human Prehistory GE (3)
- ANTH 1820 - Cultural Anthropology GE (3)
- ANTH 2820 - Anthropology of Food (3)
- ANTH 2830 - Hoax and Myth in Anthropology (3)
- ANTH 3810 - Applied Anthropology (3)
- ANTH 3820 - World Archaeology (3)
- ANTH 3830 - Anthropological Linguistics (3)
- ANTH 4890 - Anthropology Senior Seminar (3)
- Anthropology Electives (15)

Anthropological Field Experience:

- ANTH 4830 - Archaeological Field Research (3)
  OR
- ANTH 4835 - Anthropological Study Tour (3)
  OR
- ANTH 4885 - Practicum (1-6) (3)

General Education Requirements: 36 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ANTH 1810 - Human Prehistory GE (3) +
- ANTH 1820 - Cultural Anthropology GE (3) +

Free Electives: 42 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Sociology Minor (757) (18 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 18 Semester Hours

- SOC 1800 - Introduction to Sociology GE (3)
- Sociology Electives (9)

Select One of the following:

- SOC 2810 - Culture and Society (3)
- SOC 2845 - Social Inequality and Social Justice (3)
- SOC 2850 - Community, Work & Public Life (3)
- SOC 2854 - Changing Families (3)

Select One of the following:

- SOC 3830 - Protests, Movements & Social Change (3)
- SOC 3845 - Social Deviance (3)
- SOC 3870 - Society & Self (3)
- SOC 3885 - Globalization (3)

Sociology, BA (42-755) (120 hours)

Major, Bachelor of Arts Degree

The graduate with a Bachelor of Arts degree in Sociology will use the knowledge and skills obtained in the program to:

- Analyze societal issues using sociological concepts to articulate the social dimensions of reality.
- Pose and answer critical questions using empirical data, following scientific principles.
- Present sociological knowledge professionally, following ethical principles in research and sociological practice.

Sociology, BA (42-755) (4 Year Guide)

Major Requirements: 30 Semester Hours

- SOC 1800 - Introduction to Sociology GE (3)
- SOC 2805 - Introduction to Social Research (3) *
- SOC 4860 - Sociological Thought (3)
- SOC 4890 - Applied Social Research (3)

Choose One Course From the Following:

- SOC 2810 - Culture and Society (3)
- SOC 2845 - Social Inequality and Social Justice (3)
- SOC 2850 - Community, Work & Public Life (3)
- SOC 2854 - Changing Families (3)

Choose Two Courses From the Following:

- SOC 3830 - Protests, Movements & Social Change (3)
- SOC 3845 - Social Deviance (3)
- SOC 3870 - Society & Self (3)
- SOC 3885 - Globalization (3)

Sociology Electives: 9 Semester Hours**

General Education Requirements: 39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- SOC 1800 - Introduction to Sociology GE (3)

Modern Language Requirement: 9 Semester Hours

Refer to Bachelor's Degree Requirements section for fulfillment options.

Free Electives: 42 Semester Hours **

Minimum Total: 120 Semester Hours

*May substitute alternative research course if double major.

**Minors are strongly advised.

Sociology, BS (43-756) (120 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Sociology will use the knowledge and skills obtained in the program to:

- Analyze societal issues using sociological concepts to articulate the social dimensions of reality.
- Pose and answer critical questions using empirical data, following scientific principles.
- Present sociological knowledge professionally, following ethical principles in research and sociological practice.

Sociology, BS (43-756) (4 Year Guide)

Major Requirements: 30 Semester Hours

- SOC 1800 - Introduction to Sociology GE (3)
- SOC 2805 - Introduction to Social Research (3) *
- SOC 4860 - Sociological Thought (3)
- SOC 4890 - Applied Social Research (3)

Choose One Course From the Following:

- SOC 2810 - Culture and Society (3)
- SOC 2845 - Social Inequality and Social Justice (3)
- SOC 2850 - Community, Work & Public Life (3)
- SOC 2854 - Changing Families (3)

Choose Two Courses From the Following:

- SOC 3830 - Protests, Movements & Social Change (3)
- SOC 3845 - Social Deviance (3)
- SOC 3870 - Society & Self (3)
- SOC 3885 - Globalization (3)

Electives in Sociology: 9 Semester Hours

General Education Requirements: 39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- SOC 1800 - Introduction to Sociology GE (3)

Free Electives: 51 Semester Hours

Minimum Total: 120 Semester Hours

*May substitute alternate research course if double major.

College of Education

The College of Education
Lovinger 2190
660-543-4272
Fax 660-543-4167
ucmo.edu/ced

The College of Education is comprised of:

- Department of Special Education & Behavior Analysis
- Department of Counseling and Educational Leadership
- Department of Early, Elementary, Middle and Physical Education
- Department of Educational Foundations and Literacy
- Department of Educational Technology and Library Science

Teacher Education

In addition to the College of Education, teacher education students may also be enrolled in programs through the College of Arts, Humanities, and Social Sciences and the College of Health, Science, and Technology.

The University of Central Missouri's teacher education programs are accredited by the Council for the Accreditation of Educator Preparation (CAEP).

Conceptual Framework Information

The philosophical underpinnings of the UCM reflective practice model are described in the Conceptual Framework for Teacher Education.

Belief Statement
The Central educator is a competent, caring, reflective practitioner committed to the premise that all can learn.

Mission Statement
As a cornerstone of the institution since 1871, the University of Central Missouri's Teacher Education Program develops teachers and other school professionals who are well grounded in theory, display competence in content knowledge and instructional strategies, and possess the dispositions to ensure success for all learners. The Teacher Education Program prepares individuals as professional educators for an ever-changing, culturally diverse population. Faculty and candidates provide support and service to schools in meeting their present and future challenges by developing communities that learn through research and scholarly activities. Educator preparation is a campus-wide responsibility, a commitment that reflects the honor and worth of serving a vital profession.

Policies and Procedures

The teacher certification programs offered by UCM meet certification requirements set by the Missouri Department of Elementary and Secondary Education (DESE).

Initial teacher certification may be earned at UCM in part by completing the Bachelor of Science in Education degree, the Bachelor of Music Education degree, or in certain instances the Bachelor of Science or Bachelor of Arts degree. The degree earned does not automatically lead to certification. Students may apply for certification upon completion of degrees that are designated as meeting Missouri certification guidelines.

The State of Missouri and UCM stipulate the following requirements for students seeking initial teacher certification:

1. All students enrolled in a teacher education program at the University of Central Missouri are required to have cleared a DESE- sanctioned background check prior to observing or participating in PK-12 classrooms.
2. The following courses must be completed with a grade of C or better:
    - EDFL 2100 -*Introduction to the Teaching Profession*

    - FLDX 2150 -*Introductory Field Experience*
    - EDFL 2240 -*Educational Psychology*
    - EDSP 2100 -*Education of the Exceptional Child*
3. All undergraduate students must be admitted to teacher education at least one full semester prior to the desired student teaching semester.
4. A Professional Education GPA of 3.0, and a content area GPA of 3.0.
5. For admission to teacher education and permission to student teach, students must earn a positive dispositional assessment (no zeros on any indicator) and meet with their program faculty representative to discuss those results.
6. The appropriate Missouri content assessment for the candidate's certification area must be attempted prior to student teaching and must be successfully completed to earn initial certification.
7. Programs may add additional requirements for admission to teacher education.

DESE requirements for certification, including state-wide required assessments are under development and may change. Requirements for graduation and certification may change in order to meet DESE requirements for certification. Updates will be available through your success advisor, faculty advisor, and the Office of Clinical Services and Certification.

Upon initial teacher certification completion, UCM offers an added certification (additional coursework required) in Driver's Education (9-12), Elementary Mathematics Specialist (Grades 1-6), English Language Learner (K-12), and Special Reading (K-12).

Career and Technical Education Certificate (10-864) (17-18 hours)

Certificate

The graduate with a Certificate in Career and Technical Education will use the knowledge and skills obtained in the program to:

- Meet the Missouri Teacher Standards (MTS) at the introductory level or above.
- Develop a thorough understanding of instructional materials and their development.
- Produce and implement authentic student assessments.
- Disaggregate assessment data for improved student learning and performance in the 3 primary domains of learning; cognitive, psychomotor, and affective.
- Learn methods and techniques for teaching CTE students, including exceptional children.
- Become effective CTE classroom and laboratory managers.
- Assist CTE students prepare for college and/or career readiness.

Required Courses: 17-18 Semester Hours

Students must select one path to completion from the choices below:

Area 1:

- CTE 4145 - Curriculum & Literacy Development in CTE (3)
- CTE 4160 - Methods of Teaching Career and Technical Education (3)
- CTE 4165 - Performance Assessment in Career and Technical Education (3)
- EDSP 2100 - Education of the Exceptional Child (3)

- CTE 4150 - Vocational Guidance (3)
  OR

- BTE 4241 - Coordination of Cooperative Education Programs (3)

- CTE 4110 - Foundations of Career and Technical Education (3)
  OR
- CTE 4140 - New Teacher Institute (3)

Area 2:

- CTE 4100 - CTTE 1 - Curriculum & Assessment (3)
- CTE 4120 - CTTE 2 - Curriculum & Methods (1)
- CTE 4130 - CTTE 3 - Curriculum, Methods, & Planning (2)
- CTE 4210 - CTTE 4 - Current Topics in CTE (2)
- CTE 4220 - CTTE 5 - Management, Guidance, & Special Needs (2)
- CTE 4230 - CTTE 6 - Work & Project Based Learning (2)
- CTE 4240 - CTTE 7 - College and Career Readiness (2)

- CTE 4110 - Foundations of Career and Technical Education (3)
  OR
- CTE 4140 - New Teacher Institute (3)

Educational Studies and Training, BS (43-675) (120 hours)

Major, Bachelor of Science Degree

This traditional program or "2+2" program (building on an Associate Degree) allows students to apply educational concepts to traditional or alternative educational or training settings. UCM does not confer teacher certification for this major.

The graduate with a Bachelor of Science in Educational Studies & Training will use the knowledge and skills obtained in the program to:

- Use oral and written communication skills to create, express, and interpret information and ideas including technical information and terminology for diverse audiences.
- Utilize fundamental knowledge of subject matter to plan/prepare effective instruction.
- Employ assessment/evaluation tools in learning settings to advance learner achievement and adjust learning plans.
- Employ instructional strategies in a learning setting to advance learning.

Educational Studies and Training, BS (43-675) (4 Year Guide)

Major Requirements: 39 Semester Hours

Major Core Requirements: 15 Semester Hours

Students must select at least one course from each of the 5 core areas to meet a minimum total of 15 Semester Hours.

Core Area 1 - Curriculum: 1-4 Semester Hours

Students must choose at least 1 course from this section.

- CTE 4120 - CTTE 2 - Curriculum & Methods (1)
- CTE 4145 - Curriculum & Literacy Development in CTE (3)
- CTE 4230 - CTTE 6 - Work & Project Based Learning (2)
- ECEL 3320 - Literacy and Communication Arts for the Intermediate Learner (2)
- ECEL 3520 - Social Studies and Economics for the Intermediate Learner (1)
- ECEL 3620 - Science for the Intermediate Learner (1)
- ECEL 3820 - Mathematics for the Intermediate Learner (2)
- ECEL 3830 - Early Childhood Curriculum (3)
- EDFL 4240 - Integrated English Language Arts Curriculum & Assessment for Middle Level Learners: Block Four (4)
- EDSP 4330 - Curriculum and Methods for Teaching Students with Autism and Severe Developmental Disabilities I (3)
- EDSP 4421 - Methods of Cross-Categorical Special Education I: Intellectual Disabilities/Other Health Impairments (3)
- EDSP 4440 - Curriculum and Methods for Teaching Early Childhood Special Education (3)
- MLED 4135 - Middle Level Curriculum and Assessment (4)
- MS 4410 - The Army Officer (3: 3 lecture, 0 lab)

Core Area 2 - Instructional Strategies: 1-3 Semester Hours

Students must choose at least 1 course from this section.

- BTE 4210 - Methods of Teaching Business and Marketing Education (3)
- CTE 4130 - CTTE 3 - Curriculum, Methods, & Planning (2)
- CTE 4160 - Methods of Teaching Career and Technical Education (3)
- CTE 4180 - Adult Education and Training (3)
- CTE 4240 - CTTE 7 - College and Career Readiness (2)
- CTE 4974 - Educational Evaluation and Strategies (2)
- ECEL 3310 - Literacy and Communication Arts for the Young Learner (2)
- ECEL 3510 - Social Studies and Economics for the Young Learner (1)
- ECEL 3610 - Science for the Young Learner (1)
- ECEL 3810 - Mathematics for the Young Learner (2)
- EDFL 3210 - Methods of Reading Instruction (3)
- EDFL 4235 - Methods of Teaching Middle Level English Language Arts (3)
- EDSP 4210 - Teaching Emergent and At-Risk Readers (3)
- EDSP 4420 - Methods of Cross-Categorical Special Education (3)
- EDSP 4422 - Methods of Cross Categorical Disabilities II: Learning Disabilities (3)
- EDSP 4450 - Curriculum and Methods for Teaching Students with Autism and Severe Developmental Disabilities II (3)
- FCSE 4740 - Methods of Teaching Family and Consumer Sciences (3)
- MS 4420 - Company Grade Leadership (3: 3 lecture, 0 lab)

Core Area 3 - Assessment: 1-3 Semester Hours

Students must choose at least 1 course from this section.

- CTE 4100 - CTTE 1 - Curriculum & Assessment (3)

- CTE 4165 - Performance Assessment in Career and Technical Education (3)
- ECEL 4120 - Curriculum Design and Assessment (3)
- ECEL 4800 - Curriculum Design and Assessment in Mathematics (2)
- EDFL 4300 - Educational Assessment and Evaluation (2)
- EDFL 4974 - Content Specific Assessment (1)
- EDSP 4620 - Evaluation of Abilities and Achievement (3)
- MS 3310 - Training Management and the Warfighting Functions (3: 3 lecture, 0 lab)

Core Area 4 - Classroom Management: 1-4 Semester Hours

Students must choose at least 1 course from this section.

- CTE 4210 - CTTE 4 - Current Topics in CTE (2)
- CTE 4220 - CTTE 5 - Management, Guidance, & Special Needs (2)
- CTE 4973 - CTE Classroom and Lab Management Techniques (1)
- ECEL 4400 - Classroom Management and Interactions (3)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- EDFL 4973 - Classroom Management in Content Areas (1)
- EDSP 4360 - Advanced Behavior Management (3)
- MLED 4340 - The Engaging Middle Level Classroom (4)
- MS 3320 - Applied Leadership in Small Unit Operations (3: 3 lecture, 0 lab)

Core Area 5 -Practicum/ Internship: 3 Semester Hours

Students must choose at least 1 of the following paths from this section.

Path 1

- CTE 4022 - Teaching/Administration Intern (1-3) (1)
  AND one of the courses listed below:
- ECEL 3150 - Early Childhood Practicum (2)
- ECEL 3151 - Young Learner Practicum (Grades 1-3) (2)
- ECEL 3152 - Intermediate Learner Practicum (Grades 4-6) (2)

Path 2

- CTE 4022 - Teaching/Administration Intern (1-3) (2)
  AND one of the courses listed below:
- EDSP 4361 - Practicum in Behavioral Management Techniques (1)
- FLDX 2150 - Introductory Field Experience (1)
- FLDX 3000 - Field Experience in the Content Area (1)
- FLDX 4970 - Field Experience II in the Content Area (1)

Path 3

- CTE 4022 - Teaching/Administration Intern (1-3) (3)

Educational or Training Specialty Area: 24 Semester Hours

Educational or Training content area courses or other approved technical electives from Career & Technical Education, Military Education & Training, Industry Training, or Pre-K-12 Educational Studies.

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements.

- CTE 2000 - Technology and Society GE (3) (recommended)
- EDFL 2240 - Educational Psychology GE (3) (recommended)

- CTE 2060 - Technical Writing GE (3) (recommended)
  OR
- ENGL 1030 - Composition II GE (3) (recommended)

Free Electives: 39 Semester Hours

Minimum Total: 120 Semester Hours

Department of Special Education & Behavior Analysis

Special Education Minor (BSE) (891) (21 hours)

Minor, Bachelor of Science in Education Degree

We encourage all teacher education majors who have a willingness to work with a diverse population of special needs children to declare a Special Education minor. This minor provides sufficient coursework to enable the candidate to add on Mild/Moderate Cross-Categorical teaching certification after completion of the BSE degree and initial teacher certification. All courses listed here require the prerequisite course EDSP 2100 - Education of the Exceptional Child (3) for enrollment.

Minor Requirements: 21 Semester Hours

- EDSP 4140 - Collaborating With Professionals and Families of Students with Exceptionalities (3)
- EDSP 4210 - Teaching Emergent and At-Risk Readers (3)
- EDSP 4359 - Behavior Management for Classroom Teachers (3)
- EDSP 4385 - Introduction to Cross-Categorical Special Education (3)
- EDSP 4420 - Methods of Cross-Categorical Special Education (3)
- EDSP 4620 - Evaluation of Abilities and Achievement (3)
- EDSP 4700 - IEP and the Law (3)

Special Education, BSE (41-784) (120-121 hours)

Major, Bachelor of Science in Education Degree

Certification to teach cross-categorical disabilities K-12; severely developmentally disabled B-12; or early childhood special education Birth-Grade 3.

The graduate with a Bachelor of Science in Special Education will apply knowledge and skills obtained in the program to:

- Understand how exceptionalities may interact with development and learning and use this knowledge to provide meaningful and challenging learning experiences for individuals with exceptionalities.
- Create safe, inclusive, culturally responsive learning environments so that individuals with exceptionalities become active and effective learners and develop emotional well-being, positive social interactions, and self-determination.
- Use knowledge of general and specialized curricula to individualize learning for individuals with exceptionalities.
- Use multiple methods of assessment and data-sources in making educational decisions.
- Select, adapt, and use a repertoire of evidence-based instructional strategies to advance learning of individuals with exceptionalities.
- Use foundational knowledge of the field and the their professional Ethical Principles and Practice Standards to inform special education practice, to engage in lifelong learning, and to advance the profession.
- Collaborate with families, other educators, related service providers, individuals with exceptionalities, and personnel from community agencies in culturally responsive ways to address the needs of individuals with exceptionalities across a range of learning experiences.

Special Education, BSE (41-784) - Cross-Categorical Disabilities Area (SE01) (4 Year Guide)

Special Education, BSE (41-784) - Autism and Severe Disabilities Area (SE04) (odd year start plan) (4 Year Guide)

Special Education, BSE (41-784) - Autism and Severe Disabilities Area (SE04) (even year start plan) (4 Year Guide)

Special Education, BSE (41-784) - Early Childhood Special Education Area (SE03) (4 Year Guide)

Major Requirements: 52-58 Semester Hours

Core Requirements - All Certification Areas: 32 Semester Hours

- CD 4402 - Language Acquisition in Children with Developmental Disabilities (2) +
- EDSP 3210 - Methods of Reading Instruction for Special Education (3) +
- EDSP 4140 - Collaborating With Professionals and Families of Students with Exceptionalities (3) +
- EDSP 4210 - Teaching Emergent and At-Risk Readers (3)
- EDSP 4350 - Augmentative and Alternative Communication (3)
- EDSP 4359 - Behavior Management for Classroom Teachers (3) +
- EDSP 4360 - Advanced Behavior Management (3) +
- EDSP 4620 - Evaluation of Abilities and Achievement (3) +
- EDSP 4700 - IEP and the Law (3) +
- EDSP 4890 - Mathematics for Special Education (3) +
- MATH 3890 - Concepts and Methods of Teaching for Special Education (3) +

Area of Certification Requirements: 20-26 Semester Hours

Area 1 - Cross-Categorical Disabilities (SE01): 20 Semester Hours

- EDFL 3215 - Teaching Reading in Content Fields (3) +
- EDFL 3410 - Children's Literature (3) +
- EDSP 4150 - Career Development for Students with Disabilities (2) +
- EDSP 4385 - Introduction to Cross-Categorical Special Education (3) +
- EDSP 4421 - Methods of Cross-Categorical Special Education I: Intellectual Disabilities/Other Health Impairments (3) +
- EDSP 4422 - Methods of Cross Categorical Disabilities II: Learning Disabilities (3) +
- EDSP 4423 - Methods of Cross-Categorical Special Education III: Emotional/Behavioral Disorders (3) +

Area 2 - Autism and Severe Disabilities (SE04): 22 Semester Hours

- EDFL 3410 - Children's Literature (3) +
- EDSP 4150 - Career Development for Students with Disabilities (2) +
- EDSP 4161 - Physical and Health Care Needs of Students with Autism and Severe Developmental Disabilities (2)
- EDSP 4310 - Introduction to Students with Autism and Severe Developmental Disabilities (2) +
- EDSP 4330 - Curriculum and Methods for Teaching Students with Autism and Severe Developmental Disabilities I (3) +
- EDSP 4370 - Screening, Diagnosing and Prescribing Instruction (3) +
- EDSP 4450 - Curriculum and Methods for Teaching Students with Autism and Severe Developmental Disabilities II (3) +
- NUR 4060 - Physical and Health Needs of the Medically Fragile Child (1) +
- PE 4340 - Adapted Physical Education (3)

Area 3 - Early Childhood Special Education (SE03): 26 Semester Hours

- ECEL 2850 - Integration of Arts & Movement in Early Childhood and Elementary Classrooms (3)
- EDSP 3150 - Community and Family Resources (2) +
- EDSP 3151 - Community and Family Resources Practicum (1) +
- EDSP 4320 - Introduction to Early Childhood Special Education (3) +
- EDSP 4330 - Curriculum and Methods for Teaching Students with Autism and Severe Developmental Disabilities I (3) +
- EDSP 4370 - Screening, Diagnosing and Prescribing Instruction (3) +
- EDSP 4440 - Curriculum and Methods for Teaching Early Childhood Special Education (3) +
- HDFS 1220 - Child and Adolescent Development (3) +
- HDFS 1230 - Observation of Children (2) +
- HDFS 3250 - Organization and Administration of Programs for Young Children (3)

Professional Education Requirements - Cross-Categorical Disabilities and Autism and Severe Disabilities: 27 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)

- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)

- HDFS 1220 - Child and Adolescent Development (3)
  OR
- PSY 2220 - Child and Adolescent Psychological Development (3)
  OR
- PSY 3220 - Life-Span Development GE (3)

Student Teaching Semester: 12 Semester Hours

- FLDX 4395 - Student Teaching in Special Education I (1-12) (8)
- FLDX 4468 - Student Teaching I (1-12) (4)

Professional Education Requirements - Early Childhood Special Education: 24 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)

Student Teaching Semester: 12 Semester Hours

- FLDX 4395 - Student Teaching in Special Education I (1-12) (6)
- FLDX 4396 - Student Teaching in Special Education II (1-12) (6)

General Education Requirements: 36-39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- EDFL 2240 - Educational Psychology GE (3) +

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- MATH 1520 - Practical Mathematics GE (3)

- PSY 3220 - Life-Span Development GE (3) + (if chosen Areas 1,2)

Free Electives: 0-5 Semester Hours

Minimum Total: 120 Semester Hours

+Course requires a grade of C or better.

Department of Counseling and Educational Leadership

Department of Early, Elementary, Middle and Physical Education

Coaching Minor (731) (22 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Certification to coach is not required in the state of Missouri.

Minor Requirements: 22 Semester Hours

- KIN 1800 - Functional Anatomy (3)
- PE 2100 - Foundation, History & Philosophy of Teaching Physical Education (3)
- PE 4550 - Introduction to Coaching (3)
- PE 4551 - Fundamental Techniques in Coaching (3)
- PE 4561 - Coaching Practicum (1)
- PE 4740 - Legal Liability in Fitness/Wellness, Physical Education, Recreation and Sport Settings (2)
- AT 3610 - Care and Prevention of Injuries (3)
- HLTH 4330 - First Aid and CPR (1)

- KIN 2900 - Essentials of Personal Training (3)
  OR
- PE 3310 - Analysis and Teaching of Physical Training (3)

Early Childhood Education - Minor (BSE) (723) (17 hours)

Minor, Bachelor of Science in Education Degree

Available only to candidates pursuing a Bachelor of Science in Education degree.

Minor Requirements Clinical Pathway: 17 Semester Hours

- ECEL 2830 - Early Childhood Principles and Observation (3)
- EDSP 3150 - Community and Family Resources (2)
- EDSP 3151 - Community and Family Resources Practicum (1)
- HDFS 3250 - Organization and Administration of Programs for Young Children (3)

Junior Block I: Methods for the Early Learner (PreK-K): 8 Semester Hours

- ECEL 3150 - Early Childhood Practicum (2)
- ECEL 3830 - Early Childhood Curriculum (3)
- ECEL 3850 - Development and Learning Through Play (3)

Early Childhood Special Education Minor (668) (15 hours)

We encourage all teacher education majors who have a willingness to work with a diverse population of young children with special needs to declare an Early Childhood Special Education minor. This minor provides sufficient coursework to enable the candidate to add on Early Childhood Special Education teaching certification after completion of the BSE degree and initial teacher certification. All courses in the minor require the prerequisite course EDSP 2100 for enrollment.

Minor Requirements: 15 Semester Hours

- EDSP 4210 - Teaching Emergent and At-Risk Readers (3)
- EDSP 4320 - Introduction to Early Childhood Special Education (3)
- EDSP 4360 - Advanced Behavior Management (3)
- EDSP 4361 - Practicum in Behavioral Management Techniques (1)
- EDSP 4370 - Screening, Diagnosing and Prescribing Instruction (3)
- EDSP 4440 - Curriculum and Methods for Teaching Early Childhood Special Education (3) *
  * Requires admission to Teacher Education Program for enrollment

Elementary Education - Option Early Childhood Birth-Grade 3, BSE (41-286) (120-121 hours)

Major, Bachelor of Science in Education Degree

Teacher Education programs in the Department of Early, Elementary, Middle and Physical Education are accredited by the Council for the Accreditation of Educator Preparation (CAEP) and the Missouri Department of Elementary and Secondary Education (DESE). The BSE in Elementary Education includes two options. The Early Childhood Education option leads to Missouri teaching certification for Birth-Grade 3. The Elementary Education Grades 1 -6 option leads to Missouri teaching certification for grades 1 - 6.

The junior and senior levels in the program are field-based blocks which integrate core content (language arts/literacy, mathematics, science, and social studies). All courses are listed as corequisites and are embedded within the context of practice in a UCM Partner School. Students who need to fulfill a part of a block need to consult with a faculty advisor.

Students must earn at least a C grade in all Professional Education courses.

Certification to teach early childhood education, Birth-Grade 3.

Elementary Education - Early Childhood Birth-Grade 3, BSE (41-286) (4 Year Guide)

The graduate with a Bachelor of Science in Elementary Education, Early Childhood Birth-Grade 3 option will apply knowledge and skills obtained in the program to:

- Promote child development and learning while building family and community relationships.
- Observe, document, and assess to support young children and families.
- Apply content knowledge to build and implement developmentally appropriate curriculum.

Major Requirements Clinical Pathway: 55 Semester Hours

Junior Block I: Methods for the Early Learner (preK-K): 8 Semester Hours

- ECEL 3150 - Early Childhood Practicum (2) +
- ECEL 3830 - Early Childhood Curriculum (3)
- ECEL 3850 - Development and Learning Through Play (3)

Junior Block II: Methods for the Young Learner (grades 1-3): 8 Semester Hours

- ECEL 3151 - Young Learner Practicum (Grades 1-3) (2) +
- ECEL 3310 - Literacy and Communication Arts for the Young Learner (2)
- ECEL 3510 - Social Studies and Economics for the Young Learner (1)
- ECEL 3610 - Science for the Young Learner (1)
- ECEL 3810 - Mathematics for the Young Learner (2)

Senior Block I: Senior Experience: 14 Semester Hours

- ECEL 4120 - Curriculum Design and Assessment (3)
- ECEL 4140 - Communication Arts Integration (4)
- ECEL 4160 - Senior Practicum for Elementary and Early Childhood Education (1) +
- ECEL 4400 - Classroom Management and Interactions (3) +
- ECEL 4850 - Mathematics Curriculum, Assessment, and Instruction (3)

Non-Block Courses: 25 Semester Hours

- ECEL 1400 - University and Teacher Education Foundations I (1)
- ECEL 1500 - University and Teacher Education Foundations II (1)
- ECEL 2510 - Concepts in Elementary Social Studies I (2)
- ECEL 2830 - Early Childhood Principles and Observation (3)
- ECEL 2850 - Integration of Arts & Movement in Early Childhood and Elementary Classrooms (3)
- ECEL 3325 - Language Acquisition and Literacy Development (4)
- ECEL 3468 - Community, School and Family Connections (3)
- ECEL 3600 - Science for Early Childhood (1)
- ECEL 3800 - Math for Early Childhood (1)
- EDSP 3150 - Community and Family Resources (2) +
- EDSP 3151 - Community and Family Resources Practicum (1)
- HDFS 3250 - Organization and Administration of Programs for Young Children (3)

Professional Education Requirements: 27 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- ECEL 4400 - Classroom Management and Interactions (3)
- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)

- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)

- HDFS 1220 - Child and Adolescent Development (3)
  OR
- PSY 2220 - Child and Adolescent Psychological Development (3)
  OR
- PSY 3220 - Life-Span Development GE (3)

Student Teaching Semester: 12 Semester Hours

- FLDX 4493 - Student Teaching Early Childhood (1-12) (6)
- FLDX 4496 - Student Teaching Elementary II (1-12) (6)

General Education Requirements: 36-39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- EDFL 2240 - Educational Psychology GE (3) +

- ECEL 2110 - Diversity and Social Justice GE (3)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- MATH 1520 - Practical Mathematics GE (3)
- PSY 3220 - Life-Span Development GE (3) + (if chosen)

Free Electives: 0-2 Semester Hours

Minimum Total: 120-121 Semester Hours

+ Course requires a grade of C or better.

Elementary Education - Option Grades 1-6, BSE (41-285) (121-124 hours)

Major, Bachelor of Science in Education Degree

Teacher Education programs in the Department of Early, Elementary, Middle and Physical Education are accredited by the Council for the Accreditation of Educator Preparation (CAEP) and the Missouri Department of Elementary and Secondary Education (DESE). The BSE in Elementary Education includes two options. The Early Childhood Education option leads to Missouri teaching certification for Birth-Grade 3. The Elementary Education Grades 1 -6 option leads to Missouri teaching certification for grades 1 - 6.

The junior and senior levels in the program are field-based blocks which integrate core content (language arts/literacy, mathematics, science, and social studies). All courses are listed as corequisites and are embedded within the context of practice in a UCM Partner School. Students who need to fulfill a part of a block need to consult with a faculty advisor.

Students must earn at least a C grade in all Professional Education courses.

Certification to teach elementary in grades 1-6.

Elementary Education, BSE (41-285) (Grades 1 - 6 Option) (4 Year Guide)

The graduate with a Bachelor of Science in Elementary Education, Grades 1-6 option will apply knowledge and skills obtained in the program to:

- Demonstrate and apply understandings of major concepts, skills, and practices, as they interpret disciplinary curricular standards and related expectations within and across literacy, mathematics, science, and social studies for grades K-6.
- Plan and adapt instructional sequences and justify their selection of goals, assessments and instructional strategies to promote student learning.
- Deliver instruction using a variety of effective instructional practices guided by knowledge of children and assessment of students' learning.
- Demonstrate effective classroom management strategies and engagement techniques to promote student learning.

Major Requirements Clinical Pathway: 58 Semester Hours

Junior Block II: Methods for the Young Learner (Grades 1-3): 8 Semester Hours

- ECEL 3151 - Young Learner Practicum (Grades 1-3) (2) +
- ECEL 3310 - Literacy and Communication Arts for the Young Learner (2)
- ECEL 3510 - Social Studies and Economics for the Young Learner (1)
- ECEL 3610 - Science for the Young Learner (1)
- ECEL 3810 - Mathematics for the Young Learner (2)

Junior Block III: Methods for the Intermediate Learner (Grades 4-6): 8 Semester Hours

- ECEL 3152 - Intermediate Learner Practicum (Grades 4-6) (2) +
- ECEL 3320 - Literacy and Communication Arts for the Intermediate Learner (2)
- ECEL 3520 - Social Studies and Economics for the Intermediate Learner (1)
- ECEL 3620 - Science for the Intermediate Learner (1)
- ECEL 3820 - Mathematics for the Intermediate Learner (2)

Senior Block I: Senior Experience: 14 Semester Hours

- ECEL 4120 - Curriculum Design and Assessment (3)
- ECEL 4140 - Communication Arts Integration (4)
- ECEL 4160 - Senior Practicum for Elementary and Early Childhood Education (1) +
- ECEL 4400 - Classroom Management and Interactions (3) +

- ECEL 4850 - Mathematics Curriculum, Assessment, and Instruction (3)

Non-Block Courses: 28 Semester Hours

- ECEL 1400 - University and Teacher Education Foundations I (1)
- ECEL 1500 - University and Teacher Education Foundations II (1)
- ECEL 2510 - Concepts in Elementary Social Studies I (2)
- ECEL 2520 - Concepts in Elementary Social Studies II (2)
- ECEL 2610 - Life & Earth Science for Teachers (3)
- ECEL 2620 - Physical Science and Engineering Design for Teachers (3)
- ECEL 2850 - Integration of Arts & Movement in Early Childhood and Elementary Classrooms (3)
- ECEL 3325 - Language Acquisition and Literacy Development (4)
- ECEL 3468 - Community, School and Family Connections (3)
- EDFL 3410 - Children's Literature (3) +
- MATH 2820 - Elementary Mathematics from an Advanced Perspective (3) +

Professional Education Requirements: 27 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- ECEL 4400 - Classroom Management and Interactions (3)
- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)

- HDFS 1220 - Child and Adolescent Development (3)
  OR
- PSY 2220 - Child and Adolescent Psychological Development (3)
  OR
- PSY 3220 - Life-Span Development GE (3)

Student Teaching Semester: 12 Semester Hours

- FLDX 4495 - Student Teaching Elementary I (1-12) (6)
- FLDX 4496 - Student Teaching Elementary II (1-12) (6)

General Education Requirements: 36-39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- EDFL 2240 - Educational Psychology GE (3) +

- ECEL 2110 - Diversity and Social Justice GE (3)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- MATH 1520 - Practical Mathematics GE (3)
- PSY 3220 - Life-Span Development GE (3) + (if chosen)

Minimum Total: 121-124 Semester Hours

+ Course requires a grade of C or better.

Health Education Minor (BSE) (804) (23 hours)

Minor, Bachelor of Science in Education Degree

The student will demonstrate a knowledge and/or competencies in the following areas:

- The structures, functions, and interrelationships of body systems as they apply to improving and maintaining healthful living.
- The principles of nutrition and their application to maintaining good health and preventing health problems.
- The use and abuse of legal and illegal drugs and their effects on the human body and society.
- The prevention and management of communicable and chronic diseases and related health care.
- The consumer health issues related to the marketing, selection, and use of health products and services.
- The attaining and maintaining good mental health and its effects on the health of the body.
- The dynamics of interpersonal relationships as related to family life, human sexuality, and growth and development.
- The process of behavior change that favorably affect personal health.
- The expanded model of the Comprehensive School Health Program and the interrelationships of its components.
- The basic concepts of injury prevention both intentional and unintentional, first aid, emergency systems, and the effects of trauma.

Minor Requirements: 23 Semester Hours

- HLTH 1100 - Personal Health GE (3)
- HLTH 1350 - Responding to Emergencies (3)
- HLTH 3360 - Methods in Secondary School Health (2) *
- HLTH 4310 - Drugs: Addiction to Recovery (3)
- KIN 1800 - Functional Anatomy (3)
- KIN 2850 - Foundations of Exercise Physiology (3)
- PSY 4230 - Psychology of Adolescence (3)

- HLTH 2200 - Applied Nutrition and Health Interventions (3)
  OR
- NUTR 4300 - Nutrition and Human Performance (3)

Note:

*This course has a prerequisite not listed in the program; see specific class listing in the catalog for additional requirements.

Middle School-Junior High School, BSE (41-840) (120 hours)

Major, Bachelor of Science in Education Degree

Certification to teach grades 5-9, in a subject area.

The graduate with a Bachelor of Science in Education degree with a major in Middle School/Junior High School will use the knowledge and skills obtained in the program to:

- Understand, use, and reflect on the major concepts, principles, theories, and research related to young adolescent development and use that knowledge in their practice. They demonstrate their ability to apply this knowledge when making curricular decisions, planning and implementing instruction, participating in middle level programs and practices, and providing healthy and effective learning environments for all young adolescents.
- Understand and use the central concepts, standards, research, and structures of content to plan and implement curriculum that develops all young adolescents' competence in subject matter. They use their knowledge and available resources to design, implement, and evaluate challenging, developmentally responsive curriculum that results in meaningful learning outcomes. Middle level teacher candidates demonstrate their ability to assist all young adolescents in understanding the interdisciplinary nature of knowledge. They design and teach curriculum that is responsive to all young adolescents' local, national, and international histories, language/dialects, and individual identities (e.g., race, ethnicity, culture, age, appearance, ability, sexual orientation, socioeconomic status, family composition).
- Understand the major concepts, principles, theories, and research underlying the philosophical foundations of developmentally responsive middle level programs and schools, and they work successfully within middle level organizational components.
- Understand, use, and reflect on the major concepts, principles, theories, and research related to data-informed instruction and assessment. They employ a variety of developmentally appropriate instructional strategies, information literacy skills, and technologies to meet the learning needs of all young adolescents (e.g., race, ethnicity, culture, age, appearance, ability, sexual orientation, socioeconomic status, family composition).
- Understand their complex roles as teachers of young adolescents. They engage in practices and behaviors that develop their competence as middle level professionals. They are informed advocates for young adolescents and middle level education, and work successfully with colleagues, families, community agencies, and community members. Middle level teacher candidates demonstrate positive dispositions and engage in ethical professional behaviors.

Middle School-Junior High School, BSE (41-840) - Business Education Subject Area (4 Year Guide)

Middle School-Junior High School, BSE (41-840) - Engineering & Technology Subject Area (4 Year Guide)

Middle School-Junior High School, BSE (41-840) - General Science Subject Area (4 Year Guide)

Middle School-Junior High School, BSE (41-840) - Language Arts Subject Area (4 Year Guide)

Middle School-Junior High School, BSE (41-840) - Math Subject Area (4 Year Guide)

Middle School-Junior High School, BSE (41-840) - Social Science Subject Area (4 Year Guide)

Middle School-Junior High School, BSE (41-840) - Speech/Theatre Subject Area (4 Year Guide)

Major Requirements: 71-75 Semester Hours

Subject Areas: 21-25 Semester Hours

All Middle School-Junior High majors must choose one subject area from the following seven:

Area 1 - Business Education (MS01): 24 Semester Hours

- CTE 1210 - Managing Information Using Computer Applications GE (2)
- CTE 2060 - Technical Writing GE (3)
- Electives from BTE minor or recommended by the BTE advisor (19)

Area 2 - Engineering and Technology (MS02): 24 Semester Hours

- ATM 1010 - Contemporary Power Systems (3: 2 lecture, 1 lab)
- CMGT 1300 - Introduction to Construction Management (3: 2 lecture, 1 lab)
- CTE 1300 - Introduction to Engineering Design (3)
- CTE 2000 - Technology and Society GE (3)
- ENGT 1510 - Introduction to Manufacturing Processes (3: 2 lecture, 1 lab)

Electives in Engineering and Technology: 9 Semester Hours

- ENGT 1011 - Applied Electricity (4: 3 lecture, 1 lab)
- ET 1020 - General Electronics (3)
- ENGT 1050 - Digital Principles and Applications (3: 2 lecture, 1 lab)
- CADD 1110 - Fundamentals of Drafting (3: 3 lecture, 0 lab)
- CADD 1170 - AutoCAD Applications (3: 3 lecture, 0 lab)
- ENGT 1010 - Materials for Manufacturing and Construction (3)
- ENGT 1120 - Welding (3: 2 lecture, 1 lab)

Area 3 - General Science (MS03): 23-25 Semester Hours

- GEOS 1112 - Astronomy (3)
- STCH 3020 - Science and Engineering Practices (3)
- STCH 4010 - Exploring Firsthand Science Lessons (1-2)

- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)
  OR
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)

- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
  OR
- GEOS 1114 - Weather and Climate GE (4: 3 lecture, 1 lab)

- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
  OR
- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)

- BIOL 1003 - Introduction to the Sciences: Ecology GE (3) **AND**

- BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab)
  OR
- BIOL 1005 - Introduction to Environmental Science GE (3) **AND**
- BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab)
  OR
- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)

Area 4 - Language Arts (MS04): 23 Semester Hours

- EDFL 4230 - Response to Intervention for Middle School English Language Arts: Block Three (4) +
- EDFL 4240 - Integrated English Language Arts Curriculum & Assessment for Middle Level Learners: Block Four (4) +
- ENGL 1020 - Composition I GE (3)
- ENGL 1030 - Composition II GE (3)
- ENGL 3110 - English Grammar (3)
- ENGL 3830 - Young Adult Literature and Reading Instruction (3) +

Elective in Language Arts: Select one course

- ENGL 2010 - Introduction to Reading Poetry and Drama GE (3)
- ENGL 2020 - Introduction to Reading Fiction GE (3)
- ENGL 2200 - American Literature to 1865 (3)
- ENGL 2205 - Introduction to American Literature GE (3)
- ENGL 2210 - British Literature to 1798 (3)
- ENGL 2215 - Introduction to British Literature GE (3)
- ENGL 2220 - Introduction to World Literature GE (3)

Area 5 - Math (MS05): 22 Semester Hours

- MATH 1820 - Math for Middle School Teachers (3)
- MATH 2821 - Elements of Algebra (3)
- MATH 2822 - Elements of Geometry (3)
- MATH 2824 - Infinite Processes I (3)
- MATH 2825 - Infinite Processes II (2)
- MATH 3800 - Teaching and Learning Numbers and Operations (3) +
- MATH 3802 - Concepts and Methods in Middle School Mathematics (2)
- MATH 4851 - Probability and Statistics for Middle/High School Mathematics (3)

Area 6 - Social Science (MS06): 21 Semester Hours

- ECON 1010 - Principles of Macroeconomics GE (3)
- ECON 1011 - Principles of Microeconomics GE (3)
- GEOG 2212 - World Geography GE (3)
- HIST 1350 - History of the United States to 1877 GE (3)
- HIST 1351 - History of the United States from 1877 GE (3)
- HIST 1402 - History of the Modern World GE (3)

- POLS 1510 - American Government GE (3)

Area 7 - Speech/Theatre (MS07): 24 Semester Hours

- COMM 1000 - Public Speaking GE (3)
- COMM 1200 - Introduction to Mass Communication GE (3)
- COMM 2330 - Teamwork and Group Dynamics (3)
- THEA 1500 - Acting (3)
- THEA 1600 - Stagecraft (3: 3 lecture, 0 lab)
- THEA 2400 - Discovering Theatre GE (3)
- COMM/THEA electives (6)

Professional Education Requirements: 49-50 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDFL 3230 - Introduction to Language, Literacy and Literature in the Middle Level Classroom, Block One (4)
- EDFL 3240 - Application of Content Area Literacy for Middle Level Learners, Block Two (4)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- MLED 4130 - Fundamentals of Middle Level Education (4)
- MLED 4135 - Middle Level Curriculum and Assessment (4)
- MLED 4340 - The Engaging Middle Level Classroom (4)
- PSY 3220 - Life-Span Development GE (3)

Student Teaching Semester: 12 Semester Hours

- FLDX 4497 - Student Teaching Middle School I (1-12) (6)
- FLDX 4498 - Student Teaching Middle School II (1-12) (6)

Methods: 2-3 Semester Hours

Students choose one from the following based on subject area selected:

- BTE 4210 - Methods of Teaching Business and Marketing Education (3)
- CTE 4160 - Methods of Teaching Career and Technical Education (3)
- EDFL 4074 - Methods of Teaching Middle and Secondary School Social Studies (3)
- EDFL 4235 - Methods of Teaching Middle Level English Language Arts (3)
- MATH 3840 - Strategies in Teaching Middle School Mathematics (3)
- STCH 4050 - Science Teaching Methods (3)
- THEA 4984 - Methods of Teaching Speech and Theatre (2)

Note:

All Middle School- Junior high majors are encouraged to choose an additional content area by taking additional hours or with a minor. However, in order to be certified in an additional content area, a Missouri Content Assessment must be passed after initial MS/JH Certification.

General Education Requirements: 27-36 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- EDFL 2240 - Educational Psychology GE (3)
- PSY 3220 - Life-Span Development GE (3)

- ECEL 2110 - Diversity and Social Justice GE (3)
- MATH 1520 - Practical Mathematics GE (3)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- CTE 1210 - Managing Information Using Computer Applications GE (2) (If Business Education Area)
- CTE 2060 - Technical Writing GE (3) (If Business Education Area)

- ENGL 1020 - Composition I GE (3) (If Language Arts Area)
- ENGL 1030 - Composition II GE (3) (If Language Arts Area)
- ENGL 2205 - Introduction to American Literature GE (3) (If chosen in Language Arts Area)
- ENGL 2215 - Introduction to British Literature GE (3) (If chosen in Language Arts Area)
- ENGL 2220 - Introduction to World Literature GE (3) (If chosen in Language Arts Area)
- ENGL 2010 - Introduction to Reading Poetry and Drama GE (3) (If chosen in Language Arts Area)
- ENGL 2020 - Introduction to Reading Fiction GE (3) (If chosen in Language Arts Area)

- COMM 1000 - Public Speaking GE (3) (If Speech/Theatre Area)
- THEA 2400 - Discovering Theatre GE (3) (If Speech/Theatre Area)

- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab) (If chosen in Science Area)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab) (If chosen in Science Area)
- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab) (If chosen in Science Area)
- GEOS 1114 - Weather and Climate GE (4: 3 lecture, 1 lab) (If chosen in Science Area)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab) (If chosen in Science Area)
- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab) (If chosen in Science Area)
- BIOL 1003 - Introduction to the Sciences: Ecology GE (3) (If chosen in Science Area)
- BIOL 1005 - Introduction to Environmental Science GE (3) (If chosen in Science Area)
- BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab) (If chosen in Science Area)

Free Electives: 9-20 Semester Hours

(or Complementary Content Hours)

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Physical Education, BS (43-670) (120-123 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree with a major in Physical Education will:

- Demonstrate and integrate knowledge of the major concepts, empirical findings and current trends in the area of Physical Education.
- Recognize and demonstrate best practices in the area of special population to address problems related to the professions of adapted sports, health promotion and health-care.
- Appropriately apply knowledge and skills acquired in the curriculum to personal, social, and organizational issues.
- Identify and apply appropriate Adapted Sport language through effective speaking, reading, and writing.
- Recognize and apply empirical evidence while behaving legally and ethically in research, clinic, professional and applied settings.
- Recognize individual differences, respecting the role these differences play in intercultural and international diversity. Describe the interaction of these factors in the field.
- Review authentic occupational, career, and advanced educational opportunities appropriate to the discipline and develop a feasible plan to pursue those opportunities.
- Demonstrate a level of content knowledge required to be an effective teacher.
- Utilize appropriate practices and broad fields of information when planning and implementing effective instructional strategies for diverse populations.
- Positively impact student engagement and learning though appropriate instructional practices in the management of time, people, space, equipment, transitions and behavior.
- Understand and use multiple assessment strategies to assess individual student needs and learning as well as program effectiveness.
- Continually reflect on and make instructional and program improvement decisions based on assessment data.

Physical Education, BS (43-670) - Adapted Sport Education Area (PE10) (4 Year Guide)

Physical Education, BS (43-670) - Elementary - Secondary Certification K-12 Area (PE11) (4 Year Guide)

Physical Education, BS (43-670) - Sports & Recreation Education Area (PE12) (4 Year Guide)

Major Requirements: 48-93 Semester Hours

Major Core Requirements: 26 Semester Hours

- PE 2100 - Foundation, History & Philosophy of Teaching Physical Education (3)
- PE 2455 - Growth and Motor Development (3)
- PE 3310 - Analysis and Teaching of Physical Training (3)
- PE 3320 - Analysis and Teaching of Elementary Skills (3)
- PE 3330 - Analysis and Teaching of Secondary Skills (3)
- PE 3340 - Analysis and Teaching of Lifetime Activities (3)
- PE 3350 - Assessment of Elementary and Secondary Skills (2)
- PE 4340 - Adapted Physical Education (3)
- PE 4845 - Psychological and Social Aspects of Physical Education (3)

Select 1 of the 3 Areas: 22-67 Semester Hours

Area 1 - Adapted Sport Education (PE10): 33 Semester Hours

- EDSP 2100 - Education of the Exceptional Child (3)
- EDSP 4140 - Collaborating With Professionals and Families of Students with Exceptionalities (3)
- EDSP 4161 - Physical and Health Care Needs of Students with Autism and Severe Developmental Disabilities (2)
- EDSP 4350 - Augmentative and Alternative Communication (3)
- EDSP 4360 - Advanced Behavior Management (3)
- EDSP 4620 - Evaluation of Abilities and Achievement (3)
- PE 4000 - Special Projects in Coeducational Physical Education (1-5) (3)
- PE 4350 - Physical Education for Special Education (2)
- PE 4450 - Techniques of Teaching Physical Education Activities in the Elementary Schools (3)
- PE 4460 - Techniques of Teaching Physical Education Activities in Middle Schools and High Schools (3)
- PE 4770 - Curriculum and Instructional Planning (2)
- PE 4970 - Teaching and Management in PreK-12 Physical Education (3)
- PE 4975 - Practicum in PreK-12 Physical Education (1)

Area 2 - Elementary - Secondary Certification K-12 (PE11): 67 Semester Hours

Elementary - Secondary Certification K-12 Core: 30 Semester Hours

- AT 3610 - Care and Prevention of Injuries (3)
- DANC 2100 - Dance Appreciation GE (3)
- HLTH 1350 - Responding to Emergencies (3)
- HLTH 2200 - Applied Nutrition and Health Interventions (3)
- KIN 1800 - Functional Anatomy (3)
- KIN 2800 - Biomechanics (3)
- KIN 2850 - Foundations of Exercise Physiology (3)
- MATH 1111 - College Algebra GE (3)
- PE 4450 - Techniques of Teaching Physical Education Activities in the Elementary Schools (3)
- PE 4460 - Techniques of Teaching Physical Education Activities in Middle Schools and High Schools (3)

Professional Education: 26 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDFL 4210 - Introduction to Content Area Literacy (2)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- FLDX 3000 - Field Experience in the Content Area (1)

- PE 4890 - Methods of Teaching and Assessment in K-12 Physical Education (1)
- PE 4970 - Teaching and Management in PreK-12 Physical Education (3)
- PE 4971 - Methods of Teaching Reading and Writing in Physical Education (1)
- PE 4974 - Assessment and Data Based Decision Making in Physical Education (2)
- PE 4975 - Practicum in PreK-12 Physical Education (1)
- PSY 3220 - Life-Span Development GE (3)

Student Teaching Semester: 11 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (5)
- FLDX 4495 - Student Teaching Elementary I (1-12) (6)

Area 3 - Sports & Recreation Education (PE12): 22 Semester Hours

- PE 1200 - Fitness Through Activity and Sport (1)
- PE 1204 - Stress Management (1)
- PE 2200 - Weight Training (1)
- PE 3210 - Outdoor Skills I (3)
- PE 4000 - Special Projects in Coeducational Physical Education (1-5) (3)
- PE 4210 - Outdoor Skills II (3)
- PE 4550 - Introduction to Coaching (3)
- PE 4551 - Fundamental Techniques in Coaching (3)
- PE 4560 - Coaching and Sport Analysis (2)
- PE 4590 - Administration of Interscholastic Athletics (2)

General Education Requirements: 30-42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- DANC 2100 - Dance Appreciation GE (3)
- MATH 1111 - College Algebra GE (3)
- EDFL 2240 - Educational Psychology GE (3) +

- ECEL 2110 - Diversity and Social Justice GE (3)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- CTE 1210 - Managing Information Using Computer Applications GE (2)
  OR
- LIS 1600 - University Library and Research Skills GE (2)

- PSY 3220 - Life-Span Development GE (3) + (Area 2)

Free Electives: 0-30 Semester Hours

Adapted Sport Education Area:	19 Semester Hours
Elementary - Secondary Certification K-12 Area:	0 Semester Hours
Sports & Recreation Education Area:	30 Semester Hours

Minimum Total: 120 - 123 Semester Hours

+ Course requires a grade of C or better.

Program and Community Partnerships in Early Childhood Education (10-656) (12 hours)

Student Learning Outcomes*

After completion of the certificate courses the candidates will be able to:

- Build capacity in foundational beliefs, knowledge, and skills of early childhood education.
- Understand family, program, and community relations.
- Understand and demonstrate ethical practices.
- Understand issues in early childhood education.

*These outcomes are aligned with Standards 2 and 6 of the National Association for the Education of Young Children (NAEYC) Standards for Early Childhood Professional Preparation.

Admission Requirements:

- A minimum 2.5 GPA on any courses completed prior to admission.

Required Courses: 12 Semester Hours

- ECEL 3468 - Community, School and Family Connections (3) **
- ECEL 4000 - Special Projects in Education (1-6) (1)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDSP 3150 - Community and Family Resources (2) **
- EDSP 3151 - Community and Family Resources Practicum (1) **
- HDFS 3250 - Organization and Administration of Programs for Young Children (3)

Note:

** This course has prerequisites not listed in the program.

Teaching in the Early Childhood Classroom (10-655) (14 hours)

Student Learning Outcomes*

After completion of the certificate courses the candidates will be able to:

- Build capacity in foundational beliefs, knowledge, and skills of early childhood education.
- Construct optimal learning environments.
- Understand developmentally appropriate curriculum, assessment and instructional practices.
- Build content knowledge for teaching young children.

*These outcomes are aligned with Standards 4 and 5 of the National Association for the Education of Young Children (NAEYC) Standards for Early Childhood Professional Preparation.

Admission Requirements:

- A minimum 2.5 GPA on any courses completed prior to admission.

Required Courses: 14 Semester Hours

- ECEL 2850 - Integration of Arts & Movement in Early Childhood and Elementary Classrooms (3)
- ECEL 3150 - Early Childhood Practicum (2) **
- ECEL 3225 - Acquisition of Language and Literacy (3) **
- ECEL 3830 - Early Childhood Curriculum (3) **
- ECEL 4400 - Classroom Management and Interactions (3) **

Note:

** This course has prerequisites not listed in the program.

Understanding the Child in Early Childhood Education Certificate (10-654) (13 hours)

Student Learning Outcomes*

After completion of the certificate courses the candidates will be able to:

- Build capacity in foundational beliefs, knowledge, and skills of early childhood education.
- Understand influences on the child's development and learning.
- Understand supportive interactions for optimal growth, development, and learning.

*These outcomes are aligned with Standards 1 and 3 of the National Association for the Education of Young Children (NAEYC) Standards for Early Childhood Professional Preparation.

Admission Requirements:

- A minimum 2.5 GPA on any courses completed prior to admission.

Required Courses: 13 Semester Hours

- ECEL 2830 - Early Childhood Principles and Observation (3) **
- ECEL 3850 - Development and Learning Through Play (3) **
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- HDFS 1220 - Child and Adolescent Development (3)

Note:

** This course has prerequisites not listed in the program.

Department of Educational Foundations and Literacy

Secondary Education, BSE (41-695) - Agriculture Teacher Education Option (E328) (124-127 hours)

Teacher Education Policy

Secondary Education, BSE (41-695) - Agriculture Teacher Education Option (E328) (Odd Year) (4 Year Guide)

Secondary Education, BSE (41-695) - Agriculture Teacher Education Option (E328) (Even Year) (4 Year Guide)

Major Requirements: 47 Semester Hours

- AGRI 1200 - Agriculture Mechanics (3: 2 lecture, 1 lab)
- AGRI 1420 - Introduction to Animal Science (3)
- AGRI 1600 - Introduction to Horticulture Science (4: 3 lecture, 1 lab)
- AGRI 3110 - Agri-Business Management (3)
- AGRI 3610 - Integrated Pest Management (3)
- AGRI 4200 - Advanced Agriculture Mechanics (3: 2 lecture, 1 lab)
- CTE 1000 - Introduction to Career and Technical Education (1)
- Agriculture Electives (6)

- AGRI 1310 - Crop Science (3: 3 lecture, 0 lab)
  OR
- AGRI 2315 - Forages and Pasture Management (3: 2 lecture, 1 lab)

- AGRI 2330 - Soil Science (3)
  OR
- AGRI 2331 - Soils Management (3: 2 lecture, 1 lab)

- AGRI 3620 - Residential Landscape Design (3: 2 lecture, 1 lab)
  OR
- AGRI 3640 - Horticultural Propagation Materials (3: 2 lecture, 1 lab)
  OR
- AGRI 4600 - Horticultural Plants I: Woody (3: 2 lecture, 1 lab)

- CTE 2060 - Technical Writing GE (3)
  OR
- COMM 1500 - Writing Across the Media (3)
  OR
- COMM 1520 - Introduction to Digital Journalism (3)

- ECON 1010 - Principles of Macroeconomics GE (3)
  OR

- ECON 1011 - Principles of Microeconomics GE (3)

Select two courses: 6 Semester Hours

- AGRI 3210 - Soil and Water Conservation (3)
- AGRI 3320 - Field Crop Management (3)
- AGRI 4150 - Natural Resource Economics (3)
- AGRI 4300 - Soil Fertility and Fertilizers (3)
- AGRI 4610 - Turfgrass Science (3: 2 lecture, 1 lab)

Professional Education: 47 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- AGRI 4910 - Supervised Agriculture Experience Programs in Agricultural Education (2)
- CTE 4145 - Curriculum & Literacy Development in CTE (3)
- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 4210 - Introduction to Content Area Literacy (2)
- EDFL 4212 - Literacy in the Disciplines I (2)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- PSY 3220 - Life-Span Development GE (3)

Junior Block: 7 Semester Hours

- CTE 3710 - Organization & Management of Comprehensive CTE Programs (3)
- CTE 4973 - CTE Classroom and Lab Management Techniques (1)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- FLDX 3000 - Field Experience in the Content Area (1)

Senior Block: 8 Semester Hours

- CTE 4160 - Methods of Teaching Career and Technical Education (3)
- CTE 4974 - Educational Evaluation and Strategies (2)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- FLDX 4970 - Field Experience II in the Content Area (1)

Student Teaching Semester: 10 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (5)
- FLDX 4595 - Student Teaching II (1-12) (5)

General Education Requirements: 30-33 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ECON 1010 - Principles of Macroeconomics GE (3)
  OR
- ECON 1011 - Principles of Microeconomics GE (3)

- EDFL 2240 - Educational Psychology GE (3) +
- PSY 3220 - Life-Span Development GE (3) +

- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- CTE 2060 - Technical Writing GE (3) (if chosen)

Agriculture Teacher Ed Option Total: 124-127 Semester Hours

+ Course requires a grade of C or better.

Secondary Education, BSE (41-695) - Biology Option (E487) (122.5-123.5 hours)

Teacher Education Policy

Secondary Education, BSE (41-695) - Biology Option (E487) (4 Year Guide)

Major Requirements: 53.5-54.5 Semester Hours

General Science: 27 Semester Hours

- BIOL 2020 - General Ecology (3)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- MATH 1111 - College Algebra GE (3)
- STCH 3020 - Science and Engineering Practices (3)
- STCH 4020 - Internship in Science Teaching and Learning (1)

- BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)
  OR
- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)

- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
  OR
- GEOS 1114 - Weather and Climate GE (4: 3 lecture, 1 lab)

- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

OR

- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)

Biology: 26.5-27.5 Semester Hours

- BIOL 1000 - Biology Seminar I (.5)
- BIOL 1110 - Principles of Biology (3)
- BIOL 2512 - Cell Biology (3)
- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)
- BIOL 4102 - Evolution (3)
- BIOL 4950 - Laboratory Intern (1)
- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)

- BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)
  OR
- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)

Electives from the following: 3-4 Semester Hours

- BIOL 2010 - Human Biology GE (3)
- BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab)
- BIOL 3431 - Animal Physiology (4: 2 lecture, 2 lab)
- BIOL 3611 - Microbiology (4: 3 lecture, 1 lab) [1]
- BIOL 4411 - Plant Physiology (4: 2 lecture, 2 lab)

Professional Education: 43 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDFL 4210 - Introduction to Content Area Literacy (2)
- EDFL 4212 - Literacy in the Disciplines I (2)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- EDFL 4972 - Literacy in the Disciplines II (2)
- EDFL 4973 - Classroom Management in Content Areas (1)
- EDFL 4974 - Content Specific Assessment (1)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- FLDX 3000 - Field Experience in the Content Area (1)
- FLDX 4970 - Field Experience II in the Content Area (1)
- STCH 4010 - Exploring Firsthand Science Lessons (1-2) (1)
- STCH 4050 - Science Teaching Methods (3)

- PSY 2220 - Child and Adolescent Psychological Development (3)
  OR
- PSY 3220 - Life-Span Development GE (3)

Student Teaching Semester: 12 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (4)
- FLDX 4595 - Student Teaching II (1-12) (4)
- STCH 4080 - Science Learning and Literacy (4)

General Education Requirements: 26 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- EDFL 2240 - Educational Psychology GE (3) +

- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
  OR
- GEOS 1114 - Weather and Climate GE (4: 3 lecture, 1 lab)

- MATH 1111 - College Algebra GE (3)

- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
  OR
- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- POLS 1510 - American Government GE (3)

Biology Option Total: 122.5 -123.5 Semester Hours

[1]This course has a prerequisite.

+ Course requires a grade of C or higher.

Secondary Education, BSE (41-695) - Business Teacher Education Option (E270) (120 hours)

Teacher Education Policy

Secondary Education, BSE (41-695) - Business Teacher Education Option (E270) (4 Year Guide)

Major Requirements: 34 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3)

- ACCT 2102 - Principles of Managerial Accounting (3)
- BLAW 2720 - Legal Environment of Business (3)
- BTE 3110 - Consumer Finance and Economics (3)
- CTE 1000 - Introduction to Career and Technical Education (1)
- MGT 3315 - Management of Organizations (3)
- MGT 3325 - Business Communication (3)
- MKT 3405 - Principles of Marketing (3)
- MKT 3450 - Digital Marketing (3)

- ECON 1010 - Principles of Macroeconomics GE (3)
  OR
- ECON 1011 - Principles of Microeconomics GE (3)

Emerging Technologies Courses - Select from 2 Groups: 6 Semester Hours

Group 1:

- BTE 4510 - Desktop Publishing for Business (3)
- BTE 4550 - Publishing Applications for Business (2)
- COMM 2410 - Multimedia Production (3)
- FAME 1010 - Digital PreMedia Fundamentals (3)

Group 2:

- BTE 4535 - Data Input Technologies (2)
- BTE 4560 - Emerging Technologies for Business (2)
- INST 4110 - Google Educator Preparation (3)

Group 3:

- ART 1610 - Web Languages GE (3)
- CS 1030 - Python Programming I (3)

Professional Education: 47 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- CTE 4145 - Curriculum & Literacy Development in CTE (3)
- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 4210 - Introduction to Content Area Literacy (2)
- EDFL 4212 - Literacy in the Disciplines I (2)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- PSY 3220 - Life-Span Development GE (3)

Junior Block: 7 Semester Hours

- CTE 3710 - Organization & Management of Comprehensive CTE Programs (3)
- CTE 4973 - CTE Classroom and Lab Management Techniques (1)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- FLDX 3000 - Field Experience in the Content Area (1)

Senior Block: 8 Semester Hours

- CTE 4160 - Methods of Teaching Career and Technical Education (3)
- CTE 4974 - Educational Evaluation and Strategies (2)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- FLDX 4970 - Field Experience II in the Content Area (1)

Student Teaching Semester: 12 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (6)
- FLDX 4595 - Student Teaching II (1-12) (6)

General Education Requirements: 31-33 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ECON 1010 - Principles of Macroeconomics GE (3)
  OR
- ECON 1011 - Principles of Microeconomics GE (3)

- EDFL 2240 - Educational Psychology GE (3) +
- PSY 3220 - Life-Span Development GE (3) +

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- ART 1610 - Web Languages GE (3) (if chosen)

Free Electives: 6-8 Semester Hours

Business Teacher Education Option Total: 120 Semester Hours

+ Course requires a grade of C or better.

Secondary Education, BSE (41-695) - Chemistry Option (E485) (127 hours)

Teacher Education Policy

Secondary Education, BSE (41-695) - Chemistry Option (E485) (4 Year Guide)

Major Requirements: 58 Semester Hours

General Science: 30 Semester Hours

- (BIOL 1003 - Introduction to the Sciences: Ecology GE (3)
  OR
- BIOL 1005 - Introduction to Environmental Science GE (3))
  AND
- BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab) (4)

- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)

- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
  OR
- GEOS 1114 - Weather and Climate GE (4: 3 lecture, 1 lab)

- MATH 1151 - Calculus I GE (5) [1]
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
- STCH 3020 - Science and Engineering Practices (3)
- STCH 4020 - Internship in Science Teaching and Learning (1)

Chemistry: 28 Semester Hours

- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)
- CHEM 3111 - Inorganic Chemistry (4: 4 lecture, 0 lab)
- CHEM 3212 - Quantitative Analysis (4: 4 lecture, 0 lab)
- CHEM 3341 - Organic Chemistry I (4: 4 lecture, 0 lab)
- CHEM 3421 - Biochemistry (3)
- CHEM 4531 - Physical Chemistry: Thermodynamics and Kinetics (4: 4 lecture, 0 lab)
- PHYS 1102 - College Physics II (4: 4 lecture, 0 lab)

Professional Education: 43 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDFL 4210 - Introduction to Content Area Literacy (2)

- EDFL 4212 - Literacy in the Disciplines I (2)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- EDFL 4972 - Literacy in the Disciplines II (2)
- EDFL 4973 - Classroom Management in Content Areas (1)
- EDFL 4974 - Content Specific Assessment (1)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- FLDX 3000 - Field Experience in the Content Area (1)
- FLDX 4970 - Field Experience II in the Content Area (1)
- STCH 4010 - Exploring Firsthand Science Lessons (1-2) (1)
- STCH 4050 - Science Teaching Methods (3)

- PSY 2220 - Child and Adolescent Psychological Development (3)
  OR
- PSY 3220 - Life-Span Development GE (3)

Student Teaching Semester: 12 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (4)
- FLDX 4595 - Student Teaching II (1-12) (4)
- STCH 4080 - Science Learning and Literacy (4)

General Education Requirements: 26 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- EDFL 2240 - Educational Psychology GE (3) +

- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
  OR
- GEOS 1114 - Weather and Climate GE (4: 3 lecture, 1 lab)

- MATH 1151 - Calculus I GE (5)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- POLS 1510 - American Government GE (3)

Chemistry Option Total: 127 Semester Hours

[1] This course has a prerequisite.

+ Course requires a grade of C or better.

Secondary Education, BSE (41-695) - Earth Science Option (E280) (120 hours)

Teacher Education Policy

Secondary Education, BSE (41-695) - Earth Science Option (E280) (4 Year Guide)

Major Requirements: 48-50 Semester Hours

General Science: 28-30 Semester Hours

- BIOL 1005 - Introduction to Environmental Science GE (3)
  AND
- BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab)

- BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)
  OR
- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)

- MATH 1111 - College Algebra GE (3)
  OR
- MATH 1131 - Applied Calculus GE (3)
  OR
- MATH 1150 - Pre-Calculus Mathematics GE (5)
  OR
- MATH 1151 - Calculus I GE (5)

- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
  OR
- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)

- STCH 3020 - Science and Engineering Practices (3)
- STCH 4020 - Internship in Science Teaching and Learning (1)

Earth Science: 20 Semester Hours

- BIOL 4102 - Evolution (3)
- GEOS 1100 - Physical Geography GE (3)
- GEOS 1112 - Astronomy (3)
- GEOS 1114 - Weather and Climate GE (4: 3 lecture, 1 lab)
- GEOS 1115 - Oceanography (3)

- GEOS 2300 - Our Digital Earth GE (3)
- GEOS 4950 - Laboratory Intern (1)

Professional Education: 43 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDFL 4210 - Introduction to Content Area Literacy (2)
- EDFL 4212 - Literacy in the Disciplines I (2)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- EDFL 4972 - Literacy in the Disciplines II (2)
- EDFL 4973 - Classroom Management in Content Areas (1)
- EDFL 4974 - Content Specific Assessment (1)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- FLDX 3000 - Field Experience in the Content Area (1)
- FLDX 4970 - Field Experience II in the Content Area (1)

- PSY 2220 - Child and Adolescent Psychological Development (3)
  OR
- PSY 3220 - Life-Span Development GE (3)

- STCH 4010 - Exploring Firsthand Science Lessons (1-2) (1)
- STCH 4050 - Science Teaching Methods (3)

Student Teaching Semester: 12 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (4)
- FLDX 4595 - Student Teaching II (1-12) (4)
- STCH 4080 - Science Learning and Literacy (4)

Free Electives: 3-5 Semester Hours

General Education Requirements: 24 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- EDFL 2240 - Educational Psychology GE (3) +
- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
- GEOS 1100 - Physical Geography GE (3)
- GEOS 2300 - Our Digital Earth GE (3)

- MATH 1111 - College Algebra GE (3)
  OR
- MATH 1131 - Applied Calculus GE (3)
  OR
- MATH 1150 - Pre-Calculus Mathematics GE (5)
  OR
- MATH 1151 - Calculus I GE (5)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- POLS 1510 - American Government GE (3)

Earth Science Option Total: 120 Semester Hours

+ Course requires a grade of C or better.

Secondary Education, BSE (41-695) - Engineering and Technology Teacher Education Option (E282) (121 hours)

Teacher Education Policy

Secondary Education, BSE (41-695) - Engineering and Technology Teacher Education Option (E282) (Even Year) (4 Year Guide)

Secondary Education, BSE (41-695) - Engineering and Technology Teacher Education Option (E282) (Odd Year) (4 Year Guide)

Major Requirements: 41 Semester Hours

- CADD 1110 - Fundamentals of Drafting (3: 3 lecture, 0 lab)
  OR
- CADD 1170 - AutoCAD Applications (3: 3 lecture, 0 lab)

- CADD 4160 - Computer Graphics & Technical Presentations (3)
- CMGT 1300 - Introduction to Construction Management (3: 2 lecture, 1 lab)
- CTE 1000 - Introduction to Career and Technical Education (1)

- CTE 1300 - Introduction to Engineering Design (3)
  OR
- ENGT 1400 - Fundamentals of Engineering Design (3)

- CTE 1500 - Power and Energy for Educators (3)
- CTE 2000 - Technology and Society GE (3)

- ENGT 1120 - Welding (3: 2 lecture, 1 lab)
  OR
- AGRI 1200 - Agriculture Mechanics (3: 2 lecture, 1 lab)

- ENGT 1011 - Applied Electricity (4: 3 lecture, 1 lab)
- ENGT 1510 - Introduction to Manufacturing Processes (3: 2 lecture, 1 lab)
  Approved Program Electives (12)

Professional Education: 47 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- CTE 3710 - Organization & Management of Comprehensive CTE Programs (3)
- CTE 4145 - Curriculum & Literacy Development in CTE (3)
- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 4210 - Introduction to Content Area Literacy (2)
- EDFL 4212 - Literacy in the Disciplines I (2)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- PSY 3220 - Life-Span Development GE (3)

Junior Block: 4 Semester Hours

- CTE 4973 - CTE Classroom and Lab Management Techniques (1)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- FLDX 3000 - Field Experience in the Content Area (1)

Senior Block: 6 Semester Hours

- CTE 4160 - Methods of Teaching Career and Technical Education (3)
- CTE 4974 - Educational Evaluation and Strategies (2)
- FLDX 4970 - Field Experience II in the Content Area (1)

Student Teaching Semester: 12 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (6)
- FLDX 4595 - Student Teaching II (1-12) (6)

General Education Requirements: 33 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CTE 2000 - Technology and Society GE (3)
- EDFL 2240 - Educational Psychology GE (3) +
- PSY 3220 - Life-Span Development GE (3) +

- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

Engineering and Technical Teacher Education Option Total: 121 Semester Hours

+ Course requires a grade of C or better.

Secondary Education, BSE (41-695) - English Option (E311) (120 hours)

Teacher Education Policy

Secondary Education, BSE (41-695) - English Option (E311) (4 Year Guide)

Major Requirements: 45 Semester Hours

American Literature Requirement: Select 6 hours from ENGL 2205, 4610, 4620, 4640, 4670, 4680, 4710, or 4730.

- ENGL 2220 - Introduction to World Literature GE (3)
- ENGL 3040 - Advanced Rhetoric (3)
- ENGL 3110 - English Grammar (3)
- ENGL 3120 - History of English Language (3)
- ENGL 3240 - Critical Approaches to Literature (3)
- ENGL 3830 - Young Adult Literature and Reading Instruction (3) +
- ENGL 3840 - Composition and Evaluation (3) +
- ENGL 4360 - Shakespeare (3)
- Electives in ENGL (2000/3000/4000) (3)

Select two courses from the following: 6 Semester Hours

- ENGL 2010 - Introduction to Reading Poetry and Drama GE (3)
- ENGL 2020 - Introduction to Reading Fiction GE (3)
- ENGL 2205 - Introduction to American Literature GE (3)
- ENGL 2215 - Introduction to British Literature GE (3)

Select three courses from Areas 1-4 and one course from Area 5: 12 Semester Hours

Area 1

- ENGL 4310 - Chaucer (3)
- ENGL 4330 - Renaissance English Writers (3)
- ENGL 4340 - Old and Middle English Literature (3)

- ENGL 4390 - Special Topics in Medieval and Renaissance Literature (3)

Area 2
- ENGL 4450 - The Age of Milton (3)
- ENGL 4460 - Wits and Satirists: 1660-1800 (3)
- ENGL 4490 - Special Topics in 17th and 18th Century Literature (3)
- ENGL 4620 - Early American Literature (3)

Area 3
- ENGL 4500 - Nineteenth Century English Novel (3)
- ENGL 4510 - Romantic Poets and Essayists (3)
- ENGL 4540 - Victorian Poetry (3)
- ENGL 4590 - Special Topics in 19th Century Literature (3)
- ENGL 4610 - American Renaissance (3)
- ENGL 4640 - American Realists and Naturalists (3)

Area 4
- ENGL 4700 - British Fiction 1890 to Present (3)
- ENGL 4710 - Modern American Fiction (3)
- ENGL 4720 - Modern British Poetry (3)
- ENGL 4730 - Modern American Poetry (3)
- ENGL 4790 - Special Topics in 20th and 21st Century Literature (3)

Area 5
- ENGL 4670 - Ethnic American Literature (3)
- ENGL 4680 - African American Literature (3)

Professional Education: 42 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDFL 4210 - Introduction to Content Area Literacy (2)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- EDSP 2100 - Education of the Exceptional Child (3)
- ENGL 4890 - Methods of Teaching English (3)
- ENGL 4972 - Content Literacy in Secondary English/Language Arts (3)
- ENGL 4973 - Classroom Management in Secondary English/Language Arts (1)
- ENGL 4974 - Assessment and Differentiation in Secondary English/Language Arts (2)
- FLDX 2150 - Introductory Field Experience (1)
- FLDX 3000 - Field Experience in the Content Area (1)
- FLDX 4970 - Field Experience II in the Content Area (1)

- HDFS 1220 - Child and Adolescent Development (3)
  OR
- PSY 2220 - Child and Adolescent Psychological Development (3)
  OR

- PSY 3220 - Life-Span Development GE (3)

Student Teaching Semester: 12 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (6)
- FLDX 4595 - Student Teaching II (1-12) (6)

General Education Requirements: 30 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- EDFL 2240 - Educational Psychology GE (3) +

- ENGL 2010 - Introduction to Reading Poetry and Drama GE (3)
  OR
- ENGL 2020 - Introduction to Reading Fiction GE (3)
  OR
- ENGL 2205 - Introduction to American Literature GE (3)
  OR
- ENGL 2215 - Introduction to British Literature GE (3)

- ENGL 2220 - Introduction to World Literature GE (3)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- POLS 1510 - American Government GE (3)

Free Electives: 3 Semester Hours

English Option Total: 120 Semester Hours

+ Course requires a grade of C or better.

Secondary Education, BSE (41-695) - Family Consumer Sciences Teacher Education Option (E572) (120 hours)

Teacher Education Policy

Secondary Education, BSE (41-695) - Family Consumer Sciences Teacher Education Option (E572) (4 Year Guide)

Major Requirements: 38 Semester Hours

- CTE 1000 - Introduction to Career and Technical Education (1)
- D&N 3340 - Nutrition (3)

- FAME 1450 - Fundamentals of Apparel Design and Construction (3: 2 lecture, 1 lab)
- FAME 2442 - Textile Science (3)
- FAME 4410 - Materials for Interior Furnishings (3)
- FCSE 3120 - Family Resource Management (3)
- FOOD 2320 - Sanitation and Safety (1)
- FOOD 2322 - Food Preparation (3: 2 lecture, 1 lab)
- HDFS 1010 - Individual and Family Relationships GE (3)
- HDFS 3240 - Parent-Child Interaction (3)

- BTE 3110 - Consumer Finance and Economics (3)
  OR
- FIN 1820 - Personal Finance GE (3)

- HDFS 3230 - Family Systems and Lifespan Development (3)
  OR
- HDFS 4520 - Multicultural Study and Approaches with Families (3)
  OR
- HDFS 4580 - Resilience in Children and Adolescents (3)

- HDFS 4220 - Sexuality Across the Lifespan (3)
  OR
- HLTH 1100 - Personal Health GE (3)
  OR
- HLTH 4320 - Teaching Sexuality Education in the School (3)

- HDFS 3260 - Youth Culture and Development (3)
  OR
- PSY 3220 - Life-Span Development GE (3) +

Professional Education: 45 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- CTE 4145 - Curriculum & Literacy Development in CTE (3)
- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 4210 - Introduction to Content Area Literacy (2)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)

- HDFS 1220 - Child and Adolescent Development (3)
  OR
- PSY 2220 - Child and Adolescent Psychological Development (3)

Junior Block: 7 Semester Hours

- CTE 3710 - Organization & Management of Comprehensive CTE Programs (3)
- CTE 4973 - CTE Classroom and Lab Management Techniques (1)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)

- FLDX 3000 - Field Experience in the Content Area (1)

Senior Block: 8 Semester Hours

- CTE 4160 - Methods of Teaching Career and Technical Education (3)
- CTE 4974 - Educational Evaluation and Strategies (2)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- FLDX 4970 - Field Experience II in the Content Area (1)

Student Teaching Semester: 12 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (6)
- FLDX 4595 - Student Teaching II (1-12) (6)

General Education Requirements: 33-36 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- EDFL 2240 - Educational Psychology GE (3) +
- HDFS 1010 - Individual and Family Relationships GE (3)

- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- FIN 1820 - Personal Finance GE (3) (if chosen)
  OR
- HLTH 1100 - Personal Health GE (3) (if chosen)
  OR
- PSY 3220 - Life-Span Development GE (3) + (if chosen)

Free Electives: 1-4 Semester Hours

Family Consumer Sciences Teacher Education Option Total: 120 Semester Hours

+ Course requires a grade of C or better.

Secondary Education, BSE (41-695) - Mathematics Option (E459) (120 hours)

Teacher Education Policy

Secondary Education, BSE (41-695) - Mathematics Option (E459) (4 Year Guide)

Major Requirements: 40.5 Semester Hours

C or better required in all major coursework.

- CS 1100 - Computer Programming I (3)
- MATH 1151 - Calculus I GE (5)
- MATH 1152 - Calculus II (5)
- MATH 1850 - Orientation Seminar (0.5)
- MATH 2221 - Foundations of Geometry (3)
- MATH 2410 - Discrete Mathematics (3)
- MATH 2861 - Advanced Perspectives on High School Mathematics (3)
- MATH 2862 - Advanced Perspective on Secondary Geometry and Trigonometry (3)
- MATH 3710 - Linear Algebra (3)
- MATH 3850 - Strategies in Teaching Secondary Mathematics (3)
- MATH 4233 - The Scientific, Historical, and Sociological Impact of Mathematics (3)
- MATH 4710 - Algebraic Structures (3)
- MATH 4851 - Probability and Statistics for Middle/High School Mathematics (3)

Professional Education: 42 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDFL 4210 - Introduction to Content Area Literacy (2)
- EDFL 4212 - Literacy in the Disciplines I (2)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- EDFL 4972 - Literacy in the Disciplines II (2)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- FLDX 3000 - Field Experience in the Content Area (1)
- FLDX 4970 - Field Experience II in the Content Area (1)
- MATH 4880 - Issues and Methods of Teaching Secondary Mathematics (3)
- MATH 4973 - Engaging Secondary Mathematics Learners (1)
- MATH 4974 - Assessment in the Mathematics Classroom (1)

- HDFS 1220 - Child and Adolescent Development (3)
  OR
- PSY 2220 - Child and Adolescent Psychological Development (3)

Student Teaching Semester: 12 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (6)
- FLDX 4595 - Student Teaching II (1-12) (6)

General Education Requirements: 36 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- EDFL 2240 - Educational Psychology GE (3) +
- MATH 1151 - Calculus I GE (5) +

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- POLS 1510 - American Government GE (3)

Free Electives: 1.5 Semester Hours

Mathematics Option Total: 120 Semester Hours

+ Course requires a grade of C or better.

Secondary Education, BSE (41-695) - Physics Option (E486) (121-126 hours)

Teacher Education Policy

Secondary Education, BSE (41-695) - Physics Option (E486) (4 Year Guide)

Major Requirements: 51-58 Semester Hours

General Science: 29-30 Semester Hours

- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
- MATH 1151 - Calculus I GE (5)
- STCH 3020 - Science and Engineering Practices (3)

- ((BIOL 1003 - Introduction to the Sciences: Ecology GE (3)
  OR
- BIOL 1005 - Introduction to Environmental Science GE (3))
  AND
- BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab)) (4)

- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
  OR
- PHYS 2121 - University Physics I (5: 5 lecture, 0 lab)

Physics: 23-27 Semester Hours

- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)
- CS 1100 - Computer Programming I (3)

- CHEM 4531 - Physical Chemistry: Thermodynamics and Kinetics (4: 4 lecture, 0 lab)
  OR
- PHYS 4411 - Thermodynamics (3)

- CHEM 4532 - Physical Chemistry: Quantum Mechanics and Spectroscopy (4: 4 lecture, 0 lab)
  OR
- (PHYS 3080 - Advanced Physics Laboratory (1-3) (1)
  AND
- PHYS 3511 - Modern Physics I (3)) (4)

- PHYS 1102 - College Physics II (4: 4 lecture, 0 lab)
  OR
- PHYS 2122 - University Physics II (5: 5 lecture, 0 lab)

Physics electives: 4-6 Semester Hours

- GEOS 1112 - Astronomy (3)
- PHYS 3020 - Special Topics in Physics (1-4)
- PHYS 3080 - Advanced Physics Laboratory (1-3)
- PHYS 3211 - Analytical Mechanics I (3)
- PHYS 3512 - Modern Physics II (3)
- PHYS 3611 - Optics (3)
- PHYS 4312 - Electricity and Magnetism (3)
- PHYS 4512 - Introduction to Quantum Mechanics (3)
- PHYS 4911 - Special Problems in Physics (1-3)

Professional Education: 43 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDFL 4210 - Introduction to Content Area Literacy (2)
- EDFL 4212 - Literacy in the Disciplines I (2)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- EDFL 4972 - Literacy in the Disciplines II (2)
- EDFL 4973 - Classroom Management in Content Areas (1)
- EDFL 4974 - Content Specific Assessment (1)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- FLDX 3000 - Field Experience in the Content Area (1)
- FLDX 4970 - Field Experience II in the Content Area (1)

- PSY 2220 - Child and Adolescent Psychological Development (3)
  OR
- PSY 3220 - Life-Span Development GE (3)

- STCH 4010 - Exploring Firsthand Science Lessons (1-2) (1)
- STCH 4050 - Science Teaching Methods (3)

Student Teaching Semester: 12 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (4)
- FLDX 4595 - Student Teaching II (1-12) (4)
- STCH 4080 - Science Learning and Literacy (4)

General Education Requirements: 26 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ((BIOL 1003 - Introduction to the Sciences: Ecology GE (3)
  OR
- BIOL 1005 - Introduction to Environmental Science GE (3))
  AND
- BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab))

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- EDFL 2240 - Educational Psychology GE (3) +
- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
- MATH 1151 - Calculus I GE (5)

- POLS 1510 - American Government GE (3)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

Physics Option Total: 121-126 Semester Hours

+ Course requires a grade of C or better.

Secondary Education, BSE (41-695) - Social Studies Option (E264) (120 hours)

Teacher Education Policy

Secondary Education, BSE (41-695) - Social Studies Option (E264) (4 Year Guide)

Major Requirements: 45 Semester Hours

- ANTH 1820 - Cultural Anthropology GE (3)
- GEOG 2212 - World Geography GE (3)
- HIST 1350 - History of the United States to 1877 GE (3)
- HIST 1351 - History of the United States from 1877 GE (3)
- HIST 1400 - History of the Early World GE (3)
- HIST 1402 - History of the Modern World GE (3)
- POLS 1510 - American Government GE (3)
- POLS 2511 - State Government GE (3)
- PSY 1100 - General Psychology GE (3)
- Upper-level Electives in HIST 43** (6)
- Upper-level World History Electives - Non-Western Required (3)

- ECON 1010 - Principles of Macroeconomics GE (3)
  OR
- ECON 1011 - Principles of Microeconomics GE (3)

Electives: 6 Semester Hours

- 3000-4000 Level Courses in World History 44** or Anthropology

Professional Education: 44 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- FLDX 3000 - Field Experience in the Content Area (1)
- FLDX 4970 - Field Experience II in the Content Area (1)
- SOSC 1050 - The Social Studies (1)
- SOSC 4074 - Methods of Teaching Social Studies (3)
- SOSC 4972 - Literacy in Social Studies (4)
- SOSC 4973 - Secondary Classroom Management in Social Studies (2)
- SOSC 4974 - Social Studies Assessment (1)

- EDFL 4210 - Introduction to Content Area Literacy (2)
  OR
- EDFL 4212 - Literacy in the Disciplines I (2)

- PSY 2220 - Child and Adolescent Psychological Development (3)
  OR
- PSY 3220 - Life-Span Development GE (3)

Student Teaching Semester: 12 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (6)
- FLDX 4595 - Student Teaching II (1-12) (6)

General Education Requirements: 30 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major.

- ANTH 1820 - Cultural Anthropology GE (3)
- HIST 1350 - History of the United States to 1877 GE (3)
- POLS 1510 - American Government GE (3)
- PSY 1100 - General Psychology GE (3)

Free Electives: 1 Semester Hour

Social Studies Option Total: 120 Semester Hours

Secondary Education, BSE (41-695) - Speech Communication and Theatre Option (E362) (120 hours)

Major, Bachelor of Science in Education Degree

The graduate with a Bachelor of Science in Education in Secondary Education, Speech Communication and Theatre option will apply knowledge and skills obtained in the program to:

- Utilize critical thinking, communication and collaborative skills effectively in the interactive and creative process of theater.
- Demonstrate effective teaching competence in speech communication and theatre.
- Evaluate and constructively respond to various formats of messages, speeches, pieces, and debate cases by utilizing critical thinking, analysis, and listening skills.

Sophomore Review: On a specified day, each individual sophomore theatre major, minor, or transfer student confers with the collective Theatre & Dance faculty to assess student progress at an approximate mid-point in the student's undergraduate career. During this review, students have the opportunity to present their resume/headshot, goal statement and website/portfolio to the Theatre & Dance faculty for feedback. Students receive oral and written assessment. All written assessments are kept in the student's file in the Theatre & Dance Office.

Senior Exit Review: On a specified day in their final semester, each graduating senior confers with the collective Theatre & Dance faculty to assess student progress at the end of the student's undergraduate career. Before the review, the student will submit a written essay based on writing prompts from the faculty reflecting on their time at UCM. During the review, students receive feedback on their Senior Showcase performance/portfolio, resume, website and essay from the Theatre & Dance faculty and discuss future plans after graduation. Students receive oral and written assessment. All written assessments are kept in the student's file in the Theatre & Dance Office.

Teacher Education Policy

Secondary Education, BSE (41-695) - Speech Communication and Theatre Option (E362) (4 Year Guide)

Major Requirements: 47 Semester Hours

- COMM 1000 - Public Speaking GE (3)
- COMM 2000 - Media Literacy GE (3)
- COMM 2330 - Teamwork and Group Dynamics (3)
- COMM 2340 - Argumentation and Debate (3)
- COMM 3101 - Essential Communication Concepts (3)
- COMM 3391 - Teaching High School Speech and Debate (3)
- DANC 3210 - Musical Theatre Dance (3)
- THEA 1010 - Introduction to Theatre & Dance (1)
- THEA 1100 - Oral Interpretation GE (3)
- THEA 1500 - Acting (3)
- THEA 1600 - Stagecraft (3: 3 lecture, 0 lab)
- THEA 1700 - Stagecraft II (3: 3 lecture, 0 lab)
- THEA 2610 - Design Fundamentals (3)
- THEA 2700 - Directing (3)
- THEA 3630 - Studio Theatre I (1)
- THEA 4300 - Professional Practices (1-6) (2)
- THEA 4730 - Studio Theatre II (1)

- THEA 4400 - Literature and History of the Theatre I (3)
  OR
- THEA 4420 - Literature and History of the Theatre II (3)

Professional Education: 41 Semester Hours

Professional Education requires an overall 3.0 GPA and a grade of C or better for each course.

- EDFL 2100 - Introduction to the Teaching Profession (3)
- EDFL 2240 - Educational Psychology GE (3)
- EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)
- EDFL 4210 - Introduction to Content Area Literacy (2)
- EDFL 4212 - Literacy in the Disciplines I (2)
- EDFL 4970 - Secondary Teaching and Behavioral Management (2)
- EDFL 4972 - Literacy in the Disciplines II (2)
- EDFL 4973 - Classroom Management in Content Areas (1)
- EDFL 4974 - Content Specific Assessment (1)
- EDSP 2100 - Education of the Exceptional Child (3)
- FLDX 2150 - Introductory Field Experience (1)
- FLDX 3000 - Field Experience in the Content Area (1)
- FLDX 4970 - Field Experience II in the Content Area (1)
- PSY 3220 - Life-Span Development GE (3)
- THEA 4984 - Methods of Teaching Speech and Theatre (2)

Student Teaching Semester: 12 Semester Hours

- FLDX 4468 - Student Teaching I (1-12) (4)

- FLDX 4595 - Student Teaching II (1-12) (5)
- THEA 4920 - Secondary Field Experience II (1)
- THEA 4930 - Co-Curricular Practicum (2)

General Education Requirements: 30 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- COMM 1000 - Public Speaking GE (3)
- COMM 2000 - Media Literacy GE (3)
- EDFL 2240 - Educational Psychology GE (3) +
- PSY 3220 - Life-Span Development GE (3) +

- COMM 3000 - Film Appreciation GE (3)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- THEA 2400 - Discovering Theatre GE (3)

Free Electives: 2 Semester Hours

Speech Communication and Theatre Option Total: 120 Semester Hours

+ Course requires a grade of C or better.

Department of Educational Technology and Library Science

Instructional Technology Minor (287) (15 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor. Preparation for careers in training, educational technology, and professional development, equipping you for technology-enhanced instruction and instructional design.

Minor Requirements: 9 Semester Hours

- INST 4100 - Integrating Technology into Teaching (3)
- INST 4110 - Google Educator Preparation (3)
- INST 4200 - Instructional Design and Development (3)
- INST 4400 - Design and Production of Media for Instruction (3)
- INST 4401 - Computer Science for Educators (3)

Electives from the Following: 6 Semester Hours

- ART 1610 - Web Languages GE (3)
- BTE 4510 - Desktop Publishing for Business (3)
- BTE 4535 - Data Input Technologies (2)
- BTE 4550 - Publishing Applications for Business (2)
- BTE 4560 - Emerging Technologies for Business (2)
- COMM 1000 - Public Speaking GE (3)
- COMM 1050 - Communication in Practice GE (3)
- COMM 1630 - Web Content and Promotion Strategies (3)
- COMM 2410 - Multimedia Production (3)
- COMM 4350 - Professional Communication (3)
- CS 1030 - Python Programming I (3)
- CTE 2060 - Technical Writing GE (3)
- CTE 4180 - Adult Education and Training (3)
- ENGL 4061 - Advanced Technical Writing and Copy Editing (3)
- FAME 1010 - Digital PreMedia Fundamentals (3)
- HRM 3920 - Human Resource Management (3)
- MGT 4320 - Leadership (3)
- MKT 3450 - Digital Marketing (3)
- NET 1610 - Principles of Web Media (3)
- NET 2620 - Web Media Applications (3)
- NET 2630 - Web Authoring (3)

Harmon College of Business and Professional Studies

The Harmon College of Business and Professional Studies
Ward Edwards 1600
660-543-8577
Fax 660-543-8350
ucmo.edu/hcbps

The Harmon College of Business and Professional Studies is comprised of:

- Department of Accountancy, Big Data Analytics, and Computer Information Systems
- Department of Aviation
- Department of Criminal Justice and Criminology
- Department of Economics and Finance
- Department of Human Services
- Department of Management
- Department of Marketing, Public Relations, and Sport Management
- Missouri Safety Center

NOTE: Secondary Education: Business Teacher Education can be found with the College of Education degrees.

College Mission
Our mission is to empower the next generation of professionals to lead and serve their organizations, professions, and communities. We carry out this mission by providing an accessible, applied, and challenging education while engaging in research, innovation, and professional collaboration.

https://www.ucmo.edu/hcbps/

Accreditation

The School of Business Administration and the Accountancy program are accredited by AACSB International located at 777 South Harbour Island Boulevard, Suite 750, Tampa, FL 33602; phone 813-769-6500; web page aacsb.edu.

Bachelor of Science in Business Administration Degree Program Statement of Policy

Admission to B.S.B.A. Programs. Acceptance and registration in business administration courses or the declaration of intent to complete a business major do not guarantee admission to the B.S.B.A. programs. A student is not officially admitted to the B.S.B.A. until all BSBA admission requirements have been met and confirmed on the student degree audit. Only those students who have been officially admitted to the B.S.B.A. program may file for an application for graduation for the B.S.B.A. degree.

The desire of the faculty in the SoBA is for all UCM students to succeed. To facilitate and support (1) overall academic program quality, (2) student progress through his/her academic program at the desired rate and (3) to better ensure receiving the maximum benefit from the curriculum design, students who desire to earn a B.S.B.A. degree are to enroll and take courses that are specifically designed for their academic classification. This means that freshmen (those who have completed 0-29.5 semester hours of college credit) who take courses within the SoBA will enroll in 1000 level courses only, sophomores (completed 30-59.5 semester hours) will enroll in 2000 or 1000 level courses, juniors (completed 60-89.5 semester hours) will enroll in 3000, 2000, or 1000 level courses and seniors (all students who have completed 90 semester hours) will enroll in 4000 level courses or below.

All UCM students enrolled in business courses are required to comply with prerequisites for those courses.

Students who have not been admitted to a B.S.B.A. degree program may not enroll in more than a total of 30 semester hours in courses with the following prefixes: ACCT, CIS, ECON, EMM, ESE, FIN, HRM, MKT, MGT, RMI.**

**Deviations from this limit must be approved in writing by the dean of the Harmon College of Business and Professional Studies.

Bachelor of Science in Business Administration Admission Requirements.

Admission to all B.S.B.A. degree programs is conditional upon the completion of the school requirements and the following prerequisites:

1. The following pre-admission courses:

   ACCT 1101 - Foundations of Financial Reporting (3)

   ACCT 2102 - Principles of Managerial Accounting (3)

   BLAW 2720 - Legal Environment of Business (3)

   CIS 1600 - Business Information Management GE (3)

   ECON 1010 - Principles of Macroeconomics GE (3)

   ECON 1011 - Principles of Microeconomics GE (3)

FIN 2801 - Business Statistics I (3)

MATH 1111 - College Algebra GE (3)

2. All students pursuing a B.S.B.A degree must earn a letter grade of C or better in each pre-admission course.
3. Attainment of a 2.25 or above (2.65 or above for admission to the B.S.B.A. in Accountancy, 2.40 or above for admission to the B.S.B.A. in Finance) cumulative grade-point average on a scale of 4.00 for all credit hours completed and attainment of 2.25 or above (2.65 or above for admission to the B.S.B.A. in Accountancy, 2.40 or above for admission to the B.S.B.A in Finance) grade-point average on the 24 semester hours of pre-admission courses.
4. Transfer students from other colleges and universities must meet all UCM B.S.B.A. degree program admission requirements.
5. Admission to the B.S.B.A. program is in addition to university admission. Students will be admitted to the B.S.B.A. program once all admission criteria are met. Students are responsible to ensure that they have met all pre-admission criteria and have been officially admitted to the B.S.B.A. program.

Additional Bachelor of Science in Business Administration Graduation Requirements.

In addition to specified major and other requirements, all students graduating with a B.S.B.A. degree must satisfy the following requirements:

1. Students are required to earn at least 50 percent of their required business major credit hours for a B.S.B.A. degree at UCM.
2. Students must achieve a minimum cumulative grade-point average of 2.25 (2.65 for Accountancy, 2.40 for Finance).

Transfer of Credit

Students planning to transfer to UCM should expect to complete most major business courses during their junior and senior years. A student from a two-year or four-year institution may transfer pre-admission courses equivalent to those required for the B.S.B.A. degree at UCM.

Upper-level (3000/4000) courses cannot generally be transferred from a two-year institution and applied to a B.S.B.A. degree. However, the program head responsible for the UCM course may elect to allow such a transfer for equivalent credit. Before accepting the transfer course for equivalent credit, the course must be validated through a program administered examination or successful completion of a more advanced course in the discipline.

The specific validation requirement to be applied will be designated by the program head. The validation policy for the SoBA is consistent with policies and guidelines at comparable business schools and is in effect for all students desiring to transfer courses completed at a community or junior college. Upper-level (3000/4000) course work transferred from a four-year institution must be reviewed by the program head before such work can be applied to a B.S.B.A. degree.

Bachelor of Science in Business Administration Core Courses.

All B.S.B.A. degree program students are required to successfully complete carefully selected and designed 3000 and 4000 level business core courses. These required upper level BSBA core courses are:

- CIS 3630 - Management Information Systems (3)
- FIN 3801 - Business Statistics II (3)
- FIN 3850 - Principles of Finance (3)
- MGT 3315 - Management of Organizations (3)
- MGT 3325 - Business Communication (3)

- MGT 3360 - Supply Chain and Operations Management (3)
- MGT 4357 - Organizational Policy and Strategy (3)
- MKT 3405 - Principles of Marketing (3)

Students may enroll in 3000 level core courses after successfully completing 59.5 semester hours and may enroll in 4000 level core courses after successfully completing 89.5 semester hours. Prerequisite course requirements are to be complied with at all levels of the core and in other UCM business courses. Exception to these rules concerning core courses may be granted by the program head in the SoBA in which the course is offered. SoBA 3000 and 4000 level core courses are listed as an integral part of the academic programs. Please refer to the following pages of this section of the UCM catalog for a complete listing of core and major courses required in each program in the SoBA.

High-Impact Learning Opportunities for Students in the School of Business Administration

- Class projects with community business partners
- Co-curricular activities
- Integrative Business Experience (IBE)
- Internships through the Center for Business Internships
- Innovative PR
- Student Managed Investment Fund
- VITA (Volunteer Income Tax Assistance)
- Student organizations

Business Administration Minor (545) (18 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor. This minor is not available to students pursuing a B.S.B.A. degree.

Minor Requirements: 18 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3)
- BLAW 2720 - Legal Environment of Business (3)
- CIS 1600 - Business Information Management GE (3)
- ECON 1010 - Principles of Macroeconomics GE (3)
- MGT 3315 - Management of Organizations (3)
- MKT 3405 - Principles of Marketing (3)

Department of Aviation

https://www.ucmo.edu/aviation/

The Department of Aviation
TR Gaines 210
660-543-4969
ucmo.edu/aviation

Department of Aviation Statement of Policy

Only courses with a grade of C or better (including transfer courses) may be used to fulfill a major or minor requirement in any program offered by the School of Aviation.

Students pursuing flight training in their program must hold at least a Second (2nd) Class FAA Medical Certificate before any flight operations may commence.

The number of flight slots varies each semester as they are based on the number of available flight instructors - as a result, there may be delays in degree progress.

Students pursuing flight training may request immediate enrollment in subsequent flight courses at any time during a published term if the prerequisite has been satisfactorily completed.

Department of Aviation - UCM Flight Fee Schedule

Effective August 19, 2024
UCM Flight Fee Schedule

The following are the rates per hour for the individual aircraft operated by UCM. The rate for both flight and ground instruction is $55.00/hour and will be in addition to aircraft rental fees.

Aircraft	**Cost - Wet**
Intro Flight (30 minutes / 1 hour) Rate includes instructor	$126.00/$252.00
PA-18-150 Super Cub	$119.00
Cessna 172P Skyhawk	$166.00
Cessna 172R Skyhawk (2000 Model)	$187.00
Cessna 172S Skyhawk (G1000 Model)	$187.00
BE-58 Beechcraft Baron	$446.00

Ground Trainers:

Redbird	$28.00
Frasca	$56.00
Glider Orientation Flight (3000 ft. AGL w/instructor)	varies
Schweizer 2-33	$35.00
Tow Charge (in PA-18-150 Super Cub)	varies

*Note: A fuel surcharge will apply in addition to the above rates when UCM Aviation's fuel cost rises above $4/gallon. This rate is **subject to change** and any questions may be directed to the Department of Aviation.

Department of Aviation - UCM Airplane Flight Course Fees

Effective August 19, 2024
UCM Airplane Flight Fee Schedule

The course fees below are estimates, based on the average flight/simulator/instructor hours required for course completion. Actual amounts will vary depending on individual needs as well as whether or not the conditional fuel surcharge is in effect.

Coures Prefix	Course Description	Estimated Cost
FLYA 1320	Private Flight A	$6,712.00
FLYA 1321	Private Flight B	$8,554.00
FLYA 2313	Instrument Flight A	$2,967.00
FLYA 2314	Instrument Flight B	$7,266.00
FLYA 3310	Commercial Flight A	$4,510.00
FLYA 3311	Commercial Flight B	$4,510.00
FLYA 3312	Commercial Flight C	$5,071.00
FLYA 3315	Commercial Flight D - ASEL	$5,129.00
FLYA 3316	Commercial Flight E - ASEL	$4,852.00
FLYA 3317	Commercial Flight F - ASEL	$4,721.00
FLYA 3330	Multi-Engine Add-On	$10,845.00
FLYA 3360	Certified Flight Instructor	$5,940.00
FLYA 3362	Certified Flight Instructor - Instrument	$3,250.00
FLYA 3364	Certified Flight Instructor - Multi-Engine	$5,700.00

Jeppesen Lesson Breakdown

Information on the Jeppesen syllabus hours spreadsheet with lesson breakdown can be found under Jeppesen Syllabus Flight Hours.

Department of Aviation - Flight Operations Manual

The Flight Manual contains information for students taking courses in the School of Aviation.

COURSES

This standardization manual is designed as a reference source for all flight training courses. Flight course information, UCM policies and procedures, and flight maneuvers are explained.

It is understood that there are acceptable variations to different maneuvers, some more so than others. UCM has developed the most effective and efficient training methods for our program. Remember this text was created for the students' benefit and should be the primary reference for all maneuvers done at UCM.

Each maneuver will include a list of references indicating where further information about the maneuver may be obtained. UCM strongly suggests the references be used to help develop a complete understanding of each maneuver prior to attempting them in flight.

Jeppesen Flight Syllabi

All of the courses listed below follow the Jeppesen Flight Syllabus. (If you are in the UCM Commercial Syllabus please see the Chief Flight Instructor or the SOF.) These are available for purchase at the airport terminal building. If further assistance is needed, please feel free to speak with the Chief Flight Instructor, Assistant Chief Flight Instructor; Supervisor of Flight, or one of the Check Instructors.

FLYA 1320 Private Flight A 1.0 SH Credit

The student will progress from Unit 1 through Unit 13. PVT 1 Oral/Flight (comes after Unit 8) is the Stage 1 Check administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will complete the Private A written test in Blackboard prior to signing up for the Stage 1 Exam. The student will complete the FAA Written Test Exam for Private Pilot prior to signing up for Private Flight B.

FLYA 1321 Private Flight B 1.0 SH Credit

The student will progress from Unit 14 through Unit 26. PVT 2 Oral/Flight is the Stage 2 Check. PVT Final Oral/Final Flight 26 is the End of Course Check. All Checks are administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will complete the Private Flight B written test in Blackboard prior to signing up for End of Course Check. At the completion of this course the student will have met the requirements for the Private Pilot Practical Test.

FLYA 3310 Commercial Flight A 1.0 SH Credit

The student will progress from Unit 30 through Unit 36. COM 1 Oral/Flight is the Eval 1 Check administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will also complete the Commercial Flight A written test in Blackboard prior to signing up for the Eval 1 Check.

FLYA 3311 Commercial Flight B 1.0 SH Credit

The student will progress from Unit 37 through Unit 40. COM 2 Oral/Flight is the Eval 2 Check administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will also complete the Commercial Flight B written test in Blackboard prior to signing up for the Eval 2 Check.

FLYA 2313 Instrument Flight A 1.0 SH Credit

The student will progress from Unit 1 through Unit 13. INST 1 Oral/Flight is the Stage 1 Check administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will also complete the Instrument Flight A written test in Blackboard prior to signing up for the Stage 1 Check.

FLYA 2314 Instrument Flight B 1.0 SH Credit

The student will progress from Unit 14 through Unit 29. INST 2 Oral/Flight is the Stage 2 Check. INST Final Oral/Flight is the End of Course Check. All Checks are administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will complete the Instrument B written test in Blackboard prior to signing up for the Stage 2 Check and the FAA Written Test Exam for Instrument Airplane prior to signing up for the

End of Course Check. At the completion of this course the student will have met the requirements for the Instrument Rating Practical Test.

FLYA 3312 Commercial Flight C 1.0 SH Credit

The student will progress from Unit 41 through Unit 51. COM 3 Oral/Flight is the Stage IV Check administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will also complete the Commercial Flight C written test in Blackboard prior to signing up for the Stage IV Check.

FLYA 3315 Commercial Flight D 1.0 SH Credit

The student will progress from Unit 52 through Unit 67. COM V Oral/Flight is the Stage V Check administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will also complete the Commercial Flight D written test in Blackboard prior signing up for to Stage 4 Check.

FLYA 3316 Commercial Flight E 1.0 SH Credit

The student will progress from Unit 68 through Unit 76. COM 5 Oral/Flight (comes after Unit 45) is the Eval 3 Check administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will also complete the Commercial Flight E written test in Blackboard prior to signing up for the Eval 3 Check.

FLYA 3317 Commercial Flight F 1.0 SH Credit

The student will progress from Unit 77 through Unit 87. COM Final Oral/Flight is the End of Course Check administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will complete the Commercial F written exam in Blackboard and the FAA Written Exam for Commercial Pilot Airplane prior to signing up for the End of Course Check. At the completion of this course the student will have met the requirements for the Commercial Pilot Practical Test

GENERAL INFORMATION

Administrative

General

1. All operations will be conducted in accordance with current Federal Aviation Regulations and UCM policies.
2. All phases of training will be conducted in a professional manner. Individuals not adhering to professional standards of conduct and dress will not be allowed to conduct training and will be charged a NO SHOW.
3. Identification of airport personnel and flight students will be worn at all times.

a. Students will display their university I.D.

b. University employees will display their assigned I.D.

TSA Requirements

1. US Citizens are required to prove citizenship when receiving flight training toward a recreational pilot, sport pilot, private pilot, instrument rating or multiengine rating. Proof of citizenship includes:
    1. Valid, unexpired U.S. passport.
    2. Original birth certificate and government-issued picture ID
    3. Original certification of birth abroad with raised seal and government-issued picture ID.
    4. Original certificate of U.S. citizenship with raised seal, or a Certificate of Repatriation, and government issued picture ID.
    5. Original U.S. Naturalization Certificate with raised seal and government-issued picture ID.
2. A logbook endorsement will be given to the student upon proof of citizenship by their flight instructor.
3. Any non US citizen is required to receive TSA approval for flight training and must see the Chief Flight Instructor to begin the approval process.

4. Upon receiving the endorsement, the instructor will enter a currency into ETA.

Medical Certificates

Student pilots planning to pursue a Professional Pilot degree are recommended to obtain a first (1st) class medical prior to receiving flight training. All other aviation students are required to obtain a minimum of a second (2nd) class medical prior to receiving flight training. Student pilots utilizing VA benefits for any flight training for a certificate or rating must obtain AND maintain a second class medical.

1. One introductory flight may be received while waiting for the medical.
2. A list of current Aviation Medical Examiners may be obtained from a flight instructor or the dispatcher.

Training

1. Each degree seeking student shall be enrolled in a flight course in order to conduct flight training at UCM.

a. Class enrollment on campus meets this requirement.

b. If a student has a "U" grade from previous semesters, that must be removed before a student will be allowed to enroll or train in any other flight course.

c. Students training under Part 141 must complete an enrollment form and turn it into the Chief Flight Instructor, Assistant Chief Flight Instructor or a Check Instructor.

2. To be released for a Practical Test the following must be accomplished.

a. The student must have a Practical Test Release Form from the Chief Flight Instructor, Assistant Chief Flight Instructor or a Check Instructor before contacting an examiner for a practical test appointment. To receive this form you must present the following to a supervisor:

i. Evidence of course completion

1) Graduation Certificate. (Part 141 only)

2) Applicable aeronautical experience requirements met (Part 61 only)

3) Proper logbook endorsements from their flight instructor.

4) Original copy of written test results (if applicable).

5) Application for Airman Certificate/Rating (either on IACRA or FAA form 8710-1) completed and signed by the students' flight instructor.

Request for Advanced Placement in Flight Courses

Each student requesting advanced placement in flight courses or requesting credit for previous flight experience will

1) Present the request to the chief flight instructor.

2) Complete an oral and flight evaluation to determine the entry point in the UCM training course for the desired rating sought.

3) 14 CFR Part 141.77 requires that a student may be given credit towards the curriculum requirements of a course for previous pilot experience and knowledge, provided the following conditions are met:

a. If the credit is based upon a part 141-approved training course, the credit given that student for the previous pilot experience and knowledge may be 50 percent of the curriculum requirements and must be based upon a proficiency test or knowledge test, or both, conducted by the receiving pilot school;

b. Credit for training specified in paragraph (c) (1) or paragraph (c) (2) of 141.77 may be given only if the previous provider of the training has certified in writing, or other form acceptable to the Administrator as to the kind and amount of training provided, and the result of each stage check and end-of-course test, if applicable, given to the student.

c. If the credit is not based upon a part 141-approved training course, the credit given that student for the previous pilot experience and knowledge shall not exceed more than 25 percent of the curriculum requirements and must be based upon a proficiency test or knowledge test, or both, conducted by the receiving pilot school;

d. The receiving school determines the amount of course credit to be transferred.

Request for Credit for Certificates or Ratings Held

1) Each student that is requesting university credit based upon the possession of an FAA certificate or rating.

a. Must complete an Application for Evaluation of Official Certifications, Licenses, Diplomas and Work Experience for College Credit form.

b. Complete an end of course oral and flight evaluation for the certificate or rating.

2) Exceptions for those students seeking a degree in:

a. Professional Pilot degree programs

i. May not enter with any certificate higher than Private pilot with Instrument Rating.

ii. Students entering with an Instrument Rating will not be eligible for the restricted ATP.

iii. Commercial rated pilots must select another degree option.

b. Flight Operations Management must complete one certificate or rating at UCM

Flight Training Syllabus

1) All flight training will follow the approved Syllabus.

2) All students must have a printed syllabus appropriate to the training being received.

3) The student will have the syllabus at the airport for each flight lesson in order to prepare for the training activities of that day.

4) Each lesson in the syllabus will be completed unless approval for advanced placement has been granted.

5) All written tests, evaluation rides, and stage checks will be completed for each course regardless of whether the student is training under part 141 or part 61. No stage checks will be combined.

Training Records

1) The activity of each assigned flight activity will be recorded in ETA. There should be an entry for every day that the student is scheduled to attend.

2) After the student completes the End of Course stage check, if they want to review ground or procedures in an airplane or simulator, use the Refresher request.

Flight Scheduling

Flight training schedules will consist of weekly flight training periods.

1) Monday, Wednesday & Friday.

2) Tuesday & Thursday

The exact times will be determined based upon student and flight instructor availability. The scheduling of students to their flight slot will be conducted during the fall and spring semester finals weeks. The scheduling process is:

1) The student arrives and fills out their availability time sheet.

a. The student must have their class schedule and work schedule (if practical).

b. The student must be enrolled in the flight class they wish to complete the semester they are signing up for.

2) The student will present the availability sheet, class schedule and work schedule to the Scheduler. General Information Table of Contents 2

3) Based on the availability sheet, instructor request, flight course the student is enrolled in, and resource availability, the Scheduler will determine which flight slot the student will be in and what instructor they will be with.

4) The scheduler will then assign the student a flight block. If a student is unable to arrive in person during the scheduling time, the student must make arrangements by phone to ensure a scheduled flight block. The Scheduler will fill out the students' availability sheet for the student during the phone scheduling session. If no prior arrangements are made, the student will not be able to sign up for a flight slot until after the private student schedule day.

Ground Instruction

1) All ground instruction will be recorded in ETA and charged the ground instruction rate.

2) All ground instruction must take place at the airport.

3) Each flight will have a minimum 12 minute preflight and 18 minute post flight briefing.

a. The preflight should detail the lesson objectives, review procedures and maneuvers already introduced, and introduce new material.

b. The post flight briefing should review the maneuvers performed during the flight, review the performance of these maneuvers, record the training in the appropriate records and logbooks and assign study materials for the next lesson.

c. Additional time may be necessary.

Flight Training Attendance

1) Upon arrival at the airport to receive any type of instruction, the student must check in with the dispatcher. If not checked in, the student's attendance may not be recorded and a no show may be incurred.

2) Students will attend all flight classes regularly until the course requirements are completed. Absence does not relieve the student of the responsibility for meeting all course requirements.

3) Approved absences are listed in the university student handbook and include;

a. Illness which prevents flying or ground training. (A doctor's written excuse must be submitted)

b. Death of an immediate family member.

c. Weather prohibited flight training. (The student will be notified by their instructor. Otherwise plan to do ground instruction.)

d. FAA Tests

i. Practical tests

ii. Written tests

e. Approved University activities (Written excuse must be submitted.)

i. Field trips

ii. Campus Activities

iii. Aviation Fraternity Activities.

f. Instructor illness. (The student will be contacted ASAP)

g. Examples of unexcused absences include, but are not limited to:

i. Sports training times

ii. Music/choir practice

iii. Work

iv. Homework

v. Paper due or a class assignment.

4) Notification of an approved absence must be submitted to the Chief Flight Instructor, Assistant Chief Flight Instructor or the Supervisor of Flying (SOF) at least two hours in advance.

5) If time does not allow for the two hour minimum, the student will phone the airport and discuss the situation with the Chief Flight Instructor, Assistant Chief Flight Instructor, or the Supervisor of Flying (SOF).

6) Notify the assigned flight instructor as well, but they are not authorized to excuse any absence.

7) An unexcused absence or failure to adhere to this policy will result in a NO SHOW. (Refer to NO SHOW section of this manual to see ramifications).

8) The dispatcher will record NO SHOWS and any other absences in the student's training record.

Aeronautics Certificate (10-861) (12 hours)

Certificate

The aeronautics certificate provides you with the opportunity to learn about the aviation industry and become familiar with the history, nomenclature, and theory related to professional pilots, aviation managers and related fields.

Required Courses: 12 Semester Hours

- AVIA 1310 - Private Ground School (4)
- AVIA 1903 - Aviation History (2)
- AVIA 4090 - Aviation Law (3)
- AVIA 4500 - Aviation Safety (3)

Aviation Management, BS (43-570) - Airport Management Option (AM02) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

The mission of the Aviation Management (Option 1 - Flight Operations Management) B.S. program is to prepare students for ready advancement into flight operations management professions by developing sound and advanced student skills including critical thinking and teamwork, attainment of aviation knowledge and awareness of current aviation management issues in flight operations, infused with safety practices and practical applications in real world environments.

The mission of the Aviation Management (Option 2 - Airport Management) B.S. program is to prepare students for ready advancement into airport management professions by developing sound and advanced student skills including critical thinking and teamwork, attainment of aviation knowledge and awareness of current aviation management issues in airport management, infused with safety practices and practical applications in real world environments.

The graduate with a Bachelor of Science degree in Aviation Management will be able to:

- Express oneself clearly and concisely in writing and speech.
- Complete and present projects based on research, data interpretation, and analysis.
- Complete work utilizing inputs and outputs from other members in team projects including simulated work environments.
- Define solutions to challenges that require critical thinking.
- Explain aviation terminology and list relevant key literature references in the student's subject field.
- Recognize and solve typical practical and theoretical real life problems in the student's aviation field.
- Discuss safety, economic, and political issues that affect aviation activities in the student's career area.
- Define the key issues affecting leadership and management in the aviation industry.
- Define further career options, academic learning opportunities, and professional training and certification opportunities upon graduation.
- Apply for next-step career opportunities using qualifications, experience, and interview skills gained in the course of the student's study program.

Aviation Management, BS (43-570) - Airport Management Option (AM02) (4 Year Guide)

Major Requirements: 78 Semester Hours

C or better required in all major coursework.

Core: 44 Semester Hours

- AVIA 1310 - Private Ground School (4)
- AVIA 1903 - Aviation History (2)
- AVIA 2040 - Aviation Management (3)
- AVIA 3710 - Professional Ethics in Aviation (2)
- AVIA 4090 - Aviation Law (3)
- AVIA 4500 - Aviation Safety (3)
- ACCT 1101 - Foundations of Financial Reporting (3)
- BLAW 2720 - Legal Environment of Business (3)
- FIN 2801 - Business Statistics I (3)
- FIN 3850 - Principles of Finance (3)

- HRM 3920 - Human Resource Management (3)
- INDM 4250 - Project Management (3)
- MKT 3405 - Principles of Marketing (3)
- PR 2620 - Principles of Public Relations (3)

- MGT 3315 - Management of Organizations (3)
  OR
- INDM 4210 - Industrial Management (3)

Airport Management Option: 34 Semester Hours

C or better required in all major coursework.

- AVIA 3022 - Aviation Internship (1-3) (3)
- AVIA 3045 - Airport Management (3)
- AVIA 3046 - Airport Certification (3)
- AVIA 4030 - Airport Planning and Design (3)
- AVIA 4100 - Airport Leadership - Administration and Planning (2)
- AVIA 4101 - Airport Leadership - Operations and Communications (2)
- AVIA 4420 - Air Transportation (3)
- AVIA 4430 - Corporate Aviation Management (3)
- CADD 1110 - Fundamentals of Drafting (3: 3 lecture, 0 lab)
- CADD 1170 - AutoCAD Applications (3: 3 lecture, 0 lab)

Free Electives: 6 Semester Hours

- Free Electives (6)

General Education Requirements: 42 Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ECON 1010 - Principles of Macroeconomics GE (3)
- FIN 1820 - Personal Finance GE (3)
- MATH 1131 - Applied Calculus GE (3)
- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)

Minimum Total: 120 Semester Hours

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Aviation Safety.

UCM students with a major GPA of at least 2.70 may consult with their faculty advisor and complete a school application to declare the accelerated BS Aviation Management - Airport Management - MS Aviation Safety option. Prior to beginning the graduate portion of the program, students in the accelerated program will need to apply to the

UCM Graduate School for formal admittance to the Accelerated BS/MS program. Admission into the Accelerated BS/MS program requires a minimum undergraduate cumulative GPA of 2.70 or higher.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

AVIA 5030 Airport Planning and Design (AVIA 4030)

AVIA 5590 Aviation Law (AVIA 4090)

AVIA 5550 Aviation Safety (AVIA 4500)

AVIA 5420 Air Transportation (AVIA 4420)

OR

AVIA 5430 Corporate Aviation Management (AVIA 4430)

Aviation Management, BS (43-570) - Flight Operations Management Option (AM01) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

The mission of the Aviation Management (Flight Operations Management Option) B.S. program is to prepare students for ready advancement into flight operations management professions by developing sound and advanced student skills including critical thinking and teamwork, attainment of aviation knowledge and awareness of current aviation management issues in flight operations, infused with safety practices and practical applications in real world environments.

The graduate with a Bachelor of Science degree in Aviation Management will be able to:

- Express oneself clearly and concisely in writing and speech.
- Complete and present projects based on research, data interpretation, and analysis.
- Complete work utilizing inputs and outputs from other members in team projects including simulated work environments.
- Define solutions to challenges that require critical thinking.
- Explain aviation terminology and list relevant key literature references in the student's subject field.
- Recognize and solve typical practical and theoretical real life problems in the student's aviation field.
- Discuss safety, economic, and political issues that affect aviation activities in the student's career area.
- Define the key issues affecting leadership and management in the aviation industry.
- Define further career options, academic learning opportunities, and professional training and certification opportunities upon graduation.
- Apply for next-step career opportunities using qualifications, experience, and interview skills gained in the course of the student's study program.

Aviation Management, BS (43-570) - Flight Operations Management Option (AM01) (4 Year Guide)

Major Requirements: 78 Semester Hours

C or better required in all major coursework.

Core: 44 Semester Hours

- AVIA 1310 - Private Ground School (4)
- AVIA 1903 - Aviation History (2)
- AVIA 2040 - Aviation Management (3)
- AVIA 3710 - Professional Ethics in Aviation (2)
- AVIA 4090 - Aviation Law (3)
- AVIA 4500 - Aviation Safety (3)
- ACCT 1101 - Foundations of Financial Reporting (3)
- BLAW 2720 - Legal Environment of Business (3)
- FIN 2801 - Business Statistics I (3)
- FIN 3850 - Principles of Finance (3)
- HRM 3920 - Human Resource Management (3)
- INDM 4250 - Project Management (3)
- PR 2620 - Principles of Public Relations (3)
- MKT 3405 - Principles of Marketing (3)

- MGT 3315 - Management of Organizations (3)
  OR
- INDM 4210 - Industrial Management (3)

Flight Operations Management Option: 34 Semester Hours

C or higher required in all major coursework.

- AVIA 2325 - Instrument Ground School (4)
- AVIA 2350 - Aviation Weather (3)
- AVIA 3010 - Aerodynamics (3)
- AVIA 3080 - Air Traffic Control (3)
- AVIA 4380 - Flight Operations Management (3)
- AVIA 4420 - Air Transportation (3)
- AVIA 4430 - Corporate Aviation Management (3)
- AVIA 4610 - Physiological Human Factors (3)
- FLYA 1320 - Private Flight A (1)
- FLYA 1321 - Private Flight B (1)
- FLYA 2313 - Instrument Flight A (1)
- FLYA 2314 - Instrument Flight B (1)

Free Electives: 5 Semester Hours

- Free Electives (5)

Note:

The Professional Pilot degree option is FAA approved for the Restricted Airline Transport Pilot Certificate (R-ATP). Schedule a meeting with the Chief Flight instructor for additional information and guidance on the R-ATP as soon as possible after admittance into the degree program.

All incoming students intending to major in Aviation Management-Flight Operations Management will be classified as pre-aviation students for their first semester and are required to take AVIA 1020 - Aeronautics (2) (or another course as specified) and AVIA 1310 - Private Ground School (4) . These courses must be completed with a final grade of "B" or higher, and all other academic coursework must be completed with no Failing grades or any academic-related issues. Once these requirements are met and the FAA Private Knowledge Test is passed, the student will be allowed to enroll in the appropriate flight lab. After successfully completing the requirements of the Pre-Aviation semester, the student will be allowed to declare their major as Aviation Management-Flight Operations. After the Pre-Aviation Semester, students are required to maintain a minimum overall GPA of 2.50 to maintain flight status for FLYA courses.

Flight training scheduling (flight time) is competitive and is based on academic performance and other metrics. Incoming aviation program students with an FAA Private Pilot Certificate will have a mandatory skills evaluation with the Chief Flight Instructor, consisting of both ground and flight components. Costs associated with this evaluation are the responsibility of the student. The student's performance during the requisite evaluation will determine placement in ground and flight courses; additional coursework or remedial flight training may be required. Students entering the aviation program with their Private Pilot Certificate can receive 6 credit hours (equivalency for AVIA 1310/FLYA 1320/FLYA 1321) after completing the Instrument Rating End of Course Examination (EOC).

Although students are expected to complete the pre-aviation requirements before being placed on the flight schedule, UCM Aviation may grant provisional flight status to students who are making exemplary academic progress during the pre-aviation semester. The number of students who may be granted this special status is based on the number of flight slots available for primary flight training and other factors. Any student granted provisional flight status will be required meet the performance expectations of the pre-aviation courses and pass the FAA Private Pilot Knowledge Test in order to continue flying in the following semester.

General Education Requirements: 42 Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for full listing of requirements. The following general education courses are required by this major:

- ECON 1010 - Principles of Macroeconomics GE (3)
- FIN 1820 - Personal Finance GE (3)
- MATH 1131 - Applied Calculus GE (3)
- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)

Minimum Total: 120 Semester Hours

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Aviation Safety.

UCM students with a major GPA of at least 2.70 may consult with their faculty advisor and complete a school application to declare the accelerated BS Aviation Management - Flight Operations Management - MS Aviation Safety option. Prior to beginning the graduate portion of the program, students in the accelerated program will need to apply to the UCM Graduate School for formal admittance to the Accelerated BS/MS program.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

AVIA 5550 Aviation Safety (AVIA 4500)

AVIA 5590 Aviation Law (AVIA 4090)

AVIA 5610 Physiological Human Factors (AVIA 4610)

AVIA 5420 Air Transportation (AVIA 4420)

OR

AVIA 5430 Corporate Aviation Management (AVIA 4430)

Aviation Minor (157) (21 hours)

Minor for a Bachelor's Degree

The Aviation Minor, offered by the University of Central Missouri, is a great complement to any degree program. The aviation minor provides you with the opportunity to learn about the aviation industry and become familiar with the history, nomenclature, and theory related to professional pilots, aviation managers and related fields. If you are interested in a career that interacts with aviation industry professionals, this minor is a great addition to your current degree program.

Minor Requirements: 21 Semester Hours

- AVIA 1310 - Private Ground School (4)
- AVIA 1903 - Aviation History (2)
- AVIA 4090 - Aviation Law (3)
- AVIA 4500 - Aviation Safety (3)
- Any AVIA course (9)

Note:

NOTE: Students majoring in any Aviation Department major are not eligible for this minor.

Professional Pilot, BS (43-554) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

The mission of the Professional Pilot degree program is to prepare students for ready placement and advancement in the aviation industry as airplane pilots, by providing a solid foundational skill set to include critical thinking and teamwork, aviation related technical knowledge and the appropriate FAA pilot certifications and ratings, an awareness of the current trends and issues within the context of modern flight operations, all infused with an emphasis on safety and risk management with practical applications in the real world environment.

The graduate with a Bachelor of Science degree in Professional Pilot will be able to:

- Express oneself clearly and concisely in writing and speech.
- Complete and present projects based on research, data interpretation, and analysis.
- Complete work utilizing inputs and outputs from other members in team projects including simulated work environments.
- Define solutions to challenges that require critical thinking.

- Explain aviation terminology and list relevant key literature references in the student's subject field.
- Recognize and solve typical practical and theoretical real life problems in the student's aviation field.
- Discuss safety, economic, and political issues that affect aviation activities in the student's career area.
- Define the key issues affecting leadership and management in the aviation industry.
- Define further career options, academic learning opportunities, and professional training and certification opportunities upon graduation.
- Apply for next-step career opportunities using qualifications, experience, and interview skills gained in the course of the student's study program.

All incoming aviation students are classified as "Pre-Aviation" for their first semester. Certain academic performance metrics must be met before being classified as "Professional Pilot" majors and beginning flight training. See "NOTES" for additional information.

Professional Pilot, BS (43-554) (4 Year Guide)

Major Requirements: 71 Semester Hours

Aviation Department Core: 23 Semester Hours

- AVIA 1310 - Private Ground School (4)
- AVIA 1903 - Aviation History (2)
- AVIA 2040 - Aviation Management (3)
- AVIA 3710 - Professional Ethics in Aviation (2)
- AVIA 4090 - Aviation Law (3)
- AVIA 4500 - Aviation Safety (3)
- AVIA 4420 - Air Transportation (3)
- AVIA 4430 - Corporate Aviation Management (3)

Major Specialization (Professional Pilot): 48 Semester Hours

- AVIA 2310 - Propulsion Systems (3)
- AVIA 2325 - Instrument Ground School (4)
- AVIA 2340 - Aircraft Systems and Components (3)
- AVIA 2345 - Glass Cockpits - G1000 (2)
- AVIA 2350 - Aviation Weather (3)
- AVIA 3010 - Aerodynamics (3)
- AVIA 3080 - Air Traffic Control (3)
- AVIA 3305 - Commercial Ground School (3)
- AVIA 3360 - Flight Instructor - Airplane (3) *
- AVIA 3370 - Transport Aircraft Systems (2)
- AVIA 3372 - Flight Management Systems (2)
- AVIA 4370 - Advanced Flight Crew Management (3)
- AVIA 4610 - Physiological Human Factors (3)
- FLYA 1320 - Private Flight A (1)
- FLYA 1321 - Private Flight B (1)
- FLYA 2313 - Instrument Flight A (1)
- FLYA 2314 - Instrument Flight B (1)
- FLYA 3310 - Commercial Flight A (1)

- FLYA 3311 - Commercial Flight B (1)
- FLYA 3312 - Commercial Flight C (1)
- FLYA 3315 - Commercial Flight D (1)
- FLYA 3316 - Commercial Flight E (1)
- FLYA 3317 - Commercial Flight F (1)
- FLYA 3330 - Multi-Engine Certificate (1)

Note:

The Professional Pilot degree option is FAA approved for the Restricted Airline Transport Pilot Certificate (R-ATP). Schedule a meeting with the Chief Flight Instructor for additional information and guidance on the R-ATP as soon as possible after admittance into the degree program.

All incoming students intending to major in Professional Pilot will be classified as pre- aviation students for their first semester and are required to take AVIA 1903 - Aviation History (2) (or another course as specified) and AVIA 1310 - Private Ground School (4). These courses must be completed with a final grade of "B" or higher, and all other academic coursework must be completed with no Failing grades or any academic-related issues. Once these requirements are met and the FAA Private Pilot Knowledge Test is passed, the student will be allowed to enroll in the appropriate flight lab. After successfully completing the requirements of the Pre-Aviation semester, the student will be allowed to declare their major as Professional Pilot. After the Pre-Aviation semester, students are required to maintain a minimum overall GPA of 2.50 to maintain flight status for FLYA courses.

Flight training scheduling (flight time) is competitive and is based on academic performance and other metrics.

Incoming aviation program students with an FAA Private Pilot Certificate will have a mandatory skills evaluation with the Chief Flight Instructor, consisting of both ground and flight components. Costs associated with this evaluation are the responsibility of the student.

The student's performance during the requisite evaluation will determine placement in ground and flight courses; additional coursework or remedial flight training may be required.

Students entering the aviation program with their Private Pilot Certificate can receive 6 credit hours (equivalency for AVIA 1310/FLYA 1320/FLYA 1321 after completing the Instrument Rating End of Course Examination (EOC). Although students are expected to complete the pre-aviation requirements before being placed on the flight schedule, UCM Aviation may grant provisional flight status to students who are making exemplary academic progress during the pre-aviation semester. The number of students who may be granted this special status is based on the number of flight slots available for primary flight training and other factors. Any student granted provisional flight status will be required to pass the FAA Private Pilot Knowledge Test in order to continue flying in the following semester. Any student granted flight status will be required to meet the performance expectations of the pre-aviation courses and pass the FAA Private Pilot Knowledge Test in order to continue flying in the following semester.

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ECON 1010 - Principles of Macroeconomics GE (3)
- FIN 1820 - Personal Finance GE (3)
- MATH 1131 - Applied Calculus GE (3)
- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)

Free Electives: 7 Semester Hours

Minimum Total: 120 Semester Hours

* This course has a corequisite course that is not included in the program.

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Aviation Safety.

UCM students with a major GPA of at least 2.70 may consult with their faculty advisor and complete a school application to declare the accelerated BS Professional Pilot - MS Aviation Safety option. Prior to beginning the graduate portion of the program, students in the accelerated program will need to apply to the UCM Graduate School for formal admittance to the Accelerated BS/MS program.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

AVIA 5550 Aviation Safety (AVIA 4500)

AVIA 5590 Aviation Law (AVIA 4090)

AVIA 5610 Physiological Human Factors (AVIA 4610)

AVIA 5420 Air Transportation (AVIA 4420)

OR

AVIA 5430 Corporate Aviation Management (AVIA 4430)

Department of Accountancy, Big Data Analytics, and Computer Information Systems

Department of Accountancy, Big Data Analytics, and Computer Information Systems

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660-543-4767 Computer Information Systems & Analytics - cis@ucmo.edu
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Accountancy Statement of Policy

All students must refer to Harmon College of Business and Professional Studies for the Statement of Policy on Admission to a B.S.B.A. degree program.

Accountancy offers the following degree options:

- B.S.B.A.- Accountancy
- M.A.- Accountancy (for details about this degree see the graduate catalog)

A minor in accountancy is also offered.

For admission to the accountancy major, a student must have a cumulative GPA of 2.65 (4.00 scale) or higher on all completed undergraduate college credit and a 2.65 GPA or higher on the 24 semester hours of B.S.B.A. pre-admission courses. To graduate with a BSBA, major in Accountancy, a student must have a cumulative GPA of 2.65 or higher. Any exceptions to this policy must be approved by the Chair of the Division of Business Analytics.

A minimum grade of C must be earned in the following courses if they are to be applied toward the fulfillment of an accountancy major or minor: ACCT 1101, ACCT 2102, ACCT 2901, ACCT 3102, ACCT 3103, ACCT 2920, ACCT 2930, and ACCT 2960.

A student with an Accountancy major or minor may enroll in a course offered by the Accountancy program only if a minimum grade of at least C is earned in each of the course's accounting prerequisites.

Accountancy Minor (326) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3)
- ACCT 2102 - Principles of Managerial Accounting (3)
- ACCT 2901 - Intermediate Financial Accounting I (3)
- ACCT 2930 - Tax I (3)
- ACCT 3102 - Intermediate Financial Accounting II (3)
- ACCT 3103 - Intermediate Financial Accounting III (3)
- ACCT 4100 - Advanced Accounting (3)

Accountancy, BSBA (46-259) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science in Business Administration Degree

The graduate with a Bachelor of Science in Business Administration degree in Accountancy will use the knowledge and skills obtained in the program to:

- Solve accounting problems and prepare accounting reports.
- Apply professional standards to resolve ethical and regulatory issues.
- Use Excel proficiently.
- Communicate accounting information effectively.

Accountancy Statement of Policy

Accountancy, BSBA (46-259) (4 Year Guide)

Major Requirements: 72 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3) *+
- ACCT 2102 - Principles of Managerial Accounting (3) *+
- ACCT 2901 - Intermediate Financial Accounting I (3) +
- ACCT 2920 - Cost and Managerial Accounting (3) +
- ACCT 2930 - Tax I (3) +
- ACCT 2950 - Accounting Analytics (3)
- ACCT 2960 - Accounting Information Systems (3) +
- ACCT 3102 - Intermediate Financial Accounting II (3) +
- ACCT 3103 - Intermediate Financial Accounting III (3) +
- ACCT 4100 - Advanced Accounting (3)
- ACCT 4105 - Auditing (3)
- ACCT 4130 - Tax II (3)
- BLAW 2720 - Legal Environment of Business (3) *
- BLAW 3721 - Law of Business Transactions (3)
- FIN 2801 - Business Statistics I (3) *
- FIN 3801 - Business Statistics II (3)
- FIN 3850 - Principles of Finance (3)
- MGT 3315 - Management of Organizations (3)
- MGT 3325 - Business Communication (3)
- MGT 3360 - Supply Chain and Operations Management (3)
- MGT 4357 - Organizational Policy and Strategy (3)
- MKT 3405 - Principles of Marketing (3)
- 3000- or 4000-level Business Electives (6)

General Education Requirements: 43 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CIS 1600 - Business Information Management GE (3) *

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

- ECON 1010 - Principles of Macroeconomics GE (3) *
- ECON 1011 - Principles of Microeconomics GE (3) *
- MATH 1111 - College Algebra GE (3) *

Free Electives: 5 Semester Hours

Minimum Total: 120 Semester Hours

*Students expecting to receive the B.S.B.A. degree must meet all preadmission requirements to be admitted to this program. See the Statement of Policy on Admission to a B.S.B.A. degree program. Preadmission courses include: ACCT 1101, ACCT 2102, BLAW 2720, CIS 1600, ECON 1010, ECON 1011, FIN 2801, and MATH 1111.

+ACCT 1101, ACCT 2102, ACCT 2901, ACCT 2920, ACCT 2930, ACCT 2960, ACCT 3102, and ACCT 3103 must be completed with a grade of C or better to receive the B.S.B.A.- Accountancy degree.

Accelerated Program Notes:

The Accelerated model for this program is designed for the MA Accountancy.

Students should apply for admittance to the Accelerated Program at the beginning of the junior year, after earning at least 60 hours of undergraduate college credit that includes the 24 semester hours of BSBA preadmission courses, ACCT 1101, ACCT 2102 and ACCT 2901. The application must be made prior to the student earning senior status in the BSBA in Accountancy, through School of Accountancy Graduate Coordinator.

Students must meet specific academic criteria for acceptance into the Accelerated program. The minimum criteria for acceptance are:

- Cumulative GPA of 3.00 (4.00 scale) or higher for the first 60 hours of undergraduate college credit.
- GPA of 3.00 (or above) on the 24 semester hours of BSBA preadmission courses.
- Grade of B or higher in ACCT 1101, ACCT 2102 and ACCT 2901.

In order to remain in good standing, students must:

- Maintain an overall cumulative GPA of 3.00/(4.00 scale), and
- Earn a C or better in all accounting coursework taken in the senior year.

In any semester, if either condition is not met, students will become ineligible to continue in the Accelerated program.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

ACCT 5030 Tax II (ACCT 4130)

ACCT 5101 Managing Decision Making Using Excel (ACCT 4101)

ACCT 5115 Financial Reporting and Analysis (ACCT 4114)

ACCT 5120 Financial Accounting and Reporting I (ACCT 4121)

ACCT 5135 Internship in Accounting (ACCT 4135)

ACCT 5137 Advanced Tax I (ACCT 4137)

ACCT 5138 Advanced Tax II (ACCT 4138)

ACCT 5140 Financial Accounting and Reporting II (ACCT 4140)

ACCT 5155 Fraud Risk Management/Examination (ACCT 4155)

ACCT 5160 Data Analytics for Accountants (ACCT 4161)

ACCT 5165 Special Projects in Accounting (ACCT 4165)

Big Data and Business Analytics Minor (667) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

Required Minor Courses: 12 Semester Hours

- CIS 1625 - Programming With Visual C# (3)
- CIS 3650 - Database Management Systems (3)
- FIN 2801 - Business Statistics I (3)
- FIN 3801 - Business Statistics II (3)

Minor Electives: 9 Semester Hours

Select any three of the following courses:

- CIS 4610 - Special Projects (1-3)
- CIS 4650 - Big Data Architecture (3)
- CIS 4680 - Data Resource Management (3)
- CIS 4681 - Big Data for the Enterprise (3)
- CIS 4683 - Big Data Visualization & Reporting (3)
- ECON 4085 - Predictive Analytics (3)

Note:

*This course has a prerequisite (CIS 1600). Student should take this course or an equivalent.

** This course has a prerequisite (MATH 1111). Student should take this course or an equivalent.

Big Data and Business Analytics, BSBA (46-640) (120 hours)

Major, Bachelor of Science in Business Administration Degree

The graduate with a Bachelor of Science degree in Business Administration in Big Data and Business Analytics will use the knowledge and skills obtained in the program to:

- Analyze business problems and apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of discipline.
- Apply theory, techniques, and tools throughout the data science life cycle and employ the resulting knowledge to satisfy stakeholders' needs.
- Make predictions of business outcomes based on data, and make decisions driven by data patterns, models and Artificial Intelligence.

- Use appropriate data engineering tools to create a Big Data Architecture for supporting business analytics in an environment with large volume of varied data.
- Conduct data-driven analysis, prediction and mitigation of organizational computing risk and security functions.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.

Big Data and Business Analytics, BSBA (46-640) (4 Year Guide)

Major Requirements: 77 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3) *
- ACCT 2102 - Principles of Managerial Accounting (3) *
- BLAW 2720 - Legal Environment of Business (3) *
- CIS 1625 - Programming With Visual C# (3)
- CIS 2625 - Web Application Architecture (3)
- CIS 2665 - Principles of Data Communications and Local Area Networking (3)
- CIS 3630 - Management Information Systems (3)
- CIS 3650 - Database Management Systems (3)
- CIS 4645 - Network and System Security (3)
- CIS 4680 - Data Resource Management (3)
- CIS 4681 - Big Data for the Enterprise (3)
- CIS 4683 - Big Data Visualization & Reporting (3)

- CIS 4686 - Business Applications of Machine and Deep Learning (3)
  OR
- ECON 4090 - Analytical Applications to Business (3)

- ECON 1011 - Principles of Microeconomics GE (3) *
- ECON 4085 - Predictive Analytics (3)
- FIN 2801 - Business Statistics I (3) *
- FIN 3801 - Business Statistics II (3)
- FIN 3850 - Principles of Finance (3)
- MGT 3315 - Management of Organizations (3)
- MGT 3325 - Business Communication (3)
- MGT 3360 - Supply Chain and Operations Management (3)
- MGT 4357 - Organizational Policy and Strategy (3)
- MKT 3405 - Principles of Marketing (3)

Electives from the Following: 8 Semester Hours

- CIS 3690 - Internship in Big Data and Business Analytics (3-9) (3-6)
- CIS 4610 - Special Projects (1-3)
- CIS 4640 - Web Application Development (3)
- CIS 4655 - Software Engineering (3)
- ECON 4030 - Directed Studies in Economics (1-3) (3)

- Other CIS 3000/4000 level courses can also be taken as electives, subject to course prerequisites.

General Education Requirements: 40 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ECON 1011 - Principles of Microeconomics GE (3) *

- CIS 1600 - Business Information Management GE (3) *
- ECON 1010 - Principles of Macroeconomics GE (3) *
- MATH 1111 - College Algebra GE (3) *

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Free Electives: 3 Semester Hours

Minimum Total: 120 Semester Hours

* Students expecting to receive the B.S.B.A. degree must meet all preadmission requirements to be admitted to this program. See the Statement of Policy on Admission to a B.S.B.A. degree program. Preadmission courses include: ACCT 1101, ACCT 2102, BLAW 2720, CIS 1600, ECON 1010, ECON 1011, FIN 2801, and MATH 1111.

Computer Information Systems Minor (535) (21 hours)

Minor for a Bachelor's Degree (535)

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- CIS 1600 - Business Information Management GE (3)
- CIS 1625 - Programming With Visual C# (3)
- CIS 2625 - Web Application Architecture (3)
- CIS 2665 - Principles of Data Communications and Local Area Networking (3)

- CIS 3650 - Database Management Systems (3)
  OR
- CIS 3660 - Analysis and Design of Computer Information Systems (3)

- ACCT 1101 - Foundations of Financial Reporting (3)
- ACCT 2102 - Principles of Managerial Accounting (3)

Computer Information Systems, BSBA (46-266) (120 hours)

Major, Bachelor of Science in Business Administration Degree

The graduate with a Bachelor of Science in Business Administration degree in Computer Information Systems will use the knowledge and skills obtained in the program to:

- Analyze technology-related, business problems and design solutions by applying appropriate analysis processes, methodologies and tools.
- Design, develop, and maintain application software, to be deployed on various devices, using suitable software engineering and design methodologies, programming languages, and web-development tools commonly adopted by businesses and other organizations.
- Design, implement and manage enterprise information technology systems and networks supporting mobile computing platforms, web-sites, and servers.
- Design, develop, and maintain databases using current database management systems.
- Design user interaction to facilitate the user's task and experience.
- Analyze risks and implement security measures for organizational computing environments.
- Apply project management skills and use project management software when creating a business solution; work collaboratively with others showing leadership, as appropriate.
- Use productivity software effectively.
- Communicate effectively in oral and written form; participate fully in group discussion and activities.
- Demonstrate knowledge of professional and ethical expectations in the work place.

Computer Information Systems, BSBA (46-266) (Area 1: Software Development) (4 Year Guide)

Computer Information Systems, BSBA (46-266) (Area 2: Cloud Computing, Networking and Security) (4 Year Guide)

Computer Information Systems, BSBA (46-266) (Area 3: Mobile and Web Development) (4 Year Guide)

Major Requirements: 77 Semester Hours

- CIS 1625 - Programming With Visual C# (3)
- CIS 2625 - Web Application Architecture (3)
- CIS 2665 - Principles of Data Communications and Local Area Networking (3)
- CIS 3630 - Management Information Systems (3)
- CIS 3650 - Database Management Systems (3)
- CIS 3660 - Analysis and Design of Computer Information Systems (3)
- CIS 4690 - Systems Architecture and Development (3)
- ACCT 1101 - Foundations of Financial Reporting (3) *
- ACCT 2102 - Principles of Managerial Accounting (3) *
- BLAW 2720 - Legal Environment of Business (3) *
- ECON 1011 - Principles of Microeconomics GE (3) *
- FIN 2801 - Business Statistics I (3) *
- FIN 3801 - Business Statistics II (3)
- FIN 3850 - Principles of Finance (3)
- MGT 3315 - Management of Organizations (3)
- MGT 3325 - Business Communication (3)
- MGT 3360 - Supply Chain and Operations Management (3)
- MGT 4357 - Organizational Policy and Strategy (3)
- MKT 3405 - Principles of Marketing (3)

Four courses from one of the following Areas: 12 Semester Hours

Area 1 - Software Development

- CIS 3625 - Business Application Development with Java (3)
- CIS 3670 - User Experience Design (3)
- CIS 4680 - Data Resource Management (3)

- CIS 4660 - Advanced Applications Development Using JAVA (3)
  OR
- CIS 4670 - Applications Development Using Visual C# (3)

Area 2 - Cloud Computing, Networking and Security

- CIS 3665 - Cloud Computing and Data Communication Technologies (3)
- CIS 4645 - Network and System Security (3)
- CIS 4665 - Data Communication and Distributed Data Processing (3)
- CIS 4685 - Cloud and Network: Planning, Design, and Security (3)

Area 3 - Mobile and Web Development

- CIS 3625 - Business Application Development with Java (3)
- CIS 3670 - User Experience Design (3)
- CIS 4640 - Web Application Development (3)
- CIS 4675 - Mobile Business Application Development (3)

Electives from the Following: 8 Semester Hours

- CIS 3695 - Internship in Computer Information Systems (3-9) (3)
- CIS 4610 - Special Projects (1-3)
- CIS 4625 - Information Security Management (3)
- CIS 4635 - Seminar in Business Computer Applications (2-3)
- CIS 4640 - Web Application Development (3)
- CIS 4655 - Software Engineering (3)
- CIS 4675 - Mobile Business Application Development (3)

Note:

Any CIS course in the tracks (prerequisites apply).

Any ET courses approved by the school.

General Education Requirements: 40 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CIS 1600 - Business Information Management GE (3) *

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

- ECON 1010 - Principles of Macroeconomics GE (3) *
- ECON 1011 - Principles of Microeconomics GE (3)
- MATH 1111 - College Algebra GE (3) *

Free Electives: 3 Semester Hours

Minimum Total: 120 Semester Hours

*Students expecting to receive the B.S.B.A. degree must meet all preadmission requirements to be admitted to this program. See the Statement of Policy on Admission to a B.S.B.A. degree program. Preadmission courses include: ACCT 1101, ACCT 2102, BLAW 2720, CIS 1600, ECON 1010, ECON 1011, FIN 2801, and MATH 1111.

Enterprise Resource Planning Minor (690) (18 hours)

Minor for a Bachelors Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 18 Semester Hours

- CIS 1625 - Programming With Visual C# (3)
- CIS 3630 - Management Information Systems (3) *
- CIS 3650 - Database Management Systems (3) *
- CIS 3660 - Analysis and Design of Computer Information Systems (3)
- CIS 4678 - Fundamentals of Enterprise Resource Planning (3)
- CIS 4688 - ERP Configuration and Implementation (3)

Note:

* This course has a prerequisite not listed in the program.

Department of Criminal Justice and Criminology

The Department of Criminal Justice and Criminology collaborates with the Department of Management and the Department of Government, Law, and International Affairs to offer the Legal Studies Minor (555) (21 hours).

Corrections Minor (709) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- CJ 1000 - Introduction to Criminal Justice GE (3)
- CJ 3006 - Corrections (3)

Electives from the Following: 15 Semester Hours

- CJ 3000 - History of Corrections and Penal Institutions (3)
- CJ 3104 - Institutional Operations (3)
- CJ 3310 - Law of Corrections (3)
- CJ 4006 - Probation, Parole and Community Corrections (3)
- CJ 4330 - Criminal Justice and the Mental Health Systems (3)
- CJ 4503 - Criminology (3)

Criminal Justice and Criminology Minor (681) (18 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 18 Semester Hours

- CJ 1000 - Introduction to Criminal Justice GE (3)
- CJ 3300 - Criminal Law and Procedure (3)
- CJ 3006 - Corrections (3)
- CJ 3010 - Policing a Democratic Society (3)
- Criminal Justice Electives (6)

Criminal Justice and Criminology, BS (43-680) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Criminal Justice and Criminology will use the knowledge and skills obtained in the program to:

- Analyze problems inherent to the criminal justice system, including issues related to diversity, discrimination, morals, and/or ethics.
- Use qualitative and quantitative social science research to construct solutions to problems inherent to the criminal justice system, including issues related to diversity, discrimination, morals, and/or ethics.
- Describe the potential causes of crime and the process of criminalization.
- Produce articulate, comprehensible, and grammatically correct written communications using appropriate criminal justice information and resources.

Only courses with a grade of C or better (including transfer courses) may be used to fulfill a core requirement in any major or minor offered exclusively by the Department of Criminal Justice. Students taking CJ courses to meet the requirements of majors/minors in other departments may use a D grade to fulfill requirements, unless stipulated by that department. A student may enroll in a course offered by the Department of Criminal Justice only if a grade of C or better is earned in each of the course's prerequisites taken. A grade of D or better will meet the requirements for the 15 hours of CJ electives taken to fulfill a CJ major or any electives required for a CJ minor.

Criminal Justice and Criminology, BS (43-842) (4 Year Guide)

Major Requirements: 42 Semester Hours

- CJ 1000 - Introduction to Criminal Justice GE (3) +
- CJ 2010 - Ethics in Criminal Justice (3) +
- CJ 2700 - Introduction to Juvenile Justice (3) +
- CJ 3006 - Corrections (3) +
- CJ 3010 - Policing a Democratic Society (3) +
- CJ 3300 - Criminal Law and Procedure (3) +
- CJ 3600 - Research in Criminal Justice and Criminology (3) +
- CJ 4020 - Crime, Justice and Social Diversity (3) +
- CJ 4503 - Criminology (3) +
- Criminal Justice Electives (15)

General Education Requirements: 39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CJ 1000 - Introduction to Criminal Justice GE (3) +

Free Electives: 39 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Criminal Justice and Criminology.

UCM students with a major GPA of at least 3.50 may consult with their faculty advisor regarding declaring the accelerated BS Criminal Justice and Criminology - MS Criminal Justice and Criminology option. Prior to beginning the graduate portion of the program, students in the accelerated program will need to apply to the UCM Graduate School for formal admittance to the Accelerated BS/MS program. A GRE will not be required for students in the Accelerated program.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

CJ 5001 Special Projects in Criminal Justice Administration (CJ 4000)

CJ 5002 Criminal Justice Philosophy and Policy (CJ 4002)

CJ 5003 Advanced Criminology (CJ 4003)

CJ 5010 Criminal Justice International Study (CJ 4010)

CJ 5090 Miscarriages of Justice (CJ 4090)

CJ 5403 Sexual Assault and the Criminal Justice System (CJ 4403)

CJ 5420 Organized Crime (CJ 4420)

CJ 5444 Terrorism (CJ 4444)

CJ 5488 Homeland Security (CJ 4488)

CJ 5920 Women and Crime (CJ 4920)

Juvenile Justice Minor (636) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- CJ 2700 - Introduction to Juvenile Justice (3)
- CJ 4702 - Juvenile Corrections (3)
- CJ 4704 - Dynamics of Delinquent Behavior (3)
- HDFS 3230 - Family Systems and Lifespan Development (3)
- HDFS 3260 - Youth Culture and Development (3)

Choose 2 Electives: 6 Semester Hours

- CJ 4701 - Juvenile Law & Policy (3)
- CJ 4703 - International Juvenile Justice (3)
- HDFS 4540 - Addiction and the Family (3)
- HDFS 4550 - Health and Human Services (3)
- HDFS 4580 - Resilience in Children and Adolescents (3)

Law Enforcement Minor (6801) (21 hours)

This minor is offered by the Criminal Justice & Criminology Program as a 21-credit hour interdisciplinary program open to all students. Students majoring in criminal justice and other related fields who have a desire to work in the field of law enforcement (local, county, state, federal) will find this minor of substantial benefit to their future careers. This minor is designed to specifically enhance skills that are critical to the daily operations performed by a professional law enforcement official. Among many available choices, the curriculum offers courses related to management and leadership of a law enforcement entity, effective interpersonal communication skills, basic criminal investigation techniques, and report writing for field professionals.

Minor Requirements: 15 Semester Hours

All minor coursework requires a grade of C or better.

- CJ 3010 - Policing a Democratic Society (3) *
- CJ 3101 - Management and Leadership in Law Enforcement (3) *
- CJ 3190 - Criminal Justice Report Writing (3)
- CJ 3400 - Criminal Investigation (3)
- CJ 4190 - Interpersonal Communication Skills for Criminal Justice (3)

Elective Courses: 6 Semester Hours

- CJ 3030 - Federal Law Enforcement (3)
- CJ 3405 - Homicide Investigation (3)
- CJ 4001 - Contemporary Issues in Law Enforcement (3)
- CJ 4433 - Crime Mapping (3)
- CJ 4488 - Homeland Security (3)

Total Required Hours: 21 Semester Hours

Notes:

* This course has a prerequisite not listed in the program.

Mental Health Certificate (10-8421) (12 hours)

Required Courses: 9 Semester Hours

- CJ 4330 - Criminal Justice and the Mental Health Systems (3) *
- HDFS 4540 - Addiction and the Family (3)
- PSY 4440 - Abnormal Psychology (3) *

Elective from the Following: 3 Semester Hours

- HDFS 4520 - Multicultural Study and Approaches with Families (3)
- HDFS 4550 - Health and Human Services (3)
- HDFS 4580 - Resilience in Children and Adolescents (3)
- PSY 4330 - Multicultural Psychology (3)
- SOWK 2600 - Introduction to Social Welfare and Social Work (3)
- SOWK 4610 - Special Topics in Social Work (1-3)

Note:

*This course has a prerequisite not listed in the program.

Terrorism and Homeland Security Certificate (10-647) (12 hours)

Certificate

The Terrorism and Homeland Security undergraduate certificate program is designed to help students meet professional objectives. Each course contains specific and relevant information regarding the theoretical and practical aspects of terrorism and those who perpetrate it. The student may choose to use this certificate as a career enhancement tool for entry level employment or advancement in a law enforcement or other agency. A student must earn a "C" or better with the courses listed to earn this certificate.

Required Courses: 12 Semester Hours

- CJ 1000 - Introduction to Criminal Justice GE (3)
- CJ 3020 - Comparative Justice Systems (3)
- CJ 4444 - Terrorism (3)
- CJ 4488 - Homeland Security (3)

Department of Economics and Finance

Economics Minor (538) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- ECON 1010 - Principles of Macroeconomics GE (3)
- ECON 1011 - Principles of Microeconomics GE (3)
- Electives in economics (15) **

Note:

**Must include at least one upper-level (3000/4000) course to meet graduation requirements.

Economics, BSBA (46-611) (120 hours)

Major, Bachelor of Science in Business Administration Degree

The graduate with a Bachelor of Science in Business Administration degree in Economics will use the knowledge and skills obtained in the program to:

- Use economic models to study behavior and can interpret the results of their models.
- Use these results to make inferences and draw conclusions.
- Calculate and interpret descriptive statistics.
- Communicate economic ideas and information in written and spoken form.

Economics, BSBA (46-611) (4 Year Guide)

Major Requirements: 57 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3) *
- ACCT 2102 - Principles of Managerial Accounting (3) *
- BLAW 2720 - Legal Environment of Business (3) *
- CIS 3630 - Management Information Systems (3)
- ECON 3010 - Intermediate Macroeconomics (3)
- ECON 3030 - Intermediate Microeconomics (3)
- ECON 4000 - Senior Seminar in Economics (3)
- FIN 2801 - Business Statistics I (3) *
- FIN 3801 - Business Statistics II (3)
- FIN 3850 - Principles of Finance (3)
- MGT 3315 - Management of Organizations (3)
- MGT 3325 - Business Communication (3)
- MGT 3360 - Supply Chain and Operations Management (3)
- MGT 4357 - Organizational Policy and Strategy (3)
- MKT 3405 - Principles of Marketing (3)

Electives from the Following: 12 Semester Hours

- ECON 3020 - Money and Banking (3)
- ECON 3035 - Internship in Economics (1-6) (1-3)
- ECON 3065 - Labor Economics (3)
- ECON 4010 - International Economics (3)
- ECON 4020 - Natural Resource Economics (3)
- ECON 4050 - Comparative Economic Systems (3)
- ECON 4054 - Sports Economics (3)
- ECON 4060 - Game Theory (3)
- ECON 4065 - Managerial Economics (3)
- ECON 4075 - Time Series Analysis (3)
- ECON 4080 - Econometrics I (3)
- ECON 4085 - Predictive Analytics (3)

General Education Requirements: 43 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CIS 1600 - Business Information Management GE (3) *
- ECON 1010 - Principles of Macroeconomics GE (3) *
- ECON 1011 - Principles of Microeconomics GE (3) *
- MATH 1111 - College Algebra GE (3) *

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR

- MKT 1401 - Professional Speaking and Presentation GE (3)

Free Electives: 20 Semester Hours

Minimum Total: 120 Semester Hours

*Students expecting to receive the B.S.B.A. degree must meet all preadmission requirements to be admitted to this program. See the Statement of Policy on Admission to a B.S.B.A. degree program. Preadmission courses include: ACCT 1101, ACCT 2102, BLAW 2720, CIS 1600, ECON 1010, ECON 1011, FIN 2801, and MATH 1111.

Finance Minor (541) (24 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 24 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3)
- FIN 2801 - Business Statistics I (3)
- FIN 3801 - Business Statistics II (3)
- FIN 3850 - Principles of Finance (3)
- FIN 3861 - Financial Management I (3)
- FIN 3881 - Financial Institutions and Markets (3)
- FIN 3891 - Security Analysis (3)

Elective from the following: 3 Semester Hours

- FIN 3893 - Credit and Financial Statement Analysis (3)
- FIN 4815 - Investment Portfolio Administration (3)
- FIN 4817 - Managing Financial Derivatives (3)
- FIN 4820 - International Finance (3)
- FIN 4821 - Professional Financial Analysis (3)
- FIN 4862 - Financial Management II (3)
- FIN 4880 - Bank Management (3)
- RMI 3803 - Principles of Insurance (3)

Finance, BSBA (46-267) (120 hours)

Major, Bachelor of Science in Business Administration Degree

The graduate with a Bachelor of Science in Business Administration degree in Finance will use the knowledge and skills obtained in the program to:

- Demonstrate working knowledge of time value of money and risk-return tradeoffs.
- Define and differentiate between various financial instruments and markets.
- Make value-additive decisions using fundamental financial models.

For admission to the finance major, a student must have a cumulative GPA of 2.40 or above (on a 4.00 scale) on all completed undergraduate college credit and a 2.40 GPA (or above) on the 24 semester hours of B.S.B.A. pre-admission courses. To graduate with a B.S.B.A., major in finance, a student must have a cumulative GPA of 2.40 or higher.

Finance, BSBA (46-267) (4 Year Guide)

Major Requirements: 69 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3) *
- ACCT 2102 - Principles of Managerial Accounting (3) *
- BLAW 2720 - Legal Environment of Business (3) *
- CIS 3630 - Management Information Systems (3)
- ECON 3020 - Money and Banking (3)
- ECON 3030 - Intermediate Microeconomics (3)
- FIN 2801 - Business Statistics I (3) *
- FIN 3801 - Business Statistics II (3)
- FIN 3850 - Principles of Finance (3) +
- FIN 3861 - Financial Management I (3) +
- FIN 3881 - Financial Institutions and Markets (3) +
- FIN 3891 - Security Analysis (3) +
- FIN 3893 - Credit and Financial Statement Analysis (3) +
- MGT 3315 - Management of Organizations (3)
- MGT 3325 - Business Communication (3)
- MGT 3360 - Supply Chain and Operations Management (3)
- MGT 4357 - Organizational Policy and Strategy (3)
- MKT 3405 - Principles of Marketing (3)

Electives from the Following: 15 Semester Hours

- FIN 3818 - Cryptocurrency Blockchain & FinTech (3)
- FIN 3835 - Internship in Finance (1-6) (3)
- FIN 4815 - Investment Portfolio Administration (3)
- FIN 4817 - Managing Financial Derivatives (3)
- FIN 4820 - International Finance (3)
- FIN 4821 - Professional Financial Analysis (3)
- FIN 4831 - Student Managed Investment Fund (3)
- FIN 4862 - Financial Management II (3)
- FIN 4880 - Bank Management (3)
- RMI 3803 - Principles of Insurance (3)
- RMI 4802 - Life and Health Insurance (3)
- RMI 4803 - Property and Casualty Insurance (3)
- RMI 4804 - Employee Benefits and Retirement Planning (3)
- Business Elective (3000-4000 level) (3)

General Education Requirements: 43 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CIS 1600 - Business Information Management GE (3) *
- ECON 1010 - Principles of Macroeconomics GE (3) *
- ECON 1011 - Principles of Microeconomics GE (3) *
- MATH 1111 - College Algebra GE (3) *

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Free Electives: 8 Semester Hours

Minimum Total: 120 Semester Hours

*Students expecting to receive the B.S.B.A. degree must meet all preadmission requirements to be admitted to this program. See the Statement of Policy on Admission to a B.S.B.A. degree program. Preadmission courses include: ACCT 1101, ACCT 2102, BLAW 2720, CIS 1600, ECON 1010, ECON 1011, FIN 2801, and MATH 1111.

+FIN 3850, FIN 3861, FIN 3881, FIN 3891 and FIN 3893 must be completed with a grade of C or better to receive the B.S.B.A.-Finance degree.

International Business, BSBA (46-598) (120 hours)

Major, Bachelor of Science in Business Administration Degree

The graduate with a Bachelor of Science in Business Administration degree in International Business will use the knowledge and skills obtained in the program to:

- Master all core business knowledge, skills and aptitudes required in the Bachelor of Science in Business Administration (BSBA) program.
- Recognize the impact the global environment has on specific business disciplines.
- Demonstrate competency in one non-native language.
- Apply language and business skills in a non-native setting.
- Understand differences in business and economic policies and systems in a foreign country.

International Business, BSBA (46-598) (4 Year Guide)

Major Requirements: 75 Semester Hours

Major Core Requirements: 51 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3) *
- ACCT 2102 - Principles of Managerial Accounting (3) *
- BLAW 2720 - Legal Environment of Business (3) *
- CIS 3630 - Management Information Systems (3)

- ECON 3010 - Intermediate Macroeconomics (3)
- ECON 4010 - International Economics (3)
- FIN 2801 - Business Statistics I (3) *
- FIN 3801 - Business Statistics II (3)
- FIN 3850 - Principles of Finance (3)
- FIN 4820 - International Finance (3)
- MGT 3315 - Management of Organizations (3)
- MGT 3325 - Business Communication (3)
- MGT 3345 - International Management (3)
- MGT 3360 - Supply Chain and Operations Management (3)
- MGT 4357 - Organizational Policy and Strategy (3)
- MKT 3405 - Principles of Marketing (3)
- MKT 4460 - International Marketing (3)

Electives from the Following: 6 Semester Hours

- ANTH 3810 - Applied Anthropology (3)
- COMM 2350 - Intercultural Communication (3)
- GEOG 2212 - World Geography GE (3)
- GEOG 3200 - Geography of Europe (3)
- GEOG 3225 - Geography of Latin America (3)
- HIST 1402 - History of the Modern World GE (3)
- HIST 3416 - Europe in Crisis: 1900-Present (3)
- HIST 4452 - Modern Latin America (3)
- HIST 4463 - Modern China (3)

Modern Language Requirement: 12 Semester Hours

All international business majors must demonstrate proficiency in a modern language other than their native language. This requirement can be satisfied by:

1. Completing 12 credit hours of one modern language.
2. Testing and receiving a ranking of "intermediate" in both the oral and written portions of the ACTFL test in a modern language. Three of these hours can be used to satisfy General Education requirements: Additional Courses for Knowledge Area I - 3 hours.

International Experience Requirement: 6 Semester Hours

Complete a minimum of 6 credit hours through one or more of the following options (need to be approved by the Department of Economics and Finance chair):

1. Study Abroad Program
2. International Study Tour
3. International Internship

If the student has school chair approval prior to the International Experience, these courses may be used to fulfill Major, Modern Language, or Electives requirements. A minimum of 120 credit hours are required to receive the BSBA degree in International Business.

General Education Requirements: 34-40 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CIS 1600 - Business Information Management GE (3) *
- ECON 1010 - Principles of Macroeconomics GE (3) *
- ECON 1011 - Principles of Microeconomics GE (3) *
- GEOG 2212 - World Geography GE (3) (if chosen)
- HIST 1402 - History of the Modern World GE (3) (if chosen)
- MATH 1111 - College Algebra GE (3) *
- 3 credit hours of Modern Language courses will be counted as General Education requirements

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Free Electives: 5-11 Semester Hours

Minimum Total: 120 Semester Hours

*Students expecting to receive the B.S.B.A. degree must meet all preadmission requirements to be admitted to this program. See the Statement of Policy on Admission to a B.S.B.A. degree program. Preadmission courses include: ACCT 1101, ACCT 2102, BLAW 2720, CIS 1600, ECON 1010, ECON 1011, FIN 2801, and MATH 1111.

Risk Management and Insurance, BSBA (46-644) (120 hours)

Major, Bachelor of Science in Business Administration Degree

The graduate with a Bachelor of Science in Business Administration degree in Risk Management and Insurance will use the knowledge and skills obtained in the program to:

- Master all core business knowledge, skills and aptitudes required in the program.
- Demonstrate working knowledge of risk management process.
- Demonstrate working knowledge of insurance industry.
- Understand different insurance contracts to manage risks.

Risk Management and Insurance, BSBA (46-644) (4 Year Guide)

Major Requirements: 69 Semester Hours

Major Core Courses: 54 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3) *
- ACCT 2102 - Principles of Managerial Accounting (3) *

- BLAW 2720 - Legal Environment of Business (3) *
- CIS 3630 - Management Information Systems (3)
- FIN 2801 - Business Statistics I (3) *
- FIN 3801 - Business Statistics II (3)
- FIN 3850 - Principles of Finance (3)
- MGT 3315 - Management of Organizations (3)
- MGT 3325 - Business Communication (3)
- MGT 3360 - Supply Chain and Operations Management (3)
- MGT 4357 - Organizational Policy and Strategy (3)
- MKT 3405 - Principles of Marketing (3)
- RMI 3803 - Principles of Insurance (3)
- RMI 3835 - Internship in Insurance (1-6) (3)
- RMI 4802 - Life and Health Insurance (3)
- RMI 4803 - Property and Casualty Insurance (3)
- RMI 4804 - Employee Benefits and Retirement Planning (3)
- RMI 4850 - Corporate Risk Management (3)

Electives from the Following: 15 Semester Hours

- ECON 4085 - Predictive Analytics (3)
- FIN 3861 - Financial Management I (3)
- FIN 3881 - Financial Institutions and Markets (3)
- FIN 3891 - Security Analysis (3)
- FIN 3893 - Credit and Financial Statement Analysis (3)
- FIN 4817 - Managing Financial Derivatives (3)
- MKT 3430 - Professional Sales (3)
- Up to three hours may be upper level (3000-4000) business electives.

General Education Requirements: 43 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CIS 1600 - Business Information Management GE (3) *
- MATH 1111 - College Algebra GE (3) *
- ECON 1010 - Principles of Macroeconomics GE (3) *
- ECON 1011 - Principles of Microeconomics GE (3) *

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Free Electives: 8 Semester Hours

BADM 1400 is strongly recommended as a free elective.

Minimum Total: 120 Semester Hours

*Students expecting to receive the B.S.B.A. degree must meet all preadmission requirements to be admitted to this program. See the Statement of Policy on Admission to a B.S.B.A. degree program. Preadmission courses include: ACCT 1101, ACCT 2102, BLAW 2720, CIS 1600, ECON 1010, ECON 1011, FIN 2801, and MATH 1111.

Department of Human Services

Department of Human Services
Wood 005
660-543-4407
ucmo.edu/cdsw

Human Development and Family Science Minor (1003) (21 hours)

Minor for a Bachelor's Degree

The minor in Human Development and Family Science enables students to work with children and families in various settings. Due to the changes and diversities among modern families, there is an increasing demand for Human Development and Family Science Professionals. Opportunities at the state/federal level are anticipated due to the massive retirement of the baby boomer generation. In addition, many Human Development and Family Science graduates apply and are accepted to graduate schools in related field such as Marriage and Family Therapy, School Counseling, Family Law, Special Education, Elementary/Early Childhood Education, Counseling, and Human Development and Family Sciences.

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- HDFS 1010 - Individual and Family Relationships GE (3)
- HDFS 1220 - Child and Adolescent Development (3)
- HDFS 3230 - Family Systems and Lifespan Development (3)

Electives from the Following: 6 Semester Hours

- HDFS 3260 - Youth Culture and Development (3)
- HDFS 4250 - Selected Issues in Child and Family Development (3)
- HDFS 4510 - Early Childhood Approaches (3)
- HDFS 4520 - Multicultural Study and Approaches with Families (3)
- HDFS 4530 - Transition to Marriage (3)
- HDFS 4540 - Addiction and the Family (3)
- HDFS 4550 - Health and Human Services (3)
- HDFS 4560 - Divorce (3)
- HDFS 4570 - Death, Loss, and Grief Across the Lifespan (3)
- HDFS 4580 - Resilience in Children and Adolescents (3)
- HDFS 4590 - Health Issues in Childhood and Adolescence (3)

Electives in Human Development and Family Science: 6 Semester Hours

Human Development and Family Science, BS (43-1004) (120 hours)

Major, Bachelor of Science Degree

Students will be:

- Able to think critically about problems and issues impacting individuals and families across the lifespan.
- Prepare to use developmentally appropriate practices to promote the optimal development of diverse children, youth, adults, and families.
- Competent to assume leadership roles in programs providing services to individuals, families and communities.
- Demonstrate knowledge and skills to advocate for policy changes that impact individuals and families.
- Aware of and sensitive to ethical implications in their professional relationships with diverse families and children.
- Define and describe various issues related to diversity, equity and inclusion and their impacts on individuals and families.

Students must earn a grade of C or better for all courses with an HDFS and CFD prefix.

The Human Development and Family Science undergraduate program is a Certified Family Life Educator (CFLE) Program through the National Council on Family Relations (NCFR). The required courses listed below meet the criteria for approval as a provisional Certified Family Life Education (CFLE). Students wishing to obtain **provisional** CFLE certification must apply to NCFR upon the completion of an undergraduate degree in HDFS.

Courses required: HDFS 1010, HDFS 1220, HDFS 3230, HDFS 3240, HDFS 3710, HDFS 4220, HDFS 4260, HDFS 4520, HDFS 4550, HDFS 4710, HDFS 4745, HDFS 4850, FCSE 3120, and pick one of the following - HDFS 4530, HDFS 4560, HDFS 4570, or HDFS 4540.

For questions, contact Dr. Jaimee Hartenstein - hartenstein@ucmo.edu

Human Development and Family Science, BS (43-1004) (4 Year Guide)

Major Requirements: 48 Semester Hours

- HDFS 1220 - Child and Adolescent Development (3)
- HDFS 1230 - Observation of Children (2)
- HDFS 1450 - Valuing Differences: Discovering Common Ground (1)
- HDFS 3230 - Family Systems and Lifespan Development (3)
- HDFS 3240 - Parent-Child Interaction (3)
- HDFS 3250 - Organization and Administration of Programs for Young Children (3)
- HDFS 3260 - Youth Culture and Development (3)
- HDFS 3710 - Field Experience in Child and Family Development (3)
- HDFS 4220 - Sexuality Across the Lifespan (3)
- HDFS 4260 - Adulthood (3)
- HDFS 4710 - Internship (3)
- HDFS 4745 - Senior Seminar (3)
- HDFS 4850 - Family Policy and Advocacy (3)
- SOC 2805 - Introduction to Social Research (3)

Electives from the Following: 6 Semester Hours

- HDFS 4250 - Selected Issues in Child and Family Development (3)
- HDFS 4510 - Early Childhood Approaches (3)
- HDFS 4520 - Multicultural Study and Approaches with Families (3)
- HDFS 4530 - Transition to Marriage (3)
- HDFS 4540 - Addiction and the Family (3)
- HDFS 4550 - Health and Human Services (3)
- HDFS 4560 - Divorce (3)
- HDFS 4570 - Death, Loss, and Grief Across the Lifespan (3)
- HDFS 4580 - Resilience in Children and Adolescents (3)
- HDFS 4590 - Health Issues in Childhood and Adolescence (3)

Elective from the Following: 3 Semester Hours

- BTE 3110 - Consumer Finance and Economics (3)
- FCSE 3120 - Family Resource Management (3)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- HDFS 1010 - Individual and Family Relationships GE (3)
- ECEL 2110 - Diversity and Social Justice GE (3)

- PSY 1100 - General Psychology GE (3)
  OR
- SOC 1800 - Introduction to Sociology GE (3)

Free Electives: 30 Semester Hours

- **Contact HDFS faculty advisor for guidance**

Minimum Total: 120 Semester Hours

Social Work, BSW (48-847) (120 hours)

Major, Bachelor of Social Work Degree

The graduate with a Bachelor of Social Work degree will use the knowledge and skills obtained in the program to:

- Identify as a professional social worker and conduct one's self accordingly.
- Apply social work ethical principles to guide professional practice.
- Apply critical thinking to inform and communicate professional judgments.
- Engage diversity and differences in practice.
- Advance human rights and social and economic justice.

- Engage in research-informed practice and practice-informed research.
- Apply knowledge of human behavior and the social environment.
- Engage in policy practice to advance social and economic well-being and to deliver effective social work services.
- Respond to contexts that shape practice.
- Engage, assess, intervene, and evaluate with individuals, families, groups, organizations, and communities.

Social Work Statement of Policy

A student may enroll in a course offered by the Social Work Program only if a grade of C or better is earned in each of the course's prerequisites taken.

Purpose

The purpose of the social work profession is to promote human and community well-being. The BSW Program prepares students for professional generalist social work practice or graduate education. Students are expected to demonstrate mastery of all competencies and practice behaviors identified by the accrediting body.

Admission Policy

Students entering UCM as freshmen should indicate a social work major. Transfer students must meet all requirements. Admission to the social work program is conditional upon successful completion of all requirements.

Requirements for Admission to the Social Work Program

1. Completion of General Education courses listed as requirements of the social work major with a C or better.
2. Cumulative grade-point average of 2.00.
3. A minimum grade of C for courses listed as curriculum requirements of the social work major.
4. Completion of PSY 1100 , SOC 1800 , BIOL 2010, SOWK 2600, and SOWK 3601.
5. Students must complete a social work prefix course in residence prior to applying for admission into the social work program.
6. Submission of:
    1. Application for Admission to social work program.
    2. Transcript of all university work.
    3. Three references including one from the SOWK 3601 volunteer supervisor.
    4. Autobiographical statement.
7. The Admissions Packet will be distributed during an informational meeting scheduled for students enrolled in SOWK 3601. Students who miss the meeting or need assistance should meet with their faculty mentor. Admission to the program is required to enroll in SOWK 4630 and SOWK 4650 .
8. Successful completion of an interview with Social Work Admissions Committee.
9. Provisional admission requires the student to write a corrective action plan with approval by the faculty mentor prior to the end of the semester in which they receive a provisional admission. The student will be interviewed a second time during the following semester, providing an opportunity to demonstrate time, effort and progress toward resolving provisional concerns.

Criteria for Retention

Social Work students will be permitted to continue in the Social Work major by meeting certain "Criteria for Retention" as established by the program.

1. An earned grade of C or better in all courses listed as requirements of the social work major.
2. Students failing to earn a grade of C or better in either SOWK 4660 - Field Practicum (9) or SOWK 4661 - Field Practicum Seminar (3) are not permitted to repeat the two courses and will not be allowed to continue in the Social Work Program at Central, nor be able to graduate with a BSW from the University of Central Missouri.
3. Adherence to the National Association of Social Workers' Code of Ethics.
4. Demonstrate professional demeanor and maintain social functioning that allows for effective beginning level generalist social work practice. Social Functioning refers to students' ability to cope with the demands generated by interaction with their environment, including school, work, family, and personal and professional relationships.

5. Demonstrate effective verbal and written communication skills.
6. Continued enrollment as a student in good standing at UCM. A student who has not maintained enrollment in good standing for a period of one year must have a retention hearing upon their return to the program.

Credit for Life Experience
Credit will not be given for life or previous work experience for courses required in the social work major.

Accreditation
The Bachelor of Social Work program is accredited by the Council on Social Work Education, a specialized accrediting body recognized by the Council for Higher Education Accreditation (CHEA). The Council on Social Work Education (CSWE) is located at 1725 Duke Street, Suite 500, Alexandria, VA 22314-3457; phone 703-683-8080; email
info@cswe.org.

Social Work, BSW (48-847) (4 Year Guide)

Major Requirements: 51 Semester Hours

C or better required for all major coursework.

- SOC 2805 - Introduction to Social Research (3)
- SOC 3825 - Race and Ethnic Relations (3)
- SOWK 2600 - Introduction to Social Welfare and Social Work (3)
- SOWK 3601 - Social Work Practice and the Agency Experience (3)
- SOWK 3605 - Methods of Inquiry and Evaluation for Social Workers (3)
- SOWK 3610 - Social Work Practice: Basic Skills (3)
- SOWK 3612 - Human Behavior Across the Lifespan (3)
- SOWK 4612 - Human Behavior Social Systems (3)
- SOWK 4630 - Social Work Practice: Intervention with Families and Groups (3)
- SOWK 4640 - Social Work Practice: Intervention with Communities and Organizations (3)
- SOWK 4650 - Social Policy and Economic Justice (3)
- SOWK 4660 - Field Practicum (9)
- SOWK 4661 - Field Practicum Seminar (3)
- PSY 4440 - Abnormal Psychology (3)

- SOWK 4610 - Special Topics in Social Work (1-3) (3)
  OR
- SOWK 4620 - Social Services and Policy with Older Adults (3)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- BIOL 2010 - Human Biology GE (3) +
- PSY 1100 - General Psychology GE (3) +
- SOC 1800 - Introduction to Sociology GE (3) +

Free Electives: 27 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Speech-Language Pathology, BS (43-273) (120 hours)

Major, Bachelor of Science Degree

Overview of Program

The primary purpose of the B.S. Degree in Speech-Language Pathology is to prepare students for possible admission to graduate programs in either Speech-Language Pathology or Audiology. Completion of the B.S. Degree in Speech-Language Pathology does not provide the qualifications that students will need for employment as a speech-language pathologist or audiologist, nor does it guarantee admission to a graduate program in Speech-Language Pathology or Audiology; however, the undergraduate degree can lead to employment opportunities in a variety of related fields. The Master's degree is considered the entry level degree to enter the field of Speech-Language Pathology. UCM offers a Master's degree program that is accredited by the Council on Academic Accreditation of the American Speech-Language Hearing Association (ASHA) in Speech-Language Pathology. The clinical doctorate (AuD), not currently offered at UCM, is the entry level degree to enter the field of Audiology.

Undergraduate Student Learning Outcomes

The graduate with a Bachelor of Science in Speech-Language Pathology will use the knowledge and skills obtained in the program to:

1. Demonstrate knowledge of information regarding prevention, assessment and intervention concerning communication differences and disorders and swallowing or other upper aerodigestive disorders.
2. Provide prevention, assessment and intervention services to children and adults across a wide range of speech and language disorders and differences in a closely supervised setting.
3. Demonstrate emerging skills in oral and written language to achieve effective clinical and professional interaction.
4. Begin to exhibit professional behavior as defined in the cardinal documents of the American Speech-Language-Hearing Association (ASHA) including but not limited to Certification Standards for the Certificate of Clinical Competence in Speech-Language Pathology, ASHA Scope of Practice in Speech-Language Pathology, ASHA Code of Ethics and ASHA Preferred Practice Patterns for the Profession of Speech-Language Pathology.
5. Collaborate with professionals and provide counseling to individuals and their families regarding speech and language differences and disorders in a closely supervised setting.
6. Begin to integrate classroom-based knowledge, clinical experience and technological resources to support Evidence-Based Practice in a guided clinical setting.

Undergraduate Admission Policies and Procedures

Student enrollment is limited to the following Communication Disorders courses unless the student is either provisionally or fully admitted to the undergraduate functional major in speech-language pathology: CD 1000, CD 2301, CD 3301, CD 4401, CD 4900. If the student is not provisionally or fully admitted to the undergraduate program, enrollment in Communication Disorders courses other than the ones listed above, shall be determined in conference with the director of undergraduate studies in the program.

Students who have been admitted to the undergraduate program and have not enrolled in Communication Disorders' courses for three consecutive semesters will be dropped from the undergraduate program. These students must reapply for admission to the undergraduate program prior to enrollment in any additional courses in Communication Disorders.

1. **Admission of Non-Transfer Students**
    1. Admission Criteria:
        1. Must have a minimal overall GPA of 3.20.
        2. Must have earned a minimum of 30 university credit hours, applicable to graduation, including a grade of C or better in ENGL 1020 and ENGL 1030 or CTE 3060 or ENGL 1080.
        3. Must have made a grade of C or better and a 3.20 GPA or better in the following CD courses: CD 1000, CD 2301, CD 3301.
        4. Students may enroll in the four courses listed under I.A.3. a maximum of two times.
        5. Students must complete a speech, language and hearing screening.
        6. Students must submit a formal application for admission to the undergraduate Communication Disorders program.
        7. Students who do not meet requirements I. A. 1-6. are ineligible for admission to the undergraduate Communication Disorders program.
    2. Maintenance Criteria:
        1. The first semester the student's overall GPA drops below a 3.20 after being admitted to the undergraduate program in Communication Disorders, the student will receive a letter of written academic warning from the Communication Disorders program.
        2. Any student under academic warning whose overall GPA falls below a 3.20 for any subsequent semester will become ineligible to continue taking courses in the Communication Disorders program and/or to re-apply for admission to the undergraduate program.
        3. Any student who receives a grade below C in any CD course or whose GPA drops below a 3.20 in CD courses will receive a letter of warning. Students must obtain a grade of C or better and a 3.20 GPA or better in all CD courses taken prior to completing an undergraduate major in Communication Disorders. Students may enroll in any CD course a maximum of 2 times.
        4. Students must maintain a cumulative GPA of 3.20 or higher.
2. **Admission of Undergraduate Transfer Students**
    1. Admission Criteria:
        1. Transfer students must meet requirements I.A.1-7.
        2. Students who are transferring two or more of the courses listed in I.A.3. and meet other criteria listed in I.A. will be provisionally admitted and must take an additional six semester hours of Communication Disorders courses at the University of Central Missouri before applying for full admission.
        3. Transfer students must demonstrate the competencies required for the UCM equivalent for any courses being transferred before applying for full admission to the undergraduate program.
    2. Maintenance Criteria:
        1. Same as for non-transfer students.
    3. Other
        1. A minimum letter grade of a C or better and a 3.20 GPA or better must be obtained for the six semester hours under II.A.2. for the transfer student to be able to apply for full admission to the undergraduate program. Those courses in which the undergraduate transfer student makes a grade below a C can be retaken only once. If this requirement is not met, the student becomes ineligible to continue taking courses in the School of Human Services and/or to apply for full admission to the undergraduate major in speech-language pathology.

3. **Post-Baccalaureate Students**
   Post-Baccalaureate Students must have permission of the program director to enroll in any Communication Disorders course.
4. **Clinical Practicum Requirements**
   Undergraduate students will complete the following practicum requirements as described below:

Clinical Observation Requirements
Undergraduate students will complete 25 clock hours of clinical observation as follows:

1. CD 3503 - Principles of Clinical Management (3) - 5 clock hours
2. CD 4404 - Assessment and Treatment of Language-Based Literacy Disorders (3) - 5 clock hours
3. CD 4504 - Introduction to Articulation and Phonological Disorders (3) - 5 clock hours
4. CD 4505 - School-age Issues in Communication Disorders (3) - 5 clock hours
5. CD 4512 - Best Practices in Early Childhood Intervention (3) - 5 clock hours

Orientation Policies and Procedures
All first-semester clinicians must enroll in CD 4802 - Undergraduate Clinical Practicum I (1). Students will pay a one-time fee for Clinic Shirts and name tag. Students enrolled in CD 4802 will also pay a fee for Clinic Note, a cloud-based electronic medical record for universities and private practice clinics. Undergraduate students enrolled in CD 4803 - Undergraduate Clinical Practicum II (1) will pay a fee for Clinic Note. UG students will pay for Clinic Note the semesters they are in CD 4802 and CD 4803. Those UG students who are accepted in the Graduate Speech Pathology program will pay for Clinic Note their first semester as a graduate student in CD 5811 (if they have previously been enrolled in CD 4802 and CD 4803. Students must pay for three semesters of Clinic Note.) They will not be charged after their first semester of CD 5811, provided they have taken CD 4802 and CD 4803 and have paid for two semesters of Clinic Note.

CPR Certification
Students will obtain certification in adult and child cardiopulmonary resuscitation prior to enrolling in clinical practicum experiences. Students must maintain re-certification throughout all clinical practicum experiences.

Immunizations
Students must be tested yearly for Tuberculosis (TB) and submit results of testing to the Director of Clinical Services prior to beginning clinic each year. Additionally, students must submit proof of having initiated the three shot series of immunization against Hepatitis B prior to beginning clinical practicum.

Student Clinicians participating in the Welch-Schmidt Center for Communication Disorders are expected to comply with all University of Central Missouri health requirements. This includes current tuberculosis (TB) test and updated immunizations as recommended by the US Center for Disease Control (CDC) and the Missouri Department of Health and Senior Services.

All immunizations that are required by the University of Central Missouri and recommended by the Centers for Disease Control and Prevention (CDC) and the Missouri Department of Health and Senior Services must be up to date prior to beginning clinical practicum. People who are not properly immunized pose a public health risk to their patients, co-workers and themselves.

If immunizations and TB tests are not up to date [for example, by virtue of an exemption], you may not be accepted at medical and/or educational clinical rotation sites, etc. This could prevent you from participating in a variety of clinical experiences which would ultimately prevent you from graduating.

Seasonal flu shots are being required by many external clinical sites and will not accept student clinicians who have not had this immunization.

Criminal Background Check
Prior to beginning clinic, students will receive the most recent criminal background check procedures from the Director of Clinical Services. If a background check is unsatisfactory, placement in clinic may not be possible. A student unable to be placed in clinic will not be able to complete the program.

Grades
Students who are under academic warning from the School of Human Services may not enroll in any clinical practicum courses.

Clinician Meetings
Clinicians are required to attend clinician meetings which cover a variety of topics ranging from paperwork and procedures to assessment and intervention tools available in our clinic. These meetings are scheduled as needed throughout the semester.

Knowledge and Skills Acquisition (KASA)
The Bachelor of Science Degree in Speech-Language Pathology is a competency based program. These competencies reflect the knowledge and skills required by the ASHA Certification Standards III, Program of Study-Knowledge Outcomes IV, and Program of Study-Skill Outcomes. These required knowledges and skills are delineated on the KASA. To understand the procedures associated with the KASA documentation, students are required to attend KASA trainings offered each semester. Students will be expected to demonstrate competency related knowledges and skills throughout their undergraduate program through formative and summative assessments. For all courses listed on the KASA, students must achieve a grade of C or better. Students' successful demonstration of the acquisition of knowledges and skills will be documented on the KASA. Students not demonstrating the achievement of course and practicum related knowledges and skills will be required to successfully complete remediation procedures that will then allow those knowledges and skills to be documented on the KASA. The faculty of the Communication Disorders Program has determined a grade of "B" or competency of a "4" or "5" on the KASA demonstrates specific knowledge and/or skills have been acquired for clinical practicum. In cases where the student's progression in the acquisition of knowledge and/or skill does not meet expectations within the semester, a plan for clinical remediation may be established. Remediation plans are designed to improve a student's knowledge and skills in a specific area of weakness. Successful completion of remediation procedures does not alter the final course grade.

Credit for Life Experience
Credit **will not** be given for life or previous work experience for courses required in the speech-language pathology major.

Speech-Language Pathology, BS (43-273) (4 Year Guide)

Major Requirements: 55 Semester Hours

C or better required in all CD prefix courses.

- AT 1625 - CPR/First Aid/AED for Health Care Professionals (1)
- CD 1000 - Introduction to Communication Disorders (3)
- CD 2301 - American Phonetics (3)
- CD 3301 - Anatomy and Physiology of Speech and Swallowing (2)
- CD 3304 - Speech Science (3)
- CD 3503 - Principles of Clinical Management (3)
- CD 4102 - Counseling Persons with Communication Disorders and Their Families (2)
- CD 4103 - Introduction to Evidence Based Practice in Communication Disorders (2)
- CD 4401 - Language Development (3)
- CD 4404 - Assessment and Treatment of Language-Based Literacy Disorders (3)
- CD 4501 - Basic Neuroscience for Speech-Language Pathologists (2)
- CD 4504 - Introduction to Articulation and Phonological Disorders (3)
- CD 4505 - School-age Issues in Communication Disorders (3)
- CD 4510 - Multicultural Issues in Communication Disorders (2)
- CD 4512 - Best Practices in Early Childhood Intervention (3)

- CD 4701 - Introduction to Audiology (3)
- CD 4706 - Hearing Measurement (3)
- CD 4708 - Aural Rehabilitation (3)
- CD 4802 - Undergraduate Clinical Practicum I (1)
- CD 4803 - Undergraduate Clinical Practicum II (1)
- PSY 3030 - Introduction to Statistics for Psychology (3)
- PSY 3220 - Life-Span Development GE (3)

General Education Requirements: 39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- PSY 3220 - Life-Span Development GE (3)

- COMM 1000 - Public Speaking GE (3)
- PSY 1100 - General Psychology GE (3)

- BIOL 1003 - Introduction to the Sciences: Ecology GE (3)
- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)
  OR
- BIOL 1003 - Introduction to the Sciences: Ecology GE (3) (3)
- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)
  OR
- BIOL 1003 - Introduction to the Sciences: Ecology GE (3) (3)
- BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab)
- CHEM 1103 - Introduction to the Sciences: Chemistry GE (3)
  OR
- BIOL 1003 - Introduction to the Sciences: Ecology GE (3) (3)
- BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab) (1:1 lab)
- PHYS 1103 - Introduction to the Sciences: Physics GE (3)

Free Electives: 26 Semester Hours

Minimum Total: 120 Semester Hours

Department of Management

The Department of Management collaborates with the Department of Government, Law, and International Affairs and Department of Criminal Justice and Criminology to offer the Legal Studies Minor (555) (21 hours).

Events and Services Certificate (10-698) (12 hours)

Required Courses: 12 Semester Hours

- MKT 3430 - Professional Sales (3)

- MKT 4475 - Services Marketing (3)
- EMM 3825 - Events Management (3)

- ESE 3845 - Small Business Operations Analysis (3)
  OR
- EMM 4825 - Advanced Events Management (3)

Events Marketing and Management, BSBA (46-669) (120 hours)

Major, Bachelor of Science in Business Administration Degree

The graduate with a Bachelor of Science in Business Administration degree in Events Marketing and Management will use the knowledge and skills obtained in the program to:

- Demonstrate an understanding of the importance of customer service in a client or service environment
- Develop strategies for implementation of events
- Plan and execute events while effectively managing budgets
- Effectively assess events after their completion and create improvement plans

BSBA in Events Marketing and Management majors are not eligible for the Events and Services Certificate from UCM.

Events Marketing and Management, BSBA (46-669) (4 Year Guide)

Major Requirements: 66 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3) *
- ACCT 2102 - Principles of Managerial Accounting (3) *
- BLAW 2720 - Legal Environment of Business (3) *
- CIS 3630 - Management Information Systems (3)
- FIN 2801 - Business Statistics I (3) *
- FIN 3801 - Business Statistics II (3)
- FIN 3850 - Principles of Finance (3) **
- MGT 3315 - Management of Organizations (3) **
- MGT 3325 - Business Communication (3)
- MGT 3360 - Supply Chain and Operations Management (3)
- MGT 4357 - Organizational Policy and Strategy (3)
- MKT 3405 - Principles of Marketing (3) **

Additional Required Courses in the Major: 21 Semester Hours

- EMM 3825 - Events Management (3)
- EMM 3835 - Internship in Events (3-9) (3)***
- EMM 4825 - Advanced Events Management (3)
- MKT 3430 - Professional Sales (3)
- MKT 3450 - Digital Marketing (3)
- MKT 4475 - Services Marketing (3)

- FIN 3885 - Integrative Business Experience Practicum (3) **

OR

- MGT 3385 - Integrative Business Experience Practicum (3) **
  OR
- MKT 3485 - Integrative Business Experience Practicum (3) **

Choose from the following: 9 Semester Hours

- ESE 3845 - Small Business Operations Analysis (3)
- MGT 3320 - XBOB eXperience Based Organizational Behavior (3)
- MGT 4325 - Management Communication (3)
- PR 2620 - Principles of Public Relations (3)
- SM 3210 - Sport and Media (3) ^^
- SM 3700 - Sport Facility Management (3) ^^
- SM 3720 - Managing Sport Events (3) ^^
- SM 4200 - Applied Sport Marketing (3) ^^
- Other approved course (**maximum 3 credits**) (3)

- MKT 4450 - Integrated Marketing Communication (3) ##
  OR
- PR 3640 - Integrated Strategic Communication (3) ##

General Education Requirements: 43 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CIS 1600 - Business Information Management GE (3) *
- ECON 1010 - Principles of Macroeconomics GE (3) *
- ECON 1011 - Principles of Microeconomics GE (3) *
- MATH 1111 - College Algebra GE (3) *

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Free Electives: 11 Semester Hours

Minimum Total: 120 Semester Hours

*Students expecting to receive the B.S.B.A. degree must meet all preadmission requirements to be admitted to this program. See the Statement of Policy on Admission to a B.S.B.A. degree program. Preadmission courses include: ACCT 1101, ACCT 2102, BLAW 2720, CIS 1600, ECON 1010, ECON 1011, FIN 2801, and MATH 1111.
**Students must enroll in IBE Practicum (MGT 3385 or MKT 3485 or FIN 3885) concurrently with the IBE sections of MGT 3315, MKT 3405 and FIN 3850.
BSBA in Events Marketing and Management may not choose both MKT 4450 and PR 3640.

^^ BSBA in Events Mkt & Mgt majors are not required to meet the SM 1100 course prerequisite for SM 3700, 3720, 3210 and 4200. See the EMM program coordinator for assistance in enrolling in these EMM courses, if chosen.

***The internship is a requirement of this degree program. Students in the major must have an overall cumulative GPA of 2.50 or above (4.00 scale) before they can attempt the internship requirement. Students must also complete the following BEFORE they can enroll and participate in the 3 credit Internship.

- 21 UCM credit hours completed (minimum).
- 60 credit hours of university credit (minimum) - a requirement of UCM HCBPS Internship Office.
- 2.50 (or above) overall GPA - a requirement of UCM HCBPS Internship Office .
- Complete pre-internship paperwork and processes with HCBPS Internship Office

Legal Studies Minor (555) (21 hours)

Minor for a Bachelor's Degree

The Legal Studies minor is an interdisciplinary minor that allows students to take law-related classes offered by various programs at UCM. The three required classes come from Criminal Justice, Political Science, and Business Law. And, students can select from a range of electives to fulfill the 21 semester hours.

Minor Requirements: 21 Semester Hours

- BLAW 2720 - Legal Environment of Business (3)
- CJ 3300 - Criminal Law and Procedure (3) *
- POLS 2580 - Public Law and the Judicial Process (3)

Electives from the Following: 12 Semester Hours

No more than 6 hours from any one discipline and at least 6 hours must be upper-level (3000/4000)

- ACCT 2930 - Tax I (3)
- ACCT 4130 - Tax II (3) *
- AVIA 4090 - Aviation Law (3)
- BLAW 3721 - Law of Business Transactions (3) *
- BLAW 4740 - Employment Law (3) *
- COMM 2340 - Argumentation and Debate (3)
- COMM 4250 - Digital Media Law, Ethics and Diversity (3) *
- CJ 3310 - Law of Corrections (3) *
- CJ 4302 - Evidence and Courtroom Procedure (3)
- CJ 4321 - Civil Remedies in Criminal Justice (3) *
- CJ 4390 - The Death Penalty (3)
- CJ 4701 - Juvenile Law & Policy (3)
- ECON 4060 - Game Theory (3) *
- EDSP 4700 - IEP and the Law (3) *
- HDFS 4850 - Family Policy and Advocacy (3)
- INDM 4015 - Legal Aspects of Industry (3)
- PE 4740 - Legal Liability in Fitness/Wellness, Physical Education, Recreation and Sport Settings (2)
- PHIL 1400 - Deductive Logic (3)
- PHIL 1410 - Critical Thinking GE (3)

- PHIL 2300 - Ethics GE (3)
- POLS 3581 - Trial Advocacy (3)
- POLS 3598 - International Human Rights (3)
- POLS 4530 - International Law (3)
- POLS 4573 - Administrative Law (3)
- POLS 4580 - American Constitutional Law (3)
- POLS 4581 - Civil Rights and Liberties (3)
- POLS 4583 - First Amendment (3)
- PR 4650 - Public Relations & Promotional Law (3)
- SAFE 4425 - Safety and Health Legislation and Standards (3)

Note:

* This course has a prerequisite not listed in the program.

Management Minor (510) (18 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 18 Semester Hours

- MGT 3315 - Management of Organizations (3)
- MGT 3320 - XBOB eXperience Based Organizational Behavior (3)
- MGT 3325 - Business Communication (3)
- HRM 3920 - Human Resource Management (3)

Electives from the Following: 6 Semester Hours

- ESE 3710 - Entrepreneurial Business Planning (3)
- ESE 3720 - Business As a Force for Good (3)
- ESE 3845 - Small Business Operations Analysis (3)
- ESE 4710 - Commercialization (3)
- MGT 3335 - Internship in Management (1-9) (3-6)
- MGT 3360 - Supply Chain and Operations Management (3)
- MGT 4310 - Innovation, Quality and Sustainability (3)
- MGT 4320 - Leadership (3)
- MGT 4325 - Management Communication (3)
- MGT 4330 - Lean Six Sigma for Managers (3)
- MGT 4800 - Organizational Development and Personal Praxis (3)

Management, BSBA (46-268) (120 hours)

Major, Bachelor of Science in Business Administration Degree

The graduate with a Bachelor of Science in Business Administration degree in Management will use the knowedge and skills obtained in the program to:

- Become more effective decision makers.
- Organize activities to implement decisions.
- Deliver effective oral presentations and written communications.
- Lead others effectively.

Management, BSBA (46-268) (Area 1: Management) (4 Year Guide)

Management, BSBA (46-268) (Area 2: Leadership) (4 Year Guide)

Management, BSBA (46-268) (Area 3: Learning & Development) (4 Year Guide)

Management, BSBA (46-268) (Area 4: Entrepreneurship & Social Enterprise) (4 Year Guide)

Management, BSBA (46-268) (Area 6: Supply Chain Management) (4 Year Guide)

Major Requirements: 61-76 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3) *
- ACCT 2102 - Principles of Managerial Accounting (3) *
- BLAW 2720 - Legal Environment of Business (3) *
- CIS 3630 - Management Information Systems (3)
- FIN 2801 - Business Statistics I (3) *
- FIN 3801 - Business Statistics II (3)
- FIN 3850 - Principles of Finance (3) **
- MGT 3315 - Management of Organizations (3) **
- MGT 3320 - XBOB eXperience Based Organizational Behavior (3)
- MGT 3325 - Business Communication (3)
- MGT 3360 - Supply Chain and Operations Management (3)
- MGT 4325 - Management Communication (3)
- MGT 4357 - Organizational Policy and Strategy (3)
- MKT 3405 - Principles of Marketing (3) **

- FIN 3885 - Integrative Business Experience Practicum (3) **
  OR
- MGT 3385 - Integrative Business Experience Practicum (3) **
  OR
- MKT 3485 - Integrative Business Experience Practicum (3) **

Select One of the 5 Areas: 16-31 Semester Hours

Area 1 - Management (MGT1): 21 Semester Hours

- ESE 3710 - Entrepreneurial Business Planning (3)
- ESE 3720 - Business As a Force for Good (3)
- ESE 3845 - Small Business Operations Analysis (3)
- ESE 4710 - Commercialization (3)
- HRM 3920 - Human Resource Management (3)

- MGT 3335 - Internship in Management (1-9) (3) ^
- MGT 3345 - International Management (3)
- MGT 4320 - Leadership (3)
- MGT 4330 - Lean Six Sigma for Managers (3)
- MGT 4800 - Organizational Development and Personal Praxis (3)

Area 2 - Leadership (MGT2): 22-30 Semester Hours

- ESE 3720 - Business As a Force for Good (3)
- HRM 3920 - Human Resource Management (3)
- MGT 3345 - International Management (3)
- MGT 4320 - Leadership (3)
- MGT 4800 - Organizational Development and Personal Praxis (3)

Complete one of the following **Leadership Experiences (1-9):**

- Peace Corps Prep Certificate***(1-9) (recorded as MGT 4350 (1) or ESE 4750 (1) upon completion)
- 240 Validated non-profit volunteer hours for one organization ESE 3750 (1-3) or MGT 3350 (1-3) *****
- Study Abroad (3)
- International Internship**** (3)
- MGT 3335 Internship**** (3)
- ESE 4200 - Service Project in Leadership (1)

Leadership Electives: 6 Semester Hours

- ANTH 1820 - Cultural Anthropology GE (3) #, GE
- ANTH 3850 - Globalization and Culture (3) #
- ANTH 4820 - Anthropology of Gender (3) #
- ANTH 4870 - Ethnographic Methods (3) #
- COMM 2350 - Intercultural Communication (3) ##
- GEOG 4270 - World Political Geography (3) #
- GSS 2000 - Intersections: Gender, Race, Class GE (3) ##, GE
- GSS 2050 - Sexuality, Identity & Social Action GE (3) #, GE
- HIST 1402 - History of the Modern World GE (3) #, GE
- ISP 4000 - Study Abroad (1-18) (3) or International Study Tour (3)
- POLS 2535 - Model United Nations (3) #
- POLS 4520 - Principles of International Development (3) #
- SOC 3825 - Race and Ethnic Relations (3) #
- SOC 3885 - Globalization (3) #
- SOC 4866 - Outsiders and Outcasts (3) #

Area 3 - Learning & Development (MGT3): 21 Semester Hours

- HRM 3920 - Human Resource Management (3)
- HRM 4340 - Needs Assessment (1)
- HRM 4341 - Selecting Materials and Delivery Methods (1)
- HRM 4342 - Delivery and Evaluation (1)
- MGT 3345 - International Management (3)

- MGT 4320 - Leadership (3)
- MGT 4330 - Lean Six Sigma for Managers (3)
- MGT 4800 - Organizational Development and Personal Praxis (3)

Learning & Development Electives: 3 Semester Hours

- EMM 3825 - Events Management (3)
- ESE 3710 - Entrepreneurial Business Planning (3)
- ESE 3720 - Business As a Force for Good (3)
- ESE 3845 - Small Business Operations Analysis (3)
- MGT 3335 - Internship in Management (1-9) (3)

Area 4 - Entrepreneurship & Social Enterprise (MGT4): 16-24 Semester Hours

- ESE 3710 - Entrepreneurial Business Planning (3)
- ESE 3720 - Business As a Force for Good (3)
- ESE 3845 - Small Business Operations Analysis (3)
- ESE 4710 - Commercialization (3)
- MGT 4330 - Lean Six Sigma for Managers (3)

  Complete the **ESE Experience** requirement either by fulfilling the requirements of the Peace Corps Prep Certificate (see https://www.ucmo.edu/offices/peace-corps/) OR by completing both Internship and Volunteer hours (**1-9 Semester Hours**)
- Peace Corps Prep Certificate***(1-9) (recorded as MGT 4350 (1) or ESE 4750 (1) upon completion
  OR
- ESE 3335 Internship**** (3)
  AND
- 120 Validated non-profit volunteer hours for one organization ESE 3750 (1-3) or MGT 3350 (1-3) *****
  Note: (Volunteer hours must not be for the same organization as ESE 3335 Internship)
  OR
- ESE 3335 Internship**** (3)
  AND
- ESE 4200 - Service Project in Leadership (1)

Area 5 - Supply Chain Management (MGT6): 24 Semester Hours

- MGT 3345 - International Management (3)
- MGT 4310 - Innovation, Quality and Sustainability (3)
- MGT 4320 - Leadership (3)
- MGT 4330 - Lean Six Sigma for Managers (3)

Supply Chain Management Electives: 12 Semester Hours

- CDM 3000 - Introduction to Crisis and Disaster Management (3)
- CDM 4715 - Business Continuity Planning (3)
- CDM 4735 - Critical Infrastructure (3)
- CDM 4745 - Crisis Management (3)

- CIS 3650 - Database Management Systems (3)
- CIS 4678 - Fundamentals of Enterprise Resource Planning (3)
- CIS 4680 - Data Resource Management (3)
- CIS 4681 - Big Data for the Enterprise (3)
- CIS 4683 - Big Data Visualization & Reporting (3)
- CIS 4688 - ERP Configuration and Implementation (3)
- ECON 3030 - Intermediate Microeconomics (3)
- ECON 4075 - Time Series Analysis (3)
- ECON 4085 - Predictive Analytics (3)
- ECON 4090 - Analytical Applications to Business (3)
- INDM 4250 - Project Management (3)
- MGT 3335 - Internship in Management (1-9) (3) ^^ **** (max 6 hours will count as SC Electives)
- MGT 4800 - Organizational Development and Personal Praxis (3)

General Education Requirements: 43 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CIS 1600 - Business Information Management GE (3) *
- ECON 1010 - Principles of Macroeconomics GE (3) *
- ECON 1011 - Principles of Microeconomics GE (3) *
- MATH 1111 - College Algebra GE (3) *

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Free Electives: 2-19 Semester Hours

Management Area:	11 Semester Hours
Leadership Area:	2-10 Semester Hours
Learning & Development Area:	11 Semester Hours
Entrepreneurship & Social Enterprise Area:	8-16 Semester Hours
Supply Chain Management Area:	8 Semester Hours

Minimum Total: 120 Semester Hours

* Students expecting to receive the B.S.B.A. degree must meet all preadmission requirements to be admitted to this program. See the Statement of Policy on Admission to a B.S.B.A. degree program. Preadmission courses include: ACCT 1101, ACCT 2102, BLAW 2720, CIS 1600, ECON 1010, ECON 1011, FIN 2801, and MATH 1111.

All BSBA in Management majors are encouraged to complete an Internship (MGT 3335 or ESE 3335).

^ Note that only 3 credits of MGT 3335 - Internship in Management (1-9), if chosen, may count towards the 21 credits in Area 1: Management.

^^ Note that only 6 credits of MGT 3335 - Internship in Management (1-9) , if chosen, may count towards 12 credits in Area 6: Supply Chain Management.

required for the Peace Corps Prep Intercultural Competence category.

also fulfill the Peace Corps Prep Intercultural Competence category electives.

GE also fulfill UCM General Education.

** Students must enroll in IBE Practicum (MGT 3385 or MKT 3485 or FIN 3885) concurrently with the IBE sections of MGT 3315, MKT 3405 and FIN 3850.

***__Peace Corps Prep Certificate__ (see https://www.ucmo.edu/offices/peace-corps/) The Peace Corps Prep Certificate is awarded by the Peace Corps. BSBA in Management majors, through their major courses will meet #6 Community and Economic Development sector requirements. Foreign language is encouraged but preparation depends on future service plans. Intercultural Competence is met by choosing either GSS 2000 Intersections: Gender, Race Class (3) or COMM 3340 Intercultural Communication (3) and six (6) additional credits in Intercultural Competence, some of which are also General Education courses. Further, in Area 2 Leadership, the Leadership Electives include 6 credits which include options from the Peace Corps Prep Intercultural Competence list. A BSBA in Management should be able to complete the Peace Corps Prep Certificate with a maximum of 9 credits; not including foreign language. The Peace Corps Prep Certificate also requires substantive intercultural experience. See the Peace Corps Prep Coordinator or the Management Coordinator to discuss this requirement further. Lastly, there are non-credit professional and leadership development requirements for the Peace Corps Prep Certificate.

****__Internships.__ Students who choose an internship must have an overall cumulative GPA of 2.50 or above (4.00 scale) before they can enroll in their internship. Additionally, students must meet the following requirements for internship: 21 UCM credit hours completed (minimum). 60 credit hours of university credit (minimum). 2.50 (or above) overall GPA. Complete pre-internship paperwork and processes with HCBPS Internship Office.

***** **Volunteer Hours**, if chosen, for Area 4 must not be same organization as internship for which the student earns internship credit. See Management Coordinator and HCBPS Internship Coordinator before starting volunteer hours.

*** and *****Upon completion of the following, students will be enrolled in a 0 credit special topics course to indicate completion of the requirement in the Degree Audit. See the Management Program Coordinator for more information.

- Peace Corps Prep Certificate: MGT 4350 (0 credits) or ESE 4750 (0 credits).
- Validated Volunteer Hours: MGT 3350 (0 credits) or ESE 3750 (0 credits).

Department of Marketing, Public Relations, and Sport Management

Advertising Minor (672) (18 hours)

The advertising minor is an ideal option for students interested in learning more about specific advertising strategies and medium. The cross-disciplinary program incorporates classes from marketing, public relations, and digital

technology. Students will learn about both the business-related and creative aspects in the advertising industry. UCM does not confer teacher certification for this minor.

Minor Requirements: 18 Semester Hours

- MKT 3420 - Principles of Advertising (3)
- NET 2620 - Web Media Applications (3) *
- PR 2620 - Principles of Public Relations (3)

- MKT 3450 - Digital Marketing (3)
  OR
- PR 4630 - Electronic & Social Media for Public Relations (3)

- MKT 4450 - Integrated Marketing Communication (3) *
  OR
- PR 3640 - Integrated Strategic Communication (3)

Elective from the Following: 3 Semester Hours

- FAME 3010 - Social Media, Mobile Apps, and Content Management (3: 3 lecture, 0 lab) *
- MKT 3435 - Internship in Marketing (1-6) *
- MKT 4440 - Seminar in Brand Management (3) *
- PR 3625 - Design and Layout (3)
- PR 4610 - Public Relations Management and Industry Practices (3)

  NOTE: The following courses may require prerequisites, admission to the B.S.B.A. program, 2.5

  G.P.A. and/or program coordinator approval: MKT 3435, MKT 4440, PR 4610.
  *This course has a prerequisite not listed in the program.

Marketing Minor (512) (18 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 18 Semester Hours

- MKT 3405 - Principles of Marketing (3)
- MKT 3430 - Professional Sales (3)
- MKT 3480 - Consumer Behavior (3)

Marketing Elective from the Following: 9 Semester Hours

- BLAW 2720 - Legal Environment of Business (3)
- ECON 1010 - Principles of Macroeconomics GE (3)
- MKT 3410 - Retail Management (3)

- MKT 3420 - Principles of Advertising (3)
- MKT 3445 - Marketing Distribution (3)
- MKT 3450 - Digital Marketing (3)
- MKT 3475 - Marketing Research (3)
- MKT 4475 - Services Marketing (3)
- MKT 4410 - Advanced Professional Sales (3)
- MKT 4420 - Sales Management (3)
- MKT 4440 - Seminar in Brand Management (3)
- MKT 4454 - Sports Marketing (3)

Marketing, BSBA (46-269) (120 hours)

Major, Bachelor of Science in Business Administration Degree

The graduate with a Bachelor of Science in Business Administration degree in Marketing will use the knowledge and skills obtained in the program to:

- Understand the marketing concepts in consumer behavior, personal selling, marketing research, marketing analysis, strategy development and global decision-making.
- Communicate effectively in both individual and team situations using both oral and written communication.
- Interact effectively with others to analyze situations and solve marketing problems.
- Understand the valuing process as it relates to making optimal decisions in the global business environment.
- Apply analysis and problem solving skills to assess marketing situations and develop strategies for implementation.

Marketing, BSBA (46-269) (4 Year Guide)

Major Requirements: 66 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3) *
- ACCT 2102 - Principles of Managerial Accounting (3) *
- BLAW 2720 - Legal Environment of Business (3) *
- CIS 3630 - Management Information Systems (3)
- FIN 2801 - Business Statistics I (3) *
- FIN 3801 - Business Statistics II (3)
- FIN 3850 - Principles of Finance (3)
- MGT 3315 - Management of Organizations (3)
- MGT 3325 - Business Communication (3)
- MGT 3360 - Supply Chain and Operations Management (3)
- MGT 4357 - Organizational Policy and Strategy (3)
- MKT 3405 - Principles of Marketing (3)
- MKT 3430 - Professional Sales (3)
- MKT 3475 - Marketing Research (3)
- MKT 3480 - Consumer Behavior (3)
- MKT 4460 - International Marketing (3)
- MKT 4490 - Marketing Management (3)

Electives from the Following: 15 Semester Hours

- MKT 1400 - Orientation to Marketing (1)
- MKT 3410 - Retail Management (3)
- MKT 3420 - Principles of Advertising (3)
- MKT 3435 - Internship in Marketing (1-6)
- MKT 3445 - Marketing Distribution (3)
- MKT 3450 - Digital Marketing (3)
- MKT 4410 - Advanced Professional Sales (3)
- MKT 4420 - Sales Management (3)
- MKT 4440 - Seminar in Brand Management (3)
- MKT 4450 - Integrated Marketing Communication (3)
- MKT 4454 - Sports Marketing (3)
- MKT 4475 - Services Marketing (3)
- MKT 4480 - Special Projects in Marketing (1-3)

General Education Requirements: 43 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CIS 1600 - Business Information Management GE (3) *
- ECON 1010 - Principles of Macroeconomics GE (3) *
- ECON 1011 - Principles of Microeconomics GE (3) *
- MATH 1111 - College Algebra GE (3) *

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Free Electives: 11 Semester Hours

Minimum Total: 120 Semester Hours

*Students expecting to receive the B.S.B.A. degree must meet all preadmission requirements to be admitted to this program. See the Statement of Policy on Admission to a B.S.B.A. degree program. Preadmission courses include: ACCT 1101, ACCT 2102, BLAW 2720, CIS 1600, ECON 1010, ECON 1011, FIN 2801, and MATH 1111.

Professional Selling Certificate (10-638)

Required Courses: 12 Semester Hours

- MKT 3405 - Principles of Marketing (3)
- MKT 3430 - Professional Sales (3)
- MKT 4410 - Advanced Professional Sales (3) *
- MKT 4420 - Sales Management (3) *

Note:

* One of these two courses may be substituted with MKT 3435 - Internship in Marketing (1-6) (with a sales focus) upon approval of the school chair.

Public Relations and Strategic Communication, BS (43-684) (120 hours)

Major, Bachelor of Science Degree

A Public Relations and Strategic Communication Bachelor of Science degree requires a minimum of 120 semester hours and a four-semester minimum sequence of courses. A minor is not required but is encouraged. An Industry Practices concentration is also elective.

Mission Statement

To provide students with a world-class education, through a small-college learning environment, in Public Relations and Strategic Communication.

Program Outcomes

The graduate with a Bachelor of Science degree in Public Relations and Strategic Communication will use the knowledge and skills obtained in the program to:

- Demonstrate Public Relations driven knowledge and understanding.
- Demonstrate written, oral and visual communication knowledge and application proficiency for Public Relations purposes.
- Demonstrate critical thinking, problem-solving, and decision-making proficiency relevant to Public Relations purposes.
- Demonstrate research knowledge and application proficiency for Public Relations purposes.
- Demonstrate strategic planning knowledge and application proficiency for Public Relations purposes.
- Demonstrate preparedness for professional life and/or further academic study.

Program Policies

At the time of first admission to UCM, a student should indicate/declare the intent to become a Public Relations and Strategic Communication major. Each declared major is encouraged to visit a success advisor in the Success Advising Center (UN 128, also check MyCentral for link to your advisor's appointment calendar). In addition, the student can also visit with Public Relations and Strategic Communication faculty in Dockery 200, PR Suite, 660-543-4246.

The following prerequisites are required for enrollment in PR 4685 and PR 4690: (1) completion of general education courses ENGL 1020 and (ENGL 1030 or ENGL 1080 or CTE 2060), and MKT 1401 or COMM 1000 or COMM 1050 with a grade no lower than a C; and (2) completion of major-specific courses PR 2620, PR 3610 and PR 3620, with no grade lower than a C and a 2.33 grade-point average or better.

The Public Relations and Strategic Communication faculty encourage all students to meet with an advisor each semester before enrolling.

Graduation Policies

1. Course substitutions for program requirements may be made only by the Public Relations and Strategic Communication program advisor and school chair.
2. A student must earn a grade no lower than a C in the following courses in order to graduate with a Public Relations degree: MKT 1401 or COMM 1000 or COMM 1050; ENGL 1020 and (ENGL 1030 or ENGL 1080 or CTE 2060); PR 1600, PR 2620, PR 3605, PR 3610 and PR 3620.
3. Only six semester hours of coursework with a D can be counted toward the Public Relations and Strategic Communication major. Any D credits to be counted must be approved by the Public Relations and Strategic Communication program faculty advisor.
4. To graduate with a Public Relations and Strategic Communication degree, a student must obtain at least a 2.25 grade-point average for all credit hours completed at UCM or elsewhere and a 2.25 grade-point average for all course work in the major.
5. PR 4600 may be repeated for up to nine hours. Three hours of PR 4605 are required; three additional hours of PR 4605 are elective. PR 4625 may be repeated up to nine hours with proper approval. PR 4627 may be repeated up to nine hours with proper approval.
6. Public Relations and Strategic Communication majors are not required to complete a concentration or minor. They are, however, encouraged to complete the Public Relations-specific Industry Practices concentration or any minor of their choosing. The Industry Practices concentration and minors can be declared when visiting the Success Advising Center.

Public Relations and Strategic Communication, BS (43-684) (4 Year Guide)

Major Requirements: 54 Semester Hours

- PR 1600 - Orientation to PR (3) +
- PR 2620 - Principles of Public Relations (3) +
- PR 3605 - Survey of Public Relations Research and Theory (3) +
- PR 3610 - Writing and Editing (3) +
- PR 3620 - Strategic Planning and Research for PR (3) +
- PR 3625 - Design and Layout (3)
- PR 3640 - Integrated Strategic Communication (3)
- PR 4605 - Public Relations Internship (1-3) (3)
- PR 4610 - Public Relations Management and Industry Practices (3)
- PR 4630 - Electronic & Social Media for Public Relations (3)
- PR 4650 - Public Relations & Promotional Law (3)
- PR 4680 - Advanced PR Writing (3)
- PR 4685 - Strategic Public Relations Case Analysis (3)
- PR 4690 - Public Relations Campaigns (3)

PR electives from the Following: 12 Semester Hours

- PR 4600 - Special Topics in Public Relations (1-3) (3-9)
- PR 4605 - Public Relations Internship (1-3)
- PR 4625 - Innovative Public Relations (1-9)
- PR 4627 - Special Projects in Public Relations (1-3) (1-9)
- PR 4640 - Advanced Public Relations Design (3)
- PR 4655 - Global Sports Public Relations (3)
- PR 4670 - Strategic Crisis Communication (3)
- PR 4675 - Media Training (3)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- COMM 1000 - Public Speaking GE (3) +
  OR
- COMM 1050 - Communication in Practice GE (3) +
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3) +

Free Electives: 24 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Public Relations and Strategic Messaging Certificate (10-6842) (12 hours)

Student Learning Outcomes - A student with a Certificate in Public Relations and Strategic Messaging will use the knowledge and skills obtained in the program to:

- Demonstrate public relations and strategic communication driven knowledge and understanding.
- Demonstrate critical thinking, problem-solving and decision making proficiency relevant to PR and strategic communication purposes.
- Demonstrate strategic planning knowledge and application proficiency for PR and strategic communication purposes.
- Demonstrate preparedness for professional life and/or further academic study.

The undergraduate certificate in Public Relations and Strategic Messaging is a 12 credit hour program intended for professionals in any field who want a solid foundation in public relations and strategic communication. Its content provides a broad overview of the public relations and strategic communications industry, as well as a survey of complementary professional fields and corresponding US law. The certificate-holder should be qualified to sit for the Public Relations Society of America's Certificate in Principles of Public Relations exam.

Required Courses: 12 Semester Hours

- PR 2620 - Principles of Public Relations (3)
- PR 3640 - Integrated Strategic Communication (3)
- PR 4650 - Public Relations & Promotional Law (3)

- PR 4630 - Electronic & Social Media for Public Relations (3)
  OR
- PR 4670 - Strategic Crisis Communication (3)

Public Relations Minor (253) (18 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

All public relations minors must obtain a 2.25 GPA (with no grade lower than a C) in PR 1600, PR 2620 and PR 3605.

The graduate with a Bachelor of Science degree with a Public Relations minor will at some level use the knowledge and skills obtained in the program to:

- Demonstrate public relations driven knowledge and understanding.
- Demonstrate written, oral and visual communication knowledge and application proficiency for public relations purposes.
- Demonstrate critical thinking, problem-solving, and decision making proficiency relevant to public relations purposes.
- Demonstrate research knowledge and application proficiency for public relations purposes.
- Demonstrate strategic planning knowledge and application proficiency for public relations purposes.
- Demonstrate preparedness for professional life and/or further academic study.

Minor Requirements: 18 Semester Hours

- PR 1600 - Orientation to PR (3)
- PR 2620 - Principles of Public Relations (3)
- PR 3605 - Survey of Public Relations Research and Theory (3)
- PR 3640 - Integrated Strategic Communication (3)
- PR 4650 - Public Relations & Promotional Law (3)
- Elective PR course from approved list (see major electives) (3)

Sport Management, BS (43-612) (120 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Sport Management will:

- Demonstrate knowledge and understanding of management, marketing, communication, financial, socio-cultural, and legal concepts relevant to careers in the sport management field.
- Be able to apply content knowledge and critical thinking skills to identify problems and make sound decisions in practical settings in the sport industry.
- Be able to identify core leadership skills to examine sport-related problems for developing appropriate solutions.
- Demonstrate competence in oral and written communication to work collaboratively in diverse sport settings.
- Be able to present using effective content, organization, and technology, accompanied by appropriate delivery skills.

Sport Management, BS (43-612) (4 Year Guide)

Major Requirements: 54-60 Semester Hours

- SM 1100 - Introduction to Sport Management (3)
- SM 2300 - Leisure and Sport (3)
- SM 3210 - Sport and Media (3)

- SM 3500 - Sport Leadership (3)
- SM 3600 - Sport Finance (3)
- SM 3700 - Sport Facility Management (3)
- SM 3720 - Managing Sport Events (3)
- SM 4000 - Seminar in Sport Management (3)
- SM 4200 - Applied Sport Marketing (3)
- SM 4220 - Sport Sponsorship and Retention (3)
- SM 4300 - Recreational Sport Management (3)
- SM 4400 - Sport Communication (3)
- SM 4980 - Internship (6) (6 or 12)
- ACCT 1101 - Foundations of Financial Reporting (3)
- BLAW 2720 - Legal Environment of Business (3)
- MGT 3315 - Management of Organizations (3)
- MKT 3405 - Principles of Marketing (3)

General Education Requirements: 43 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CIS 1600 - Business Information Management GE (3)
- ECON 1010 - Principles of Macroeconomics GE (3)

Free Electives: 17-23 Semester Hours

(Contact SM faculty advisor for guidance)

Minimum Total: 120 Semester Hours

This major includes all 18 credit hours of the Business Administration Minor. Students who wish to earn this minor must official declare the minor and have it listed on their Central Degree Audit as part of their curriculum. Students must meet all minor requirements including hours in residence (9 overall hours in the minor from UCM including at least one hour of upper-level UCM coursework).

Department of Military Science and Leadership

Military Science Minor (201) (29-35 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor

Minor Requirements: 29-34 Semester Hours

- MS 2500 - History of the US Army (3)
- MS 3310 - Training Management and the Warfighting Functions (3: 3 lecture, 0 lab)

- MS 3320 - Applied Leadership in Small Unit Operations (3: 3 lecture, 0 lab)
- MS 3330 - Introduction to the Army Physical Fitness Program (2)
- MS 3340 - Concepts in Fitness Training Development (2)
- MS 4410 - The Army Officer (3: 3 lecture, 0 lab)
- MS 4420 - Company Grade Leadership (3: 3 lecture, 0 lab)
- MS 4430 - Management of the Unit Fitness Program (2)
- MS 4440 - The Army Master Fitness Training Program (2)
- MS 4510 - Cadet Advanced Camp (3)

Elective from the Following: 3-8 Semester Hours

- MS 2510 - Cadet Basic Camp (3)
  OR
- Military Basic Training (3) *
  OR
- MS 1110 - Introduction to the Army (2)
- MS 1120 - Foundations of Leadership (2: 2 lecture, 0 lab)
- MS 2210 - Leadership and Ethics (2: 2 lecture, 0 lab)
- MS 2220 - Army Doctrine and Decision Making (2: 2 lecture, 0 lab)

Note:

*Only available through the U.S. Army. Students successfully completing U.S. Army Basic Training will receive college credit based upon UCM's ACE articulation agreement.

Missouri Safety Center

https://www.ucmo.edu/safetycenter/

The Missouri Safety Center
660-543-4830
ucmo.edu/safetycenter/

Driver Education

The Missouri Department of Elementary and Secondary Education requires successful completion of the following courses to receive a Driver Education Instructor endorsement on a teaching certificate for grades 9-12. The first two courses (DRED 2010 & DRED 2020) are taught on-line during the Spring Semester. The remaining two courses (DRED 2030 & DRED 2040) are offered during the Summer Semester and have mandatory on-site commitments of 15 hours each for a total of 30 hours. These hours must be scheduled during the Missouri Safety Center's Summer High School Driver Education program, typically during the month of June each year. If a student has been fully admitted to a bachelor's degree, master's degree, education specialist degree, or teaching certification program offered at UCM, financial aid can normally be used to help pay the cost to enroll for the above classes.

Requirements: 12 Semester Hours

- DRED 2010 - Introduction to Safety Education (3)

- DRED 2020 - Driver Task Analysis (3)
- DRED 2030 - Developing Vehicle Operation Skills and Competencies (3)
- DRED 2040 - Developing Classroom Knowledge (3)

College of Health, Science, and Technology

The College of Health, Science, and Technology
Administration 105
660-543-4450
Fax 660-543-8031
ucmo.edu/chst

The College of Health, Science, and Technology is comprised of:

- Department of Computer Science and Cybersecurity
- Department of Occupational Risk and Safety Sciences
- Department of Biological and Clinical Sciences
- School of Nursing
- Department of Nutrition, Kinesiology, and Health
- School of Industrial Sciences and Technology

College of Health, Science, and Technology Pre-Professional Programs

Students interested in the premedical, pre-osteopathy, and pre-veterinary medicine program should plan to attend the University for four years and graduate with a Bachelor of Science degree. The student should major in biology and minor in chemistry or major in chemistry and minor in biology. Additional electives are required depending upon the student's needs and interest area.

Students interested in pre-dental, pre-occupational therapy pre-optometry, and pre-physical therapy should plan to attend the University two or more years to meet the minimum requirements in biology, chemistry, mathematics, physics, and pre-engineering required by the professional school. Additional electives are required depending upon the student's needs and interest area.

Students interested in the pre-pharmacy program should consult the Chair of the Department of Biological and Clinical Sciences for suggested curriculum.

School of Industrial Sciences and Technology

https://www.ucmo.edu/technology/

The School of Industrial Sciences and Technology
Grinstead 009
660-543-4439
ucmo.edu/technology

The Information Technology, BS program is administered jointly between the School of Computer Science and Mathematics and the School of Technology.

Apparel and Textiles Merchandising Certificate (10-673) (15 hours)

The Apparel and Textiles Merchandising Certificate will provide background knowledge and hands-on experience for those entering the fashion retail, merchandising, or product development workforce. You will learn basic sewing skills, fiber and fabric applications, industry trends, ethical business concepts, and various promotion and merchandising skills. High school students who are in the Apparel, Textiles, and Interior Design Pathway can complete the certificate with dual credit and online courses.

Required Courses: 15 Semester Hours

- FAME 1400 - Principles of Fashion Merchandising (3)
- FAME 1450 - Fundamentals of Apparel Design and Construction (3: 2 lecture, 1 lab)
- FAME 2440 - Professional Work Experience (1-3) (3)
- FAME 2442 - Textile Science (3)
- FAME 3442 - Sustainability for Consumer Products (3)

Applied Lean Six Sigma Quality Certificate (10-616) (15 hours)

Certificate

Required Courses: 15 Semester Hours

- ENGT 2600 - Lean Enterprises (3)
- ENGT 3520 - Engineering Economy (3)
- ENGT 3530 - Inspection and Quality Control (3)
- ENGT 4580 - Quality Systems Engineering (3)
- ENGT 4750 - Lean Six Sigma (3)

CADD Minor (617) (18 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 18 Semester Hours

Must contain at least 9 credit hours not taken in your major.

C or better required in all coursework.

- CADD 1110 - Fundamentals of Drafting (3: 3 lecture, 0 lab)
- CADD 1170 - AutoCAD Applications (3: 3 lecture, 0 lab)
- CADD 1180 - Introduction to Building Info Modeling (3: 3 lecture, 0 lab)
- CADD 2140 - Advanced 3D Modeling (3: 3 lecture, 0 lab)

- CADD 2160 - Structural Design & Detailing (3: 3 lecture, 0 lab)
- CADD Elective (UL) (3)

Construction Management Minor (258) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- CMGT 1300 - Introduction to Construction Management (3: 2 lecture, 1 lab)
- CMGT 2310 - Construction Plans and Specifications (3)
- CMGT 2325 - Project Cost Estimating (3)
- CMGT 3320 - Principles of Construction Management (3)
- CMGT 3355 - Construction Planning and Scheduling (3)

Electives from the Following: 6 Semester Hours

- CMGT 2340 - Surveying and Construction Layout (3: 2 lecture; 1 lab) *
- CMGT 3330 - Building Codes and Code Administration (3)
- CMGT 3350 - Building Structures: Methods & Materials (3: 2 lecture, 1 lab) **
- CMGT 4310 - Construction Safety (3)
- CMGT 4325 - Advanced Estimating and Cost Analysis (3: 2 lecture, 1 lab)
- CMGT 4330 - Mechanical Systems for Buildings (3)
- CMGT 4380 - Heavy Construction: Methods and Materials (3) ***

Note:

CMGT 1300 and CMGT 2310 should be taken before enrolling in any upper-level (3000/4000) CMGT courses.

* Has prerequisite of MATH 1112 not included in the minor program.
** Has prerequisite of CMGT 2340 included in the elective courses for the minor and CMGT 2350 not included in the minor program.
*** Has prerequisite of MATH 1111 not included in the minor program.

Construction Management, BS (43-239) (122 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree with a major in Construction Management will use the knowledge and skills obtained in the program to:

- Have effective oral and written communication skills and demonstrate the ability to contribute effectively to the benefit of teams.
- Apply construction management skills to develop and apply a project budget using the project estimate and schedule.
- Produce and manage a construction schedule.

- Be a professional, ethical, and socially responsible constructor.
- Be capable and committed to providing a safe working environment on all construction projects.
- Utilize current construction management techniques and construction management technology to acquire, manage, and complete construction projects.

Construction Management, BS (43-239) (4 Year Guide)

Major Requirements: 79 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3)
- BLAW 2720 - Legal Environment of Business (3)
- CADD 1111 - Drafting for CMGT (3)
- CMGT 1300 - Introduction to Construction Management (3: 2 lecture, 1 lab)
- CMGT 1301 - Seminar in Construction Management (1)
- CMGT 2020 - Statics (3)
- CMGT 2100 - Construction Geoscience (4: 3 lecture, 1 lab)
- CMGT 2301 - Intermediate Seminar in Construction Management (1)
- CMGT 2310 - Construction Plans and Specifications (3)
- CMGT 2325 - Project Cost Estimating (3)
- CMGT 2340 - Surveying and Construction Layout (3: 2 lecture; 1 lab)
- CMGT 2350 - Construction Materials (3: 2 lecture, 1 lab)
- CMGT 3020 - Applied Strength of Materials (3)
- CMGT 3301 - Advanced Seminar in Construction Management (1)
- CMGT 3320 - Principles of Construction Management (3)
- CMGT 3330 - Building Codes and Code Administration (3)
- CMGT 3350 - Building Structures: Methods & Materials (3: 2 lecture, 1 lab)
- CMGT 3355 - Construction Planning and Scheduling (3)
- CMGT 4310 - Construction Safety (3)
- CMGT 4325 - Advanced Estimating and Cost Analysis (3: 2 lecture, 1 lab)
- CMGT 4355 - Computer-Based Project Control (3: 2 lecture, 1 lab)
- CMGT 4400 - Construction Operations (3)
- MATH 1112 - College Trigonometry (2)
- SOT 3022 - Internship in Technology (1-6) (1)

- ACCT 2102 - Principles of Managerial Accounting (3)
  OR
- MKT 3405 - Principles of Marketing (3)

- CADD 4150 - Applied Civil Design/Drafting (3: 3 lecture, 0 lab)
  OR
- CADD 4162 - Commercial Architectural Design/Drafting (BIM) (3: 3 lecture, 0 lab) *

- INDM 4210 - Industrial Management (3)
  OR
- MGT 3315 - Management of Organizations (3)

- INDM 4260 - Organizational Dynamics (3)
  OR
- HRM 3920 - Human Resource Management (3)

Electives from the Following: 3 Semester Hours

- CMGT 4330 - Mechanical Systems for Buildings (3)
- CMGT 4380 - Heavy Construction: Methods and Materials (3)

General Education Requirements: 43 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CIS 1600 - Business Information Management GE (3)
- COMM 1000 - Public Speaking GE (3)
- CTE 2060 - Technical Writing GE (3)
- ECON 1010 - Principles of Macroeconomics GE (3)
- MATH 1111 - College Algebra GE (3)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

Minimum Total: 122 Semester Hours

* This course has a prerequisite not listed in the program.

Cooperative Engineering 2-2 Transfer Agreement (590)

Transfer Agreement

Program of Study for Students Transferring to Other Institutions

The University of Central Missouri offers this pre-professional program to prepare students to transfer to a college or university offering a Bachelor of Science degree in Engineering. The first two years of courses are completed at UCM. To ensure a smooth transition, students should verify their course selection with the catalog of the school they are transferring to or contact an engineering program faculty advisor at the future engineering school. For details, consult the UCM Engineering Technology Coordinator.

Recommended Courses: 65 Semester Hours

- MATH 1151 - Calculus I GE (5)
- MATH 1152 - Calculus II (5)
- MATH 2153 - Calculus III (3)
- MATH 3151 - Differential Equations (3)
- PHYS 2121 - University Physics I (5: 5 lecture, 0 lab)
- PHYS 2122 - University Physics II (5: 5 lecture, 0 lab)
- PHYS 3211 - Analytical Mechanics I (3)
- PHYS 3212 - Analytical Mechanics II (3)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- ENGT 3520 - Engineering Economy (3)
- CADD 1110 - Fundamentals of Drafting (3: 3 lecture, 0 lab)

- ENGL 1030 - Composition II GE (3)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- ECON 1010 - Principles of Macroeconomics GE (3)
  OR
- ECON 1011 - Principles of Microeconomics GE (3)

- General Education - Knowledge Area I (9)
- General Education - Knowledge Area III (3)

Total Hours: 65 Semester Hours

Design & Drafting Technology, BS (43-568) - Mechanical Design Technology (Product/Machine) Option (DD02) (120 hours)

Major, Bachelor of Science Degree (43-568)

The graduate with a Bachelor of Science Degree in Design & Drafting Technology will use the knowledge and skills obtained in the program to:

- Select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities.
- Apply written, oral, and graphical communication in both technical and non-technical environments.
- Select and apply a knowledge of mathematics, science, engineering, and technology to design & drafting technology problems.
- Identify, analyze, and solve broadly-defined design & drafting technology problems.
- Demonstrate an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity.
- Know the impact of design & drafting technology solutions in a society and global context.
- Function effectively as a member or leader on a technical team.

All CADD courses require a grade of C or better.

Design & Drafting Technology, BS (43-568) - Mechanical Design Technology (Product/Machine) Option (DD02) (4 Year Guide)

Design & Drafting Technology, BS (43-568) (Missouri Innovation Campus (MIC)- Mechanical Design Technology (Product/Machine) Option) (4 Year Guide)

Major Requirements: 78 Semester Hours

Core Requirements: 54 Semester Hours

- CADD 1100 - Orientation to Design/Drafting (1)

- CADD 1110 - Fundamentals of Drafting (3: 3 lecture, 0 lab)
  OR

- CTE 1300 - Introduction to Engineering Design (3)

- CADD 1170 - AutoCAD Applications (3: 3 lecture, 0 lab)
- CADD 2100 - Sophomore Design/Drafting Seminar (0.5)
- CADD 2140 - Advanced 3D Modeling (3: 3 lecture, 0 lab)
- CADD 2150 - Descriptive Geometry for Engineering Technology (3: 3 lecture, 0 lab)
- CADD 2160 - Structural Design & Detailing (3: 3 lecture, 0 lab)
- CADD 2172 - MicroStation Applications (3:3 lecture, 0 lab)
- CADD 3022 - Internship in Design and Drafting (1-6) (1)
- CADD 3100 - Junior Design/Drafting Seminar (0.5)
- CADD 3170 - Design Automation (3: 3 lecture, 0 lab)
- CADD 3180 - Advanced Structural Design (3:3 lecture, 0 lab)
- CADD 4100 - Senior Design/Drafting Seminar (1)
- CADD 4160 - Computer Graphics & Technical Presentations (3)
- CADD 4172 - MEP (Mechanical, Electrical & Plumbing) & Industrial Piping Design/Drafting (3: 3 lecture, 0 lab)
- CADD 4180 - Industrial Design (3: 3 lecture, 0 lab)
- CMGT 2020 - Statics (3)
- MATH 1112 - College Trigonometry (2)

Electives from the Following: 6 Semester Hours

- CADD 4210 - Innovations Management for CADD (3)
  AND
- INDM 4250 - Project Management (3)

  OR

- INDM 4260 - Organizational Dynamics (3)
  AND
- MGT 3315 - Management of Organizations (3)

Two Electives from the Following: 6 Semester Hours

- CADD 4114 - Advanced Technical Problems in Design/Drafting (1-3)
- CADD 4500 - Substation Design (3: 3 lecture, 0 lab)
- CMGT 3330 - Building Codes and Code Administration (3)
- CMGT 4310 - Construction Safety (3)
- CS 1030 - Python Programming I (3)
- ENGT 1011 - Applied Electricity (4: 3 lecture, 1 lab)
- ENGT 4110 - Engineering Technology Problem Solving (3)
- ENGT 4120 - Hydrology and Drainage Design (3)
- ENGT 4160 - Transportation Systems Design (3)
- GEOS 4220 - Geographic Information Systems I (3)

Mechanical Design Technology (Product/Machine) Option: 24 Semester Hours

- CADD 3120 - Mechanical 3D Modeling & Detailing (3: 3 lecture, 0 lab)
- CADD 4171 - Production Design/Drafting (3: 3 lecture, 0 lab)
- CADD 4174 - Machine Design (3: 3 lecture, 0 lab)
- ENGT 2530 - Machine Tool Technology (3: 2 lecture, 1 lab)
- ENGT 2600 - Lean Enterprises (3)
- ENGT 3562 - Computer Numerical Control (CNC) (3: 2 lecture, 1 lab)
- ENGT 4520 - Robotics and Automation (3: 3 lecture, 0 lab)
- ENGT 4590 - Computer Integrated Manufacturing (CIM) (3: 2 lecture, 1 lab)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CTE 1210 - Managing Information Using Computer Applications GE (2)
- CTE 2060 - Technical Writing GE (3)
- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
- GEOG 2212 - World Geography GE (3)
- MATH 1111 - College Algebra GE (3)
- PHYS 1103 - Introduction to the Sciences: Physics GE (3)

Minimum Total: 120 Semester Hours

Design & Drafting Technology, BS (43-568) - Civil & Architectural Design Technology Option (DD01) (120 hours)

Major, Bachelor of Science Degree (43-568)

The graduate with a Bachelor of Science Degree in Design & Drafting Technology will use the knowledge and skills obtained in the program to:

- Select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities.
- Apply written, oral, and graphical communication in both technical and non-technical environments.
- Select and apply a knowledge of mathematics, science, engineering, and technology to design & drafting technology problems.
- Identify, analyze, and solve broadly-defined design & drafting technology problems.
- Demonstrate an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity.
- Know the impact of design & drafting technology solutions in a society and global context.
- Function effectively as a member or leader on a technical team.

All CADD courses require a grade of C or better.

Design & Drafting Technology, BS (43-568) - Civil & Architectural Design Technology Option (DD01) (4 Year Guide)

Design & Drafting Technology, BS (43-568) (Missouri Innovation Campus (MIC)- Civil & Architectural Design Technology Option) (4 Year Guide)

Major Requirements: 78 Semester Hours

Core Required Hours: 54 Semester Hours

- CADD 1100 - Orientation to Design/Drafting (1)

- CADD 1110 - Fundamentals of Drafting (3: 3 lecture, 0 lab)
  OR
- CTE 1300 - Introduction to Engineering Design (3)

- CADD 1170 - AutoCAD Applications (3: 3 lecture, 0 lab)
- CADD 2100 - Sophomore Design/Drafting Seminar (0.5)
- CADD 2140 - Advanced 3D Modeling (3: 3 lecture, 0 lab)
- CADD 2150 - Descriptive Geometry for Engineering Technology (3: 3 lecture, 0 lab)
- CADD 2160 - Structural Design & Detailing (3: 3 lecture, 0 lab)
- CADD 2172 - MicroStation Applications (3:3 lecture, 0 lab)
- CADD 3022 - Internship in Design and Drafting (1-6) (1)
- CADD 3100 - Junior Design/Drafting Seminar (0.5)
- CADD 3170 - Design Automation (3: 3 lecture, 0 lab)
- CADD 3180 - Advanced Structural Design (3:3 lecture, 0 lab)
- CADD 4100 - Senior Design/Drafting Seminar (1)
- CADD 4160 - Computer Graphics & Technical Presentations (3)
- CADD 4172 - MEP (Mechanical, Electrical & Plumbing) & Industrial Piping Design/Drafting (3: 3 lecture, 0 lab)
- CADD 4180 - Industrial Design (3: 3 lecture, 0 lab)
- CMGT 2020 - Statics (3)
- MATH 1112 - College Trigonometry (2)

Electives from the Following: 6 Semester Hours

- INDM 4250 - Project Management (3)
  AND
- CADD 4210 - Innovations Management for CADD (3)

  OR

- MGT 3315 - Management of Organizations (3)
  AND
- INDM 4260 - Organizational Dynamics (3)

Two Electives from the Following: 6 Semester Hours

- CADD 4114 - Advanced Technical Problems in Design/Drafting (1-3) (3)
- CADD 4500 - Substation Design (3: 3 lecture, 0 lab)
- CMGT 3330 - Building Codes and Code Administration (3)
- CMGT 4310 - Construction Safety (3)
- CS 1030 - Python Programming I (3)

- ENGT 1011 - Applied Electricity (4: 3 lecture, 1 lab)
- ENGT 4110 - Engineering Technology Problem Solving (3)
- ENGT 4120 - Hydrology and Drainage Design (3)
- ENGT 4160 - Transportation Systems Design (3)
- GEOS 4220 - Geographic Information Systems I (3)

Civil & Architectural Design Technology Option : 24 Semester Hours

- CADD 1180 - Introduction to Building Info Modeling (3: 3 lecture, 0 lab)
- CADD 3150 - Civil Drafting (3: 3 lecture, 0 lab)
- CADD 3160 - Residential Architectural Drawing (3: 3 lecture, 0 lab)
- CADD 4150 - Applied Civil Design/Drafting (3: 3 lecture, 0 lab)
- CADD 4162 - Commercial Architectural Design/Drafting (BIM) (3: 3 lecture, 0 lab)
- CMGT 2310 - Construction Plans and Specifications (3)
- CMGT 2340 - Surveying and Construction Layout (3: 2 lecture; 1 lab)
- CMGT 3010 - Applied Construction Practices (3: 2 lecture; 1 lab)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CTE 1210 - Managing Information Using Computer Applications GE (2)
- CTE 2060 - Technical Writing GE (3)
- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
- GEOG 2212 - World Geography GE (3)
- MATH 1111 - College Algebra GE (3)
- PHYS 1103 - Introduction to the Sciences: Physics GE (3)

Minimum Total: 120 Semester Hours

Electronics Technology Minor (220) (21-24 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21-24 Semester Hours

Choose one Area

Area 1

- ET 1026 - DC Circuit Analysis (4: 3 lecture, 1 lab) *
- ENGT 1027 - AC Circuit Analysis (3)
- ENGT 1050 - Digital Principles and Applications (3: 2 lecture, 1 lab)

- ENGT 2048 - Active Electronic Devices (4: 3 lecture, 1 lab)
- MATH 1112 - College Trigonometry (2)
- Upper-level (3000/4000) electives in electronics technology (4)

Area 2

- NET 1060 - Introduction to Networks (3: 2 lecture, 1 lab)
- NET 1061 - Switching, Routing, and Wireless Essentials (3: 2 lecture, 1 lab)
- NET 2060 - Enterprise Networking, Security, and Automation (3: 2 lecture, 1 lab)
- NET 2061 - Cisco CyberOps Associate (3: 2 lecture, 1 lab)
- NET 4060 - Advanced Routing (3)
- NET 4061 - Remote Access (3) *
- NET 4062 - CCNP Enterprise: CORE (3)
- NET 4063 - Network Support (3)

Note:

* This course has a prerequisite not listed in the program.

Engineering Technology, BS (43-282) - Mechanical Engineering Technology Option (Product Design) (EN02) (123 hours)

Major, Bachelor of Science Degree (43-282)

The graduate with a Bachelor of Science degree in Engineering Technology will use the knowledge and skills obtained in the program to:

- Creatively identify, analyze and solve engineering related problems and improve processes in both technical and managerial realms.
- Demonstrate mastery of the techniques, skills and modern tools necessary for current engineering technology practices.
- Practice effective personal and technical communication in both oral and written forms.
- Demonstrate lifelong learning by applying current mathematic, scientific, engineering and technical knowledge to problem solving and by adapting to emerging applications in the engineering technology fields.
- Understand and practice professional work habits including a commitment to quality, timeliness, and continuous improvement.
- Understand the professional, ethical and social responsibilities of an engineering technologist.
- Understand the need for working in teams and demonstrate the ability to effectively work in teams as well as lead teams.
- Demonstrate a respect for and knowledge of contemporary professional, societal and global issues.

Engineering Technology, BS (43-282) - Mechanical Engineering Technology Option (Product Design) (EN02) (4 Year Guide)

Major Requirements: 80 Semester Hours

Core Required Hours: 19 Semester Hours

- ENGT 1000 - Principles of Engineering (3)
- ENGT 1011 - Applied Electricity (4: 3 lecture, 1 lab)
- ENGT 3023 - Engineering Technology Internship (1-6) (1)
- ENGT 3520 - Engineering Economy (3)
- ENGT 4110 - Engineering Technology Problem Solving (3)
- ENGT 4580 - Quality Systems Engineering (3)
- MATH 1112 - College Trigonometry (2)

Option 2 - Mechanical Engineering Technology - (Prod. Des.): 61 Semester Hours

- ATM 4032 - Hydraulics and Pneumatics (3: 2 lecture, 1 lab)
- ENGT 1120 - Welding (3: 2 lecture, 1 lab)
- ENGT 1400 - Fundamentals of Engineering Design (3)
- ENGT 1500 - Orientation to Engineering Technology (3)
- ENGT 1510 - Introduction to Manufacturing Processes (3: 2 lecture, 1 lab)
- ENGT 2040 - Engineering Material Science (4: 3 lecture, 1 lab)
- ENGT 2530 - Machine Tool Technology (3: 2 lecture, 1 lab)
- ENGT 2600 - Lean Enterprises (3)
- ENGT 3400 - Manufacturing Design (3)
- ENGT 3450 - Applied Mechanics of Materials for Engineering Technology (3: 2 lecture, 1 lab)
- ENGT 3510 - Project Management for Engineering Technology (3)
- ENGT 3530 - Inspection and Quality Control (3)
- ENGT 3562 - Computer Numerical Control (CNC) (3: 2 lecture, 1 lab)
- ENGT 3600 - Applied Thermodynamics (3)
- ENGT 4221 - Manufacturing Problem Solving (3: 2 lecture, 1 lab)
- ENGT 4500 - Mechanical Engineering Design (3)
- ENGT 4750 - Lean Six Sigma (3)
- Approved Electives (9)

General Education Requirements: 43 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1103 - Introduction to the Sciences: Chemistry GE (3)
- CIS 1600 - Business Information Management GE (3)
- COMM 1000 - Public Speaking GE (3)
- CTE 2060 - Technical Writing GE (3)
- ECON 1010 - Principles of Macroeconomics GE (3)
- MATH 1131 - Applied Calculus GE (3)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

Minimum Total: 123 Semester Hours

Engineering Technology, BS (43-282) - Civil Engineering Technology Option (EN04) (120 hours)

Major, Bachelor of Science Degree (43-282)

The graduate with a Bachelor of Science degree in Engineering Technology will use the knowledge and skills obtained in the program to:

- Creatively identify, analyze and solve engineering related problems and improve processes in both technical and managerial realms.
- Demonstrate mastery of the techniques, skills and modern tools necessary for current engineering technology practices.
- Practice effective personal and technical communication in both oral and written forms.
- Demonstrate lifelong learning by applying current mathematic, scientific, engineering and technical knowledge to problem solving and by adapting to emerging applications in the engineering technology fields.
- Understand and practice professional work habits including a commitment to quality, timeliness, and continuous improvement.
- Understand the professional, ethical and social responsibilities of an engineering technologist.
- Understand the need for working in teams and demonstrate the ability to effectively work in teams as well as lead teams.
- Demonstrate a respect for and knowledge of contemporary professional, societal and global issues.

Engineering Technology, BS (43-282) - Civil Engineering Technology Option (EN04) (4 Year Guide)

Major Requirements: 77 Semester Hours

Core Required Hours: 19 Semester Hours

- ENGT 1000 - Principles of Engineering (3)
- ENGT 1011 - Applied Electricity (4: 3 lecture, 1 lab)
- ENGT 3023 - Engineering Technology Internship (1-6) (1)
- ENGT 3520 - Engineering Economy (3)
- ENGT 4110 - Engineering Technology Problem Solving (3)
- ENGT 4580 - Quality Systems Engineering (3)
- MATH 1112 - College Trigonometry (2)

Option 4 - Civil Engineering Technology: 58 Semester Hours

- CADD 1111 - Drafting for CMGT (3)
- CADD 3175 - Advanced MicroStation (3: 3 lecture, 0 lab)
- CADD 4150 - Applied Civil Design/Drafting (3: 3 lecture, 0 lab)
- CMGT 2020 - Statics (3)
- CMGT 2100 - Construction Geoscience (4: 3 lecture, 1 lab)
- CMGT 2310 - Construction Plans and Specifications (3)
- CMGT 2325 - Project Cost Estimating (3)
- CMGT 2340 - Surveying and Construction Layout (3: 2 lecture; 1 lab)
- CMGT 2350 - Construction Materials (3: 2 lecture, 1 lab)
- CMGT 3020 - Applied Strength of Materials (3)

- CMGT 3320 - Principles of Construction Management (3)
- CMGT 3350 - Building Structures: Methods & Materials (3: 2 lecture, 1 lab)
- CMGT 4310 - Construction Safety (3)
- ENGT 1120 - Welding (3: 2 lecture, 1 lab)
- ENGT 1500 - Orientation to Engineering Technology (3)
- ENGT 4120 - Hydrology and Drainage Design (3)
- ENGT 4140 - Soils and Foundation Design (3)
- ENGT 4150 - Concrete and Steel Design (3)
- ENGT 4160 - Transportation Systems Design (3)

General Education Requirements: 43 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for full listing of requirements. The following general education classes are required by this major:

- CIS 1600 - Business Information Management GE (3)
- COMM 1000 - Public Speaking GE (3)
- CTE 2060 - Technical Writing GE (3)
- ECON 1010 - Principles of Macroeconomics GE (3)
- MATH 1131 - Applied Calculus GE (3)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
- CHEM 1103 - Introduction to the Sciences: Chemistry GE (3)

Minimum Total: 120 Semester Hours

Engineering Technology, BS (43-282) - Industrial Engineering Technology Option (EN03) (124 hours)

Major, Bachelor of Science Degree (43-282)

The graduate with a Bachelor of Science degree in Engineering Technology will use the knowledge and skills obtained in the program to:

- Creatively identify, analyze and solve engineering related problems and improve processes in both technical and managerial realms.
- Demonstrate mastery of the techniques, skills and modern tools necessary for current engineering technology practices.
- Practice effective personal and technical communication in both oral and written forms.
- Demonstrate lifelong learning by applying current mathematic, scientific, engineering and technical knowledge to problem solving and by adapting to emerging applications in the engineering technology fields.
- Understand and practice professional work habits including a commitment to quality, timeliness, and continuous improvement.
- Understand the professional, ethical and social responsibilities of an engineering technologist.
- Understand the need for working in teams and demonstrate the ability to effectively work in teams as well as lead teams.
- Demonstrate a respect for and knowledge of contemporary professional, societal and global issues.

Engineering Technology, BS (43-282) - Industrial Engineering Technology Option (EN03) (4 Year Guide)

Major Requirements: 81 Semester Hours

Core Required Hours: 19 Semester Hours

- ENGT 1000 - Principles of Engineering (3)
- ENGT 1011 - Applied Electricity (4: 3 lecture, 1 lab)
- ENGT 3023 - Engineering Technology Internship (1-6) (1)
- ENGT 3520 - Engineering Economy (3)
- ENGT 4110 - Engineering Technology Problem Solving (3)
- ENGT 4580 - Quality Systems Engineering (3)
- MATH 1112 - College Trigonometry (2)

Option 3 - Industrial Engineering Technology: 62 Semester Hours

- ATM 4032 - Hydraulics and Pneumatics (3: 2 lecture, 1 lab)
- ENGT 1120 - Welding (3: 2 lecture, 1 lab)
- ENGT 1400 - Fundamentals of Engineering Design (3)
- ENGT 1500 - Orientation to Engineering Technology (3)
- ENGT 1510 - Introduction to Manufacturing Processes (3: 2 lecture, 1 lab)
- ENGT 2040 - Engineering Material Science (4: 3 lecture, 1 lab)
- ENGT 2530 - Machine Tool Technology (3: 2 lecture, 1 lab)
- ENGT 2600 - Lean Enterprises (3)
- ENGT 3017 - Programmable Logic Controllers (4: 3 lecture, 1 lab)
- ENGT 3400 - Manufacturing Design (3)
- ENGT 3450 - Applied Mechanics of Materials for Engineering Technology (3: 2 lecture, 1 lab)
- ENGT 3510 - Project Management for Engineering Technology (3)
- ENGT 3530 - Inspection and Quality Control (3)
- ENGT 3562 - Computer Numerical Control (CNC) (3: 2 lecture, 1 lab)
- ENGT 3600 - Applied Thermodynamics (3)
- ENGT 4221 - Manufacturing Problem Solving (3: 2 lecture, 1 lab)
- ENGT 4520 - Robotics and Automation (3: 3 lecture, 0 lab)
- ENGT 4590 - Computer Integrated Manufacturing (CIM) (3: 2 lecture, 1 lab)
- ENGT 4750 - Lean Six Sigma (3)
- INDM 4240 - Facilities Engineering (3)

General Education Requirements: 43 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1103 - Introduction to the Sciences: Chemistry GE (3)
- CIS 1600 - Business Information Management GE (3)
- COMM 1000 - Public Speaking GE (3)
- CTE 2060 - Technical Writing GE (3)
- ECON 1010 - Principles of Macroeconomics GE (3)
- MATH 1131 - Applied Calculus GE (3)

- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

Minimum Total: 124 Semester Hours

Engineering Technology, BS (43-282) - Management Option (EN07) (124 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Engineering Technology will use the knowledge and skills obtained in the program to:

- Creatively identify, analyze and solve engineering related problems and improve processes in both technical and managerial realms.
- Demonstrate mastery of the techniques, skills and modern tools necessary for current engineering technology practices.
- Practice effective personal and technical communication in both oral and written forms.
- Demonstrate lifelong learning by applying current mathematic, scientific, engineering and technical knowledge to problem solving and by adapting to emerging applications in the engineering technology fields.
- Understand and practice professional work habits including a commitment to quality, timeliness, and continuous improvement.
- Understand the professional, ethical and social responsibilities of an engineering technologist.
- Understand the need for working in teams and demonstrate the ability to effectively work in teams as well as lead teams.
- Demonstrate a respect for and knowledge of contemporary professional, societal and global issues.

Note: This program can potentially be completed 100% Online.

Engineering Technology, BS (43-282) - Management Option (EN07) (4 Year Guide)

Major Requirements: 81 Semester Hours

Core Required Hours: 19 Semester Hours

- ENGT 1000 - Principles of Engineering (3)
- ENGT 1011 - Applied Electricity (4: 3 lecture, 1 lab)
- ENGT 3023 - Engineering Technology Internship (1-6) (1)
- ENGT 3520 - Engineering Economy (3)
- ENGT 4580 - Quality Systems Engineering (3)
- ENGT 4110 - Engineering Technology Problem Solving (3)
- MATH 1112 - College Trigonometry (2)

Option 5 - Management: 62 Semester Hours

- ENGT 2600 - Lean Enterprises (3)
- ENGT 3510 - Project Management for Engineering Technology (3)
- ENGT 3530 - Inspection and Quality Control (3)

- ENGT 4750 - Lean Six Sigma (3)
- ENGT 4950 - Seminar in Engineering Technology Management (3)
- INDM 4010 - Current Issues in Industry (3)
- INDM 4015 - Legal Aspects of Industry (3)
- INDM 4210 - Industrial Management (3)
- INDM 4220 - Human Factors Engineering (3)
- INDM 4230 - Lean and Quality Management (3)
- INDM 4240 - Facilities Engineering (3)
- INDM 4260 - Organizational Dynamics (3)
- INDM 4280 - Industrial Statistics (3)
- SAFE 3070 - Safety Leadership (3)
- Departmental Approved Electives (20)

General Education Requirements: 43 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1103 - Introduction to the Sciences: Chemistry GE (3)
- CIS 1600 - Business Information Management GE (3)
- COMM 1000 - Public Speaking GE (3)
- CTE 2060 - Technical Writing GE (3)
- ECON 1010 - Principles of Macroeconomics GE (3)
- MATH 1131 - Applied Calculus GE (3)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

Minimum Total: 124 Semester Hours

Engineering Technology, BS (43-282) - Robotics, Automation, and Controls Option (EN06) (124 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Engineering Technology will use the knowledge and skills obtained in the program to:

- Creatively identify, analyze and solve engineering related problems and improve processes in both technical and managerial realms.
- Demonstrate mastery of the techniques, skills and modern tools necessary for current engineering technology practices.
- Practice effective personal and technical communication in both oral and written forms.
- Demonstrate lifelong learning by applying current mathematic, scientific, engineering and technical knowledge to problem solving and by adapting to emerging applications in the engineering technology fields.

- Understand and practice professional work habits including a commitment to quality, timeliness, and continuous improvement.
- Understand the professional, ethical and social responsibilities of an engineering technologist.
- Understand the need for working in teams and demonstrate the ability to effectively work in teams as well as lead teams.
- Demonstrate a respect for and knowledge of contemporary professional, societal and global issues.

Engineering Technology, BS (43-282) - Robotics, Automation, and Controls Option (EN06) (4 Year Guide)

Major Requirements: 81 Semester Hours

Core Required Hours: 19 Semester Hours

- ENGT 1000 - Principles of Engineering (3)
- ENGT 1011 - Applied Electricity (4: 3 lecture, 1 lab)
- ENGT 3023 - Engineering Technology Internship (1-6) (1)
- ENGT 3520 - Engineering Economy (3)
- ENGT 4110 - Engineering Technology Problem Solving (3)
- ENGT 4580 - Quality Systems Engineering (3)
- MATH 1112 - College Trigonometry (2)

Option 1 - Robotics, Automation, and Controls: 62 Semester Hours

- ENGT 1027 - AC Circuit Analysis (3)
- ENGT 1050 - Digital Principles and Applications (3: 2 lecture, 1 lab)
- ENGT 1400 - Fundamentals of Engineering Design (3)
- ENGT 1500 - Orientation to Engineering Technology (3)
- ENGT 2048 - Active Electronic Devices (4: 3 lecture, 1 lab)
- ENGT 2060 - Microprocessors: Theory and Application (3: 2 lecture, 1 lab)
- ENGT 2065 - Computer Programming for Engineering Technology (3)
- ENGT 2600 - Lean Enterprises (3)
- ENGT 3017 - Programmable Logic Controllers (4: 3 lecture, 1 lab)
- ENGT 3020 - Circuit Analysis and Implementation (3: 2 lecture, 1 lab)
- ENGT 3200 - Energy Production and Transmission (3)
- ENGT 3510 - Project Management for Engineering Technology (3)
- ENGT 3530 - Inspection and Quality Control (3)
- ENGT 3562 - Computer Numerical Control (CNC) (3: 2 lecture, 1 lab)
- ENGT 3600 - Applied Thermodynamics (3)
- ENGT 4520 - Robotics and Automation (3: 3 lecture, 0 lab)
- ENGT 4530 - Advanced Robotics, Vision, Automation & Controls (3: 2 lecture, 1 lab)
- ENGT 4590 - Computer Integrated Manufacturing (CIM) (3: 2 lecture, 1 lab)
- NET 1060 - Introduction to Networks (3: 2 lecture, 1 lab)
- Department Approved Electives (3)

General Education Requirements: 43 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1103 - Introduction to the Sciences: Chemistry GE (3)
- CIS 1600 - Business Information Management GE (3)
- COMM 1000 - Public Speaking GE (3)
- CTE 2060 - Technical Writing GE (3)
- ECON 1010 - Principles of Macroeconomics GE (3)
- MATH 1131 - Applied Calculus GE (3)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

Minimum Total: 124 Semester Hours

Fashion Merchandising Minor (327) (18 hours)

Minor for a Bachelor's Degree

The Fashion Merchandising minor is a good addition for students with various majors who are interested in the fashion industry. The 3 core classes provide industry background. The 3 FAME elective classes can be customized to fit the individual career path of the student.

UCM does not confer teacher certification for this minor.

Minor Requirements: 18 Semester Hours

- FAME 1400 - Principles of Fashion Merchandising (3)
- FAME 2442 - Textile Science (3)
- FAME 3430 - Professional Image Management (3)
- FAME electives (9)

Fashion: Textiles and Clothing in Business, BS (43-118) (120 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree with a major in Fashion: Textiles and Clothing in Business will use the knowledge and skills obtained in the program to:

- Demonstrate knowledge that facilitates the development, production, promotion and sale of soft goods. (Content Knowledge)
- Communicate and collaborate effectively in both individual and team settings in a creative environment. (Communication Skills)
- Demonstrate professional qualities that are socially, ethically and responsibly moral in a diverse society. (Professional Qualities/ Diversity)
- Use technology to create and present materials, organize and analyze data. (Technical Skills)
- Demonstrate awareness of constant changes within the global fashion market and the need for sustainable materials in textile products. (Social and Global Awareness)
- Interact effectively with co-workers, supervisors and customers to solve problems that lead to effective management and leadership. (Professional skills)

Fashion: Textiles and Clothing in Business, BS (43-118) (4 Year Guide)

Major Requirements: 63 Semester Hours

- FAME 1010 - Digital PreMedia Fundamentals (3)
- FAME 1400 - Principles of Fashion Merchandising (3)
- FAME 1445 - Fashion Seminar 1 (1)
- FAME 1450 - Fundamentals of Apparel Design and Construction (3: 2 lecture, 1 lab)
- FAME 2425 - Apparel Quality Analysis (3)
- FAME 2440 - Professional Work Experience (1-3) (3)
- FAME 2442 - Textile Science (3)
- FAME 2445 - Fashion Seminar 2 (1)
- FAME 3415 - Product Development for Consumers (3)
- FAME 3430 - Professional Image Management (3)
- FAME 3434 - Fashion History of Costume (3)
- FAME 3435 - Fashion Buying (3)
- FAME 3440 - Visual Merchandising and Fashion Promotion (3)
- FAME 3442 - Sustainability for Consumer Products (3)
- FAME 3445 - Fashion Seminar 3 (1)
- FAME 4400 - Branding and Fashion Technology (3)
- FAME 4410 - Materials for Interior Furnishings (3)
- FAME 4425 - Fashion Entrepreneurship (3)
- FAME 4433 - Sourcing in the Global Market (3)
- FAME 4445 - Senior Seminar in Fashion and Apparel Merchandising (3)
- FAME 4490 - Internship in Fashion and Apparel Merchandising (1-3) (3)

Electives from the Following: 6 Semester Hours

- FAME 2450 - Advanced Apparel Design & Construction (3: 2 lecture, 1 lab)
- FAME 2440 - Professional Work Experience (1-3) (3)
- FAME 4450 - Special Problems in Textiles and Clothing (2-3) (3)
- FAME 4490 - Internship in Fashion and Apparel Merchandising (1-3) (3)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements.

Free Electives: 15 Semester Hours

Minimum Total: 120 Semester Hours

Manufacturing Minor (153) (22 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor

Minor Requirements: 22 Semester Hours

- ENGT 1510 - Introduction to Manufacturing Processes (3: 2 lecture, 1 lab)
- ENGT 2040 - Engineering Material Science (4: 3 lecture, 1 lab)
- ENGT 2530 - Machine Tool Technology (3: 2 lecture, 1 lab)
- ENGT 4590 - Computer Integrated Manufacturing (CIM) (3: 2 lecture, 1 lab)

Electives: 9 Semester Hours

- CADD 1110 - Fundamentals of Drafting (3: 3 lecture, 0 lab)
- CADD 1170 - AutoCAD Applications (3: 3 lecture, 0 lab)
- CTE 1300 - Introduction to Engineering Design (3)
- CTE 2060 - Technical Writing GE (3)
- ENGT 3530 - Inspection and Quality Control (3)
- ENGT 3562 - Computer Numerical Control (CNC) (3: 2 lecture, 1 lab)
- ENGT 4520 - Robotics and Automation (3: 3 lecture, 0 lab)
- MGT 3315 - Management of Organizations (3)

Robotics & Automation Certificate (10-865) (14 hours)

Certificate

Required Courses: 14 Semester Hours

- ENGT 1011 - Applied Electricity (4: 3 lecture, 1 lab)
- ENGT 3017 - Programmable Logic Controllers (4: 3 lecture, 1 lab)
- ENGT 4520 - Robotics and Automation (3: 3 lecture, 0 lab)
- ENGT 4530 - Advanced Robotics, Vision, Automation & Controls (3: 2 lecture, 1 lab)

Technology Certificate (10-565) (21 hours)

Certificate

The certificate program in Technology is designed by the student and a faculty advisor, based upon the curriculum outline below. Each program of study has a significant component of advanced technology study in a high-demand area of occupational preparation. The student may choose to use this program as career preparation for entry into employment, or the student may supplement a baccalaureate degree in a technology area with this area of study.

Core Courses: 10-11 Semester Hours

- General Education Communication (3)
- General Education Mathematical Sciences (3)
- General Education Natural Science with a Lab (4-5)

Technical Electives: 10-11 Semester Hours

The student will complete 10-11 semester hours of approved technical electives from one or more of the high-demand areas of occupational preparation designated by the State of Missouri. This course work will primarily come

from the 1,000 and 2,000 levels of technical content. In some individual cases, advanced course work may be required.

Minimum Total: 21 Semester Hours

School of Nursing

https://www.ucmo.edu/nursing/

The School of Nursing
Dockery 203
660-543-4775
ucmo.edu/nursing

The School of Nursing Statement of Policy

Program
UCM's School of Nursing offers a Bachelor of Science in Nursing. The nursing program is unique with its focus on rural nursing practice in smaller community and suburban hospitals in the junior year and urban nursing practice in the senior year.

Accreditation
The nursing program is fully approved by the Missouri State Board of Nursing and nationally accredited by the Commission on Collegiate Nursing Education. Contact numbers for the Nursing Schools's accrediting agencies are: Missouri State Board (573) 751-0681; Commission on Collegiate Nursing Education (202) 463-6930. The Commission on Collegiate Nursing Education is located at 655 K Street, NW, Suite 750, Washington, DC 20001.

Student Learning Outcomes
The graduate with a Bachelor of Science degree in Nursing will use the knowledge, skills and attitudes obtained in the program to:

- Demonstrate caring and goal directed relationships with all members of the health care team including patients/clients and their support systems.
- Demonstrate use of data and technology to monitor outcomes, promote safety, and continuously improve patient centered care and health care systems.
- Demonstrate intellectual skill based on the use of theories and principles guided by logic and sound judgment to allow for the provision of safe quality nursing care. (See handbook for more.)
- Actively engage in interaction based on mutual respect with collaboration toward goal achievement.
- Internalize and demonstrate ethically grounded behaviors reflective of the ANA *Nursing's Social Policy Statement, Scope and Standards of Practice* (2010) and ANA *Code of Ethics for Nurses* (2015).

Admission
Students entering UCM as freshmen or by transfer should indicate a pre-nursing major. Admission to the nursing program is conditional upon completion of a minimum of sixty semester hours, completion of all nursing prerequisites and general education courses as outlined in the plan of study, and all of the requirements for admission listed below. Admission to the nursing program involves competition between all eligible candidates. The School of Nursing reserves the right to select among all qualified candidates. Students are selected in March for Fall semester nursing classes and in October for Spring. The necessary application is available through MyCentral and the student is responsible for submitting all hard copy materials to the School of Nursing.

Admission Criteria to the Undergraduate Nursing Program

1. Evidence of good moral character as determined by the Missouri State Board of Nursing in the Nurse Practice Act (1999) and by the American Nurses' Association *Code of Ethics for Nurses* (2015).
2. All nursing prerequisites and general education courses must be completed at the time of admission. Computer literacy is required to be admitted to the nursing program.
3. A minimum of a 2.75 cumulative grade-point average is required at the time of application.
4. Minimum grade of C in all nursing prerequisites and nursing courses. A student receiving a grade lower than C in any nursing prerequisite may repeat that course only one time. If the course was taken at UCM, it must be repeated at UCM.
5. A student receiving more than one D and/or F in a course or courses with a nursing prefix will not be eligible for admission into the program.
6. Students will not be permitted to withdraw more than one time from a nursing prerequisite course without permission of the School of Nursing.
7. Science prerequisites, as identified in NURSING Major, Bachelor of Science Degree, must have been taken within 10 years of requested semester admission.
8. Applicants for the nursing program must achieve a "mastery level score" (based on percentile) on the designated nursing admission examination.
9. Completion of additional requirements such as speech and hearing exam, assessment(s), etc. at the time of application deadline. The student is responsible for making sure all materials are submitted in MyCentral and to the School of Nursing.
10. Nursing applications are completed online and a $30 application fee applies. January 1 is the deadline for Fall Admission to the nursing program and July 1 is the deadline for Spring Admission to the nursing program. Additional forms are to be supplied to the School of Nursing by the application deadline.
11. Official transcripts-it is the student's responsibility to request ALL official transcripts from other universities and colleges be submitted to the Admissions Office of the University to be posted as part of the student's official transcript by 5 p.m., December 31 for Fall admission and June 30 for Spring admission.
12. Required immunizations, a satisfactory background check, CPR for healthcare providers, and a drug screen must be complete and validated before the first day of clinical.
13. Additional considerations given to the following:

- Academic history with patterns and trends indicating potential for academic success.
- The functional abilities required to be successful in the nursing program, with reasonable accommodation. See Core Performance Standards.
- Eligibility for licensure. Completion of the nursing program does not guarantee eligibility to take licensure examination. Refer to the Nurse Practice Act in the state in which you anticipate licensure. In Missouri refer to Sections 335.046 and 335.066 at ecodev.state.mo.us/pr/nursing.
- Number of credit hours taken at The University of Central Missouri. Students will be categorized in two classifications for consideration for admission to the nursing program:
    1. Students who have taken all nursing prerequisite courses at UCM; and
    2. Students who have transferred credit for one or more nursing prerequisite course(s) from another institution.

Nursing prerequisite courses are CHEM 1104, BIOL 3401, BIOL 3402, BIOL 3610, PSY 1100, SOC 1800, D&N 3340, NUR 1700, NUR 2200, NUR 2710, and NUR 3200. Grade point averages are a determining factor in selection.

- Additional assessments may be required.

Direct Admission Policy:
Upon admission to the University, a student who meets the following criteria may be given the opportunity of direct admission to the nursing program:

1. Admitted to UCM as freshmen with ACT 25 or higher and a high school CGPA of 3.00.
2. Declared nursing as a major.
3. Maintains a 3.65 cumulative grade point average at UCM at the time of application review.
4. Achieves a "mastery level score" (based on percentile) on the designated nursing admission examination.
5. Meet criteria published in the UCM undergraduate catalog and School of Nursing Undergraduate Handbook as of the date of formal application.

- Direct admission is limited to 40 students per semester based on admission date to UCM.

- Students who are directly admitted have the same period of time to complete their degree program as other UCM students.
- Direct Admission nursing students complete the nursing application by the set deadlines like all other nursing students.
- A Direct Admission nursing student may lose his/her place in the nursing program if he/she falls below the specified standards.
- Students must complete all prerequisites successfully on their first attempt.

Student Veteran Policy:

For students who are U.S. Military Veterans, transfer credits for military courses, based on the recommendation of the American Council on Education (ACE)'s Guide to the Evaluation of Education Experiences in the Armed Services, will be considered when evaluating nursing prerequisites courses and student's overall GPA. Elective and/or direct course credit will be awarded based on ACE recommendations.

To be eligible for Student Veteran consideration for admission to the nursing program, the student must:

- Be admitted to the University of Central Missouri.
- Meet the criteria for admission to the undergraduate nursing program, allowing consideration of military transfer credits.
- Be honorably discharged from the U.S. armed forces.
- Submit acceptable forms of documentation such as: CCAF Transcript (Community College of the Air Force Transcript) JST Transcript (Joint Service Transcript - Army, Navy, Marines).

Special Expenses

1. Additional expenses for nursing majors include: uniforms, shoes, picture ID badge, watch with second hand, stethoscope, sphygmomanometer, health insurance, background check, drug screen, vaccinations and blood tests, selected books and testing expenses. Testing experiences apply across the entire nursing program.
2. Nursing students must have access to transportation upon admission to the nursing program.
3. Nursing students must be certified in 2-person cardiopulmonary resuscitation for health care providers according to CNE orientation manual.
4. During the semester of anticipated graduation, licensing expenses, university graduation expenses, invitations, and more are additional expenses.

Core Performance Standards for Admission and Progression

FUNCTIONAL ABILITY : STANDARD : SOME EXAMPLES OF NECESSARY ACTIVITIES (Not Inclusive)

Thinking skills: Critical thinking ability sufficient for sound clinical judgment. Identify cause-effect relationships in clinical situations, develop nursing care plans to integrate data from different sources and decide whether to initiate action or report, ability to interpret variations in vital signs, lab values, among other skills.

Interaction: Interpersonal abilities sufficient to interact with individuals, families, and groups from a variety of socio-economic and cultural backgrounds. Establish rapport with patients/clients and colleagues. Works as a team member.

Communication: Communication abilities sufficient for productive interaction with others in verbal and written form and other formats. Explain treatment procedures, initiate health teaching, document and interpret nursing actions and patient/client responses.

Motor skills: Gross and fine motor abilities sufficient to provide safe and effective nursing care. Move around work area and within confined spaces. Calibrate and use equipment, position clients, insert catheters, injections.

Sensory/Perceptual: Auditory/visual and tactile ability sufficient to monitor and assess health needs. Hear monitor alarm, (IV alarm, etc.), emergency signals, auscultatory sounds, cries for help.

Re-Application for Admission

A student re-applying for admission to the nursing program within 6 months to a year of the initial application is not required to obtain a new speech/hearing exam.

A student re-applying for admission to the nursing program over 18 months from the initial application is required to obtain a repeat speech/hearing exam, background check and drug screen.

Students in non-compliance with these requirements will be referred to the Health Committee.

It is the responsibility of the applying student to provide documentation of compliance with these health requirements by the time of admission. Students not in compliance with these requirements will be referred to the Health Committee.

The Health Committee recommends that each student assume responsibility for personal health maintenance. An annual health assessment is strongly encouraged. Students are required to maintain insurance coverage for illness and accidents throughout their time in the program.

Requirements for Progression in the Nursing Program

1. Following admission to the nursing program, the student will follow the typical 4-year program for class enrollment. The courses in each semester are designed to be taken concurrently. Any changes in the courses taken must receive approval from the school chair prior to modifying enrollment.
2. A student must make a minimum grade of C in all nursing courses to progress in the nursing program.
3. A student who receives a D or F in a nursing course will be suspended from the program and is required to seek retention in order to repeat the course. The retention process is initiated by the student with the instructor whose course was failed. Completion and filing of the Request for Retention Form is the responsibility of the student. If a student is not retained within a year, that student may be required to repeat all courses within the major. Requirements for retention to the program are all contained in the current Undergraduate Student Handbook for the School of Nursing.
4. A student receiving two NUR failures in one semester is ineligible to continue in the program. A didactic and its associated clinical would count as one failure.
5. Students who withdraw from the nursing program must follow the Nursing School's **Withdrawal Policy** contained herein and compete with other students for retention into the program.
6. Students must be successful in passing each course in a particular semester in the program to progress to the next semester.

Withdrawal Policy

Students within the program who withdraw from any nursing course are automatically suspended from the program and must follow the Nursing School's Retention Policy in order to be retained. Students who withdraw from a nursing course and do not follow the requirements of the Nursing School Withdrawal Policy as stated below will not be considered for retention.

Students who withdraw from any nursing course must compete with other students for retention to the program. Students may be retained only once to the nursing program based on the decision of the Admissions and Progression Committee.

Students who have been attending meetings of a nursing course and wish to withdraw should:

Clinical/practicum courses

1. Notify their instructor in writing of their desire to withdraw and their reason for this decision.
2. Meet with the chair.
3. Follow the University process for withdrawal (See UCM's University Calendar and Handbook or Catalog for information).

Theory courses

1. Notify their instructor in writing of their desire to withdraw and their reason for this decision.

2. Follow the university policy for withdrawal (See UCM's University Planner/Handbook or Catalog for information). Students are not eligible to withdraw from a nursing clinical/practicum course when they have received their final grade from the instructor. Students who receive a final grade of D or F from the instructor and withdraw from the course will have their erroneous W changed to the appropriate failing grade by the School of Nursing. Students who have not attended classes in the semester they wish to withdraw may withdraw from nursing courses by following the University Withdrawal Policy.

Transfer into the Nursing Major

Transfer of upper-level (3000/4000) nursing credit will be considered according to the following procedure:

1. Students will meet the General Education requirements as listed in the current University Catalog.
2. Only students in good standing at a nationally accredited baccalaureate nursing program are eligible for transfer. Credits will be evaluated and allowed in accordance with current UCM and School of Nursing policy.
3. Evaluation of each transfer student will be made within the School of Nursing on an individual basis.
4. Students will take a minimum of 30 semester hours of upper-level courses, with a minimum of 30 semester hours in the nursing major at UCM.
5. Students will apply for admission to the School of Nursing and be subject to the regular program admission policy. In addition, the following evaluation process will be followed:
   Credit for nursing courses will be based on a review of content, course description, syllabi, and catalog description,
   1. If content is basically the same, the Nursing School Transfer Committee may approve the course for nursing credit. The credit hours approved may be at the maximum credit hour allocation for the UCM nursing course.
   2. If the content is fairly similar, the School of Nursing Transfer Committee may approve credit and in addition require NUR 4000 - Special Projects in Nursing (1-3) (2-6 credits).
   3. Only discrete courses in the content areas of research and ethics, pharmacology and observation and assessment will be considered for transfer as meeting the required courses in these areas.
6. The student will have the chair or dean from the nursing school they are transferring from write a letter to the chair of UCM's School of Nursing stating they are a student in good standing.
7. All prospective transfer students will be interviewed by the school Chairperson.

RN-BS in Nursing Option for Students Holding the R.N.

1. Credits from accredited nursing programs will be evaluated and allowed in accordance with current UCM policy.
2. Students will meet the General Education requirements as listed in the current University Catalog for nursing majors.
3. Evaluation of each R.N. student will be made within the School of Nursing to determine placement in the program.
4. Students will take a minimum of 30 semester hours of upper-level (3000/4000) courses, with a minimum of 30 semester hours in the nursing major through UCM.
5. Students will apply for admission to the School of Nursing and be subject to the regular program admission policy. In addition, the following criteria will be followed:
   1. Applicants must have a current unencumbered RN license eligible to practice nursing.
   2. Credit for non-college nursing courses may be applied to the nursing major upon successful performance on challenge examinations. A maximum of 30 semester hours of special credit may be awarded by challenge.

Nursing - Generic Option, BS (43-133) (124 hours)

Generic Option, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Nursing will use the knowledge, skills and attitudes obtained in the program to:

- Demonstrate caring and goal directed relationships with all members of the health care team including patients/clients and their support systems.
- Demonstrate use of data and technology to monitor outcomes, promote safety, and continuously improve patient centered care and health care systems.
- Demonstrate intellectual skill based on the use of theories and principles guided by logic and sound judgment to allow for the provision of safe quality nursing care. (See handbook for more.)
- Actively engage in interaction based on mutual respect with collaboration toward goal achievement.
- Internalize and demonstrate ethically grounded behaviors reflective of the ANA Nursing's Social Policy Statement, Scope and Standards of Practice (2010) and ANA Code of Ethics for Nurses (2015).

Nursing, BS (43-133) (4 Year Guide)

Policies

Major Requirements: 82 Semester Hours

C or better required in all major coursework.

- NUR 1700 - Introduction to Professional Nursing (1)
- NUR 2200 - Culture and Sustainability in Health (3)
- NUR 2710 - Introduction to Nursing Applications Across the Lifespan (1)
- NUR 3200 - Pathophysiology (4)
- NUR 3210 - Pharmacological Therapies (3)
- NUR 3306 - Assessment Across the Lifespan (2)
- NUR 3307 - Assessment and Fundamentals Lab (2)
- NUR 3410 - Concepts of Nursing in Health Promotion & Wellness (2)
- NUR 3515 - Fundamentals of Nursing (2)
- NUR 3516 - Fundamentals of Nursing Practicum (3)
- NUR 3610 - Concepts of Adult and Older Adult Nursing I (3)
- NUR 3611 - Concepts of Adult and Older Adult Nursing I Practicum (3)
- NUR 3612 - Technical Nursing Skills Lab (2)
- NUR 3710 - Mental Health Nursing (2)
- NUR 4012 - Evidence-based Practice/Research (2)
- NUR 4013 - Health Policy and Nursing Ethics (2)
- NUR 4111 - Socio-Economic Factors Impacting Health (3)
- NUR 4410 - Concepts of Maternal-Child Nursing (3)
- NUR 4411 - Concepts of Maternal-Child Nursing Practicum (2)
- NUR 4510 - Concepts of Adult and Older Adult Nursing II (3)
- NUR 4511 - Concepts of Adult and Older Adult Nursing II Practicum (3)
- NUR 4512 - Advanced Pharmacology & Technical Nursing Skills Lab (2)
- NUR 4602 - Synthesis of Nursing Concepts (2)
- NUR 4610 - Population Health (3)
- NUR 4611 - Population Health Practicum (3)
- NUR 4710 - Leadership/Care Management (2)
- NUR 4711 - Capstone (3)
- BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab)
- BIOL 3402 - Human Physiology (5: 4 lecture, 1 lab)
- BIOL 3610 - Basic Microbiology (3)
- D&N 3340 - Nutrition (3)

Elective from the Following: 2 Semester Hours

- NUR 2000 - e-Health and Cyber Wellness (2)
- NUR 2020 - Health: The Women's Perspective (2)
- NUR 4020 - Grief and Loss (2)
- NUR 4030 - Human Sexuality (2)
- NUR 4040 - Nursing Informatics (2)
- NUR 4210 - Wellness for U.S. Veterans and Military Families (2)
- NUR 4405 - Aging of Self and Others (2)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab) +
- PSY 1100 - General Psychology GE (3) +
- SOC 1800 - Introduction to Sociology GE (3) +

+Course requires a grade of C or better.

Minimum Total: 124 Semester Hours

Nursing - RN-BS Nursing Option, BS (43-288) (120 hours)

RN-BS Nursing Option, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Nursing will use the knowledge, skills and attitudes obtained in the program to:

- Demonstrate caring and goal directed relationships with all members of the health care team including patients/clients and their support systems.
- Demonstrate use of data and technology to monitor outcomes, promote safety, and continuously improve patient centered care and health care systems.
- Demonstrate intellectual skill based on the use of theories and principles guided by logic and sound judgment to allow for the provision of safe quality nursing care. (See handbook for more.)
- Actively engage in interaction based on mutual respect with collaboration toward goal achievement.
- Internalize and demonstrate ethically grounded behaviors reflective of the ANA Nursing's Social Policy Statement, Scope and Standards of Practice (2010) and ANA Code of Ethics for Nurses (2015).

Policies

Major Requirements: 44-48 Semester Hours

C or better required in all major coursework.

- NUR 4010 - RN-BS Health and Physical Assessment (3)
- NUR 4015 - RN-BS Evidence Based Practice/Research (2)
- NUR 4050 - RN-BS Professional Nursing Dimensions and Perspectives (4)

- NUR 4052 - RN-BS Concepts of Wellness (3)
- NUR 4111 - Socio-Economic Factors Impacting Health (3)
- NUR 4200 - RN-BS Pathophysiology (3)
- NUR 4406 - RN-BS Concepts of Community Health Nursing (3)
- NUR 4407 - RN-BS Concepts of Community Health Nursing Practicum (2)
- NUR 4608 - RN-BS Concepts of Nursing Leadership in Management (4)
- NUR 4609 - RN-BS Concepts of Nursing Leadership in Management Practicum (1)
- BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab)
- BIOL 3402 - Human Physiology (5: 4 lecture, 1 lab)
- BIOL 3610 - Basic Microbiology (3)
- D&N 3340 - Nutrition (3)

Nursing Elective from the Following: 2-6 Semester Hours

- NUR 4020 - Grief and Loss (2)
- NUR 4030 - Human Sexuality (2)
- NUR 4040 - Nursing Informatics (2)
- NUR 4210 - Wellness for U.S. Veterans and Military Families (2)
- NUR 4405 - Aging of Self and Others (2)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

Additional General Education requirements do not apply to Registered Nurses seeking a B.S. in Nursing.

Transfer Hours: 30-34 Semester Hours

Free Electives: 0-4 Semester Hours

Minimum Total: 120 Semester Hours

Department of Agriculture

Agricultural Science, BS (43-890) (120 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Agricultural Science will use the knowledge and skills obtained in the program to:

- Explain how knowledge of scientific principles, economic theories and management concepts are applied in agricultural practices to produce food and fiber for society.
- Describe how local, state, national and international policies and perspectives impact agriculture and food production throughout the world.

- Demonstrate effective written and oral communication skills in agricultural science classes.
- Demonstrate ability to analyze and solve agriculture problems individually and in groups.

Agricultural Science, BS (43-890) (Area 1: Agribusiness Management) (4 Year Guide)

Agricultural Science, BS (43-890) (Area 2: Animal Science) (4 Year Guide)

Agricultural Science, BS (43-890) (Area 3: Agronomy) (4 Year Guide)

Agricultural Science, BS (43-890) (Area 4: Horticultural Science) (4 Year Guide)

Agricultural Science, BS (43-890) (Area 5: Agriculture Communications (4 Year Guide)

Major Requirements: 67 Semester Hours

Core: 40 Semester Hours

- AGRI 1100 - Strategies for Success in the UCM Agriculture Program (1)

- AGRI 1200 - Agriculture Mechanics (3: 2 lecture, 1 lab)
  OR
- AGRI 2320 - Introduction to Precision Agriculture (3: 3 lecture, 0 lab)

- AGRI 1310 - Crop Science (3: 3 lecture, 0 lab)
- AGRI 1420 - Introduction to Animal Science (3)
- AGRI 1600 - Introduction to Horticulture Science (4: 3 lecture, 1 lab)
- AGRI 2130 - Global Agriculture (3)
- AGRI 2140 - Agriculture Professional Development Seminar (1)

- AGRI 2330 - Soil Science (3) *
  OR
  *This course is required for Areas 3 and 4.
- AGRI 2331 - Soils Management (3: 2 lecture, 1 lab)

- AGRI 2425 - Introduction to Animal Production (3: 3 lecture, 0 lab)
- AGRI 2535 - Agriculture Issues and Literacy 3
- AGRI 3110 - Agri-Business Management (3)
- AGRI 3120 - Distribution and Marketing Agriculture Products (3)
- AGRI 3810 - Internship in Agriculture (1-3) (3)
- AGRI 4101 - Agricultural Capstone Experience (1)
- SAFE 4300 - Agricultural Safety (3)

Select One of the 5 Areas: 27 Semester Hours

Area 1 - Agribusiness Management (AG11): 27 Semester Hours

- AGRI 3140 - Agricultural Analysis and Statistics (3)
- AGRI 4110 - Agricultural Futures Trading (3)
- AGRI 4115 - Agriculture and Food Law (3)
- AGRI 4120 - International Agriculture (3)

- AGRI 4140 - Agricultural Policy (3)
- AGRI 4150 - Natural Resource Economics (3)
- MGT 3325 - Business Communication (3)
- MKT 3430 - Professional Sales (3)

- ACCT 2100 - Survey of Accounting (3)
  OR
- ACCT 1101 - Foundations of Financial Reporting (3)

Area 2 - Animal Science (AG12): 27 Semester Hours

- AGRI 2315 - Forages and Pasture Management (3: 2 lecture, 1 lab)
- AGRI 2430 - Animal Handling (3: 3 lecture, 0 lab)
- AGRI 3410 - Animal Breeding and Genetics (2: 2 lecture, 0 lab)
- AGRI 3415 - Meat Science (2: 1 lecture, 1 lab)
- AGRI 3420 - Animal Nutrition (3: 2 lecture, 1 lab)
- AGRI 3425 - Specialty Livestock Production (1: 1 lab)
- AGRI 4110 - Agricultural Futures Trading (3)
- AGRI 4410 - Animal Health and Diseases (3)
- AGRI 4415 - Animal Reproduction (3)
- AGRI 4440 - Advanced Beef Cattle and Swine Production (4: 3 lecture, 1 lab)

Area 3 - Agronomy (AG13): 27 Semester Hours

- AGRI 2331 - Soils Management (3: 2 lecture, 1 lab)
- AGRI 3210 - Soil and Water Conservation (3)
- AGRI 3320 - Field Crop Management (3)
- AGRI 3610 - Integrated Pest Management (3)

- AGRI 4110 - Agricultural Futures Trading (3)
  OR
- AGRI 4120 - International Agriculture (3)

- AGRI 4300 - Soil Fertility and Fertilizers (3)
- AGRI 4310 - Plant Breeding and Genetics (3)
- AGRI 4320 - Plant Diseases (3)
- AGRI 4340 - Weed Science and Management (3: 2 lecture, 1 lab)

Area 4 - Horticultural Science (AG14): 27 Semester Hours

- AGRI 2331 - Soils Management (3: 2 lecture, 1 lab)
- AGRI 3610 - Integrated Pest Management (3)

- AGRI 3620 - Residential Landscape Design (3: 2 lecture, 1 lab)
  OR
- AGRI 3640 - Horticultural Propagation Materials (3: 2 lecture, 1 lab)

- AGRI 4200 - Advanced Agriculture Mechanics (3: 2 lecture, 1 lab)

- AGRI 4320 - Plant Diseases (3)
- AGRI 4600 - Horticultural Plants I: Woody (3: 2 lecture, 1 lab)

- AGRI 4605 - Horticultural Plants II: Herbaceous (3: 2 lecture, 1 lab)
  OR
- AGRI 4610 - Turfgrass Science (3: 2 lecture, 1 lab)

Agriculture Restricted Electives: 6 Semester Hours

- AGRI 2615 - Fruit and Vegetable Production (3: 2 lecture 1 lab)
- AGRI 2620 - Floral Design (3: 2 Lecture, 1 lab)
- AGRI 2625 - Beekeeping and Apiculture (3: 2 lecture 1 lab)
- AGRI 3615 - Greenhouse Management (3: 2 lecture; 1 lab)

Area 5 - Agriculture Communications (AG15): 27 Semester Hours

- AGRI 4115 - Agriculture and Food Law (3)
- COMM 1500 - Writing Across the Media (3)
- COMM 1519 - Media Aesthetics (3)
- COMM 2000 - Media Literacy GE (3)
- COMM 2410 - Multimedia Production (3)
- COMM 2411 - Audio Production (3)
- COMM 2412 - Introduction to Digital Video (3)

Agriculture Restricted Electives: 3 Semester Hours

- AGRI 3200 - Farm Power and Machinery (3)
- AGRI 3610 - Integrated Pest Management (3)
- AGRI 4340 - Weed Science and Management (3: 2 lecture, 1 lab)

Communication Restricted Electives: 3 Semester Hours

- COMM 3500 - Multiplatform Journalism Storytelling (3)
- COMM 3520 - Publication and Production Editing (3)
- COMM 4235 - Media Promotions (3)
- MKT 3450 - Digital Marketing (3)

General Education Requirements: 39-42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)
- COMM 1000 - Public Speaking GE (3)

- ECON 1010 - Principles of Macroeconomics GE (3)
  OR

- FIN 1820 - Personal Finance GE (3)

- ECON 1011 - Principles of Microeconomics GE (3)
- MATH 1111 - College Algebra GE (3)
- COMM 2000 - Media Literacy GE (3) (Area 5)

Free Electives: 11-14 Semester Hours

Area 5 - Agriculture Communications: 8 semester hours must be upper-level hours.

Minimum Total: 120 Semester Hours

Agriculture Minor (110) (25 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 25 Semester Hours

- AGRI 1310 - Crop Science (3: 3 lecture, 0 lab) *
- AGRI 1420 - Introduction to Animal Science (3)
- AGRI 2330 - Soil Science (3)
- AGRI 3120 - Distribution and Marketing Agriculture Products (3)
- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)
- ECON 1011 - Principles of Microeconomics GE (3)

- AGRI 1200 - Agriculture Mechanics (3: 2 lecture, 1 lab)
  OR
- AGRI 3200 - Farm Power and Machinery (3)

- AGRI 1600 - Introduction to Horticulture Science (4: 3 lecture, 1 lab)

Note:

* This course has prerequisites not listed in the program.

Department of Biological and Clinical Sciences

Department of Biological and Clinical Sciences
W.C. Morris 306
660-543-4933

NOTE: Careers in professional specialties in biology generally require preparation through at least the masters degree. The biology programs at UCM provide preparation for students who plan professional work in the following biological specialties:

- Biomedical Sciences
- Conservation Enforcement
- Entomology
- Environmental Biology
- Fisheries and Estuarine Ecology
- Forest Biology
- Marine Biological Sciences
- Oceanography
- Plant Science
- Systematic Botany
- Wildlife Conservation

Option in Biology Teacher Education are offered: Secondary Education, BSE (41-695) - Biology Option (E487) (122.5-123.5 hours)

Animal Identification Certificate (10-662) (20 hours)

The Animal Identification undergraduate certificate program is designed to help students meet professional objectives. Each course contains a significant level of the identification and identification procedures for natural resource jobs. The student may choose to use this certificate as career preparation tool for entry into employment. A student must earn a "C" or better with the courses listed to earn this certificate.

Required Courses: 20 Semester Hours

- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)

Electives: 16 Semester Hours

- BIOL 4210 - Ichthyology (3)
- BIOL 4210L - Ichthyology Lab (1: 1 lab)
- BIOL 4221 - Mammalogy (2)
- BIOL 4221L - Mammalogy Lab (2: 2 lab)
- BIOL 4223 - Ornithology (2)
- BIOL 4223L - Ornithology Lab (2: 2 lab)
- BIOL 4232 - Herpetology (2)
- BIOL 4232L - Herpetology Lab (2: 2 lab)
- BIOL 4312 - Entomology (2)
- BIOL 4312L - Entomology Lab (2: 2 lab)

Bioinformatics, BS (43-653) - Biological Science Option (0030) (120 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Bioinformatics will use the knowledge and skills obtained in the program to:

- Communicate effectively in a variety of professional contexts
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline
- Apply computational, mathematical and statistical approaches to analyze biological data
- Integrate informatics including statistical software packages with fundamental biological principles to solve problems

Bioinformatics, BS (43-653) - Biological Science Option (0030) (4 year Guide)

Major Requirements: 80.5-82.5 Semester Hours

Core: 58.5-60.5 Semester Hours

- ACST 2310 - Statistics and Data Analysis (3)
- ACST 3311 - Introduction to Probability and Statistics (3)
- ACST 4321 - Regression Analysis (3)
- BIOL 1000 - Biology Seminar I (.5)
- BIOL 1500 - General Biology I - Essentials of Molecular and Cellular Biology (4: 3 lecture, 1 lab)
- BIOL 2000 - Biology Seminar II (.5)
- BIOL 2512 - Cell Biology (3)
- BIOL 3001 - Biology Seminar III (.5)
- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)
- BIOL 3650 - Fundamentals of Bioinformatics I (3)
- BIOL 4515 - Molecular Technology (3: 2 lecture, 1 lab)
- BIOL 4650 - Fundamentals of Bioinformatics II (3)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)
- CS 1000 - Computers and Modern Society GE (3)
- CS 1030 - Python Programming I (3)
- CS 2030 - Python Programming II (3)

- MATH 1131 - Applied Calculus GE (3)
  OR
- MATH 1151 - Calculus I GE (5)

- CS 2400 - Discrete Structures (3)
  OR
- MATH 2410 - Discrete Mathematics (3)

- COMM 1000 - Public Speaking GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Biological Science Option: 22 Semester Hours

Required Option Courses: 10 Semester Hours

- BIOL 1505 - General Biology II - Essentials of Organismal Biology (4: 3 lecture, 1 lab)
- BIOL 4514 - Molecular Biology (3)

- BIOL 4222 - The Biological Perspective (3)
  OR
- BIOL 4014 - Internship in Biology (1-9) (3)

Electives from the following: 12 Semester Hours

- BIOL 1110 - Principles of Biology (3)
- BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)
- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)
- BIOL 2020 - General Ecology (3)
- BIOL 3211 - Comparative Anatomy (4: 2 lecture, 2 lab)
- BIOL 3213 - Developmental Biology (4: 2 lecture, 2 lab)
- BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab)
- BIOL 3402 - Human Physiology (5: 4 lecture, 1 lab)
- BIOL 3413 - Immunology (3)
- BIOL 3414 - Histology (3: 2 lecture, 1 lab)
- BIOL 3431 - Animal Physiology (4: 2 lecture, 2 lab)
- BIOL 3709 - Dendrology (4: 3 lecture, 1 lab)
- BIOL 3711 - Plant Identification (4: 3 lecture, 1 lab)
- BIOL 3712 - Field Techniques in Biology (4: 1 lecture, 3 lab)
- BIOL 3721 - Wildlife Management (3)
- BIOL 4013 - Biostatistics (3)
- BIOL 4014 - Internship in Biology (1-9)
- BIOL 4102 - Evolution (3)
- BIOL 4210 - Ichthyology (3)
- BIOL 4210L - Ichthyology Lab (1: 1 lab)
- BIOL 4221 - Mammalogy (2)
- BIOL 4221L - Mammalogy Lab (2: 2 lab)
- BIOL 4223 - Ornithology (2)
- BIOL 4223L - Ornithology Lab (2: 2 lab)
- BIOL 4232 - Herpetology (2)
- BIOL 4232L - Herpetology Lab (2: 2 lab)
- BIOL 4311 - Parasitology (4: 2 lecture, 2 lab)
- BIOL 4312 - Entomology (2)
- BIOL 4312L - Entomology Lab (2: 2 lab)
- BIOL 4400 - Endocrinology (2)
- BIOL 4411 - Plant Physiology (4: 2 lecture, 2 lab)
- BIOL 4516 - Hematology/Virology (3)
- BIOL 4517 - Serology Laboratory (1)
- BIOL 4709 - Plant Ecology (4: 2 lecture, 2 lab)
- BIOL 4710 - Limnology (4: 2 lecture, 2 lab)
- BIOL 4711 - Animal Ecology (3)

- BIOL 4711L - Animal Ecology Lab (1: 1 lab)
- BIOL 4919 - Wildlife Policy and Law (3)
- BIOL 4953 - Ecology Field Course (1-6)
- CHEM 3341 - Organic Chemistry I (4: 4 lecture, 0 lab)
- CHEM 3342 - Organic Chemistry II (4: 4 lecture, 0 lab)
- CHEM 3421 - Biochemistry (3)
- CHEM 4431 - Biochemistry Laboratory (2)
- GEOS 4220 - Geographic Information Systems I (3)
- MATH 1152 - Calculus II (5)

- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
  OR
- PHYS 2121 - University Physics I (5: 5 lecture, 0 lab)
  OR
- PHYS 2123 - University Physics I (4)

- PHYS 1102 - College Physics II (4: 4 lecture, 0 lab)
  OR
- PHYS 2122 - University Physics II (5: 5 lecture, 0 lab)
  OR
- PHYS 2124 - University Physics II (4)

General Education Requirements: 29 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CS 1000 - Computers and Modern Society GE (3)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)

- COMM 1000 - Public Speaking GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

- MATH 1131 - Applied Calculus GE (3)
  OR
- MATH 1151 - Calculus I GE (5)

Free Electives: 8.5-10.5 Semester Hours

Minimum Total: 120 Semester Hours

Bioinformatics, BS (43-653) - Computing and Statistics Option (0029) (120 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Bioinformatics will use the knowledge and skills obtained in the program to:

- Communicate effectively in a variety of professional contexts
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline
- Apply computational, mathematical and statistical approaches to analyze biological data
- Integrate informatics including statistical software packages with fundamental biological principles to solve problems

Bioinformatics, BS (43-653) - Computing and Statistics Option (0029) (4 year Guide)

Major Requirements: 80.5-82.5 Semester Hours

Core: 58.5-60.5 Semester Hours

- ACST 2310 - Statistics and Data Analysis (3)
- ACST 3311 - Introduction to Probability and Statistics (3)
- ACST 4321 - Regression Analysis (3)
- BIOL 1000 - Biology Seminar I (.5)
- BIOL 1500 - General Biology I - Essentials of Molecular and Cellular Biology (4: 3 lecture, 1 lab)
- BIOL 2000 - Biology Seminar II (.5)
- BIOL 2512 - Cell Biology (3)
- BIOL 3001 - Biology Seminar III (.5)
- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)
- BIOL 3650 - Fundamentals of Bioinformatics I (3)
- BIOL 4515 - Molecular Technology (3: 2 lecture, 1 lab)
- BIOL 4650 - Fundamentals of Bioinformatics II (3)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)
- CS 1000 - Computers and Modern Society GE (3)
- CS 1030 - Python Programming I (3)
- CS 2030 - Python Programming II (3)

- MATH 1131 - Applied Calculus GE (3)
  OR
- MATH 1151 - Calculus I GE (5)

- CS 2400 - Discrete Structures (3)
  OR
- MATH 2410 - Discrete Mathematics (3)

- COMM 1000 - Public Speaking GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Computing & Statistics Option: 22 Semester Hours

Required Option Courses: 13 Semester Hours

- CS 1100 - Computer Programming I (3)
- CS 1110 - Computer Programming II (3)
- CS 2300 - Data Structures (3)
- CS 4300 - Algorithm Design and Analysis (3)
- MATH 1040 - Introduction to the Mathematical Sciences (1)

Electives from the following: 9 Semester Hours

- ACST 4323 - Statistical Aspects of Experimental Design (3)
- ACST 4351 - Principles of Data Mining (3)
- CS 4000 - Special Problems in Computer Science (1-3)
- CS 4600 - Database Theory and Applications (3)
- CS 4700 - Artificial Intelligence (3)
- CS 4710 - Introduction to Machine Learning (3)
- CS 4720 - Neural Network and Deep Learning (3)
- DSA 3200 - Introduction to Data Visualization (3)
- DSA 4100 - Programming Foundations for Data Science and AI (3)
- DSA 4200 - Advanced Data Visualization (3)
- DSA 4600 - NoSQL Database Systems (3)
- DSA 4620 - Big Data Analytics (3)
- MATH 1152 - Calculus II (5)
- MATH 2153 - Calculus III (3)
- MATH 3710 - Linear Algebra (3)

- CS 4020 - Internship (1-3) (3)
  OR
- ACST 4390 - Internship in Actuarial Science or Statistics (1-6) (3)

General Education Requirements: 29 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CS 1000 - Computers and Modern Society GE (3)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)

- COMM 1000 - Public Speaking GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

- MATH 1131 - Applied Calculus GE (3)
  OR
- MATH 1151 - Calculus I GE (5)

Free Electives: 8.5-10.5 Semester Hours

Minimum Total: 120 Semester Hours

Biological Monitoring and Assessment Certificate (10-660)

The Biological Monitoring and Assessment undergraduate certificate program is designed to help students meet professional objectives. Each course contains a significant level of sampling, monitoring and assessment procedures for natural resource jobs. The student may choose to use this certificate as career preparation tool for entry into employment. A student must earn a "C" or better with the courses listed to earn this certificate.

Required Courses: 21 Semester Hours

- BIOL 3709 - Dendrology (4: 3 lecture, 1 lab)
- BIOL 4013 - Biostatistics (3)
- BIOL 4014 - Internship in Biology (1-9) (3)
- BIOL 4709 - Plant Ecology (4: 2 lecture, 2 lab)
- BIOL 4711 - Animal Ecology (3)
- BIOL 4711L - Animal Ecology Lab (1: 1 lab)
- BIOL 4722 - Conservation Biology (3)

Biology Minor (476) (22 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 22 Semester Hours

- BIOL 1110 - Principles of Biology (3)
- BIOL 2020 - General Ecology (3)
- BIOL 2510 - Basic Genetics GE (3)
- BIOL 2512 - Cell Biology (3)

- BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)
  OR
- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)

- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)
  OR
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)

- Upper-level (3000/4000) elective in Biology (1-2)

Biology, BS (43-380) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Biology will use the knowledge and skills obtained in the program to:

- Apply fundamental biological principles from major areas of biology to answer questions encountered by biologists
- Use discipline-appropriate methods and instruments with accuracy, precision and safety in order to answer biological questions.
- Use the language and concepts of Biology to communicate effectively in oral and written form.

Biology, BS (43-380) (Area 1: General Biology) (4 Year Guide)

Biology, BS (43-380) (Area 2: Ecology & Evolutionary Biology) (4 Year Guide)

Biology, BS (43-380) (Area 3: Wildlife & Natural Resource Conservation) (4 Year Guide)

Biology, BS (43-380) (Area 4: Integrative Biology, Plant Biology Emphasis) (4 Year Guide)

Biology, BS (43-380) (Area 4: Integrative Biology, Animal Biology Emphasis) (4 Year Guide)

Biology, BS (43-380) (Area 5: Biomedical/Cellular & Molecular Biology) (4 Year Guide)

Biology, BS (43-380) (Area 6: Pre-Med, Pre-Dental, Pre-Vet) (4 Year Guide)

Biology, BS (43-380) (Area 7: Conservation Enforcement) (4 Year Guide)

Biology, BS (43-380) (Area 8: Pre-Science Education) (4 Year Guide)

Major Requirements: 67-90 Semester Hours

Core Requirements: 34.5 Semester Hours

- BIOL 1000 - Biology Seminar I (.5)
- BIOL 1500 - General Biology I - Essentials of Molecular and Cellular Biology (4: 3 lecture, 1 lab)
- BIOL 1505 - General Biology II - Essentials of Organismal Biology (4: 3 lecture, 1 lab)
- BIOL 2000 - Biology Seminar II (.5)
- BIOL 2020 - General Ecology (3)
- BIOL 2512 - Cell Biology (3)
- BIOL 3001 - Biology Seminar III (.5)
- BIOL 4102 - Evolution (3)

- BIOL 4014 - Internship in Biology (1-9) (3)
  OR
- BIOL 4222 - The Biological Perspective (3)

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)
- MATH 1111 - College Algebra GE (3)

Elect One of the 8 Areas: 32.5-55.5 Semester Hours

Area 1 - General Biology (BI01): 32.5-35.5 Semester Hours

- BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)
- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)

- BIOL 2510 - Basic Genetics GE (3)
  OR
- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)

- BIOL 3611 - Microbiology (4: 3 lecture, 1 lab)

- BIOL 4001 - Ecology Senior Seminar (.5-1) (.5)
  OR
- BIOL 4002 - Life Science Senior Seminar (.5-1) (.5)

- BIOL 4013 - Biostatistics (3)

Ecology/Wildlife Biology Electives: 7-8 Semester Hours

- BIOL 3709 - Dendrology (4: 3 lecture, 1 lab)
- BIOL 3711 - Plant Identification (4: 3 lecture, 1 lab)
- BIOL 3712 - Field Techniques in Biology (4: 1 lecture, 3 lab)
- BIOL 4210 - Ichthyology (3)
- BIOL 4210L - Ichthyology Lab (1: 1 lab)
- BIOL 4221 - Mammalogy (2)
- BIOL 4221L - Mammalogy Lab (2: 2 lab)
- BIOL 4223 - Ornithology (2)
- BIOL 4223L - Ornithology Lab (2: 2 lab)
- BIOL 4232 - Herpetology (2)
- BIOL 4232L - Herpetology Lab (2: 2 lab)
- BIOL 4312 - Entomology (2)
- BIOL 4312L - Entomology Lab (2: 2 lab)
- BIOL 4412 - Wildlife Diseases (4: 3 lecture, 1 lab)
- BIOL 4709 - Plant Ecology (4: 2 lecture, 2 lab)
- BIOL 4710 - Limnology (4: 2 lecture, 2 lab)
- BIOL 4711 - Animal Ecology (3)
- BIOL 4711L - Animal Ecology Lab (1: 1 lab)
- BIOL 4953 - Ecology Field Course (1-6)

Life Science Electives: 7-8 Semester Hours

- BIOL 3213 - Developmental Biology (4: 2 lecture, 2 lab)
- BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab)
- BIOL 3402 - Human Physiology (5: 4 lecture, 1 lab)
- BIOL 3413 - Immunology (3)
- BIOL 3414 - Histology (3: 2 lecture, 1 lab)
- BIOL 3431 - Animal Physiology (4: 2 lecture, 2 lab)
- BIOL 4311 - Parasitology (4: 2 lecture, 2 lab)
- BIOL 4400 - Endocrinology (2)
- BIOL 4403 - Environmental Physiology (4: 3 lecture, 1 lab)

- BIOL 4411 - Plant Physiology (4: 2 lecture, 2 lab)
- BIOL 4514 - Molecular Biology (3)
- BIOL 4515 - Molecular Technology (3: 2 lecture, 1 lab)
- BIOL 4516 - Hematology/Virology (3)
- BIOL 4517 - Serology Laboratory (1)

Area 2 - Ecology and Evolutionary Biology (BI02): 37.5-39.5 Semester Hours

- BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)
- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)
- BIOL 3711 - Plant Identification (4: 3 lecture, 1 lab)
- BIOL 4001 - Ecology Senior Seminar (.5-1) (.5)
- BIOL 4013 - Biostatistics (3)

- BIOL 2510 - Basic Genetics GE (3)
  OR
- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)

- BIOL 3610 - Basic Microbiology (3)
  OR
- BIOL 3611 - Microbiology (4: 3 lecture, 1 lab)
  OR
- BIOL 4412 - Wildlife Diseases (4: 3 lecture, 1 lab)

Choose 2 from the Following: 8 Semester Hours

- BIOL 4709 - Plant Ecology (4: 2 lecture, 2 lab)
- BIOL 4710 - Limnology (4: 2 lecture, 2 lab)
- BIOL 4711 - Animal Ecology (3)
- BIOL 4711L - Animal Ecology Lab (1: 1 lab)

Choose from the Following: 8 Semester Hours

- BIOL 3211 - Comparative Anatomy (4: 2 lecture, 2 lab)
- BIOL 3709 - Dendrology (4: 3 lecture, 1 lab)
- BIOL 3712 - Field Techniques in Biology (4: 1 lecture, 3 lab)
- BIOL 4210 - Ichthyology (3)
- BIOL 4210L - Ichthyology Lab (1: 1 lab)
- BIOL 4221 - Mammalogy (2)
- BIOL 4221L - Mammalogy Lab (2: 2 lab)
- BIOL 4223 - Ornithology (2)
- BIOL 4223L - Ornithology Lab (2: 2 lab)
- BIOL 4232 - Herpetology (2)
- BIOL 4232L - Herpetology Lab (2: 2 lab)
- BIOL 4312 - Entomology (2)
- BIOL 4312L - Entomology Lab (2: 2 lab)
- BIOL 4953 - Ecology Field Course (1-6)

Note:

It is strongly recommended to take GEOS 4220 - Geographic Information Systems I (3), 3, as a free elective for those students interested in government agency jobs.

Area 3 - Wildlife and Natural Resource Conservation (BI03): 39.5-40.5 Semester Hours

- BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)
- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)
- BIOL 3711 - Plant Identification (4: 3 lecture, 1 lab)
- BIOL 3721 - Wildlife Management (3)
- BIOL 4001 - Ecology Senior Seminar (.5-1) (.5)
- BIOL 4013 - Biostatistics (3)
- BIOL 4412 - Wildlife Diseases (4: 3 lecture, 1 lab)
- BIOL 4722 - Conservation Biology (3)
- BIOL 4919 - Wildlife Policy and Law (3)

- BIOL 2510 - Basic Genetics GE (3)
  OR
- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)

Electives from the Following: 8 Semester Hours

- BIOL 3211 - Comparative Anatomy (4: 2 lecture, 2 lab)
- BIOL 3709 - Dendrology (4: 3 lecture, 1 lab)
- BIOL 3712 - Field Techniques in Biology (4: 1 lecture, 3 lab)
- BIOL 4210 - Ichthyology (3)
- BIOL 4210L - Ichthyology Lab (1: 1 lab)
- BIOL 4221 - Mammalogy (2)
- BIOL 4221L - Mammalogy Lab (2: 2 lab)
- BIOL 4223 - Ornithology (2)
- BIOL 4223L - Ornithology Lab (2: 2 lab)
- BIOL 4232 - Herpetology (2)
- BIOL 4232L - Herpetology Lab (2: 2 lab)
- BIOL 4312 - Entomology (2)
- BIOL 4312L - Entomology Lab (2: 2 lab)
- BIOL 4709 - Plant Ecology (4: 2 lecture, 2 lab)
- BIOL 4710 - Limnology (4: 2 lecture, 2 lab)
- BIOL 4711 - Animal Ecology (3)
- BIOL 4711L - Animal Ecology Lab (1: 1 lab)
- BIOL 4953 - Ecology Field Course (1-6)

Note:

It is strongly recommended to take GEOS 4220 - Geographic Information Systems I (3), 3, as a free elective for those students interested in government agency jobs.

Area 4 - Integrative Biology (BI04): 33.5-35.5 Semester Hours

- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)

- BIOL 4001 - Ecology Senior Seminar (.5-1) (.5)
  OR
- BIOL 4002 - Life Science Senior Seminar (.5-1) (.5)

- BIOL 4013 - Biostatistics (3)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

Choose Plant or Animal Biology Emphasis (A or B): 22-24 Semester Hours

A. Plant Biology Emphasis

- BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)
- BIOL 3711 - Plant Identification (4: 3 lecture, 1 lab)
- BIOL 4411 - Plant Physiology (4: 2 lecture, 2 lab)
- BIOL 4709 - Plant Ecology (4: 2 lecture, 2 lab)

Electives from the Following: 6-8 Semester Hours

- AGRI 2330 - Soil Science (3)
- AGRI 2331 - Soils Management (3: 2 lecture, 1 lab)
- AGRI 4310 - Plant Breeding and Genetics (3)
- AGRI 4320 - Plant Diseases (3)
- BIOL 3611 - Microbiology (4: 3 lecture, 1 lab)
- BIOL 4312 - Entomology (2)
- BIOL 4312L - Entomology Lab (2: 2 lab)
- BIOL 4514 - Molecular Biology (3)
- BIOL 4515 - Molecular Technology (3: 2 lecture, 1 lab)
- GEOS 4220 - Geographic Information Systems I (3)

B. Animal Biology Emphasis

- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)
- BIOL 3211 - Comparative Anatomy (4: 2 lecture, 2 lab)
- BIOL 3431 - Animal Physiology (4: 2 lecture, 2 lab)
- BIOL 4711 - Animal Ecology (3)
- BIOL 4711L - Animal Ecology Lab (1: 1 lab)

Electives from the Following: 6-8 Semester Hours

- BIOL 3213 - Developmental Biology (4: 2 lecture, 2 lab)
- BIOL 3413 - Immunology (3)
- BIOL 3414 - Histology (3: 2 lecture, 1 lab)
- BIOL 3611 - Microbiology (4: 3 lecture, 1 lab)

- BIOL 4210 - Ichthyology (3)
- BIOL 4210L - Ichthyology Lab (1: 1 lab)
- BIOL 4221 - Mammalogy (2)
- BIOL 4221L - Mammalogy Lab (2: 2 lab)
- BIOL 4223 - Ornithology (2)
- BIOL 4223L - Ornithology Lab (2: 2 lab)
- BIOL 4232 - Herpetology (2)
- BIOL 4232L - Herpetology Lab (2: 2 lab)
- BIOL 4311 - Parasitology (4: 2 lecture, 2 lab)
- BIOL 4312 - Entomology (2)
- BIOL 4312L - Entomology Lab (2: 2 lab)
- BIOL 4400 - Endocrinology (2)
- BIOL 4412 - Wildlife Diseases (4: 3 lecture, 1 lab)
- BIOL 4514 - Molecular Biology (3)
- BIOL 4515 - Molecular Technology (3: 2 lecture, 1 lab)
- GEOS 4220 - Geographic Information Systems I (3)

Area 5 - Biomedical/Cellular and Molecular Biology (BI05): 33.5 Semester Hours

- BIOL 3213 - Developmental Biology (4: 2 lecture, 2 lab)
- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)
- BIOL 4002 - Life Science Senior Seminar (.5-1) (.5)
- BIOL 4514 - Molecular Biology (3)
- BIOL 4515 - Molecular Technology (3: 2 lecture, 1 lab)

- ACST 1300 - Basic Statistics GE (3)
  OR
- ACST 2310 - Statistics and Data Analysis (3)
  OR
- BIOL 4013 - Biostatistics (3)

Electives from the Following: 16 Semester Hours

- AGRI 4310 - Plant Breeding and Genetics (3)
- AGRI 4320 - Plant Diseases (3)
- BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)
- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)
- BIOL 1510 - Investigative Biology (4: 3 lecture, 1 lab)
- BIOL 3413 - Immunology (3)
- BIOL 3431 - Animal Physiology (4: 2 lecture, 2 lab)
- BIOL 3611 - Microbiology (4: 3 lecture, 1 lab)
- BIOL 4311 - Parasitology (4: 2 lecture, 2 lab)
- BIOL 4411 - Plant Physiology (4: 2 lecture, 2 lab)
- BIOL 4412 - Wildlife Diseases (4: 3 lecture, 1 lab)
- BIOL 4516 - Hematology/Virology (3)
- BIOL 4517 - Serology Laboratory (1)
- CHEM 3341 - Organic Chemistry I (4: 4 lecture, 0 lab)

- CHEM 3342 - Organic Chemistry II (4: 4 lecture, 0 lab)
- CHEM 3421 - Biochemistry (3)
- CS 1030 - Python Programming I (3)
- CS 2030 - Python Programming II (3)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

Area 6 - Pre-Med., Pre-Dental, Pre-Vet (BI06): 44.5 Semester Hours

- BIOL 3213 - Developmental Biology (4: 2 lecture, 2 lab)
- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)
- BIOL 3611 - Microbiology (4: 3 lecture, 1 lab)
- BIOL 4002 - Life Science Senior Seminar (.5-1) (.5)
- CHEM 3341 - Organic Chemistry I (4: 4 lecture, 0 lab)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
- PHYS 1102 - College Physics II (4: 4 lecture, 0 lab)

- BIOL 3211 - Comparative Anatomy (4: 2 lecture, 2 lab)
  AND
- BIOL 3431 - Animal Physiology (4: 2 lecture, 2 lab)
  OR
- BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab)
  AND
- BIOL 3402 - Human Physiology (5: 4 lecture, 1 lab)

Electives from the Following: 12 Semester Hours

- BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)
- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)
- BIOL 3413 - Immunology (3)
- BIOL 3414 - Histology (3: 2 lecture, 1 lab)
- BIOL 4013 - Biostatistics (3)
- BIOL 4311 - Parasitology (4: 2 lecture, 2 lab)
- BIOL 4400 - Endocrinology (2)
- BIOL 4412 - Wildlife Diseases (4: 3 lecture, 1 lab)
- BIOL 4514 - Molecular Biology (3)
- BIOL 4515 - Molecular Technology (3: 2 lecture, 1 lab)
- BIOL 4516 - Hematology/Virology (3)
- BIOL 4517 - Serology Laboratory (1)
- CHEM 3342 - Organic Chemistry II (4: 4 lecture, 0 lab)
- CHEM 3421 - Biochemistry (3)

Area 7 - Conservation Enforcement (BI07): 47.5-48.5 Semester Hours

- BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)
- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)
- BIOL 2510 - Basic Genetics GE (3)

- BIOL 3711 - Plant Identification (4: 3 lecture, 1 lab)
- BIOL 3721 - Wildlife Management (3)
- BIOL 4001 - Ecology Senior Seminar (.5-1) (.5)
- BIOL 4412 - Wildlife Diseases (4: 3 lecture, 1 lab)
- BIOL 4919 - Wildlife Policy and Law (3)
- CJ 1000 - Introduction to Criminal Justice GE (3)
- CJ 3300 - Criminal Law and Procedure (3)
- CJ 4302 - Evidence and Courtroom Procedure (3)
- CTE 2060 - Technical Writing GE (3)
- PR 2620 - Principles of Public Relations (3)

Electives from the Following: 4 Semester Hours

- BIOL 3709 - Dendrology (4: 3 lecture, 1 lab)
- BIOL 3712 - Field Techniques in Biology (4: 1 lecture, 3 lab)
- BIOL 4210 - Ichthyology (3)
- BIOL 4210L - Ichthyology Lab (1: 1 lab)
- BIOL 4221 - Mammalogy (2)
- BIOL 4221L - Mammalogy Lab (2: 2 lab)
- BIOL 4223 - Ornithology (2)
- BIOL 4223L - Ornithology Lab (2: 2 lab)
- BIOL 4232 - Herpetology (2)
- BIOL 4232L - Herpetology Lab (2: 2 lab)
- BIOL 4312 - Entomology (2)
- BIOL 4312L - Entomology Lab (2: 2 lab)

Elective from the Following: 3-4 Semester Hours

- BIOL 4709 - Plant Ecology (4: 2 lecture, 2 lab)
- BIOL 4710 - Limnology (4: 2 lecture, 2 lab)
- BIOL 4711 - Animal Ecology (3)
- BIOL 4711L - Animal Ecology Lab (1: 1 lab)
- BIOL 4722 - Conservation Biology (3)

Area 8 - Pre-Science Education (BI08): 54.5-55.5 Semester Hours

- BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)
- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)
- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)
- BIOL 3611 - Microbiology (4: 3 lecture, 1 lab)
- BIOL 4950 - Laboratory Intern (1) (1-2)
- Approved Upper Level BIOL courses (7-8)
- EDSP 2100 - Education of the Exceptional Child (3)
- EDFL 2240 - Educational Psychology GE (3)
- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
- PHYS 1003 - Essentials in Physical Sciences with Lab (4: 3 lecture, 1 lab)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

- POLS 1510 - American Government GE (3)
- STCH 3020 - Science and Engineering Practices (3)

- BIOL 4001 - Ecology Senior Seminar (.5-1) (.5)
  OR
- BIOL 4002 - Life Science Senior Seminar (.5-1) (.5)

- HIST 1350 - History of the United States to 1877 GE (3)
  OR
- HIST 1351 - History of the United States from 1877 GE (3)

- HDFS 1220 - Child and Adolescent Development (3)
  OR
- PSY 2220 - Child and Adolescent Psychological Development (3)
  OR
- PSY 3220 - Life-Span Development GE (3)

General Education Requirements: 20-35 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab) (all areas)
- MATH 1111 - College Algebra GE (3) (all areas)

- BIOL 2510 - Basic Genetics GE (3) (Areas 1, 2 & 3 if chosen, Area 7)
- CJ 1000 - Introduction to Criminal Justice GE (3) (Area 7)
- CTE 2060 - Technical Writing GE (3) (Area 7)
- EDFL 2240 - Educational Psychology GE (3) (Area 8)
- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab) (Area 8)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab) (Areas 4, 6 & 8, Area 5 if chosen)
- POLS 1510 - American Government GE (3) (Area 8)

- HIST 1350 - History of the United States to 1877 GE (3) (Area 8)
  OR
- HIST 1351 - History of the United States from 1877 GE (3) (Area 8)

Free Electives: 9-23 Semester Hours

Area 1: 15-21 Semester Hours

Area 2: 11-16 Semester Hours

Area 3: 10-14 Semester Hours

Area 4: 18-20 Semester Hours

Area 5: 17-23 Semester Hours

Area 6: 9 Semester Hours

Area 7: 11-12 Semester Hours

Area 8: 10-11 Semester Hours

Minimum Total: 120 Semester Hours

Accelerated Program Notes:

The following accelerated model for this program is designed for the MS Biology.

Preference for admission to the program is given to prospective students with the following:

- 3.0 or higher GPA
- Required to have completed at least 8 credit hours of biology courses, and a grade of a B or higher in each previously completed biology course
- Recommended to have taken at least one chemistry course
- Three letters of recommendation
- Statement of purpose stating career goals for the non-thesis option, and research and career goals for the thesis option

Undergraduate students can take up to 12 credits of graduate credits while working towards earning an undergraduate degree. Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

BIOL 5011 Special Topics in Biology (1-5) (BIOL 4011)

BIOL 5012 Special Projects in Biology (0-8) (BIOL 4012)

BIOL 5014 Internship in Biology (1-9) (BIOL 4014)

BIOL 5102 Evolution (3) (BIOL 4102)

BIOL 5113 Biostatistics (3) (BIOL 4013)

BIOL 5210L Ichthyology Lab (1: 1 lab) (BIOL 4210L)

BIOL 5210 Ichthyology (3) (BIOL 4210)

BIOL 5221L Mammalogy Lab (2: 2 lab) (BIOL 4221L)

BIOL 5221 Mammalogy (2) (BIOL 4221)

BIOL 5223L Ornithology Lab (2: 2 lab) (BIOL 4223L)

BIOL 5223 Ornithology (2) (BIOL 4223)

BIOL 5232L Herpetology Lab (2: 2 lab) (BIOL 4232L)

BIOL 5232 Herpetology (2) (BIOL 4232)

BIOL 5311 Parasitology (4: 2 lecture, 2 lab) (BIOL 4311)

BIOL 5312L Entomology Lab (2: 2 lab) (BIOL 4312L)

BIOL 5312 Entomology (2) (BIOL 4312)

BIOL 5400 Endocrinology (2) (BIOL 4400)

BIOL 5411 Plant Physiology (4: 2 lecture, 2 lab) (BIOL 4411)

BIOL 5412 Wildlife Diseases (4: 3 lecture, 1 lab) (BIOL 4412)

BIOL 5514 Molecular Biology (3) (BIOL 4514)

BIOL 5515 Molecular Technology (3: 2 lecture, 1 lab) (BIOL 4515)

BIOL 5516 Hematology/Virology (3) (BIOL 4516)

BIOL 5517 Serology Laboratory (1) (BIOL 4517)

BIOL 5709 Plant Ecology (4: 2 lecture, 2 lab) (BIOL 4709)

BIOL 5710 Freshwater Biology (4) (BIOL 4710)

BIOL 5711L Animal Ecology Lab (1: 1 lab) (BIOL 4711L)

BIOL 5711 Animal Ecology (3) (BIOL 4711)

BIOL 5722 Conservation Biology (3) (BIOL 4722)

BIOL 5919 Wildlife Policy and Law (3) (BIOL 4919)

BIOL 5953 Ecology Field Course (1-6) (BIOL 4953)

The following accelerated model for this program is designed for Area 8 Pre-Science Education to the Master of Arts in Teaching Science Education Area.

UCM students having completed at least 9 hours of biology courses with a GPA of at least 3.00 may consult with the coordinator of the MS/MAT accelerated program and complete a departmental application to declare the accelerated BS/MAT major. To be recommended to the graduate portion of the program, students must have a major GPA of 3.00 or above and an overall GPA of 2.75 in the undergraduate portion of the program. Prior to beginning the graduate portion of the program, students will need to apply to the UCM Graduate School for formal admittance to the accelerated program. Upon completion of this program, students will be eligible for science teaching certification in Biology.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

EDFL 5105 Foundations of Teaching and Learning (EDFL 4105)

STCH 5010 Exploring First Hand Science Lessons (STCH 4010)

STCH 5020 Internship in Science Teaching and Learning (STCH 4020)

STCH 5050 Science Teaching Methods (STCH 4050)

Forensic Science Minor (491) (22-25 hours)

Minor for a Bachelor's Degree

Minor Requirements: 22-25 Semester Hours

Biology Major Track: 25 Semester Hours

- BIOL 2010 - Human Biology GE (3)
  OR
- BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab)

- BIOL 3410 - Forensic Science (3)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)
- CJ 1000 - Introduction to Criminal Justice GE (3)
- CJ 3400 - Criminal Investigation (3)
- CJ 4302 - Evidence and Courtroom Procedure (3)

Chemistry Major Track: 22 Semester Hours

- BIOL 1110 - Principles of Biology (3)

- BIOL 2010 - Human Biology GE (3)
  OR
- BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab)

- BIOL 3410 - Forensic Science (3)
- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)
- CJ 1000 - Introduction to Criminal Justice GE (3)
- CJ 3400 - Criminal Investigation (3)
- CJ 4302 - Evidence and Courtroom Procedure (3)

Criminal Justice Major Track: 23 Semester Hours

Criminal Justice majors must take CJ 3400 and CJ 4302 as electives in the major.

- BIOL 1110 - Principles of Biology (3)

- BIOL 2010 - Human Biology GE (3)
  OR
- BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab)

- BIOL 3410 - Forensic Science (3)
- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)

Note:

Any student pursuing a major other than Biology, Chemistry or Criminal Justice would need to take all of the required courses for the forensic science minor.

Medical Laboratory Science, BS (43-694) (121-125 hours)

Major, Bachelor of Science Degree

The graduate with a Medical Laboratory Science Major, Bachelor of Science Degree will use the knowledge and skills obtained in the program to:

- Collect, analyze and apply information to solve problems. (managing information)
- Use various laboratory techniques and/or instruments with understanding, accuracy, precision and safety. (technology)
- Think logically within the scientific parameters of professional biologists. (higher-order thinking)
- Use the language and concepts of Biology to communicate effectively in oral and written form; to follow instructions precisely and to function in independent and collaborative settings. (communicating and interacting)
- Exhibit the ethical use of knowledge, materials and procedures that demonstrates an impact on society. (valuing)
- Challenge the licensure exam of the National Accrediting Agency for Clinical Laboratory Scientists (NAACLS) to become a certified Medical Laboratory Scientist (ASCP) or Clinical Laboratory Scientist (ASCP) after completing a 12-month clinical rotation at an affiliated hospital.
- Be eligible to apply for graduate/professional training in nearly all medical fields.

Medical Laboratory Science, BS (43-694) (4 Year Guide)

Major Requirements: 59-60 Semester Hours

- BIOL 1000 - Biology Seminar I (.5)
- BIOL 2512 - Cell Biology (3)
- BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab)
- BIOL 3402 - Human Physiology (5: 4 lecture, 1 lab)
- BIOL 3413 - Immunology (3)
- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)
- BIOL 3611 - Microbiology (4: 3 lecture, 1 lab)
- BIOL 4002 - Life Science Senior Seminar (.5-1) (.5)
- BIOL 4311 - Parasitology (4: 2 lecture, 2 lab)
- BIOL 4514 - Molecular Biology (3)
- BIOL 4516 - Hematology/Virology (3)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)
- CHEM 3341 - Organic Chemistry I (4: 4 lecture, 0 lab)
- CHEM 3421 - Biochemistry (3)
- MATH 1111 - College Algebra GE (3)

- ACST 1300 - Basic Statistics GE (3)
  OR
- PSY 3030 - Introduction to Statistics for Psychology (3)

- BIOL 1110 - Principles of Biology (3)

OR

- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)

Medical Laboratory Science Transfer Credit: 30 Semester Hours

Transfer courses in various accredited medical technology programs may vary from hospital to hospital and are part of the Medical Technology functional major required by affiliation agreement for this program. They are not offered on campus or open to students in other programs.

Transfer credit for these courses is allowed for work taken at one of our affiliated hospitals in Kansas City (North Kansas City Hospital, Saint Luke's Hospital or K.U. in Kansas City, Kansas); in Springfield (Lester E. Cox Medical Center); in Joplin (Mercy Hospital); in Wichita (Wichita State University Medical Technology Program); in St. Louis (Mercy Hospital) or any fully accredited hospital medical technology training program which must be accredited by the American Medical Association Council on Medical Education. Admission and fees for the hospital portions of this program are the prerogative of the hospital and thus cannot be guaranteed by the University. Licensure to practice is dependent upon state regulations and professional examinations and thus cannot be guaranteed by the University or hospital. For additional information on this program and for entry into clinical programs, students are urged to see the program faculty advisor at their earliest convenience. Because of complexities of affiliation agreements and variations in clinical programs, all pertinent information cannot be presented in this catalog.

It is the student's responsibility to notify UCM of the completion of the rotations so transfer credit can be posted and the degree can be awarded.

General Education Requirements: 32-35 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- MATH 1111 - College Algebra GE (3)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)

- ACST 1300 - Basic Statistics GE (3) (if chosen)

Minimum Total: 121-125 Semester Hours

Plant Identification Certificate (10-642)

The Plant Identification undergraduate certificate program is designed to help students meet professional objectives. Each course contains a significant level of the identification procedures and natural history for natural resource jobs. The student may choose to use this certificate as career preparation tool for entry into employment. A student must earn a "C" or better in the courses listed to earn this certificate.

After completion of the certificate the student will:

- Know taxonomic, morphological and genetic characteristics as related to identification and classification of plant groups.
- Use taxonomic, morphological and genetic characteristics to identify and classify plant species into hierarchical groups.
- Know, understand, and use contemporary identification and taxonomic dichotomous keys and tools used in the identification of plant species.

- Identify species and taxonomic groups of plants.

Admission Requirements
To be considered for admission to the UCM undergraduate Certificate in Plant Identification, the student must have a minimum cumulative grade point average (GPA) of 2.75 at the university level and courses equivalent to BIOL 1110 (Principles of Biology) with a grade of "C" or better.

To remain a candidate for the Certificate in Plant Identification a grade of "C" or higher must be obtained for all core and elective classes. A maximum of seven units of transfer credit may be applied toward requirements in the Certificate in Plant Identification. Courses taken toward the undergraduate certificate program may be applied to a UCM Bachelor of Science degree.

Application Process
To apply for admission for the Certificate in Plant Identification, the following items must be submitted:
1. Application for the Certificate in Plant Identification.
2. Updated curriculum vita.
3. Statement of Academic and Professional Goals: a 500-word statement summarizing how your professional and educational goals are consistent with the objectives of the Certificate in Plant Identification.

Required Courses: 19 Semester Hours

- BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)
- BIOL 2020 - General Ecology (3)
- BIOL 3709 - Dendrology (4: 3 lecture, 1 lab)
- BIOL 3711 - Plant Identification (4: 3 lecture, 1 lab)
- BIOL 4709 - Plant Ecology (4: 2 lecture, 2 lab)

Radiologic Technology, BS (43-609) (127.5 hours)

Major, Bachelor of Science Degree

The graduate with a Radiologic Technology Major, Bachelor of Science Degree will use the knowledge and skills obtained in the program to:

- Communicate effectively in oral and written form.
- Demonstrate mastery of Radiologic Technology by challenging the licensure exam of ARRT (American Registry of Radiologic Technology) after completing a clinical rotation at an affiliated hospital.
- Students will demonstrate understanding of discipline specific knowledge in biological principles and processes.

Courses in various accredited radiologic technology programs may vary from hospital to hospital.

These courses are part of the Radiologic Technology major required by affiliation agreement for this program. They are not offered on campus or open to students in other programs. Credit for these courses is allowed for work taken at Hillyard Technical Center in St. Joseph and of their associated clinical affiliates. The program is fully accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT).

Admission and fees for the hospital portions of this program are the prerogative of the hospital and thus cannot be guaranteed by the University. Licensure to practice is dependent upon state regulations and professional examinations and thus cannot be guaranteed by the University or hospital. For additional information on this program and for entry into clinical programs, students are urged to see the program faculty advisor at their earliest

convenience. Because of complexities of affiliation agreements and variations in clinical programs, all pertinent information cannot be presented in this catalog.

Admission Policies

1. At the time of first admission to UCM, a student should indicate/declare the intent to become a Radiologic Technology major. Each declared major is encouraged to visit the program's advisor each semester.
2. Students need to have an ACT score of 24 or higher in order to enroll in both MATH 1111 and CHEM 1131 the first semester.
3. Admission to the B.S. Radiologic Technology program is in addition to university admission. Students will be admitted to the B.S. program once all admission criteria are met. Students are responsible to ensure that they have met all pre-admission criteria and have been officially admitted to the B.S. program. In addition, students will have to apply to the clinical affiliate for admission into the clinical portion of the degree.
4. Admission forms and additional information are available at ucmo.edu/biology. The student is responsible for submitting all required materials to the School of Natural Sciences in WCM 306.
5. Application information, and a student's Central Degree Audit will be reviewed and admission eligibility determined. Students must take a minimum of 30 hours at UCM to be eligible for admission to the RT program.
6. Admission to the RT program is conditional upon successful completion of a minimum of fifty semester hours, successful completion of all prerequisites necessary for admission to the first semester program and the requirements for admission listed below. Admission to the Radiologic Technology program involves competition between all eligible candidates.
7. Biology and Agriculture reserves the right to select among all qualified candidates. Students are selected in December for the following Summer/Fall semester RT consideration. Names of students admitted to the program are forwarded to the affiliates for consideration at their programs, assuming the student has also submitted an application with the affiliate, and met the affiliate's admission requirements.

Admission Criteria to the Radiologic Technology Program

1. Evidence of good moral character and ethical behavior as determined by JRCERT.org standards on their website, which also parallels the Code of Medical Ethics that medical professionals must follow.
2. Most science prerequisites (May have 2 maximum remaining to take) must be completed at the time of admission. This includes BIOL 1000, BIOL 1110, BIOL 3211, BIOL 3215, BIOL 3401, BIOL 3402, BIOL 3611, BIOL 4003, CHEM 1131, and PHYS 1101.
3. A minimum of a 2.75 cumulative grade-point average is required at the time of application.
4. Minimum grade of C in all major courses. A student receiving a grade lower than C in any course may repeat that course only one time. If the course was taken at UCM, it must be repeated at UCM.
5. A student receiving more than two Ds and/or an F in a course or courses with a biology, chemistry, or physics prefix will not be eligible for admission into the program.
6. Students will not be permitted to withdraw from any required majors course without permission of the School of Natural Sciences. Unexcused Withdrawal (W) from a required program course constitutes withdrawal from the UCM RT program and students must seek a different degree as it would be viewed as unethical (see 1).
7. ANY outstanding courses required for the degree MUST be taken and completed the Spring semester before clinicals. Enrollment would be blocked for clinical courses and a student would be removed from the program. Substitutions will NOT be given. A student would have to reapply to the UCM RT program, and the affiliate clinical program for the following year.
8. Students may only re-apply for the competitive admission one time.
9. Additional considerations will be given to the following:
   Academic history with patterns and trends indicating potential for academic success.
   Number of credit hours taken at The University of Central Missouri.
   Students will be categorized in two classifications for consideration for admission to the RT program:

1. Students who have taken all Radiologic Technology prerequisite courses at UCM; and
2. Students who have transferred credit for one or more science prerequisite course(s) from another institution.

Grade point averages are a determining factor in selection.
Additional assessments may be required.

Affiliation Requirements

1. For admission into an affiliated program, candidates for this degree must maintain a minimum grade-point average (each affiliate establishes their own minimum GPA) based upon courses listed in the program.
2. Candidates must have a minimum grade of C or better in listed program courses.
3. Affiliates may require some courses (like College Algebra and Anatomy and Physiology) be completed within a certain timeframe for consideration of clinical application. See the individual affiliates for specifics.
4. Affiliates require candidates successfully complete a minimum number of shadowing in a diagnostic area of Radiologic Technology. See the individual affiliates for specific shadowing requirements.
5. Candidates must meet the Skills Standards and other affiliate program requirements listed in their Prospective Student Information Guide for consideration of applications.
6. Students must meet with a faculty advisor within enrolling in 15 credit hours to obtain specific course information, program and learning assessment goals, and the Prospective Student Information Guide. This helps ensure success in the program.
7. Students apply to JRCERT affiliated programs for admission. The affiliate selects students for the clinical internship program.

Graduation Policies

1. Course substitutions for program requirements may be made only by the Radiologic Technology program advisor and school chair.
2. A student may not graduate with a degree in Radiologic Technology in which the grade of record for any required coursework is an F.
3. A student must earn a grade no lower than a C in the required courses in order to graduate with a Radiologic Technology degree.
4. To graduate with a Radiologic Technology degree, a student must obtain at least a 2.75 grade-point average on a 4.00 scale for all credit hours completed at UCM or elsewhere, and attain at least a 2.75 grade-point average for all course work in the major.
5. Transfer students from other colleges and universities must meet all degree program admission requirements. Transfer students may take appropriate additional course work to fulfill admission requirements. The first clinical year courses do not count as upper level courses.
6. Students are required to earn at least 50 percent of their required major credit hours for a B.S. degree at UCM.

Transfer of Credit

Transferring of credit is not advised as it will add an additional year onto the program due to residency requirements.

Upper-level (3000/4000) courses cannot generally be transferred from a two-year institution and applied to a B.S. degree. However, the school chair responsible for the UCM course may elect to allow such a transfer for equivalent credit. Before the school chair may accept the transfer course for equivalent credit, the course must be "validated" through an administered examination. Since this program barely meets the minimum requirement for upper-level hours, expect to take more courses to fulfill this requirement.

Upper-level (3000/4000) course work transferred from a four-year institution must be reviewed by the school chair before such work can be applied to a B.S. degree. The school chair may choose to apply the validation requirement to such transfers.

Students who have not enrolled in Radiologic Technology courses for two consecutive pre-clinical semesters will be dropped from the undergraduate program. If students were admitted to the RT program, these students must reapply for admission to the undergraduate program prior to enrollment in any additional courses in Radiologic Technology.

Radiologic Technology, BS (43-609) (4 Year Guide)

Major Requirements: 83.5 Semester Hours

C or better required in all major coursework.

- BIOL 1000 - Biology Seminar I (.5)
- BIOL 1110 - Principles of Biology (3)
- BIOL 3000 - Cooperative Clinical (0-15)
- BIOL 3211 - Comparative Anatomy (4: 2 lecture, 2 lab)
- BIOL 3215 - Medical Terminology (3)
- BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab)
- BIOL 3402 - Human Physiology (5: 4 lecture, 1 lab)
- BIOL 3500 - Cooperative Clinical II (0-15)
- BIOL 3611 - Microbiology (4: 3 lecture, 1 lab)
- BIOL 4003 - Radiologic Technology Senior Seminar (1)
- BIOL 4100 - Cooperative Clinical III (0-15)
- BIOL 4500 - Cooperative Clinical IV (0-15)

Note:

Admission and fees for the affiliate portion of this program are the prerogative of the affiliate and thus cannot be guaranteed by the University. Licensure to practice is dependent upon state regulations and professional examinations and thus cannot be guaranteed by the University or affiliate.

For additional information on this program and for entry into affiliate programs, students are urged to see the program faculty advisor at their earliest convenience. Because of complexities of affiliation agreements and variations in programs, all pertinent information cannot be presented in this catalog.

The last 2 years are clinical rotations spent at the affiliates and their sites. Students are no longer on campus and are not considered UCM students. Affiliation agreements include the 30 hours of transfer credit for each year that articulate to UCM.

Clinical Credits: 30 Semester Hours

Radiologic Technology Special Credit: 30 Semester Hours

It is the student's responsibility to notify UCM upon completion of the clinical rotations so transfer credit can be posted and the degree can be awarded. A maximum of 10 hours of upper level credit can be awarded for the rotations.

General Education Requirements: 44 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

Courses require a grade of C or better.

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- COMM 1000 - Public Speaking GE (3)
- CTE 2060 - Technical Writing GE (3)
- ENGL 1020 - Composition I GE (3)
- MATH 1111 - College Algebra GE (3)
- PHIL 2300 - Ethics GE (3)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
- PSY 1100 - General Psychology GE (3)
- SOC 1800 - Introduction to Sociology GE (3)

Minimum Total: 127.5 Semester Hours

Department of Computer Science and Cybersecurity

https://www.ucmo.edu/cs-math/

Department of Computer Science and Cybersecurity
W.C. Morris 222
660-543-4930
ucmo.edu/cs-math

An option in Mathematics is offered: Secondary Education, BSE (41-695) - Mathematics Option (E459) (120 hours)

Department of Computer Science and Cybersecurity Statement of Policy

A course with a grade lower than a C will not be allowed to fulfill a major or minor requirement in any program offered by the Department of Computer Science and Cybersecurity.

A student may enroll in a course offered by the Department of Computer Science and Cybersecurity only if a grade of C or better is earned in each of the course's prerequisites taken.

Computer Science Minor (449) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

A course with a grade lower than a C will not be allowed to fulfill a major or minor requirement in any program offered by the Department of Computer Science and Cybersecurity.

Minor Requirements: 21 Semester Hours

- CS 1100 - Computer Programming I (3)
- CS 1110 - Computer Programming II (3)
- CS 2300 - Data Structures (3)

Electives from the Following: 12 Semester Hours

At least one course must be upper-level (3000/4000).

- CS 1030 - Python Programming I (3)
- CS 2030 - Python Programming II (3)
- CS 2400 - Discrete Structures (3)
- CS 3100 - Programming Languages (3)
- CS 3110 - Applications Programming in C# and .NET (3)
- CS 3120 - Client Side Web Programming (3)
- CS 3200 - Computer Organization and Architecture (3)
- CS 3400 - Discrete Structures II (4)
- CS 3500 - C and UNIX Environment (3)
- CS 3800 - Applications Development with VB.NET (3)
- CS 3850 - Game Development 2D (3)
- CS 4110 - Mobile Applications Programming with Android (3)
- CS 4120 - Advanced Applications Programming in Java (3)
- CS 4130 - Server Side Web Programming (3)
- CS 4500 - Operating Systems (3)
- CS 4600 - Database Theory and Applications (3)
- CS 4610 - Introduction to Cloud Computing (3)
- CS 4660 - Introduction to Cloud Services (3)
- CS 4700 - Artificial Intelligence (3)
- CS 4830 - Game Development 3D (3)
- CYBR 1500 - Command Line Environments (3)
- CYBR 3130 - Secure Programming (3)
- CYBR 3300 - Introduction to Cryptography (3)
- CYBR 4820 - Introduction to Information Assurance (3)
- DSA 1000 - Introduction to Data Analytics (3)
- DSA 3200 - Introduction to Data Visualization (3)
- DSA 4100 - Programming Foundations for Data Science and AI (3)
- DSA 4200 - Advanced Data Visualization (3)
- DSA 4600 - NoSQL Database Systems (3)
- DSA 4620 - Big Data Analytics (3)
- SE 3920 - Modern Software Lifecycle and Tools (3)
- SE 4930 - Software Testing and Quality Assurance (3)

Note:

** Other elective options: Any valid Computer Science Major's electives, if the prerequisites are satisfied.

Computer Science, BS (43-281) - Computer Networking Option (CS08) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

Program Educational Objectives - Within a few years of graduation, a graduate with a Bachelor of Science degree in Computer Science will use the knowledge and skills obtained in the program to:

- Have established themselves in successful computer science-focused careers and/or pursuing advanced degrees.
- Continue to update their professional knowledge and skills to adapt to innovation and change to meet the needs of industry and/or academia.
- Contribute to the greater good of their communities through professional involvement and service.

Additional, graduates with a Bachelor of Science degree in Computer Science will demonstrate the following specific student outcomes:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

A course with a grade lower than a C will not be allowed to fulfill a major or minor requirement in any program offered by the Department of Computer Science and Cybersecurity.

Computer Science, BS (43-281) - Computer Networking Option (CS08) (4 Year Guide)

Major Requirements: 69 Semester Hours

C or better required in all major coursework.

Core: 42 Semester Hours

- CS 1000 - Computers and Modern Society GE (3)
- CS 1100 - Computer Programming I (3)
- CS 1110 - Computer Programming II (3)
- CS 2300 - Data Structures (3)
- CS 2400 - Discrete Structures (3)
- CS 3100 - Programming Languages (3)
- CS 3200 - Computer Organization and Architecture (3)
- CS 3500 - C and UNIX Environment (3)
- CS 4300 - Algorithm Design and Analysis (3)
- CS 4500 - Operating Systems (3)
- CS 4600 - Database Theory and Applications (3)
- SE 3910 - Software Engineering (3)

- CYBR 3130 - Secure Programming (3)
  OR
- CYBR 4820 - Introduction to Information Assurance (3)
  OR

- CYBR 4920 - Software Security (3)

- CS 4920 - Senior Project (3)
  OR
- SE 4920 - Senior Project (3)

Computer Networking Option: 27 Semester Hours

Electives from the Following: 12-21 Semester Hours

- CS 3120 - Client Side Web Programming (3)
- CS 3840 - Computer Networking (3)
- CS 4130 - Server Side Web Programming (3)
- CS 4610 - Introduction to Cloud Computing (3)
- CS 4660 - Introduction to Cloud Services (3)
- CYBR 4140 - Web Application Security (3)
- NET 1060 - Introduction to Networks (3: 2 lecture, 1 lab)
- NET 1061 - Switching, Routing, and Wireless Essentials (3: 2 lecture, 1 lab)

Electives from the Following: 6-15 Semester Hours

- CS 1030 - Python Programming I (3)
- CS 2030 - Python Programming II (3)
- CS 3110 - Applications Programming in C# and .NET (3)
- CS 3400 - Discrete Structures II (4)
- CS 3800 - Applications Development with VB.NET (3)
- CS 3850 - Game Development 2D (3)
- CS 4000 - Special Problems in Computer Science (1-3) (3)
- CS 4020 - Internship (1-3) (3)
- CS 4110 - Mobile Applications Programming with Android (3)
- CS 4120 - Advanced Applications Programming in Java (3)
- CS 4700 - Artificial Intelligence (3)
- CS 4810 - Computer Graphics (3)
- CS 4830 - Game Development 3D (3)
- CYBR 1500 - Command Line Environments (3)
- CYBR 1800 - Introduction to Cybersecurity (3)
- CYBR 2500 - Computer Systems Administration (3)
- CYBR 3130 - Secure Programming (3) *
- CYBR 3300 - Introduction to Cryptography (3)
- CYBR 3510 - Systems Security (3)
- CYBR 3520 - Introduction to Cyber-Physical Systems Security (3)
- CYBR 3820 - Usable Privacy and Security (3)
- CYBR 3830 - Economics of Cybersecurity (3)
- CYBR 4840 - Ethical Hacking (3)
- CYBR 4920 - Software Security (3) *
- DSA 1000 - Introduction to Data Analytics (3)
- DSA 3200 - Introduction to Data Visualization (3)

- DSA 4100 - Programming Foundations for Data Science and AI (3)
- DSA 4200 - Advanced Data Visualization (3)
- DSA 4600 - NoSQL Database Systems (3)
- DSA 4620 - Big Data Analytics (3)
- IT 3100 - Human Computer Interaction (3)
- SE 3900 - Software Requirements Engineering (3)
- SE 3920 - Modern Software Lifecycle and Tools (3)
- SE 4930 - Software Testing and Quality Assurance (3)
- SE 4940 - Software Design and Architecture (3)
- SE 4950 - Secure Software Engineering (3)
- SE 4960 - Project Management (3)

  * Course can not be used as both an elective and core requirement.

General Education Requirements: 39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CS 1000 - Computers and Modern Society GE (3) +
- ACST 1300 - Basic Statistics GE (3) +
- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Free Electives: 12 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Computer Science.

UCM students having completed at least 9 hours of computer science courses above the 1000 level with a major GPA of at least 3.00 may consult with their faculty advisor and complete a school application to declare the accelerated BS/MS major in computer science. Prior to beginning the graduate portion of the program, students in the accelerated program will need to apply to the UCM Graduate School for formal admission to the Accelerated BS/MS program.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

CS 5220 Advanced Applications Programming in Java (CS 4120)

CS 5200 Database Theory and Applications (CS 4600)

CS 5610 Introduction to Cloud Computing (CS 4610)

CS 5660 Introduction to Cloud Services (CS 4660)

CS 5700 Artificial Intelligence (CS 4700)

CS 5710 Machine Learning (CS 4710)

CS 5810 Computer Graphics (CS 4810)

CYBR 5240 Web Application Security (CYBR 4140)

CYBR 5610 Cloud Security (CYBR 4610)

CYBR 5820 Introduction to Information Assurance (CYBR 4820)

CYBR 5840 Ethical Hacking (CYBR 4840)

CYBR 5850 Computer and Network Forensics (CYBR 4850)

CYBR 5920 Software Security (CYBR 4920)

DSA 5100 Programming Foundations for Data Science (DSA 4100)

DSA 5200 Adv. Data Visualization (DSA 4200)

DSA 5400 Statistical Foundations for Data Science and AI (DSA 4400)

DSA 5600 NoSQL Database Systems (DSA 4600)

DSA 562 Big Data Analytics (DSA 4620)

SE 5930 Software Testing and Quality Assurance (SE 4930)

SE 5940 Software Design and Architecture (SE 4940)

SE 5950 Secure Software Engineering (SE 4950)

Computer Science, BS (43-281) - Computer Science Option (CS02) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

Program Educational Objectives - Within a few years of graduation, a graduate with a Bachelor of Science degree in Computer Science will use the knowledge and skills obtained in the program to:

- Have established themselves in successful computer science-focused careers and/or pursuing advanced degrees.
- Continue to update their professional knowledge and skills to adapt to innovation and change to meet the needs of industry and/or academia.
- Contribute to the greater good of their communities through professional involvement and service.

Additional, graduates with a Bachelor of Science degree in Computer Science will demonstrate the following specific student outcomes:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

In addition, students in Option 2 Computer Science will demonstrate the following extra student outcomes:

- Apply computer science theory and software development fundamentals to produce computing-based solutions.

The B.S. in Computer Science - Computer Science Option is accredited by the Computing Accreditation Commission of ABET. http://www.abet.org

A course with a grade lower than a C will not be allowed to fulfill a major or minor requirement in any program offered by the Department of Computer Science and Cybersecurity.

Computer Science, BS (43-281) - Computer Science Option (CS02) (4 Year Guide)

Major Requirements: 74-77 Semester Hours

C or better required in all major coursework.

Core: 42 Semester Hours

- CS 1000 - Computers and Modern Society GE (3)
- CS 1100 - Computer Programming I (3)
- CS 1110 - Computer Programming II (3)
- CS 2300 - Data Structures (3)
- CS 2400 - Discrete Structures (3)
- CS 3100 - Programming Languages (3)
- CS 3200 - Computer Organization and Architecture (3)
- CS 3500 - C and UNIX Environment (3)
- CS 4300 - Algorithm Design and Analysis (3)
- CS 4500 - Operating Systems (3)
- CS 4600 - Database Theory and Applications (3)
- SE 3910 - Software Engineering (3)

- CYBR 3130 - Secure Programming (3)
  OR
- CYBR 4820 - Introduction to Information Assurance (3)
  OR
- CYBR 4920 - Software Security (3)

- CS 4920 - Senior Project (3)
  OR
- SE 4920 - Senior Project (3)

Computer Science Option: 32-35 Semester Hours

- CS 3840 - Computer Networking (3)
- MATH 1151 - Calculus I GE (5)

Electives from the following: 7-9 Semester Hours

- ACST 4321 - Regression Analysis (3)
- ACST 4323 - Statistical Aspects of Experimental Design (3)
- CS 3400 - Discrete Structures II (4)
- MATH 1152 - Calculus II (5)
- MATH 2153 - Calculus III (3)
- MATH 3151 - Differential Equations (3)
- MATH 3710 - Linear Algebra (3)
- MATH 4450 - Introduction to Graph Theory (3)

- ACST 2310 - Statistics and Data Analysis (3)
  OR
- ACST 3311 - Introduction to Probability and Statistics (3)
  OR
- DSA 4400 - Statistical Foundations for Data Science and AI (3)

Electives from the Following: 8-9 Semester Hours

Science electives must be from two different prefixes.

- BIOL 1004 - Introduction to the Sciences: Ecology GE (4: 3 lecture, 1 lab)
- BIOL 1005 - Introduction to Environmental Science GE (3) **AND** BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
- GEOS 1114 - Weather and Climate GE (4: 3 lecture, 1 lab)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

Electives from the Following: 9 Semester Hours

- CS 3110 - Applications Programming in C# and .NET (3)
- CS 3120 - Client Side Web Programming (3)
- CS 3800 - Applications Development with VB.NET (3)
- CS 3850 - Game Development 2D (3)
- CS 4830 - Game Development 3D (3)
- CS 4000 - Special Problems in Computer Science (1-3)
- CS 4020 - Internship (1-3) (3)
- CS 4110 - Mobile Applications Programming with Android (3)
- CS 4120 - Advanced Applications Programming in Java (3)
- CS 4130 - Server Side Web Programming (3)
- CS 4610 - Introduction to Cloud Computing (3)

- CS 4660 - Introduction to Cloud Services (3)
- CS 4700 - Artificial Intelligence (3)
- CS 4710 - Introduction to Machine Learning (3)
- CS 4810 - Computer Graphics (3)
- CYBR 3130 - Secure Programming (3) *
- CYBR 3300 - Introduction to Cryptography (3)
- CYBR 4140 - Web Application Security (3)
- CYBR 4840 - Ethical Hacking (3)
- CYBR 4920 - Software Security (3) *
- SE 3900 - Software Requirements Engineering (3)
- SE 3920 - Modern Software Lifecycle and Tools (3)
- SE 4930 - Software Testing and Quality Assurance (3)
- SE 4940 - Software Design and Architecture (3)
- SE 4950 - Secure Software Engineering (3)
- SE 4960 - Project Management (3)
- DSA 3200 - Introduction to Data Visualization (3)
- DSA 4100 - Programming Foundations for Data Science and AI (3)
- DSA 4200 - Advanced Data Visualization (3)
- DSA 4600 - NoSQL Database Systems (3)
- DSA 4620 - Big Data Analytics (3)

  * Course can not be used as both an elective and core requirement.

General Education Requirements: 29 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CS 1000 - Computers and Modern Society GE (3) +

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Additional Required General Education Courses for Computer Science Option

- MATH 1151 - Calculus I GE (5) +

- BIOL 1004 - Introduction to the Sciences: Ecology GE (4: 3 lecture, 1 lab) (if chosen) +
- BIOL 1005 - Introduction to Environmental Science GE (3) (if chosen) and BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab) (if chosen) +
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab) (if chosen) +
- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab) (if chosen) +
- GEOS 1114 - Weather and Climate GE (4: 3 lecture, 1 lab) (if chosen) +
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab) (if chosen) +

Free Electives: 14-17 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Computer Science.

UCM students having completed at least 9 hours of computer science courses above the 1000 level with a major GPA of at least 3.00 may consult with their faculty advisor and complete a school application to declare the accelerated BS/MS major in computer science. Prior to beginning the graduate portion of the program, students in the accelerated program will need to apply to the UCM Graduate School for formal admission to the Accelerated BS/MS program.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

CS 5220 Advanced Applications Programming in Java (CS 4120)

CS 5200 Database Theory and Applications (CS 4600)

CS 5610 Introduction to Cloud Computing (CS 4610)

CS 5660 Introduction to Cloud Services (CS 4660)

CS 5700 Artificial Intelligence (CS 4700)

CS 5710 Machine Learning (CS 4710)

CS 5810 Computer Graphics (CS 4810)

CYBR 5240 Web Application Security (CYBR 4140)

CYBR 5610 Cloud Security (CYBR 4610)

CYBR 5820 Introduction to Information Assurance (CYBR 4820)

CYBR 5840 Ethical Hacking (CYBR 4840)

CYBR 5850 Computer and Network Forensics (CYBR 4850)

CYBR 5920 Software Security (CYBR 4920)

DSA 5100 Programming Foundations for Data Science (DSA 4100)

DSA 5200 Adv. Data Visualization (DSA 4200)

DSA 5400 Statistical Foundations for Data Science and AI (DSA 4400)

DSA 5600 NoSQL Database Systems (DSA 4600)

DSA 562 Big Data Analytics (DSA 4620)

SE 5930 Software Testing and Quality Assurance (SE 4930)

SE 5940 Software Design and Architecture (SE 4940)

SE 5950 Secure Software Engineering (SE 4950)

Computer Science, BS (43-281) - Game Development Option (CS04) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

Program Educational Objectives - Within a few years of graduation, a graduate with a Bachelor of Science degree in Computer Science will use the knowledge and skills obtained in the program to:

- Have established themselves in successful computer science-focused careers and/or pursuing advanced degrees.
- Continue to update their professional knowledge and skills to adapt to innovation and change to meet the needs of industry and/or academia.
- Contribute to the greater good of their communities through professional involvement and service.

Additional, graduates with a Bachelor of Science degree in Computer Science will demonstrate the following specific student outcomes:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

A course with a grade lower than a C will not be allowed to fulfill a major or minor requirement in any program offered by the Department of Computer Science and Cybersecurity.

Computer Science, BS (43-281) - Game Development Option (CS04) (4 Year Guide)

Major Requirements: 69 Semester Hours

C or better required in all major coursework.

Core: 42 Semester Hours

- CS 1000 - Computers and Modern Society GE (3)
- CS 1100 - Computer Programming I (3)
- CS 1110 - Computer Programming II (3)
- CS 2300 - Data Structures (3)
- CS 2400 - Discrete Structures (3)
- CS 3100 - Programming Languages (3)
- CS 3200 - Computer Organization and Architecture (3)
- CS 3500 - C and UNIX Environment (3)

- CS 4300 - Algorithm Design and Analysis (3)
- CS 4500 - Operating Systems (3)
- CS 4600 - Database Theory and Applications (3)
- SE 3910 - Software Engineering (3)

- CYBR 3130 - Secure Programming (3)
  OR
- CYBR 4820 - Introduction to Information Assurance (3)
  OR
- CYBR 4920 - Software Security (3)

- CS 4920 - Senior Project (3)
  OR
- SE 4920 - Senior Project (3)

Game Development Option: 27 Semester Hours

Required Courses: 15 Semester Hours

- CS 1820 - Video Game Design and Analysis (3)
- CS 2820 - Game Programming (3)
- CS 3110 - Applications Programming in C# and .NET (3)
- CS 3850 - Game Development 2D (3)
- CS 4830 - Game Development 3D (3)

Electives from the Following: 12 Semester Hours

- CS 1030 - Python Programming I (3)
- CS 2030 - Python Programming II (3)
- CS 3120 - Client Side Web Programming (3)
- CS 3400 - Discrete Structures II (4)
- CS 3800 - Applications Development with VB.NET (3)
- CS 3840 - Computer Networking (3)
- CS 4000 - Special Problems in Computer Science (1-3) (3)
- CS 4020 - Internship (1-3) (3)
- CS 4110 - Mobile Applications Programming with Android (3)
- CS 4120 - Advanced Applications Programming in Java (3)
- CS 4130 - Server Side Web Programming (3)
- CS 4610 - Introduction to Cloud Computing (3)
- CS 4660 - Introduction to Cloud Services (3)
- CS 4700 - Artificial Intelligence (3)
- CS 4810 - Computer Graphics (3)
- CYBR 1500 - Command Line Environments (3)
- CYBR 1800 - Introduction to Cybersecurity (3)
- CYBR 2500 - Computer Systems Administration (3)
- CYBR 3130 - Secure Programming (3) *
- CYBR 3300 - Introduction to Cryptography (3)

- CYBR 4140 - Web Application Security (3)
- CYBR 4840 - Ethical Hacking (3)
- CYBR 4920 - Software Security (3) *
- DSA 1000 - Introduction to Data Analytics (3)
- DSA 3200 - Introduction to Data Visualization (3)
- DSA 4100 - Programming Foundations for Data Science and AI (3)
- DSA 4200 - Advanced Data Visualization (3)
- DSA 4600 - NoSQL Database Systems (3)
- DSA 4620 - Big Data Analytics (3)
- IT 3100 - Human Computer Interaction (3)
- SE 3900 - Software Requirements Engineering (3)
- SE 3920 - Modern Software Lifecycle and Tools (3)
- SE 4930 - Software Testing and Quality Assurance (3)
- SE 4940 - Software Design and Architecture (3)
- SE 4950 - Secure Software Engineering (3)
- SE 4960 - Project Management (3)

  * Course can not be used as both an elective and core requirement.

General Education Requirements: 39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CS 1000 - Computers and Modern Society GE (3) +
- ACST 1300 - Basic Statistics GE (3) +
- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Free Electives: 12 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Computer Science.

UCM students having completed at least 9 hours of computer science courses above the 1000 level with a major GPA of at least 3.00 may consult with their faculty advisor and complete a school application to declare the accelerated BS/MS major in computer science. Prior to beginning the graduate portion of the program, students in the

accelerated program will need to apply to the UCM Graduate School for formal admission to the Accelerated BS/MS program.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

CS 5220 Advanced Applications Programming in Java (CS 4120)

CS 5200 Database Theory and Applications (CS 4600)

CS 5610 Introduction to Cloud Computing (CS 4610)

CS 5660 Introduction to Cloud Services (CS 4660)

CS 5700 Artificial Intelligence (CS 4700)

CS 5710 Machine Learning (CS 4710)

CS 5810 Computer Graphics (CS 4810)

CYBR 5240 Web Application Security (CYBR 4140)

CYBR 5610 Cloud Security (CYBR 4610)

CYBR 5820 Introduction to Information Assurance (CYBR 4820)

CYBR 5840 Ethical Hacking (CYBR 4840)

CYBR 5850 Computer and Network Forensics (CYBR 4850)

CYBR 5920 Software Security (CYBR 4920)

DSA 5100 Programming Foundations for Data Science (DSA 4100)

DSA 5200 Adv. Data Visualization (DSA 4200)

DSA 5400 Statistical Foundations for Data Science and AI (DSA 4400)

DSA 5600 NoSQL Database Systems (DSA 4600)

DSA 562 Big Data Analytics (DSA 4620)

SE 5930 Software Testing and Quality Assurance (SE 4930)

SE 5940 Software Design and Architecture (SE 4940)

SE 5950 Secure Software Engineering (SE 4950)

Computer Science, BS (43-281) - Software Development Option (CS07) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

Program Educational Objectives - Within a few years of graduation, a graduate with a Bachelor of Science degree in Computer Science will use the knowledge and skills obtained in the program to:

- Have established themselves in successful computer science-focused careers and/or pursuing advanced degrees.
- Continue to update their professional knowledge and skills to adapt to innovation and change to meet the needs of industry and/or academia.
- Contribute to the greater good of their communities through professional involvement and service.

Additional, graduates with a Bachelor of Science degree in Computer Science will demonstrate the following specific student outcomes:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

A course with a grade lower than a C will not be allowed to fulfill a major or minor requirement in any program offered by the Department of Computer Science and Cybersecurity.

Computer Science, BS (43-281) - Software Development Option (CS07) (4 Year Guide)

Computer Science, BS (43-281) (Missouri Innovation Campus (MIC), Software Development Option) (4 Year Guide)

Major Requirements: 69 Semester Hours

C or better required in all major coursework.

Core: 42 Semester Hours

- CS 1000 - Computers and Modern Society GE (3)
- CS 1100 - Computer Programming I (3)
- CS 1110 - Computer Programming II (3)
- CS 2300 - Data Structures (3)
- CS 2400 - Discrete Structures (3)
- CS 3100 - Programming Languages (3)
- CS 3200 - Computer Organization and Architecture (3)
- CS 3500 - C and UNIX Environment (3)
- CS 4300 - Algorithm Design and Analysis (3)
- CS 4500 - Operating Systems (3)
- CS 4600 - Database Theory and Applications (3)
- SE 3910 - Software Engineering (3)

- CYBR 3130 - Secure Programming (3)
  OR
- CYBR 4820 - Introduction to Information Assurance (3)
  OR
- CYBR 4920 - Software Security (3)

- CS 4920 - Senior Project (3)

OR

- SE 4920 - Senior Project (3)

Software Development Option: 27 Semester Hours

Electives from the Following: 12-24 Semester Hours

- CS 3110 - Applications Programming in C# and .NET (3)
- CS 3120 - Client Side Web Programming (3)
- CS 4120 - Advanced Applications Programming in Java (3)
- CS 4130 - Server Side Web Programming (3)
- CYBR 3130 - Secure Programming (3) *
- SE 3900 - Software Requirements Engineering (3)
- SE 3920 - Modern Software Lifecycle and Tools (3)
- SE 4930 - Software Testing and Quality Assurance (3)
- SE 4940 - Software Design and Architecture (3)
- SE 4950 - Secure Software Engineering (3)
- SE 4960 - Project Management (3)

Electives from the Following: 3-15 Semester Hours

- CS 1030 - Python Programming I (3)
- CS 2030 - Python Programming II (3)
- CS 3400 - Discrete Structures II (4)
- CS 3800 - Applications Development with VB.NET (3)
- CS 3840 - Computer Networking (3)
- CS 3850 - Game Development 2D (3)
- CS 4000 - Special Problems in Computer Science (1-3) (3)
- CS 4020 - Internship (1-3) (3)
- CS 4110 - Mobile Applications Programming with Android (3)
- CS 4610 - Introduction to Cloud Computing (3)
- CS 4660 - Introduction to Cloud Services (3)
- CS 4700 - Artificial Intelligence (3)
- CS 4810 - Computer Graphics (3)
- CS 4830 - Game Development 3D (3)
- CYBR 1500 - Command Line Environments (3)
- CYBR 1800 - Introduction to Cybersecurity (3)
- CYBR 2500 - Computer Systems Administration (3)
- CYBR 3300 - Introduction to Cryptography (3)
- CYBR 3510 - Systems Security (3)
- CYBR 3520 - Introduction to Cyber-Physical Systems Security (3)
- CYBR 3820 - Usable Privacy and Security (3)
- CYBR 3830 - Economics of Cybersecurity (3)
- CYBR 4140 - Web Application Security (3)
- CYBR 4840 - Ethical Hacking (3)
- CYBR 4920 - Software Security (3) *
- DSA 1000 - Introduction to Data Analytics (3)

- DSA 3200 - Introduction to Data Visualization (3)
- DSA 4100 - Programming Foundations for Data Science and AI (3)
- DSA 4200 - Advanced Data Visualization (3)
- DSA 4600 - NoSQL Database Systems (3)
- DSA 4620 - Big Data Analytics (3)
- IT 3100 - Human Computer Interaction (3)

  * Course can not be used as both an elective and core requirement.

General Education Requirements: 39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CS 1000 - Computers and Modern Society GE (3) +
- ACST 1300 - Basic Statistics GE (3) +
- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Free Electives: 12 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Computer Science.

UCM students having completed at least 9 hours of computer science courses above the 1000 level with a major GPA of at least 3.00 may consult with their faculty advisor and complete a school application to declare the accelerated BS/MS major in computer science. Prior to beginning the graduate portion of the program, students in the accelerated program will need to apply to the UCM Graduate School for formal admission to the Accelerated BS/MS program.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

CS 5220 Advanced Applications Programming in Java (CS 4120)

CS 5200 Database Theory and Applications (CS 4600)

CS 5610 Introduction to Cloud Computing (CS 4610)

CS 5660 Introduction to Cloud Services (CS 4660)

CS 5700 Artificial Intelligence (CS 4700)

CS 5710 Machine Learning (CS 4710)

CS 5810 Computer Graphics (CS 4810)

CYBR 5240 Web Application Security (CYBR 4140)

CYBR 5610 Cloud Security (CYBR 4610)

CYBR 5820 Introduction to Information Assurance (CYBR 4820)

CYBR 5840 Ethical Hacking (CYBR 4840)

CYBR 5850 Computer and Network Forensics (CYBR 4850)

CYBR 5920 Software Security (CYBR 4920)

DSA 5100 Programming Foundations for Data Science (DSA 4100)

DSA 5200 Adv. Data Visualization (DSA 4200)

DSA 5400 Statistical Foundations for Data Science and AI (DSA 4400)

DSA 5600 NoSQL Database Systems (DSA 4600)

DSA 562 Big Data Analytics (DSA 4620)

SE 5930 Software Testing and Quality Assurance (SE 4930)

SE 5940 Software Design and Architecture (SE 4940)

SE 5950 Secure Software Engineering (SE 4950)

Cybersecurity Minor (634) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

A course with a grade lower than a C will not be allowed to fulfill a major or minor requirement in any program offered by the Department of Computer Science and Cybersecurity.

Minor Requirements: 21 Semester Hours

- CYBR 1800 - Introduction to Cybersecurity (3) *
- CYBR 4850 - Computer and Network Forensics (3)

Choose one of the following areas:

Cyber Operations

- CYBR 1500 - Command Line Environments (3)
- CYBR 2500 - Computer Systems Administration (3)
- CYBR 4610 - Cloud Security (3)

- CYBR 4840 - Ethical Hacking (3)
- NET 1060 - Introduction to Networks (3: 2 lecture, 1 lab)

Secure Software Development

- CS 1100 - Computer Programming I (3)
- CS 1110 - Computer Programming II (3)
- CS 2300 - Data Structures (3)
- SE 3910 - Software Engineering (3)
- SE 4950 - Secure Software Engineering (3)

Note:

* CS 1000 may be used to fulfill the requirements for CYBR 1800. Students need to consult Cybersecurity Program Coordinator for approval.

Cybersecurity, BS (43-892) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

Program Educational Objectives - Within a few years of graduation, a graduate with a Bachelor of Science degree in Cybersecurity will use the knowledge and skills obtained in the program to:

- Have established themselves in successful cybersecurity-focused careers and/or pursuing advanced degrees.
- Continue to update their professional knowledge and skills to adapt to innovation and change to meet the needs of industry and/or academia.
- Contribute to the greater good of their communities through professional involvement and service.

Additionally, graduates with a Bachelor of Science degree in Cybersecurity will demonstrate the following specific student outcomes:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply security principles and practices to maintain operations in the presence of risks and threats.

The B.S. Cybersecurity is accredited by the Computing Accreditation Commission of ABET. http://www.abet.org

A course with a grade lower than a C will not be allowed to fulfill a major or minor requirement in any program offered by the Department of Computer Science and Cybersecurity.

Cybersecurity, Cyber Operations, BS (43-892) (4 Year Guide)

Cybersecurity, Secure Software Development, BS (43-892) (4 Year Guide)

Major Requirements: 63-72 Semester Hours

C or better required in all major coursework.

Core: 45 Semester Hours

- CYBR 1500 - Command Line Environments (3)
- CYBR 1800 - Introduction to Cybersecurity (3)
- CYBR 2500 - Computer Systems Administration (3)
- CYBR 3130 - Secure Programming (3)
- CYBR 3300 - Introduction to Cryptography (3)
- CYBR 3510 - Systems Security (3)
- CYBR 3520 - Introduction to Cyber-Physical Systems Security (3)
- CYBR 3820 - Usable Privacy and Security (3)
- CYBR 4820 - Introduction to Information Assurance (3)
- CYBR 4840 - Ethical Hacking (3)
- CYBR 4850 - Computer and Network Forensics (3)
- CS 1030 - Python Programming I (3)
- CS 2400 - Discrete Structures (3)
- CS 3840 - Computer Networking (3)
- ACST 1300 - Basic Statistics GE (3)

Choose one of the following areas: 12-15 Semester Hours

Cyber Operations - 12 Semester Hours

- NET 1060 - Introduction to Networks (3: 2 lecture, 1 lab)
- NET 1061 - Switching, Routing, and Wireless Essentials (3: 2 lecture, 1 lab)

- NET 2060 - Enterprise Networking, Security, and Automation (3: 2 lecture, 1 lab)

OR

- CJ 3450 - Computer Crime Investigation (3)

- NET 3068 - Network Security I (3: 2 lecture, 1 lab)

Secure Software Development - 15 Semester Hours

- CS 1100 - Computer Programming I (3)
- CS 1110 - Computer Programming II (3)
- CS 2300 - Data Structures (3)
- SE 3910 - Software Engineering (3)
- SE 4950 - Secure Software Engineering (3)

Electives from the following: 6-12 Semester Hours

- CJ 3450 - Computer Crime Investigation (3)
- CS 1100 - Computer Programming I (3)
- CS 1110 - Computer Programming II (3)
- CS 2300 - Data Structures (3)

- CS 3110 - Applications Programming in C# and .NET (3)
- CS 3120 - Client Side Web Programming (3)
- CS 3500 - C and UNIX Environment (3)
- CS 3800 - Applications Development with VB.NET (3)
- CS 4020 - Internship (1-3) (3)
- CS 4110 - Mobile Applications Programming with Android (3)
- CS 4120 - Advanced Applications Programming in Java (3)
- CS 4130 - Server Side Web Programming (3)
- CS 4300 - Algorithm Design and Analysis (3)
- CS 4500 - Operating Systems (3)
- CS 4600 - Database Theory and Applications (3)
- CS 4610 - Introduction to Cloud Computing (3)
- CS 4700 - Artificial Intelligence (3)
- CYBR 3830 - Economics of Cybersecurity (3)
- CYBR 4010 - Special Topics in Cybersecurity (3)
- CYBR 4140 - Web Application Security (3)
- CYBR 4610 - Cloud Security (3)
- CYBR 4920 - Software Security (3)
- CYBR 4940 - Threat Intelligence and Incident Response (3)
- DSA 4620 - Big Data Analytics (3)
- SE 3910 - Software Engineering (3)
- SE 4950 - Secure Software Engineering (3)
- SE 4960 - Project Management (3)
- NET 1060 - Introduction to Networks (3: 2 lecture, 1 lab)
- NET 1061 - Switching, Routing, and Wireless Essentials (3: 2 lecture, 1 lab)
- NET 2060 - Enterprise Networking, Security, and Automation (3: 2 lecture, 1 lab)
- NET 2061 - Cisco CyberOps Associate (3: 2 lecture, 1 lab)
- NET 3068 - Network Security I (3: 2 lecture, 1 lab)

- COMM 3327 - Improving Interviewing Skills (3)
  OR
- MGT 3325 - Business Communication (3)

General Education Requirements: 39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ACST 1300 - Basic Statistics GE (3) +

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Free Electives: 9-18 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Cybersecurity & Information Assurance.

UCM students having completed at least 9 hours of cybersecurity courses above the 1000 level with a major GPA of at least 3.00 may consult with their faculty advisor and complete a school application to declare the accelerated BS/MS major in cybersecurity. Prior to beginning the graduate portion of the program, students in the accelerated program will need to apply to the UCM Graduate School for formal admission to the Accelerated BS/MS program.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

CS 5220 Advanced Applications Programming in Java (CS 4120)

CS 5200 Database Theory and Applications (CS 4600)

CS 5610 Introduction to Cloud Computing (CS 4610)

CS 5660 Introduction to Cloud Services (CS 4660)

CS 5700 Artificial Intelligence (CS 4700)

CYBR 5240 Web Application Security (CYBR 4140)

CYBR 5610 Cloud Security (CYBR 4610)

CYBR 5820 Introduction to Information Assurance (CYBR 4820)

CYBR 5840 Ethical Hacking (CYBR 4840)

CYBR 5850 Computer and Network Forensics (CYBR 4850)

CYBR 5920 Software Security (CYBR 4920)

CYBR 5940 Threat Intelligence and Incident Response (CYBR 4940)

DSA 5100 Programming Foundations for Data Science (DSA 4100)

DSA 5200 Advanced Data Visualization (DSA 4200)

DSA 5400 Statistical Foundations for Data Science and AI (DSA 4400)

DSA 5600 NoSQL Database Systems (DSA 4600)

DSA 5620 Big Data Analytics (DSA 4620)

SE 5950 Secure Software Engineering (SE 4950)

Data Science Minor (1002) (21 hours)

Minor for a Bachelor's Degree

Students majoring in STEM related fields will find this minor of substantial benefit to their future careers. This minor is designed to specifically enhance skills that are critical for preparing, analyzing, and communicating findings from data in order that decisions can be made based on fact.

UCM does not confer teacher certification for this minor.

A course with a grade lower than a C will not be allowed to fulfill a major or minor requirement in any program offered by the Department of Computer Science and Cybersecurity.

Minor Requirements: 21 Semester Hours

Required Minor Courses: 12 Semester Hours

- ACST 1300 - Basic Statistics GE (3)
- CS 1030 - Python Programming I (3)
- CS 2030 - Python Programming II (3)
- DSA 1000 - Introduction to Data Analytics (3)

Minor Electives: 9 Semester Hours

- CS 4710 - Introduction to Machine Learning (3) *
- DSA 3200 - Introduction to Data Visualization (3)
- DSA 4100 - Programming Foundations for Data Science and AI (3)
- DSA 4200 - Advanced Data Visualization (3)
- DSA 4400 - Statistical Foundations for Data Science and AI (3)
- DSA 4600 - NoSQL Database Systems (3) *
- DSA 4620 - Big Data Analytics (3) *

Note:

*This course has a prerequisite not listed in the program.

Data Science, BS (43-1005) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

Program Educational Objectives - Within a few years of graduation, a graduate with a Bachelor of Science degree in Data Science will use the knowledge and skills obtained in the program to:

- Have established themselves in successful data science-focused careers and/or pursuing advanced degrees.
- Continue to update their professional knowledge and skills to adapt to innovation and change to meet the needs of industry and/or academia.
- Contribute to the greater good of their communities through professional involvement and service.

Additional, graduates with a Bachelor of Science degree in Data Science will demonstrate the following specific student outcomes:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply theory, techniques, and tools throughout the data analysis lifecycle and employ the resulting knowledge to satisfy stakeholders' needs.

A course with a grade lower than a C will not be allowed to fulfill a major or minor requirement in any program offered by the Department of Computer Science and Cybersecurity.

Data Science, BS (43-1005) (4 Year Guide)

Major Requirements: 63 Semester Hours

C or better required in all major coursework.

Core Required Hours: 48 Semester Hours

- CS 1000 - Computers and Modern Society GE (3)
- CS 1030 - Python Programming I (3)
- CS 1100 - Computer Programming I (3)
- CS 1110 - Computer Programming II (3)
- CS 2030 - Python Programming II (3)
- CS 2300 - Data Structures (3)
- CS 2400 - Discrete Structures (3)
- CS 4300 - Algorithm Design and Analysis (3)
- CS 4600 - Database Theory and Applications (3)
- DSA 1000 - Introduction to Data Analytics (3)
- DSA 3200 - Introduction to Data Visualization (3)
- DSA 4100 - Programming Foundations for Data Science and AI (3)
- DSA 4200 - Advanced Data Visualization (3)
- DSA 4600 - NoSQL Database Systems (3)
- DSA 4620 - Big Data Analytics (3)
- DSA 4920 - Senior Project (3)

Electives from the following: 15 Semester Hours

- CS 3110 - Applications Programming in C# and .NET (3)
- CS 3120 - Client Side Web Programming (3)
- CS 3400 - Discrete Structures II (4)
- CS 3500 - C and UNIX Environment (3)
- CS 3850 - Game Development 2D (3)
- CS 4000 - Special Problems in Computer Science (1-3)
- CS 4020 - Internship (1-3)

- CS 4110 - Mobile Applications Programming with Android (3)
- CS 4120 - Advanced Applications Programming in Java (3)
- CS 4130 - Server Side Web Programming (3)
- CS 4160 - Advanced Applications Programming in Python (3)
- CS 4500 - Operating Systems (3)
- CS 4610 - Introduction to Cloud Computing (3)
- CS 4700 - Artificial Intelligence (3)
- CS 4710 - Introduction to Machine Learning (3)
- CS 4830 - Game Development 3D (3)
- CYBR 3130 - Secure Programming (3)
- CYBR 3300 - Introduction to Cryptography (3)
- CYBR 4140 - Web Application Security (3)
- CYBR 4820 - Introduction to Information Assurance (3)
- DSA 4400 - Statistical Foundations for Data Science and AI (3)
- IT 3100 - Human Computer Interaction (3)
- SE 3900 - Software Requirements Engineering (3)
- SE 3910 - Software Engineering (3)
- SE 3920 - Modern Software Lifecycle and Tools (3)
- SE 4930 - Software Testing and Quality Assurance (3)
- SE 4960 - Project Management (3)

General Education Requirements: 39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CS 1000 - Computers and Modern Society GE (3) +
- ACST 1300 - Basic Statistics GE (3) +
- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Free Electives: 18 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Data Science and Artificial Intelligence.

UCM students having completed at least 9 hours of required courses in the BS Data Science curriculum above the 1000 level with a major GPA of at least 3.00 may consult with their faculty advisor and complete a school application

to declare the accelerated BS/MS major in Data Science and Artificial Intelligence. Prior to beginning the graduate portion of the program, students in the accelerated program will need to apply to the UCM Graduate School for formal admission to the Accelerated BS/MS program.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

CS 5160 Advanced Applications Programming in Python (CS 4160)

CS 5200 Database Theory and Applications (CS 4600)

CS 5220 Advanced Applications Programming in Java (CS 4120)

CS 5610 Introduction to Cloud Computing (CS 4610)

CS 5700 Artificial Intelligence (CS 4700)

CS 5710 Machine Learning (CS 4710)

CYBR 5240 Web Application Security (CYBR 4140)

CYBR 5820 Introduction to Information Assurance (CYBR 4820)

DSA 5100 Programming Foundations for Data Science and AI (DSA 4100)

DSA 5200 Advanced Data Visualization (DSA 4200)

DSA 5400 Statistical Foundations for Data Science and AI (DSA 4400)

DSA 5600 NoSQL Database Systems (DSA 4600)

DSA 5620 Big Data Analytics (DSA 4620)

SE 5930 Software Testing and Quality Assurance (SE 4930)

Information Technology, BS (43-687) (120 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science Degree in Information Technology will use the knowledge and skills obtained in the program to:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Use systemic approaches to select, develop, apply, integrate, and administer secure computing technologies to accomplish user goals.

Program Educational Objectives:

- Have established themselves in successful information technology-focused careers and/or pursuing advanced degrees.
- Continue to update their professional knowledge and skills to adapt to innovation and change to meet the needs of industry and/or academia.
- Contribute to the greater good of their communities through professional involvement and service.

A course with a grade lower than a C will not be allowed to fulfill a major or minor requirement in any program offered by the Department of Computer Science and Cybersecurity.

Information Technology, BS (43-687) (Cloud and IT Infrastructure Management Area) (4 Year Guide)

Information Technology, BS (43-687) (Network and System Administration Area) (4 Year Guide)

Information Technology, BS (43-687) (Web and Mobile Applications Development Area) (4 Year Guide)

Note: A student may not earn a double degree with the BS Information Technology and the BS Networking Technology from any catalog prior to 2020.

Major Requirements: 75 Semester Hours

C or better required in all major coursework.

Core Requirements: 51 Semester Hours

- ACST 1300 - Basic Statistics GE (3)
- CS 1030 - Python Programming I (3)
- CS 2400 - Discrete Structures (3)
- CYBR 1500 - Command Line Environments (3)
- CYBR 1800 - Introduction to Cybersecurity (3)
- CYBR 2500 - Computer Systems Administration (3)
- CYBR 3510 - Systems Security (3)
- CYBR 4140 - Web Application Security (3)
- IT 3100 - Human Computer Interaction (3)
- IT 4100 - Project Management (3)
- MGT 3325 - Business Communication (3)
- NET 1058 - A+ IT Essentials: PC Hardware and Software (3)
- NET 1060 - Introduction to Networks (3: 2 lecture, 1 lab)
- NET 1061 - Switching, Routing, and Wireless Essentials (3: 2 lecture, 1 lab)
- NET 2060 - Enterprise Networking, Security, and Automation (3: 2 lecture, 1 lab)
- NET 3068 - Network Security I (3: 2 lecture, 1 lab)
- NET 4040 - Fundamentals of Network Operating Systems (3)

Choose one of the following areas: 21 Semester Hours

Network and Systems Administration - 21 Semester Hours

- NET 2061 - Cisco CyberOps Associate (3: 2 lecture, 1 lab)
- NET 3062 - Network Design (3)

- NET 3088 - Linux Operating Systems (3: 2 lecture, 1 lab)
- NET 4042 - Network Servers and Services (3)
- NET 4043 - Network Services and Infrastructure (3)
- NET 4060 - Advanced Routing (3)
- NET 4062 - CCNP Enterprise: CORE (3)

Cloud and IT Infrastructure Management - 21 Semester Hours

- CS 4610 - Introduction to Cloud Computing (3)
- CS 4660 - Introduction to Cloud Services (3)
- CYBR 3520 - Introduction to Cyber-Physical Systems Security (3)
- CYBR 4610 - Cloud Security (3)
- IT 4200 - IT Infrastructure Automation (3)
- NET 4042 - Network Servers and Services (3)
- NET 4043 - Network Services and Infrastructure (3)

Web and Mobile Applications Development - 21 Semester Hours

- CS 1100 - Computer Programming I (3)
- CS 1110 - Computer Programming II (3)
- CS 2300 - Data Structures (3)
- CS 3120 - Client Side Web Programming (3)
- CS 4110 - Mobile Applications Programming with Android (3)
- CS 4130 - Server Side Web Programming (3)
- NET 1610 - Principles of Web Media (3)

Program Electives: 3 Semester Hours

- CS 1100 - Computer Programming I (3)
- CS 1110 - Computer Programming II (3)
- CS 2300 - Data Structures (3)
- CS 3110 - Applications Programming in C# and .NET (3)
- CS 3120 - Client Side Web Programming (3)
- CS 3800 - Applications Development with VB.NET (3)
- CS 3500 - C and UNIX Environment (3)
- CS 4110 - Mobile Applications Programming with Android (3)
- CS 4120 - Advanced Applications Programming in Java (3)
- CS 4130 - Server Side Web Programming (3)
- CS 4300 - Algorithm Design and Analysis (3)
- CS 4500 - Operating Systems (3)
- CS 4610 - Introduction to Cloud Computing (3)
- CS 4660 - Introduction to Cloud Services (3)
- CS 4700 - Artificial Intelligence (3)
- CYBR 3520 - Introduction to Cyber-Physical Systems Security (3)
- CYBR 3820 - Usable Privacy and Security (3)
- CYBR 3830 - Economics of Cybersecurity (3)
- CYBR 4610 - Cloud Security (3)
- CYBR 4840 - Ethical Hacking (3)
- CYBR 4850 - Computer and Network Forensics (3)
- CYBR 4940 - Threat Intelligence and Incident Response (3)

- DSA 4620 - Big Data Analytics (3)
- IT 4200 - IT Infrastructure Automation (3)
- NET 2061 - Cisco CyberOps Associate (3: 2 lecture, 1 lab)
- NET 3062 - Network Design (3)
- NET 3088 - Linux Operating Systems (3: 2 lecture, 1 lab)
- NET 4060 - Advanced Routing (3)
- NET 4062 - CCNP Enterprise: CORE (3)

- CS 4020 - Internship (1-3) (3)
  OR
- NET 3022 - Networking Internship in Information Technology (3) (3)

General Education Requirements: 39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ACST 1300 - Basic Statistics GE (3) +

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

  +Course requires a grade of C or better.

Free Electives: 6 Semester Hours

Minimum Total: 120 Semester Hours

Software Engineering, BS (43-646) (120 hours)

Program Educational Objectives - Within a few years of graduation, a graduate with a Bachelor of Science degree in Software Engineering will use the knowledge and skills obtained in the program to:

- Have established themselves in successful software engineering-focused careers and/or pursuing advanced degrees.
- Continue to update their professional knowledge and skills to adapt to innovation and change to meet the needs of industry and/or academia.
- Contribute to the greater good of their communities through professional involvement and service.

Additionally, graduates with a Bachelor of Science degree in Software Engineering will demonstrate the following specific student
outcomes:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

A course with a grade lower than C will not be allowed to fulfill a major or minor requirement in any program offered by the Department of Computer Science and Cybersecurity.

Software Engineering, BS (43-646) (4 Year Guide)

Major Requirements: 73 Semester Hours

C or better required in all major coursework.

Core: 54 Semester Hours

- CS 1000 - Computers and Modern Society GE (3)
- CS 1100 - Computer Programming I (3)
- CS 1110 - Computer Programming II (3)
- CS 2300 - Data Structures (3)
- CS 2400 - Discrete Structures (3)
- CS 4300 - Algorithm Design and Analysis (3)
- CS 4600 - Database Theory and Applications (3)
- CYBR 3130 - Secure Programming (3)
- SE 3900 - Software Requirements Engineering (3)
- SE 3910 - Software Engineering (3)
- SE 4930 - Software Testing and Quality Assurance (3)
- SE 4940 - Software Design and Architecture (3)
- SE 4950 - Secure Software Engineering (3)
- SE 4960 - Project Management (3)
- ACST 3311 - Introduction to Probability and Statistics (3)

- CS 4920 - Senior Project (3)
  OR
- SE 4920 - Senior Project (3)

Electives from the Following: 6 Semester Hours

- CS 3100 - Programming Languages (3)
- CS 3110 - Applications Programming in C# and .NET (3)
- CS 3120 - Client Side Web Programming (3)
- CS 3200 - Computer Organization and Architecture (3)
- CS 3500 - C and UNIX Environment (3)
- CS 3800 - Applications Development with VB.NET (3)

- CS 3840 - Computer Networking (3)
- CS 3850 - Game Development 2D (3)
- CS 4000 - Special Problems in Computer Science (1-3)
- CS 4020 - Internship (1-3)
- CS 4110 - Mobile Applications Programming with Android (3)
- CS 4120 - Advanced Applications Programming in Java (3)
- CS 4130 - Server Side Web Programming (3)
- CS 4500 - Operating Systems (3)
- CS 4610 - Introduction to Cloud Computing (3)
- CS 4660 - Introduction to Cloud Services (3)
- CS 4700 - Artificial Intelligence (3)
- CS 4710 - Introduction to Machine Learning (3)
- CS 4810 - Computer Graphics (3)
- CS 4830 - Game Development 3D (3)
- CYBR 3300 - Introduction to Cryptography (3)
- CYBR 4140 - Web Application Security (3)
- CYBR 4820 - Introduction to Information Assurance (3)
- DSA 3200 - Introduction to Data Visualization (3)
- DSA 4100 - Programming Foundations for Data Science and AI (3)
- DSA 4200 - Advanced Data Visualization (3)
- DSA 4400 - Statistical Foundations for Data Science and AI (3)
- DSA 4600 - NoSQL Database Systems (3)
- DSA 4620 - Big Data Analytics (3)
- SE 3920 - Modern Software Lifecycle and Tools (3)

Math and Science Electives: 19 Semester Hours

C or better required in all major coursework.

Electives from the following: 8-9 Semester Hours

- BIOL 1004 - Introduction to the Sciences: Ecology GE (4: 3 lecture, 1 lab)
- BIOL 1005 - Introduction to Environmental Science GE (3) **AND** BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
- GEOS 1114 - Weather and Climate GE (4: 3 lecture, 1 lab)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

Electives from the following: 10-11 Semester Hours

- ACST 4321 - Regression Analysis (3)
- ACST 4323 - Statistical Aspects of Experimental Design (3)
- CS 3400 - Discrete Structures II (4)
- BIOL 1110 - Principles of Biology (3)
- BIOL 2010 - Human Biology GE (3)
- BIOL 2510 - Basic Genetics GE (3)

- BIOL 4102 - Evolution (3)
- GEOS 1112 - Astronomy (3)
- GEOS 1115 - Oceanography (3)
- MATH 1152 - Calculus II (5)
- MATH 2153 - Calculus III (3)
- MATH 3151 - Differential Equations (3)
- MATH 3710 - Linear Algebra (3)
- MATH 4450 - Introduction to Graph Theory (3)

General Education Requirements: 31-34 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for full listing of requirements. The following general education courses are required by this major:

- CS 1000 - Computers and Modern Society GE (3) +
- MATH 1151 - Calculus I GE (5) +

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

- BIOL 2010 - Human Biology GE (3) + **OR** BIOL 2510 - Basic Genetics GE (3) + (if chosen)

Natural Sciences

Select 8-9 Semester Hours (selecting two different disciplines will meet both the Natural Sciences with a Lab and Natural Sciences Non-Lab requirement)

- BIOL 1004 - Introduction to the Sciences: Ecology GE (4: 3 lecture, 1 lab) +
- BIOL 1005 - Introduction to Environmental Science GE (3) + **AND** BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab) +
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab) +
- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab) +
- GEOS 1114 - Weather and Climate GE (4: 3 lecture, 1 lab) +
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab) +

Free Electives: 13-16 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Department of Mathematics, Actuarial Science, and Statistics

Department of Mathematics, Actuarial Science, and Statistics Statement of Policy

A course with a grade lower than a C will not be allowed to fulfill a major or minor requirement in any program offered by the Department of Mathematics, Actuarial Science, and Statistics.

A student may enroll in a course offered by the Department of Mathematics, Actuarial Science, and Statistics only if a grade of C or better is earned in each of the course's prerequisites taken.

Actuarial Science and Statistics, BS (43-576) - Actuarial Science Option (AS01) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

A graduate with a Bachelor of Science degree in Actuarial Science and Statistics will use the knowledge and skills obtained in the program to:

- Communicate actuarial/statistical ideas clearly and coherently.
- Demonstrate the knowledge of the background and principle of solving problems in actuarial/statistical fields.
- Use actuarial/statistical software packages to solve real world problems.

Students must earn a grade of C or better in all major coursework.

Note: A minor in statistics is not available for this major.

Actuarial Science and Statistics, BS (43-576) - Actuarial Science Option (AS01) (4 Year Guide)

Major Core Requirements: 77 Semester Hours

Core: 44 Semester Hours

- ACST 2310 - Statistics and Data Analysis (3)
- ACST 3311 - Introduction to Probability and Statistics (3)
- ACST 4312 - Probability Models (3)
- ACST 4315 - Mathematical Statistics (3)
- ACST 4321 - Regression Analysis (3)
- ACST 4322 - Time Series Models and Analysis (3)
- ACST 4530 - Statistical Modeling (3)
- ACST 4645 - Senior Projects in Actuarial Science and Statistics (3)
- MATH 1040 - Introduction to the Mathematical Sciences (1)
- MATH 1151 - Calculus I GE (5)
- MATH 1152 - Calculus II (5)
- MATH 2153 - Calculus III (3)

- CS 1030 - Python Programming I (3)
  OR
- CS 1100 - Computer Programming I (3)

- CS 2400 - Discrete Structures (3)

OR

- MATH 2410 - Discrete Mathematics (3)

Actuarial Science Option: 33 Semester Hours

- ACST 4510 - Mathematics of Finance (3)
- ACST 4520 - Life Contingencies I (3)
- ACST 4540 - Insurance Modeling (3)
- CS 2030 - Python Programming II (3)
- ECON 1010 - Principles of Macroeconomics GE (3)
- FIN 3861 - Financial Management I (3)
- FIN 4817 - Managing Financial Derivatives (3)
- RMI 3803 - Principles of Insurance (3)

Electives from the Following: 9 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3)
- ACCT 2102 - Principles of Managerial Accounting (3)
- ACST 4313 - Review for Actuarial Exam P/1 (1)
- ACST 4323 - Statistical Aspects of Experimental Design (3)
- ACST 4331 - SAS Programming for Statistical Analysis (3)
- ACST 4335 - Multivariate Statistical Analysis (3)
- ACST 4351 - Principles of Data Mining (3)
- ACST 4390 - Internship in Actuarial Science or Statistics (1-6)
- ACST 4511 - Review for Actuarial Exam FM/2 (1)
- ACST 4910 - Special Topics in Actuarial Science or Statistics (1-3)
- DSA 3200 - Introduction to Data Visualization (3)
- DSA 4100 - Programming Foundations for Data Science and AI (3)
- ECON 1011 - Principles of Microeconomics GE (3)
- FIN 3850 - Principles of Finance (3)
- MATH 3151 - Differential Equations (3)
- MATH 3710 - Linear Algebra (3)

General Education Requirements: 33-36 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- ECON 1010 - Principles of Macroeconomics GE (3) +
- MATH 1151 - Calculus I GE (5) +

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

- ECON 1011 - Principles of Microeconomics GE (3) + (if chosen)

Free Electives: 7-10 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Mathematics - Actuarial Science and Statistics Option.

UCM students with a major GPA of at least 3.00 may consult with their faculty advisor and complete a school application to declare the accelerated BS/MS in Mathematics - Actuarial Science and Statistics Option. Prior to beginning the graduate portion of the program, student in the accelerated program will need to apply to the UCM Graduate School for formal admittance to the Accelerated BS/MS program.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

ACST 5312 Probability Models (ACST 4312)

ACST 5315 Mathematical Statistics (ACST 4315)

ACST 5321 Regression Analysis (ACST 4321)

ACST 5322 Time Series Models and Analysis (ACST 4322)

ACST 5323 Statistical Aspects of Experimental Design (ACST 4323)

ACST 5331 Multivariate Statistical Analysis (ACST 4335)

ACST 5351 Principles of Data Mining (ACST 4351)

ACST 5361 SAS Programming for Statistical Analysis (ACST 4331)

ACST 5510 Mathematics of Finance (ACST 4510)

ACST 5520 Life Contingencies I (ACST 4520)

ACST 5530 Statistical Modeling (ACST 4530)

ACST 5540 Insurance Modeling (ACST 4540)

CS 5200 Database Theory and Applications (CS 4600)

CS 5700 Artificial Intelligence (CS 4700)

CS 5710 Machine Learning (CS 4710)

DSA 5100 Programming Foundations for Data Science and AI (DSA 4100)

DSA 5200 Advanced Database Visualization (DSA 4200)

DSA 5600 NoSQL Database Systems (DSA 4600)

DSA 5620 Big Data Analytics (DSA 4620)

FIN 5817 Managing Financial Derivatives (FIN 4817)

Actuarial Science and Statistics, BS (43-576) - Statistics Option (AS02) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree (43-576)

A graduate with a Bachelor of Science degree in Actuarial Science and Statistics will use the knowledge and skills obtained in the program to:

- Communicate actuarial/statistical ideas clearly and coherently.
- Demonstrate the knowledge of the background and principle of solving problems in actuarial/statistical fields.
- Use actuarial/statistical software packages to solve real world problems.

Students must earn a grade of C or better in all major coursework.

Note: A minor in statistics is not available for this major.

Actuarial Science and Statistics, BS (43-576) - Statistics Option (AS02) (4 Year Guide)

Major Requirements: 71 Semester Hours

Core: 44 Semester Hours

- ACST 2310 - Statistics and Data Analysis (3)
- ACST 3311 - Introduction to Probability and Statistics (3)
- ACST 4312 - Probability Models (3)
- ACST 4315 - Mathematical Statistics (3)
- ACST 4321 - Regression Analysis (3)
- ACST 4322 - Time Series Models and Analysis (3)
- ACST 4530 - Statistical Modeling (3)
- ACST 4645 - Senior Projects in Actuarial Science and Statistics (3)
- MATH 1040 - Introduction to the Mathematical Sciences (1)
- MATH 1151 - Calculus I GE (5)
- MATH 1152 - Calculus II (5)
- MATH 2153 - Calculus III (3)

- CS 1100 - Computer Programming I (3)
  OR
- CS 1030 - Python Programming I (3)

- CS 2400 - Discrete Structures (3)
  OR
- MATH 2410 - Discrete Mathematics (3)

Statistics Option: 27 Semester Hours

- ACST 4323 - Statistical Aspects of Experimental Design (3)
- ACST 4331 - SAS Programming for Statistical Analysis (3)
- ACST 4351 - Principles of Data Mining (3)
- CS 1110 - Computer Programming II (3)
- CS 2300 - Data Structures (3)
- MATH 3710 - Linear Algebra (3)

Electives from the Following: 9 Semester Hours

- ACST 4313 - Review for Actuarial Exam P/1 (1)
- ACST 4335 - Multivariate Statistical Analysis (3)
- ACST 4390 - Internship in Actuarial Science or Statistics (1-6)
- ACST 4510 - Mathematics of Finance (3)
- ACST 4511 - Review for Actuarial Exam FM/2 (1)
- ACST 4520 - Life Contingencies I (3)
- ACST 4540 - Insurance Modeling (3)
- ACST 4910 - Special Topics in Actuarial Science or Statistics (1-3)
- CS 2030 - Python Programming II (3)
- CS 4600 - Database Theory and Applications (3)
- CS 4700 - Artificial Intelligence (3)
- CS 4710 - Introduction to Machine Learning (3)
- DSA 3200 - Introduction to Data Visualization (3)
- DSA 4100 - Programming Foundations for Data Science and AI (3)
- DSA 4200 - Advanced Data Visualization (3)
- DSA 4600 - NoSQL Database Systems (3)
- DSA 4620 - Big Data Analytics (3)
- MATH 3151 - Differential Equations (3)
- MATH 4150 - Advanced Calculus I (3)

General Education Requirements: 39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- MATH 1151 - Calculus I GE (5) +

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

Free Electives: 10 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Mathematics - Actuarial Science and Statistics Option.

UCM students with a major GPA of at least 3.00 may consult with their faculty advisor and complete a school application to declare the accelerated BS/MS in Mathematics - Actuarial Science and Statistics Option. Prior to beginning the graduate portion of the program, student in the accelerated program will need to apply to the UCM Graduate School for formal admittance to the Accelerated BS/MS program.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

ACST 5312 Probability Models (ACST 4312)

ACST 5315 Mathematical Statistics (ACST 4315)

ACST 5321 Regression Analysis (ACST 4321)

ACST 5322 Time Series Models and Analysis (ACST 4322)

ACST 5323 Statistical Aspects of Experimental Design (ACST 4323)

ACST 5331 Multivariate Statistical Analysis (ACST 4335)

ACST 5351 Principles of Data Mining (ACST 4351)

ACST 5361 SAS Programming for Statistical Analysis (ACST 4331)

ACST 5510 Mathematics of Finance (ACST 4510)

ACST 5520 Life Contingencies I (ACST 4520)

ACST 5530 Statistical Modeling (ACST 4530)

ACST 5540 Insurance Modeling (ACST 4540)

CS 5200 Database Theory and Applications (CS 4600)

CS 5700 Artificial Intelligence (CS 4700)

CS 5710 Machine Learning (CS 4710)

DSA 5100 Programming Foundations for Data Science and AI (DSA 4100)

DSA 5200 Advanced Database Visualization (DSA 4200)

DSA 5600 NoSQL Database Systems (DSA 4600)

DSA 5620 Big Data Analytics (DSA 4620)

FIN 5817 Managing Financial Derivatives (FIN 4817)

Mathematics Minor (482) (25 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor. Recommended for majors in business, economics, physical science, social sciences and related fields.

Minor Requirements: 25 Semester Hours

- MATH 1151 - Calculus I GE (5)
- MATH 1152 - Calculus II (5)
- MATH 2410 - Discrete Mathematics (3)
- MATH 3710 - Linear Algebra (3)

Electives from the Following or as Approved by Department: 9 Semester Hours

- ACST 3311 - Introduction to Probability and Statistics (3)
- MATH 2153 - Calculus III (3)
- MATH 3151 - Differential Equations (3)
- MATH 4710 - Algebraic Structures (3)

Mathematics Minor (BSE) (480) (25 hours)

Minor, Bachelor of Science in Education Degree

Certification to teach mathematics in grades 5-9 with a middle school-junior high school major.

A graduate with a Mathematics Minor for a Bachelor of Science in Education degree will use the knowledge and skills obtained in the program to:

- Teach mathematics to a diverse population of 5-9 learners by applying relevant learning theories, using a variety of teaching strategies, and incorporating materials, technology, and resources.
- Understand the appropriate uses of technology as tools for representing mathematical ideas, investigating patterns, testing conjectures, and representing data.
- Communicate mathematical thinking coherently, analyze and evaluate the mathematical thinking of others, and use the language of mathematics to express mathematical ideas precisely.
- Use representations to model and interpret physical, social, and mathematical phenomena.
- Understand how mathematical ideas interconnect and build on one another to produce a coherent whole and apply mathematics in contexts outside of mathematics.

Minor Requirements: 25 Semester Hours

- MATH 1820 - Math for Middle School Teachers (3)
- MATH 2821 - Elements of Algebra (3) *
- MATH 2822 - Elements of Geometry (3) *
- MATH 2824 - Infinite Processes I (3)
- MATH 2825 - Infinite Processes II (2)
- MATH 3800 - Teaching and Learning Numbers and Operations (3)
- MATH 3802 - Concepts and Methods in Middle School Mathematics (2)
- MATH 3840 - Strategies in Teaching Middle School Mathematics (3)
- MATH 4851 - Probability and Statistics for Middle/High School Mathematics (3)

Note:

* This course has a prerequisite not listed in the program.

Mathematics, BS (43-454) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

A graduate with a Bachelor of Science degree in Mathematics will use the knowledge and skills obtained in the program to:

- Communicate mathematical ideas clearly and coherently.
- Apply content knowledge to solve complex problems.
- Construct clear and concise mathematical proofs and other logical arguments.

Dual Degree with UMKC School of Computing and Engineering

The UCM Mathematics program has a dual degree arrangement with the University of Missouri-Kansas City School of Computing and Engineering. Under this agreement, students may earn a Bachelor of Science degree in Mathematics from UCM and a Bachelor of Science in Civil Engineering, Electrical and Computer Engineering or Mechanical Engineering from UMKC. Students in this program will spend three years at UCM, then transfer to UMKC for two years to complete the engineering portion of the program. Interested students should contact Dr. Lianwen Wang (lwang@ucmo.edu), Mathematics program coordinator.

Mathematics Major, BS (43-454) (4 Year Guide)

Major Requirements: 53 Semester Hours

C or better required in all major coursework.

- MATH 1040 - Introduction to the Mathematical Sciences (1)
- MATH 1151 - Calculus I GE (5)
- MATH 1152 - Calculus II (5)
- MATH 2153 - Calculus III (3)
- MATH 2410 - Discrete Mathematics (3)
- MATH 3151 - Differential Equations (3)
- MATH 3710 - Linear Algebra (3)
- MATH 4150 - Advanced Calculus I (3)
- MATH 4233 - The Scientific, Historical, and Sociological Impact of Mathematics (3)
- MATH 4710 - Algebraic Structures (3)
- MATH 4711 - Modern Algebra I (3)
- ACST 2310 - Statistics and Data Analysis (3)
- ACST 3311 - Introduction to Probability and Statistics (3)
- CS 1100 - Computer Programming I (3)

Electives from the Following: 9 Semester Hours

- MATH 2221 - Foundations of Geometry (3)
- MATH 4171 - Functions of a Complex Variable (3)

- MATH 4210 - Topology I (3)
- MATH 4400 - Combinatorics (3)
- MATH 4450 - Introduction to Graph Theory (3)
- MATH 4741 - Introduction to the Theory of Numbers (3)
- MATH 4910 - Special Problems in Mathematics (1-3)
- MATH 4912 - Internship in Mathematical Sciences (1-8)
- ACST 4312 - Probability Models (3)
- ACST 4321 - Regression Analysis (3)
- ACST 4351 - Principles of Data Mining (3)
- ACST 4510 - Mathematics of Finance (3)
- CS 1110 - Computer Programming II (3)

General Education Requirements: 39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- MATH 1151 - Calculus I GE (5) +

- COMM 1000 - Public Speaking GE (3)
  OR
- COMM 1050 - Communication in Practice GE (3)
  OR
- MKT 1401 - Professional Speaking and Presentation GE (3)

  +Course requires a grade of C or better.

Free Electives: 28 Semester Hours

Minimum Total: 120 Semester Hours

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Mathematics - Mathematics Option.

UCM students who are interested should meet with the Mathematics Program Coordinator no later than fall of the sophomore year.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

ACST 5312 Probability Models (ACST 4312)

ACST 5321 Regression Analysis (ACST 4321)

ACST 5351 Principles of Data Mining (ACST 4351)

ACST 5510 Mathematics of Finance (ACST 4510)

MATH 5100 Advanced Calculus I (MATH 4150)

MATH 5172 Functions of a Complex Variable (MATH 4171)

MATH 5210 Topology I (MATH 4210)

MATH 5400 Combinatorics (MATH 4400)

MATH 5450 Introduction to Graph Theory (MATH 4450)

MATH 5705 Modern Algebra I (MATH 4711)

MATH 5741 Introduction to the Theory of Numbers (MATH 4741)

Statistics Minor (632) (18-20 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor. This minor is not available to students in the Actuarial Science and Statistics major. Recommended for majors in business, economics, physical science, psychological science, social sciences, biology, and related fields.

Minor Requirements: 18-20 Semester Hours

- ACST 2310 - Statistics and Data Analysis (3)
- ACST 3311 - Introduction to Probability and Statistics (3)
- ACST 4321 - Regression Analysis (3)

- MATH 1131 - Applied Calculus GE (3)
  OR
- MATH 1151 - Calculus I GE (5)

Electives from the Following: 6 Semester Hours

- ACST 4312 - Probability Models (3) *
- ACST 4322 - Time Series Models and Analysis (3)
- ACST 4323 - Statistical Aspects of Experimental Design (3)
- ACST 4331 - SAS Programming for Statistical Analysis (3)
- ACST 4530 - Statistical Modeling (3)

Only 1 course may be selected from the following: 0-3 Semester Hours

- ACST 1300 - Basic Statistics GE (3)
- BIOL 4013 - Biostatistics (3) *
- FIN 3801 - Business Statistics II (3) *
- INDM 4280 - Industrial Statistics (3)
- PSY 3030 - Introduction to Statistics for Psychology (3)

Note:

* These courses require additional prerequisites not listed in the minor program. See additional information in the course descriptions.

Department of Nutrition, Kinesiology, and Health

Department of Nutrition, Kinesiology, and Health
Morrow 125
660-543-4256

Fitness/Wellness Minor (841) (24 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 24 Semester Hours

- AT 3610 - Care and Prevention of Injuries (3)
- KIN 1206 - Personal Fitness and Wellness (3: 2 lecture, 1 lab)
- KIN 1800 - Functional Anatomy (3)
- KIN 2800 - Biomechanics (3)
- KIN 2850 - Foundations of Exercise Physiology (3)
- KIN 2900 - Essentials of Personal Training (3)
- KIN 3850 - Assessment and Evaluation of Fitness/Wellness (3)

- PE 4340 - Adapted Physical Education (3)
  OR
- KIN 4341 - Physical Activity and Special Populations (3)

Health Minor (691) (15 hours)

Minor for a Bachelor's Degree

Students are required to choose 15 credit hours in Health Studies with at least one upper level course. Some courses may require a pre-requisite within the Health Studies program which will count toward your minor. Many courses are offered online. Contact the Program Coordinator to help you determine the best courses to complement your career goals. The Health minor is a flexible one that allows students to choose courses fitting their interests and career plans.

Minor Requirements: 15 Semester Hours

Select 15 credit hours from the following courses, 3 credit hours must be upper-level.

- HLTH 1010 - Introduction to Health Studies (1)
- HLTH 1100 - Personal Health GE (3)
- HLTH 1350 - Responding to Emergencies (3)
- HLTH 2200 - Applied Nutrition and Health Interventions (3)
- HLTH 2400 - Community Health Education (3)

- HLTH 3300 - Health Behavioral Theory (3)
- HLTH 3350 - Introduction to Epidemiology and Population Health (3) *
- HLTH 3400 - Interprofessional Education (IPE) I: Program Planning and Evaluation (3)
- HLTH 4000 - Special Projects in Health Studies (1-5)
- HLTH 4310 - Drugs: Addiction to Recovery (3)
- HLTH 4330 - First Aid and CPR (1)
- HLTH 4370 - Pathophysiology (3) *
- HLTH 4410 - Interprofessional Education (IPE) II: Program Implementation (3)
- HLTH 4420 - U.S. Health Policy, Advocacy and Ethics (3)
- HLTH 4450 - Global Health (3)
- HLTH 4765 - Internship (6)

Note:

* This course has a prerequisite not listed in the program.

Health Studies, BS (43-330) (120 hours)

Major, Bachelor of Science Degree

UCM Health Studies prepares students to promote healthy behaviors with an interdisciplinary perspective in corporate settings, communities, and clinics.

By integrating health courses with business, psychology, criminal justice, nutrition, etc., Health Studies allows students to blend health and well-being into value-added research and education. Upon graduation, students are prepared for careers in community or workplace health with the option to pursue graduate school. In addition to the degree, students are eligible to register for the Certified Health Education Specialist certification and could earn a minor or certificate at no additional cost.

The graduate with a Bachelor of Science degree in Health Studies will:

- Appraise personal health practices and professional health initiatives, uses goal-directed communication to incorporate various perspectives, media, and stakeholders.
- Apply knowledge of health and wellbeing theories, disease processes, factors impacting human health, and health disparities to the logical implementation of safe, goal-directed health initiatives.
- Apply program processes to implement and improve organizational and community initiatives; using research and data to describe, evaluate, and enhance population well-being.
- Examine ethical, economic, and regulatory dimensions of global health care, health programming, and public health policy.

Health Studies, BS (43-330) (4 Year Guide)

Major Requirements: 76-77 Semester Hours

C or better required in all major coursework.

- BIOL 3215 - Medical Terminology (3)
- BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab)
- BIOL 3402 - Human Physiology (5: 4 lecture, 1 lab)
- COMM 2010 - Interpersonal Communication (3)

- D&N 3340 - Nutrition (3)
- D&N 3350 - Community Nutrition (3)
- HLTH 1010 - Introduction to Health Studies (1)
- HLTH 1100 - Personal Health GE (3)
- HLTH 2200 - Applied Nutrition and Health Interventions (3)
- HLTH 2400 - Community Health Education (3)
- HLTH 3300 - Health Behavioral Theory (3)
- HLTH 3350 - Introduction to Epidemiology and Population Health (3)
- HLTH 3400 - Interprofessional Education (IPE) I: Program Planning and Evaluation (3)
- HLTH 4310 - Drugs: Addiction to Recovery (3)
- HLTH 4370 - Pathophysiology (3)
- HLTH 4410 - Interprofessional Education (IPE) II: Program Implementation (3)
- HLTH 4420 - U.S. Health Policy, Advocacy and Ethics (3)
- HLTH 4450 - Global Health (3)
- HLTH 4765 - Internship (6)
- PSY 1100 - General Psychology GE (3)
- PSY 3030 - Introduction to Statistics for Psychology (3)
- PSY 3100 - Research Methods (3)
- PSY 3220 - Life-Span Development GE (3)

- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)
  OR
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)

Approved Electives: 9 Semester Hours

Approved electives require approval from the Health Studies program which result in a minor, certificate or prepare students for a certification or graduate school program.

C or better required for all Approved Electives.

General Education Requirements: 29 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

C or better required for all courses that are also required in the Health Studies major requirements.

- HLTH 1100 - Personal Health GE (3)
- PSY 1100 - General Psychology GE (3)
- PSY 3220 - Life-Span Development GE (3)

- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)
  OR
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)

Free Electives: 5-6 Semester Hours

Minimum Total: 120 Semester Hours

Kinesiology, BS (43-671) (120 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Kinesiology will use the knowledge and skills obtained in the program to:

- Describe and demonstrate a strong foundational knowledge in functional anatomy, exercise physiology, biomechanics, fitness assessment, and implementation necessary to effectively work in the field of choice or enter a graduate program.
- Demonstrate and apply knowledge of the major concepts, empirical findings, and current trends in the area of Kinesiology to assist individuals with varying needs and diverse populations.
- Assemble actively-learned Kinesiology-related skills for application in real-world problems through internships, primary research, service learning, and/or field experiences.
- Evaluate authentic occupational, career, and advanced educational opportunities appropriate to the Kinesiology area and develop a feasible plan to pursue those aspirations.

Kinesiology, BS (43-671) (Area 1: Exercise Science) (4 Year Guide)

Kinesiology, BS (43-671) (Area 2: Corporate Fitness) (4 Year Guide)

Kinesiology, BS (43-671) (Area 3: Pre-Athletic Training) (4 Year Guide)

Kinesiology, BS (43-671) (Area 4: Pre-Occupational Therapy) (4 Year Guide)

Kinesiology, BS (43-671) (Area 5: Pre-Physical Therapy) (4 Year Guide)

Note: A student may not earn a double degree including the BS Kinesiology (Exercise Science or Corporate Fitness) and the BS Physical Education (Exercise Science or Corporate Fitness) from any catalog prior to 2019.

Major Requirements: 67-81 Semester Hours

C or better required in all major coursework.

Core Requirements: 44 Semester Hours

- BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab)
- BIOL 3402 - Human Physiology (5: 4 lecture, 1 lab)
- D&N 3340 - Nutrition (3)
- KIN 1101 - Introduction to Kinesiology (3)
- KIN 1800 - Functional Anatomy (3)
- KIN 2800 - Biomechanics (3)
- KIN 2850 - Foundations of Exercise Physiology (3)
- KIN 3850 - Assessment and Evaluation of Fitness/Wellness (3)
- KIN 4341 - Physical Activity and Special Populations (3)
- KIN 4765 - Internship (6)

- KIN 4870 - Applied Exercise Physiology (3)
- PE 2455 - Growth and Motor Development (3)
- PSY 3030 - Introduction to Statistics for Psychology (3)

Select One of the 5 Areas: 23-37 Semester Hours

Area 1 - Exercise Science (KN01): 23 Semester Hours

- AT 3610 - Care and Prevention of Injuries (3)
- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)
- HLTH 4370 - Pathophysiology (3)
- KIN 1206 - Personal Fitness and Wellness (3: 2 lecture, 1 lab)
- KIN 2900 - Essentials of Personal Training (3)
- KIN 4860 - Fitness Programming and Implementation (3)
- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)

Area 2 - Corporate Fitness (KN02): 35 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3)
- BLAW 2720 - Legal Environment of Business (3)
- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)
- CIS 1600 - Business Information Management GE (3)
- ECON 1010 - Principles of Macroeconomics GE (3)
- KIN 1206 - Personal Fitness and Wellness (3: 2 lecture, 1 lab)
- KIN 2900 - Essentials of Personal Training (3)
- KIN 4860 - Fitness Programming and Implementation (3)
- MGT 3315 - Management of Organizations (3)
- MKT 3405 - Principles of Marketing (3)
- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)

Area 3 - Pre-Athletic Training (KN03): 33 Semester Hours

- AT 3610 - Care and Prevention of Injuries (3)
- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)
- HLTH 1100 - Personal Health GE (3)
- HLTH 4370 - Pathophysiology (3)
- KIN 2900 - Essentials of Personal Training (3)
- KIN 4860 - Fitness Programming and Implementation (3)
- PHIL 2300 - Ethics GE (3)
- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)
- PSY 3220 - Life-Span Development GE (3)

- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)
  OR
- BIOL 1500 - General Biology I - Essentials of Molecular and Cellular Biology (4: 3 lecture, 1 lab)
  OR
- BIOL 1505 - General Biology II - Essentials of Organismal Biology (4: 3 lecture, 1 lab) *

Area 4 - Pre-Occupational Therapy (KN04): 30 Semester Hours

- BIOL 3215 - Medical Terminology (3)
- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)
- HLTH 4370 - Pathophysiology (3)
- PHIL 2300 - Ethics GE (3)
- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)
- PSY 3220 - Life-Span Development GE (3)
- PSY 4440 - Abnormal Psychology (3)
- SOC 1800 - Introduction to Sociology GE (3)

- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)
  OR
- BIOL 1500 - General Biology I - Essentials of Molecular and Cellular Biology (4: 3 lecture, 1 lab)
  OR
- BIOL 1505 - General Biology II - Essentials of Organismal Biology (4: 3 lecture, 1 lab) *

Area 5 - Pre-Physical Therapy (KN05): 37 Semester Hours

- BIOL 3215 - Medical Terminology (3)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)
- HLTH 4370 - Pathophysiology (3)
- PHIL 2300 - Ethics GE (3)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
- PHYS 1102 - College Physics II (4: 4 lecture, 0 lab)
- PSY 3220 - Life-Span Development GE (3)
- PSY 4440 - Abnormal Psychology (3)

- BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)
  OR
- BIOL 1500 - General Biology I - Essentials of Molecular and Cellular Biology (4: 3 lecture, 1 lab)
  OR
- BIOL 1505 - General Biology II - Essentials of Organismal Biology (4: 3 lecture, 1 lab) *

General Education Requirements: 26-35 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

C or better required for these courses.

- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab) (Areas 1, 2, 3, 4)
- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab) (Area 5)
- CIS 1600 - Business Information Management GE (3) (Area 2)
- ECON 1010 - Principles of Macroeconomics GE (3) (Area 2)
- HLTH 1100 - Personal Health GE (3) (Area 3)
- MATH 1111 - College Algebra GE (3) (All Areas)

- PHIL 2300 - Ethics GE (3) (Areas 3, 4, 5)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab) (Area 5)
- PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab) (Areas 1, 2, 3, 4)
- PSY 1100 - General Psychology GE (3) (All Areas)
- PSY 3220 - Life-Span Development GE (3) (Area 3, 4, 5)
- SOC 1800 - Introduction to Sociology GE (3) (Area 4)

Free Electives: 10-20 Semester Hours

Area 1: 18 Semester Hours

Area 2: 11 Semester Hours

Area 3: 17 Semester Hours

Area 4: 20 Semester Hours

Area 5: 10 Semester Hours

Minimum Total: 120 Semester Hours

* This course has a prerequisite not listed in the program.

Nutrition Minor (577) (32 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

The minor in Nutrition will give students the necessary prerequisites needed for the Master of Science in Nutrition and address the change in The Commission on Dietetic Registration (CDR) entry-level eligibility requirements for dietitians.

Minor Requirements: 32 Semester Hours

- ACCT 1101 - Foundations of Financial Reporting (3)
- BIOL 2510 - Basic Genetics GE (3) *
- BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab) *
- BIOL 3402 - Human Physiology (5: 4 lecture, 1 lab)
- BIOL 3611 - Microbiology (4: 3 lecture, 1 lab) *
- CHEM 1604 - Elementary Organic and Biochemistry (4: 4 lecture, 0 lab) *
- D&N 3340 - Nutrition (3) *
- FOOD 2320 - Sanitation and Safety (1)
- FOOD 2322 - Food Preparation (3: 2 lecture, 1 lab) *
- NUTR 4010 - Advanced Nutrition and Human Metabolism (3)
  NOTE: *This course has a prerequisite not listed in the program.

Sport Nutrition Minor (699) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

The Sports Nutrition minor explores basic exercise physiology, assessment/evaluation and an in depth analysis of current nutritional principles. Skills acquired in this minor allow the graduate to effectively evaluate nutritional claims, perform basic nutritional assessment, and give sound nutritional advice based on evidenced based practice.

Minor Requirements: 21 Semester Hours

- D&N 3340 - Nutrition (3) *
- NUTR 4010 - Advanced Nutrition and Human Metabolism (3) *
- NUTR 4020 - Dietary Supplements (3)
- NUTR 4300 - Nutrition and Human Performance (3) *
- KIN 2850 - Foundations of Exercise Physiology (3) *
- KIN 3850 - Assessment and Evaluation of Fitness/Wellness (3)
- KIN 4860 - Fitness Programming and Implementation (3) *

Note:

* This course has a prerequisite not listed in the program.

Department of Occupational Risk and Safety Sciences

Department of Occupational Risk and Safety Sciences

660-543-4626

Environmental, Safety & Risk Management, BS (43-674) (120 hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

Online BS degree completion program specifically designed for transfer students. Designed to assist individuals with associates degrees earn a BS degree in a highly competitive career field. Designed to maximize use of credit hours earned in an associate's degree to accelerate time to graduation and reduce cost.

A graduate with a Bachelor of Science degree in Environmental, Safety & Risk Management will use the knowledge and skills obtained in the program to:

- Identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline.
- Formulate or design a system, process, procedure or program to meet desired needs.
- Develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions.
- Communicate effectively with a range of audiences.

- Understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts.
- Function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

NOTE: Students may not earn a double degree in Environmental, Safety & Risk Management in conjunction with any other undergraduate safety degree program within Safety Sciences.

Environmental, Safety & Risk Management, BS (43-674) (4 Year Guide)

Core Requirements: 42 Semester Hours

- SAFE 3005 - Introduction to Environmental, Health, and Safety (3)
- SAFE 3070 - Safety Leadership (3)
- SAFE 3120 - Industrial Hygiene (3)
- SAFE 3430 - Industrial Hazard Control (3)
- SAFE 4000 - Ergonomics in Safety and Health (3)
- SAFE 4005 - Environmental, Health, and Safety Risk Assessment (3)
- SAFE 4035 - Occupational Risk Management (3)
- SAFE 4055 - Safety Capstone Experience (3)
- SAFE 4440 - Environmental Air Quality and Pollution Prevention (3)
- SAFE 4445 - Water Quality and Waste Water Management (3)
- SAFE 4450 - Environmental Remediation (3)
- SAFE 4560 - Systems Safety (3)
- SAFE 4940 - Statistical Analysis for Risk Management (3)

- SAFE 4425 - Safety and Health Legislation and Standards (3)
  OR
- SAFE 4435 - Environmental Compliance (3)

Approved Electives: 0-24 Semester Hours

Credit for SAFE 4915 must be approved by the program coordinator or department chair.

Credit for SAFE 4915 may be awarded in the following categories:

- Approved safety, health and environmental work experience and training electives. Up to 9 hours in this category, other requirements apply (0-9).
- Approved work experience/certification. Up to 15 hours in this category demonstrated by the following BCSP certifications (0-15):
  - ASP eligibility (3)
  - ASP in good standing (9)
  - OSHT in good standing (6)
  - CHST in good standing (6)
  - STS or STSC in good standing (9)
  - CSP in good standing (15)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CTE 2060 - Technical Writing GE (3) +

Free Electives: 12-36 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Occupational Safety, BS (43-873) - Environmental Management Option (OS01) (120 hours) [Also available as an accelerated program]

The following Student Outcomes align with the required General Criteria of the Applied and Natural Science Accreditation Commission of ABET and provide a foundation that prepares graduates to attain the BS Occupational Safety Program Educational Objectives. The graduate with a Bachelor of Science in Occupational Safety degree will use the knowledge and skills obtained in the program to:

- Identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline.
- Formulate or design a system, process, procedure or program to meet desired needs.
- Develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions.
- Communicate effectively with a range of audiences.
- Understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts.
- Function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

Program Educational Objectives

Additionally, graduates with a Bachelor of Science in Occupational Safety will be prepared to attain the following educational objectives:

- Anticipate, recognize, and evaluate hazards, exposures, and risk through development and management of control strategies for hazardous conditions and work practices.
- Uphold the responsibilities of the profession to protect people, property and the environment in a global or societal market with personal integrity and honesty through adherence to professional ethical codes.
- Acquire and evaluate evolving SH&E-related information through research, and the application and continuing development of abilities, skills, and knowledge gained in the program to identify practical solutions for safety issues.
- Continually enhance discipline-specific technical competencies, skills and knowledge by seeking certification, and through active participation in professional societies, conferences, workshops, networking, continuing education, and/or other professional development activities.
- Develop, implement and provide ongoing leadership for organizational SH&E programs.

Graduation Requirements

Students seeking to graduate from this program must have a minimum 2.20 cumulative grade-point-average and must have attained the grade of C or better in all designated safety, math, and science courses.

Note: Students may not earn a double degree in Occupational Safety in conjunction with any other undergraduate safety degree program within Safety Sciences.

Occupational Safety, BS (43-873) - Environmental Management Option (OS01) (4 Year Guide)

Major Core Requirements: 52 Semester Hours

- SAFE 1000 - Exploring the Safety Sciences (1) +
- SAFE 2900 - Applied Sciences for Professional Studies (3)
- SAFE 3000 - Principles of Accident Causation and Prevention (3) +
- SAFE 3070 - Safety Leadership (3)
- SAFE 3120 - Industrial Hygiene (3) +
- SAFE 3430 - Industrial Hazard Control (3) +
- SAFE 4000 - Ergonomics in Safety and Health (3)
- SAFE 4010 - Accident Investigation (3)
- SAFE 4025 - Workers' Compensation and Legal Aspects of Safety (3)
- SAFE 4035 - Occupational Risk Management (3)
- SAFE 4055 - Safety Capstone Experience (3) +
- SAFE 4140 - Safety and Health Laboratory (3)
- SAFE 4215 - Transportation and Storage of Hazardous Materials (3)
- SAFE 4425 - Safety and Health Legislation and Standards (3)
- SAFE 4435 - Environmental Compliance (3)
- SAFE 4560 - Systems Safety (3)
- SAFE 4850 - Industrial Fire Protection (3)
- SAFE 4940 - Statistical Analysis for Risk Management (3)

Additional coursework: 3 Semester Hours

- SAFE 4980 - Practicum in Safety Sciences (1-6) (3) +
  OR
- SAFE 4990 - Internship in Safety Sciences (1-6) (3) +

Environmental Management Option: 15 Semester Hours

- SAFE 4160 - Industrial Ventilation for Environmental Safety and Health (3)
- SAFE 4440 - Environmental Air Quality and Pollution Prevention (3)
- SAFE 4445 - Water Quality and Waste Water Management (3)
- SAFE 4450 - Environmental Remediation (3)
- SAFE elective not already required (3)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab) +
  OR
- BIOL 1005 - Introduction to Environmental Science GE (3) +
  AND
- BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab) +

- CHEM 1103 - Introduction to the Sciences: Chemistry GE (3) +
  OR
- BIOL 1005 - Introduction to Environmental Science GE (3) +

- CTE 2060 - Technical Writing GE (3) +
- MATH 1111 - College Algebra GE (3) +

Free Electives Option 1: 8 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Occupational Safety Management.

UCM students may consult with their faculty advisor and complete a school application to declare the Accelerated BS/MS Occupational Safety Management program. Prior to beginning the graduate portion of the program, student in the accelerated program will need to apply to the UCM Graduate School for formal admittance to the Accelerated BS/MS program.

Accelerated student may be eligible to include up to 9 hours from the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

SAFE 5001 Ergonomics in Safety and Health (SAFE 4000)

SAFE 5050 Food Safety (SAFE 4950)

SAFE 5150 Noise Measurements (SAFE 4150)

SAFE 5160 Industrial Ventilation for Environmental Safety and Health (SAFE 4160)

SAFE 5300 Agricultural Safety (SAFE 4300)

SAFE 5425 Safety and Health Legislation and Standards (SAFE 4425)

SAFE 5435 Environmental Compliance (SAFE 4435)

SAFE 5440 Environmental Air Quality and Pollution Prevention (SAFE 4440)

SAFE 5445 Water Quality and Waste Water Management (SAFE 4445)

SAFE 5455 Environmental Remediation (SAFE 4450)

SAFE 5510 Loss Control (SAFE 4510)

SAFE 5515 High Hazard Industries (SAFE 4515)

Occupational Safety, BS (43-873) - Occupational Health Management Option (OS03) (120 hours) [Also available as an accelerated program]

The following Student Outcomes align with the required General Criteria of the Applied and Natural Science Accreditation Commission of ABET and provide a foundation that prepares graduates to attain the BS Occupational Safety Program Educational Objectives. The graduate with a Bachelor of Science in Occupational Safety degree will use the knowledge and skills obtained in the program to:

- Identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline.
- Formulate or design a system, process, procedure or program to meet desired needs.
- Develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions.
- Communicate effectively with a range of audiences.
- Understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts.
- Function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

Program Educational Objectives

Additionally, graduates with a Bachelor of Science in Occupational Safety will be prepared to attain the following educational objectives:

- Anticipate, recognize, and evaluate hazards, exposures, and risk through development and management of control strategies for hazardous conditions and work practices.
- Uphold the responsibilities of the profession to protect people, property and the environment in a global or societal market with personal integrity and honesty through adherence to professional ethical codes.
- Acquire and evaluate evolving SH&E-related information through research, and the application and continuing development of abilities, skills, and knowledge gained in the program to identify practical solutions for safety issues.
- Continually enhance discipline-specific technical competencies, skills and knowledge by seeking certification, and through active participation in professional societies, conferences, workshops, networking, continuing education, and/or other professional development activities.
- Develop, implement and provide ongoing leadership for organizational SH&E programs.

Graduation Requirements

Students seeking to graduate from this program must have a minimum 2.20 cumulative grade-point-average and must have attained the grade of C or better in all designated safety, math, and science courses.

Note: Students may not earn a double degree in Occupational Safety in conjunction with any other undergraduate safety degree program within Safety Sciences.

Occupational Safety, BS (43-873) - Occupational Health Management Option (OS03) (4 Year Guide)

Major Core Requirements: 52 Semester Hours

- SAFE 1000 - Exploring the Safety Sciences (1) +
- SAFE 2900 - Applied Sciences for Professional Studies (3)
- SAFE 3000 - Principles of Accident Causation and Prevention (3) +
- SAFE 3070 - Safety Leadership (3)
- SAFE 3120 - Industrial Hygiene (3) +
- SAFE 3430 - Industrial Hazard Control (3) +
- SAFE 4000 - Ergonomics in Safety and Health (3)
- SAFE 4010 - Accident Investigation (3)
- SAFE 4025 - Workers' Compensation and Legal Aspects of Safety (3)
- SAFE 4035 - Occupational Risk Management (3)
- SAFE 4055 - Safety Capstone Experience (3) +
- SAFE 4140 - Safety and Health Laboratory (3)
- SAFE 4215 - Transportation and Storage of Hazardous Materials (3)
- SAFE 4425 - Safety and Health Legislation and Standards (3)
- SAFE 4435 - Environmental Compliance (3)
- SAFE 4560 - Systems Safety (3)
- SAFE 4850 - Industrial Fire Protection (3)
- SAFE 4940 - Statistical Analysis for Risk Management (3)

Additional coursework: 3 Semester Hours

- SAFE 4980 - Practicum in Safety Sciences (1-6) (3) +
  OR
- SAFE 4990 - Internship in Safety Sciences (1-6) (3) +

Occupational Health Management Option: 18 Semester Hours

- CHEM 1604 - Elementary Organic and Biochemistry (4: 4 lecture, 0 lab) +
- BIOL 2010 - Human Biology GE (3) +
- SAFE 4150 - Noise Measurements (2)
- SAFE 4160 - Industrial Ventilation for Environmental Safety and Health (3)
- SAFE 4515 - High Hazard Industries (3)

Elective from the Following: 3 Semester Hours

- SAFE 4440 - Environmental Air Quality and Pollution Prevention (3)
- SAFE 4445 - Water Quality and Waste Water Management (3)
- SAFE 4450 - Environmental Remediation (3)
- BIOL 2510 - Basic Genetics GE (3)

General Education Requirements: 36-39 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- BIOL 2010 - Human Biology GE (3) +
- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab) +

- CTE 2060 - Technical Writing GE (3) +
- MATH 1111 - College Algebra GE (3) +
- BIOL 2510 - Basic Genetics GE (3) (if chosen)

Free Electives Option 3: 8-11 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Occupational Safety Management.

UCM students may consult with their faculty advisor and complete a school application to declare the Accelerated BS/MS Occupational Safety Management program. Prior to beginning the graduate portion of the program, student in the accelerated program will need to apply to the UCM Graduate School for formal admittance to the Accelerated BS/MS program.

Accelerated student may be eligible to include up to 9 hours from the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

SAFE 5001 Ergonomics in Safety and Health (SAFE 4000)

SAFE 5050 Food Safety (SAFE 4950)

SAFE 5150 Noise Measurements (SAFE 4150)

SAFE 5160 Industrial Ventilation for Environmental Safety and Health (SAFE 4160)

SAFE 5300 Agricultural Safety (SAFE 4300)

SAFE 5425 Safety and Health Legislation and Standards (SAFE 4425)

SAFE 5435 Environmental Compliance (SAFE 4435)

SAFE 5440 Environmental Air Quality and Pollution Prevention (SAFE 4440)

SAFE 5445 Water Quality and Waste Water Management (SAFE 4445)

SAFE 5455 Environmental Remediation (SAFE 4450)

SAFE 5510 Loss Control (SAFE 4510)

SAFE 5515 High Hazard Industries (SAFE 4515)

Occupational Safety, BS (43-873) - Safety Management Option (OS02) (120 hours) [Also available as an accelerated program]

The following Student Outcomes align with the required General Criteria of the Applied and Natural Science Accreditation Commission of ABET and provide a foundation that prepares graduates to attain the BS Occupational

Safety Program Educational Objectives. The graduate with a Bachelor of Science in Occupational Safety degree will use the knowledge and skills obtained in the program to:

- Identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline.
- Formulate or design a system, process, procedure or program to meet desired needs.
- Develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions.
- Communicate effectively with a range of audiences.
- Understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts.
- Function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

Program Educational Objectives

Additionally, graduates with a Bachelor of Science in Occupational Safety will be prepared to attain the following educational objectives:

- Anticipate, recognize, and evaluate hazards, exposures, and risk through development and management of control strategies for hazardous conditions and work practices.
- Uphold the responsibilities of the profession to protect people, property and the environment in a global or societal market with personal integrity and honesty through adherence to professional ethical codes.
- Acquire and evaluate evolving SH&E-related information through research, and the application and continuing development of abilities, skills, and knowledge gained in the program to identify practical solutions for safety issues.
- Continually enhance discipline-specific technical competencies, skills and knowledge by seeking certification, and through active participation in professional societies, conferences, workshops, networking, continuing education, and/or other professional development activities.
- Develop, implement and provide ongoing leadership for organizational SH&E programs.

Graduation Requirements

Students seeking to graduate from this program must have a minimum 2.20 cumulative grade-point-average and must have attained the grade of C or better in all designated safety, math, and science courses.

Note: Students may not earn a double degree in Occupational Safety in conjunction with any other undergraduate safety degree program within Safety Sciences.

Occupational Safety, BS (43-873) - Safety Management Option (OS02) (4 Year Guide)

Major Core Requirements: 52 Semester Hours

- SAFE 1000 - Exploring the Safety Sciences (1) +
- SAFE 2900 - Applied Sciences for Professional Studies (3)
- SAFE 3000 - Principles of Accident Causation and Prevention (3) +
- SAFE 3070 - Safety Leadership (3)
- SAFE 3120 - Industrial Hygiene (3) +
- SAFE 3430 - Industrial Hazard Control (3) +
- SAFE 4000 - Ergonomics in Safety and Health (3)

- SAFE 4010 - Accident Investigation (3)
- SAFE 4025 - Workers' Compensation and Legal Aspects of Safety (3)
- SAFE 4035 - Occupational Risk Management (3)
- SAFE 4055 - Safety Capstone Experience (3) +
- SAFE 4140 - Safety and Health Laboratory (3)
- SAFE 4215 - Transportation and Storage of Hazardous Materials (3)
- SAFE 4425 - Safety and Health Legislation and Standards (3)
- SAFE 4435 - Environmental Compliance (3)
- SAFE 4560 - Systems Safety (3)
- SAFE 4850 - Industrial Fire Protection (3)
- SAFE 4940 - Statistical Analysis for Risk Management (3)

Additional coursework: 3 Semester Hours

- SAFE 4980 - Practicum in Safety Sciences (1-6) (3) +
  OR
- SAFE 4990 - Internship in Safety Sciences (1-6) (3) +

Option 2 Safety Management: 18 Semester Hours

- SAFE 4515 - High Hazard Industries (3)

Choose a Minor or Courses Listed Below: 15 Semester Hours

- Declared minors vary from 15-34 hours. Based on the number of hours in a chosen minor, the total degree hours may exceed 120 (15)
  OR
- SAFE 3015 - Emergency Preparedness (3)
- SAFE 4510 - Loss Control (3)
- SAFE elective not already required (9)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CTE 2060 - Technical Writing GE (3) +
- MATH 1111 - College Algebra GE (3) +
- Natural Sciences (7) +

Free Electives Option 2: 0-5 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the MS Occupational Safety Management.

UCM students may consult with their faculty advisor and complete a school application to declare the Accelerated BS/MS Occupational Safety Management program. Prior to beginning the graduate portion of the program, student in the accelerated program will need to apply to the UCM Graduate School for formal admittance to the Accelerated BS/MS program.

Accelerated student may be eligible to include up to 9 hours from the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

SAFE 5001 Ergonomics in Safety and Health (SAFE 4000)

SAFE 5050 Food Safety (SAFE 4950)

SAFE 5150 Noise Measurements (SAFE 4150)

SAFE 5160 Industrial Ventilation for Environmental Safety and Health (SAFE 4160)

SAFE 5300 Agricultural Safety (SAFE 4300)

SAFE 5425 Safety and Health Legislation and Standards (SAFE 4425)

SAFE 5435 Environmental Compliance (SAFE 4435)

SAFE 5440 Environmental Air Quality and Pollution Prevention (SAFE 4440)

SAFE 5445 Water Quality and Waste Water Management (SAFE 4445)

SAFE 5455 Environmental Remediation (SAFE 4450)

SAFE 5510 Loss Control (SAFE 4510)

SAFE 5515 High Hazard Industries (SAFE 4515)

Safety Minor (193) (22 hours)

Minor for a Bachelors Degree

UCM does not confer teacher certification for this minor. Students seeking a Bachelor of Science Degree in any of the following are restricted from pursuing a Safety Minor.

- Occupational Safety and Health
- Environmental, Safety and Risk Management
- Occupational Safety (all three options)

Minor Requirements: 22 Semester Hours

- SAFE 1000 - Exploring the Safety Sciences (1)
- SAFE 2900 - Applied Sciences for Professional Studies (3)
- SAFE 3000 - Principles of Accident Causation and Prevention (3)
- SAFE 3430 - Industrial Hazard Control (3)

- SAFE 4425 - Safety and Health Legislation and Standards (3)
- SAFE 4435 - Environmental Compliance (3)

Choose 2 from the Following: 6 Semester Hours

- SAFE 3120 - Industrial Hygiene (3) *
- SAFE 4000 - Ergonomics in Safety and Health (3)
- SAFE 4025 - Workers' Compensation and Legal Aspects of Safety (3)
- SAFE 4215 - Transportation and Storage of Hazardous Materials (3) *
- SAFE 4510 - Loss Control (3)
- SAFE 4515 - High Hazard Industries (3)

Note:

* This course has a prerequisite not listed in the program.

Department of Physical Sciences

Chemistry Statement of Policy

All junior and senior chemistry majors are required to attend oral presentations by students who are enrolled in CHEM 4900 and CHEM 4910.

Prior to student teaching, all Bachelor of Science in Education Chemistry majors are required to serve as a lab assistant or lab preparation assistant for one semester in partial fulfillment of CHEM 4900.

NOTE: Students must attend the first scheduled lab period to avoid being dropped from the lab to accommodate students on the wait list. ACS Approval

The Chemistry programs are American Chemical Society (ACS) approved baccalaureate programs. The American Chemical Society is located at 1155 Sixteenth St, N.W., Washington, DC 20036; phone 800-227-5558; webpage acs.org.

Chemistry Minor (478) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)
- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)
- CHEM 3341 - Organic Chemistry I (4: 4 lecture, 0 lab)
- CHEM 3342 - Organic Chemistry II (4: 4 lecture, 0 lab)
- Upper-level (3000/4000) elective in Chemistry (3)

Chemistry, BS (43-393) - Biochemistry (Pre-Med, Pre-Dental, Pre-Vet, Pre-Pharm) Option (CH04) (120 Hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science Degree in Chemistry will use the knowledge and skills obtained the program to:

- Demonstrate an understanding of core knowledge concerning the major concepts in the basic areas of the discipline (analytical, biological, inorganic, organic and physical chemistry).
- Solve problems by identifying the essential parts of a problem, developing a strategy for solving the problem, and applying appropriate methodology to arrive at a solution.
- Safely conduct chemistry experiments that utilize standard equipment, standard techniques and modern instruments, and correctly interpret results obtained from chemistry experiments.
- Use computers in data acquisition and analysis, and as a tool to locate and retrieve scientific information about a chemical, chemical technique, or topic relating to chemistry.
- Effectively communicate chemical concepts and experimental results through writing and oral communication skills.
- Successfully pursue their career objectives in advanced education in professional and/or graduate schools, in a scientific career in government or industry, in a teaching career in the school systems, or in a related career following graduation.

Policies

Chemistry (43-393) - Biochemistry (Pre-Med, Pre-Dental, Pre-Vet, Pre-Pharm) Option, BS (4 Year Guide) Begin Even Number Year

Chemistry (43-393) - Biochemistry (Pre-Med, Pre-Dental, Pre-Vet, Pre-Pharm) Option, BS (4 Year Guide) Begin Odd Number Year

Major Requirements: 67 Semester Hours

Core Requirements: 48 Semester Hours

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab) +
- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)
- CHEM 3111 - Inorganic Chemistry (4: 4 lecture, 0 lab)
- CHEM 3212 - Quantitative Analysis (4: 4 lecture, 0 lab)
- CHEM 3341 - Organic Chemistry I (4: 4 lecture, 0 lab) +
- CHEM 3342 - Organic Chemistry II (4: 4 lecture, 0 lab)
- CHEM 3421 - Biochemistry (3)
- CHEM 3920 - Communication Skills in Chemistry (2)
- CHEM 4531 - Physical Chemistry: Thermodynamics and Kinetics (4: 4 lecture, 0 lab)
- MATH 1151 - Calculus I GE (5)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
- PHYS 1102 - College Physics II (4: 4 lecture, 0 lab)

Biochemistry (Pre-Med, Pre-Dental, Pre-Vet, Pre-Pharm) Option: 19 Semester Hours

- BIOL 1500 - General Biology I - Essentials of Molecular and Cellular Biology (4: 3 lecture, 1 lab)
- BIOL 2512 - Cell Biology (3)
- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)
- CHEM 4323 - The Organic Chemistry of Biological Pathways (3)
- CHEM 4421 - Advanced Biochemistry (3)
- CHEM 4431 - Biochemistry Laboratory (2)

General Education Requirements: 32 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab) +
- MATH 1151 - Calculus I GE (5)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

Free Electives: 21 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the Master of Arts in Teaching Science Education Area.

UCM students having completed at least 9 hours of chemistry courses with a GPA of at least 3.00 may consult with the coordinator of the BS/MAT accelerated program and complete a departmental application to declare the accelerated BS/MAT major. To be recommended to the graduate portion of the program, students must have a major GPA of 3.00 or above and an overall GPA of 2.75 in the undergraduate portion of the program. Prior to beginning the graduate portion of the program, students will need to apply to the UCM Graduate School for formal admittance to the accelerated program. Upon completion of this program, students will be eligible for science teaching certification in Chemistry.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

EDFL 5105 Foundations of Teaching and Learning (EDFL 4105)

STCH 5010 Exploring First Hand Science Lessons (STCH 4010)

STCH 5020 Internship in Science Teaching and Learning (STCH 4020)

STCH 5050 Science Teaching Methods (STCH 4050)

Chemistry, BS (43-393) - Biochemistry Option (CH03) (120 Hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Chemistry will use the knowledge and skills obtained in the program to:

- Demonstrate an understanding of core knowledge concerning the major concepts in the basic areas of the discipline (analytical, biological, inorganic, organic and physical chemistry).
- Solve problems by identifying the essential parts of a problem, developing a strategy for solving the problem, and applying appropriate methodology to arrive at a solution.
- Safely conduct chemistry experiments that utilize standard equipment, standard techniques and modern instruments, and correctly interpret results obtained from chemistry experiments.
- Use computers in data acquisition and analysis, and as a tool to locate and retrieve scientific information about a chemical, chemical technique, or topic relating to chemistry.
- Effectively communicate chemical concepts and experimental results through writing and oral communication skills.
- Successfully pursue their career objectives in advanced education in professional and/or graduate schools, in a scientific career in government or industry, in a teaching career in the school systems, or in a related career following graduation.

Policies

Chemistry (43-393) - Biochemistry Option, BS (4 Year Guide) Begin Even Numbered Year

Chemistry (43-393) - Biochemistry Option, BS (4 Year Guide) Begin Odd Numbered Year

Major Requirements: 71 Semester Hours

Core Requirements: 48 Semester Hours

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab) +
- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)
- CHEM 3111 - Inorganic Chemistry (4: 4 lecture, 0 lab)
- CHEM 3212 - Quantitative Analysis (4: 4 lecture, 0 lab)
- CHEM 3341 - Organic Chemistry I (4: 4 lecture, 0 lab) +
- CHEM 3342 - Organic Chemistry II (4: 4 lecture, 0 lab)
- CHEM 3421 - Biochemistry (3)
- CHEM 3920 - Communication Skills in Chemistry (2)
- CHEM 4531 - Physical Chemistry: Thermodynamics and Kinetics (4: 4 lecture, 0 lab)
- MATH 1151 - Calculus I GE (5)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
- PHYS 1102 - College Physics II (4: 4 lecture, 0 lab)

Biochemistry Option: 23 Semester Hours

- BIOL 1500 - General Biology I - Essentials of Molecular and Cellular Biology (4: 3 lecture, 1 lab)
- BIOL 3511 - Genetics (4: 3 lecture, 1 lab)

- BIOL 4514 - Molecular Biology (3)
- BIOL 4515 - Molecular Technology (3: 2 lecture, 1 lab)
- CHEM 4231 - Instrumental Analysis (4: 4 lecture, 0 lab)
- CHEM 4421 - Advanced Biochemistry (3)
- CHEM 4431 - Biochemistry Laboratory (2)

General Education Requirements: 32 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab) +
- MATH 1151 - Calculus I GE (5)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

Free Electives: 17 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the Master of Arts in Teaching Science Education Area.

UCM students having completed at least 9 hours of chemistry courses with a GPA of at least 3.00 may consult with the coordinator of the BS/MAT accelerated program and complete a departmental application to declare the accelerated BS/MAT major. To be recommended to the graduate portion of the program, students must have a major GPA of 3.00 or above and an overall GPA of 2.75 in the undergraduate portion of the program. Prior to beginning the graduate portion of the program, students will need to apply to the UCM Graduate School for formal admittance to the accelerated program. Upon completion of this program, students will be eligible for science teaching certification in Chemistry.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

EDFL 5105 Foundations of Teaching and Learning (EDFL 4105)

STCH 5010 Exploring First Hand Science Lessons (STCH 4010)

STCH 5020 Internship in Science Teaching and Learning (STCH 4020)

STCH 5050 Science Teaching Methods (STCH 4050)

Chemistry, BS (43-393) - Chemistry (ACS Certified) Option (CH02) (120 Hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Chemistry will use the knowledge and skills obtained in the program to:

- Demonstrate an understanding of core knowledge concerning the major concepts in the basic areas of the discipline (analytical, biological, inorganic, organic and physical chemistry).
- Solve problems by identifying the essential parts of a problem, developing a strategy for solving the problem, and applying appropriate methodology to arrive at a solution.
- Safely conduct chemistry experiments that utilize standard equipment, standard techniques and modern instruments, and correctly interpret results obtained from chemistry experiments.
- Use computers in data acquisition and analysis, and as a tool to locate and retrieve scientific information about a chemical, chemical technique, or topic relating to chemistry.
- Effectively communicate chemical concepts and experimental results through writing and oral communication skills.
- Successfully pursue their career objectives in advanced education in professional and/or graduate schools, in a scientific career in government or industry, in a teaching career in the school systems, or in a related career following graduation.

Policies

Chemistry (43-393) - Chemistry: ACS Certified Option, BS (4 Year Guide) Begin Even Numbered Year

Chemistry (43-393) - Chemistry: ACS Certified Option, BS (4 Year Guide) Begin Odd Numbered Year

Major Requirements: 69 Semester Hours

Core Requirements: 48 Semester Hours

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab) +
- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)
- CHEM 3111 - Inorganic Chemistry (4: 4 lecture, 0 lab)
- CHEM 3212 - Quantitative Analysis (4: 4 lecture, 0 lab)
- CHEM 3341 - Organic Chemistry I (4: 4 lecture, 0 lab) +
- CHEM 3342 - Organic Chemistry II (4: 4 lecture, 0 lab)
- CHEM 3421 - Biochemistry (3)
- CHEM 3920 - Communication Skills in Chemistry (2)
- CHEM 4531 - Physical Chemistry: Thermodynamics and Kinetics (4: 4 lecture, 0 lab)
- MATH 1151 - Calculus I GE (5)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
- PHYS 1102 - College Physics II (4: 4 lecture, 0 lab)

Chemistry (ACS Certified) Option: 21 Semester Hours

- CHEM 4231 - Instrumental Analysis (4: 4 lecture, 0 lab)
- CHEM 4532 - Physical Chemistry: Quantum Mechanics and Spectroscopy (4: 4 lecture, 0 lab)
- CHEM 4910 - Research in Chemistry (1-5) (2)
- MATH 1152 - Calculus II (5)

Electives from the Following: 6 Semester Hours

- CHEM 4111 - Advanced Inorganic Chemistry (3)
- CHEM 4313 - Advanced Organic Chemistry (3)
- CHEM 4323 - The Organic Chemistry of Biological Pathways (3)
- CHEM 4421 - Advanced Biochemistry (3)
- CHEM 4431 - Biochemistry Laboratory (2)

General Education Requirements: 32 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab) +
- MATH 1151 - Calculus I GE (5)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

Free Electives: 19 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the Master of Arts in Teaching Science Education Area.

UCM students having completed at least 9 hours of chemistry courses with a GPA of at least 3.00 may consult with the coordinator of the BS/MAT accelerated program and complete a departmental application to declare the accelerated BS/MAT major. To be recommended to the graduate portion of the program, students must have a major GPA of 3.00 or above and an overall GPA of 2.75 in the undergraduate portion of the program. Prior to beginning the graduate portion of the program, students will need to apply to the UCM Graduate School for formal admittance to the accelerated program. Upon completion of this program, students will be eligible for science teaching certification in Chemistry.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

EDFL 5105 Foundations of Teaching and Learning (EDFL 4105)

STCH 5010 Exploring First Hand Science Lessons (STCH 4010)

STCH 5020 Internship in Science Teaching and Learning (STCH 4020)

STCH 5050 Science Teaching Methods (STCH 4050)

Chemistry, BS (43-393) - Chemistry Option (CH01) (120 Hours) [Also available as an accelerated program]

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Chemistry will use the knowledge and skills obtained in the program to:

- Demonstrate an understanding of core knowledge concerning the major concepts in the basic areas of the discipline (analytical, biological, inorganic, organic and physical chemistry).
- Solve problems by identifying the essential parts of a problem, developing a strategy for solving the problem, and applying appropriate methodology to arrive at a solution.
- Safely conduct chemistry experiments that utilize standard equipment, standard techniques and modern instruments, and correctly interpret results obtained from chemistry experiments.
- Use computers in data acquisition and analysis, and as a tool to locate and retrieve scientific information about a chemical, chemical technique, or topic relating to chemistry.
- Effectively communicate chemical concepts and experimental results through writing and oral communication skills.
- Successfully pursue their career objectives in advanced education in professional and/or graduate schools, in a scientific career in government or industry, in a teaching career in the school systems, or in a related career following graduation.

Policies

Chemistry (43-393) - Chemistry Option, BS (4 Year Guide)

Major Requirements: 54 Semester Hours

Core Requirements: 48 Semester Hours

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab) +
- CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)
- CHEM 3111 - Inorganic Chemistry (4: 4 lecture, 0 lab)
- CHEM 3212 - Quantitative Analysis (4: 4 lecture, 0 lab)
- CHEM 3341 - Organic Chemistry I (4: 4 lecture, 0 lab) +
- CHEM 3342 - Organic Chemistry II (4: 4 lecture, 0 lab)
- CHEM 3421 - Biochemistry (3)
- CHEM 3920 - Communication Skills in Chemistry (2)
- CHEM 4531 - Physical Chemistry: Thermodynamics and Kinetics (4: 4 lecture, 0 lab)
- MATH 1151 - Calculus I GE (5)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)
- PHYS 1102 - College Physics II (4: 4 lecture, 0 lab)

Chemistry Option: 6 Semester Hours

- CHEM 4111 - Advanced Inorganic Chemistry (3)
- CHEM 4231 - Instrumental Analysis (4: 4 lecture, 0 lab)
- CHEM 4313 - Advanced Organic Chemistry (3)
- CHEM 4323 - The Organic Chemistry of Biological Pathways (3)
- CHEM 4421 - Advanced Biochemistry (3)
- CHEM 4431 - Biochemistry Laboratory (2)
- CHEM 4532 - Physical Chemistry: Quantum Mechanics and Spectroscopy (4: 4 lecture, 0 lab)
- CHEM 4910 - Research in Chemistry (1-5) (2)

General Education Requirements: 32 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab) +
- MATH 1151 - Calculus I GE (5)
- PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

Free Electives: 34 Semester Hours

Minimum Total: 120 Semester Hours

+ Course requires a grade of C or better.

Accelerated Program Notes:

The Accelerated model for this program is designed for the Master of Arts in Teaching Science Education Area.

UCM students having completed at least 9 hours of chemistry courses with a GPA of at least 3.00 may consult with the coordinator of the BS/MAT accelerated program and complete a departmental application to declare the accelerated BS/MAT major. To be recommended to the graduate portion of the program, students must have a major GPA of 3.00 or above and an overall GPA of 2.75 in the undergraduate portion of the program. Prior to beginning the graduate portion of the program, students will need to apply to the UCM Graduate School for formal admittance to the accelerated program. Upon completion of this program, students will be eligible for science teaching certification in Chemistry.

Accelerated student may be eligible to include the following courses as overlap between the undergraduate and graduate programs. They would be taken at the Graduate level (5XXX):

EDFL 5105 Foundations of Teaching and Learning (EDFL 4105)

STCH 5010 Exploring First Hand Science Lessons (STCH 4010)

STCH 5020 Internship in Science Teaching and Learning (STCH 4020)

STCH 5050 Science Teaching Methods (STCH 4050)

Earth Science Minor (477) (20 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 20 Semester Hours

- GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)
- Electives in earth science (16)*

Note:

* Must include at least one upper-level (3000/4000) course to meet graduation requirements.

Geographic Information Systems Minor (857) (20 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 20 Semester Hours

- GEOG 2212 - World Geography GE (3)
- GEOS 2281 - Map Interpretation (2)
- GEOG 3270 - Research Methods in Geography (3)
- GEOS 4201 - Cartography (3)
- GEOS 4220 - Geographic Information Systems I (3)
- GEOS 4221 - Geographic Information Systems II (3)
- GEOS 4210 - Remote Sensing and Image Interpretation (3)

Science Minor (821) (20-23 hours)

Minor, Bachelor of Science in Education Degree

This minor program is designed for K-6 education majors who would like to expand their knowledge in general science as well as science teaching.

Minor Requirements: 20-23 Semester Hours

Any Approved BIOL course for 3-4 hours.
Any Approved PHYS or CHEM course for 3-4 hours.
Any Approved EASC course for 3-4 hours.

- PHYS 1003 - Essentials in Physical Sciences with Lab (4: 3 lecture, 1 lab)
- STCH 3020 - Science and Engineering Practices (3)
- STCH 4010 - Exploring Firsthand Science Lessons (1-2) (1)
- STCH 4050 - Science Teaching Methods (3)

Department of Psychological Science

Psychology Minor (748) (21 hours)

Minor for a Bachelor's Degree

UCM does not confer teacher certification for this minor.

Minor Requirements: 21 Semester Hours

- PSY 1100 - General Psychology GE (3)
- Electives in Psychology (18) **

Note:

** Must include at least one upper-level (3000/4000) course to meet graduation requirements.

Psychology, BA (42-746) (120 hours)

Major, Bachelor of Arts Degree

The graduate with a Bachelor of Arts degree in Psychology will use the knowledge and skills obtained in the program to:

- Demonstrate knowledge of the major concepts, theoretical perspectives, historical trends, and empirical findings to apply psychological principles to solve problems.
- Demonstrate knowledge of scientific reasoning and problem solving, including effective research methods.
- Demonstrate knowledge of ethical behavior as well as interpersonal and intercultural responsiveness in various settings.
- Demonstrate effective interaction and communication skills, including the ability to analyze and explain psychological concepts and research, using appropriate technology.
- Demonstrate readiness for the workplace or graduate school (e.g. self-regulation, project management, and professional judgment) and develop a feasible plan to pursue those opportunities.

Psychology, BA (42-746) (Choice 1) (4 Year Guide)

Psychology, BA (42-746) (Choice 2) (4 Year Guide)

Psychology, BA (42-746) (Choice 3) (4 Year Guide)

Psychology, BA (42-746) (Choice 4) (4 Year Guide)

Major Requirements: 40-43 Semester Hours

A student must earn a minimum grade point average of 2.0 (C) in all work taken to satisfy major and minor requirements.

- PSY 1000 - Orientation to Psychology (1)
- PSY 1100 - General Psychology GE (3)
- PSY 2130 - Learning (3)
- PSY 3220 - Life-Span Development GE (3)
- PSY 3340 - Social Psychology (3)
- PSY 4110 - History of Psychology (3)
- PSY 4150 - Cognitive Psychology (3)
- PSY 4310 - Theories of Personality (3)
- PSY 4440 - Abnormal Psychology (3)

Select One Group of Classes from the Following Choices: 9-12 Semester Hours

Choice 1: 9 Semester Hours

- PSY 3030 - Introduction to Statistics for Psychology (3)
- PSY 3100 - Research Methods (3)
- PSY 3120 - Brain and Behavior (3)

Choice 2: 10 Semester Hours

- PSY 3030 - Introduction to Statistics for Psychology (3)
- PSY 3100 - Research Methods (3)
- PSY 3130 - Physiological Psychology (4: 4 lecture, 0 lab)

Choice 3: 11 Semester Hours

- PSY 2110 - Research Design and Analysis I (4: 4 lecture, 0 lab)
- PSY 2120 - Research Design and Analysis II (4: 4 lecture, 0 lab)
- PSY 3120 - Brain and Behavior (3)

Choice 4: 12 Semester Hours

(Recommended for students planning to attend graduate school)

- PSY 2110 - Research Design and Analysis I (4: 4 lecture, 0 lab)
- PSY 2120 - Research Design and Analysis II (4: 4 lecture, 0 lab)
- PSY 3130 - Physiological Psychology (4: 4 lecture, 0 lab)

Electives from the Following: 6 Semester Hours

- PSY 4000 - Special Projects in Psychology (1-3)
- PSY 4050 - Positive Psychology (3)
- PSY 4130 - Sensation and Perception (3)
- PSY 4140 - Psychology of Human Sexuality (3)
- PSY 4180 - Seminar in Psychology (1-3)
- PSY 4230 - Psychology of Adolescence (3)
- PSY 4240 - Psychology of Aging (3)
- PSY 4320 - Psychology of Women (3)
- PSY 4330 - Multicultural Psychology (3)
- PSY 4500 - Introduction to Psychological Measurement (3)
- PSY 4540 - Introduction to Counseling Psychology (3)
- PSY 4600 - Industrial/Organizational Psychology (3)
- PSY 4730 - Cognitive and Behavioral Intervention (4)
- PSY 4740 - Forensic Psychology (3)

General Education Requirements: 36 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- PSY 1100 - General Psychology GE (3)

- PSY 3220 - Life-Span Development GE (3)

Modern Language Requirement: 9 Semester Hours

Refer to Bachelor's Degree Requirements section for fulfillment options.

Free Electives: 32-35 Semester Hours

Additional upper-level (3000/4000) electives may be required depending on choices made in major electives and general education.

Minimum Total: 120 Semester Hours

Psychology, BS (43-747) (120 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Psychology will use the knowledge and skills obtained in the program to:

- Demonstrate knowledge of the major concepts, theoretical perspectives, historical trends, and empirical findings to apply psychological principles to solve problems.
- Demonstrate knowledge of scientific reasoning and problem solving, including effective research methods.
- Demonstrate knowledge of ethical behavior as well as interpersonal and intercultural responsiveness in various settings.
- Demonstrate effective interaction and communication skills, including the ability to analyze and explain psychological concepts and research, using appropriate technology.
- Demonstrate readiness for the workplace or graduate school (e.g. self-regulation, project management, and professional judgment) and develop a feasible plan to pursue those opportunities.

Psychology, BS (43-747) (4 Year Guide)

Major Requirements: 46 Semester Hours

A student must earn a minimum grade point average of 2.0 (C) in all work taken to satisfy major and minor requirements.

- PSY 1000 - Orientation to Psychology (1)
- PSY 1100 - General Psychology GE (3)
- PSY 2110 - Research Design and Analysis I (4: 4 lecture, 0 lab)
- PSY 2120 - Research Design and Analysis II (4: 4 lecture, 0 lab)
- PSY 2130 - Learning (3)
- PSY 3130 - Physiological Psychology (4: 4 lecture, 0 lab)
- PSY 3220 - Life-Span Development GE (3)
- PSY 3340 - Social Psychology (3)
- PSY 4110 - History of Psychology (3)
- PSY 4150 - Cognitive Psychology (3)
- PSY 4310 - Theories of Personality (3)
- PSY 4440 - Abnormal Psychology (3)

Electives from the Following: 9 Semester Hours

- PSY 4000 - Special Projects in Psychology (1-3)
- PSY 4050 - Positive Psychology (3)
- PSY 4130 - Sensation and Perception (3)
- PSY 4140 - Psychology of Human Sexuality (3)
- PSY 4180 - Seminar in Psychology (1-3)
- PSY 4230 - Psychology of Adolescence (3)
- PSY 4240 - Psychology of Aging (3)
- PSY 4320 - Psychology of Women (3)
- PSY 4330 - Multicultural Psychology (3)
- PSY 4500 - Introduction to Psychological Measurement (3)
- PSY 4540 - Introduction to Counseling Psychology (3)
- PSY 4600 - Industrial/Organizational Psychology (3)
- PSY 4730 - Cognitive and Behavioral Intervention (4)
- PSY 4740 - Forensic Psychology (3)

General Education Requirements: 36 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- PSY 1100 - General Psychology GE (3)
- PSY 3220 - Life-Span Development GE (3)

Free Electives: 38 Semester Hours

Additional upper-level (3000/4000) electives may be required depending on choices made in major electives and general education.

Minimum Total: 120 Semester Hours

Online Learning and Engagement

Business Continuity Certificate (10-591) (12 hours)

Business Continuity Certificate: 12 Semester Hours

- CDM 3000 - Introduction to Crisis and Disaster Management (3)
- CDM 4715 - Business Continuity Planning (3)
- CDM 4735 - Critical Infrastructure (3)
- CDM 4745 - Crisis Management (3)

Crisis & Disaster Management, BS (43-693) (120 hours)

Major, Bachelor of Science Degree

The graduate with a Bachelor of Science degree in Crisis and Disaster Management will use the knowledge and skills obtained in the programs to:

- Demonstrate a knowledge and application of all phases of emergency management;
- Evaluate the roles, responsibilities and relationships between the private sector, public sector and non-governmental organizations in all the phases of an event or incident.
- Select methods to identify and evaluate risk exposures from internal and external hazards and to implement cost effective programs to maintain continuity of operations.
- Employ effective communication skills, knowledge of program management, organizational skills and critical thinking.
- Identify and evaluate appropriate technologies to support emergency management activities
- Recognize societal concerns, legal, professional and ethical responsibilities in the field.

Crisis and Disaster Management, BS (43-693) (4 Year Guide)

Major Requirements: 36 Semester Hours

- CDM 3000 - Introduction to Crisis and Disaster Management (3)
- CDM 3400 - Community Risk Reduction (3)
- CDM 4200 - Disaster Management Technology (3)
- CDM 4400 - Research Issues in Crisis and Disaster Management (3)
- CDM 4800 - Integrated Emergency Management (3)
- CDM 4900 - Technology Application Studies (3)
- CDM 4910 - Field Exercise Project (3) (3)
- CDM 4990 - Practicum in Crisis and Disaster Management (3-6) (3)

Select One of the Following Areas: 12 Semester Hours

Business Continuity Area

- CDM 4715 - Business Continuity Planning (3)
- CDM 4735 - Critical Infrastructure (3)
- CDM 4745 - Crisis Management (3)
- Approved Technical Elective (3)

Emergency Management Area

- CDM 3035 - Emergency Response Planning (3)
- CDM 4015 - Catastrophic Readiness (3)
- CDM 4035 - Disaster and Society (3)
- Approved Technical Elective (3)

Emergency Services Management Area

- CDM 4515 - Safety and Health for Emergency Responders (3)
- CDM 4535 - Emergency Services Management (3)

- CDM 4575 - Emergency Services Personnel Management (3)
- Approved Technical Elective (3)

Environmental Hazards Area

- CDM 3225 - Hazardous Materials Emergency Response (3)
- CDM 4215 - Environmental Disasters (3)
- CDM 4245 - Managerial Issues in Hazardous Materials (3)
- Approved Technical Elective (3)

Public Health Disaster Management Area

- CDM 4100 - Emergency Medical Technician I (3)
- CDM 4115 - Emergency Medical Technician Clinical (3)
- CDM 4175 - Public Health Disaster Management (3)
- Approved Technical Elective (3)

General Education Requirements: 42 Semester Hours

All students must complete a minimum of 42 credit hours in general education. See The General Education Program Requirements for the full listing of requirements. The following general education courses are required by this major:

- CHEM 1103 - Introduction to the Sciences: Chemistry GE (3)
  OR
- CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)

Free Electives: 42 Semester Hours

Minimum Total: 120 Semester Hours

Emergency Management Certificate (10-592) (12 hours)

Emergency Management Certificate : 12 Semester Hours

- CDM 3000 - Introduction to Crisis and Disaster Management (3)
- CDM 3035 - Emergency Response Planning (3)
- CDM 4015 - Catastrophic Readiness (3)
- CDM 4035 - Disaster and Society (3)

Emergency Services Management Certificate (10-887) (12 hours)

Emergency Services Management Certificate: 12 Semester Hours

- CDM 3000 - Introduction to Crisis and Disaster Management (3)
- CDM 4515 - Safety and Health for Emergency Responders (3)

- CDM 4535 - Emergency Services Management (3)
- CDM 4575 - Emergency Services Personnel Management (3)

Environmental Hazards Certificate (10-593) (12 hours)

Environmental Hazards Certificate (10-593): 12 Semester Hours

- CDM 3000 - Introduction to Crisis and Disaster Management (3)
- CDM 3225 - Hazardous Materials Emergency Response (3)
- CDM 4215 - Environmental Disasters (3)
- CDM 4245 - Managerial Issues in Hazardous Materials (3)

Courses

ACCT 1101 - Foundations of Financial Reporting (3)

A foundational study of the formation of business entities, and managing and reporting the flow of financial information. Emphasis is on understanding the nature of financial transactions, and preparing and analyzing the resulting financial statements. Prerequisite(s): 15 earned credit hours. Fall, Spring, Summer.

ACCT 2100 - Survey of Accounting (3)

Study of elementary financial and managerial accounting to include the preparation and use of accounting statements and use of accounting information for managerial decisions. Course may not be substituted for ACCT 1101 and/or ACCT 2102. Not available to students with credit in ACCT 2102. Spring.

ACCT 2102 - Principles of Managerial Accounting (3)

Development and use of cost and managerial accounting information for management control and decision making. Prerequisite(s): ACCT 1101; and MATH 1111 or MATH 1111R . Fall, Spring, Summer.

ACCT 2901 - Intermediate Financial Accounting I (3)

Continuing the study of the accounting cycle, preparation of the financial statements, and an introduction to accounting theory and the conceptual framework. Prerequisite(s): ACCT 1101 with a grade of C or better and a minimum GPA of 2.65. Fall, Spring.

ACCT 2920 - Cost and Managerial Accounting (3)

Application of cost and managerial accounting for decision making, financial reporting, and control of business enterprises. Prerequisite(s): ACCT 2102 with a grade of C or better. Fall.

ACCT 2930 - Tax I (3)

An introduction to federal income tax principles with a focus on the taxation of individuals. Topics include items of income (and exclusions from income), deductions (and relevant limitations), calculation of federal income tax, credits against tax, and the acquisition and disposal of assets. Fall, Spring.

ACCT 2950 - Accounting Analytics (3)

An introduction to data analytics tools and techniques used in accounting. Topics include data manipulation, data analysis, and data visualization. Intermediate and advanced Microsoft Excel and Tableau techniques are used to apply these concepts. Prerequisite(s): ACCT 1101, ACCT 2901, and CIS 1600 with grades of C or better. Spring.

ACCT 2960 - Accounting Information Systems (3)

The integration of information flows of various segments of a business into an information system of the total organization. Emphasis areas include accounting aspects of data processing, system security controls, and documentation. Prerequisite(s): ACCT 1101 and ACCT 2102 with grades of C or better. Spring.

ACCT 3102 - Intermediate Financial Accounting II (3)

The second course in the intermediate accounting series. An in-depth study of financial accounting theory and the application of generally accepted accounting principles used in financial reporting for corporate entities, with an emphasis on inventories, long-term operational assets, intangible assets, current liabilities and long-term debt. Prerequisite(s): ACCT 2901 with a grade of C or better. An additional fee is associated with this course. Fall, Spring.

ACCT 3103 - Intermediate Financial Accounting III (3)

The final course in the intermediate accounting series. A discussion of relevant financial accounting theory and the application of generally accepted accounting

principles used in financial reporting for corporate entities, with an emphasis on stockholder's equity, dilutive securities and earnings per share, investments, revenue recognition, income taxes, pensions and leases. Prerequisite(s): ACCT 3102 with a grade of C or better. An additional fee is associated with this course. Fall, Spring.

ACCT 3135 - Internship in Accounting (1-6)

Opportunity for students to gain theoretical knowledge and practical experience within a particular field of specialization. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): A declared Accounting major; Admission to the B.S.B.A. program; 60 semester hours; and overall GPA of 2.65 or above. An additional fee is associated with this course. Fall, Spring, Summer.

ACCT 4100 - Advanced Accounting (3)

This course covers financial reporting for state and local governments, not-for-profit entities, and partnerships. It also provides an introduction to concepts and financial reporting for business consolidations. Prerequisite(s): ACCT 3103 with a grade of C or better or concurrent enrollment. An additional fee is associated with this course. Fall, Spring.

ACCT 4101 - Managing Decision Making Using Excel (3)

This course is designed to prepare students to make decisions based on cost accounting information. Specifically, the course covers decision making based on economic concepts, how the methods accountants employ to measure costs influence the decision making process, how to use Microsoft Excel to organize, analyze, and clearly present large data sets, and finally how principal-agent theory affects the outcomes of decisions made. After successfully completing this course, students should be able to competently make decisions when presented with accounting data. Students should also be able to reduce goal incongruence, thereby increasing the chances that their decisions will be carried out. This course is co-listed with ACCT 5101. Prerequisite(s): ACCT 2102 with a grade of C or better. An additional fee is associated with this course.

ACCT 4105 - Auditing (3)

Study of theory and practice relating to attestation engagements, professional liability and ethics. Prerequisite(s): ACCT 2960 with a grade of C or better or concurrently. Admission to the B.S.B.A. program. An additional fee is associated with this course. Fall, Spring.

ACCT 4114 - Financial Reporting and Analysis (3)

Students gain financial statement analytical perspectives required of auditors and credit and equity analysts. Students are also exposed to current advanced topics in financial reporting. This course is co-listed with ACCT 5115. Prerequisite(s): ACCT 3103 or consent. An additional fee is associated with this course.

ACCT 4121 - Financial Accounting and Reporting I (3)

This course provides an in-depth, advanced study of the theory and practice of financial reporting, with an emphasis on preparing for the Certified Public Accounting Examination. Select topics include the conceptual framework, equity, statement of cash flows, pensions and reporting for governmental and not-for-profit entities. This course is co-listed with ACCT 5120. Prerequisite(s): ACCT 3103 and ACCT 4100. An additional fee is associated with this course.

ACCT 4130 - Tax II (3)

A continuation of federal income tax principles with a focus on tax research, responsibilities in tax practice, and an introduction to the taxation of business entities. This course is co-listed with ACCT 5030. Prerequisite(s): ACCT 2930 with a grade of C or better. An additional fee is associated with this course. Fall, Spring.

ACCT 4135 - Internship in Accounting (1-6)

Opportunity for students to gain theoretical knowledge and practical experience within a particular accountancy specialization. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with ACCT 5135. Prerequisite(s): Admission to BSBA program, GPA of 3.25 and approval of program

coordinator. An additional fee is associated with this course.

ACCT 4137 - Advanced Tax I (3)

Course in federal income taxes with a focus on income tax planning, the taxation of property transactions, and the taxation of partnerships. This course is co-listed with ACCT 5137. Prerequisite(s): ACCT 4130. An additional fee is associated with this course. Fall.

ACCT 4138 - Advanced Tax II (3)

Course in federal income taxes with a focus on the taxation of C-Corporations and S-Corporations, including an introduction to multi-jurisdictional tax issues. This course is co-listed with ACCT 5138. Prerequisite(s): ACCT 4130.

ACCT 4140 - Financial Accounting and Reporting II (3)

This course provides an in-depth, advanced study of the theory and practice of financial reporting, with an emphasis on preparing for the Certified Public Accounting Examination. Select topics include the investments, consolidations, partnerships, leases, derivatives and hedging, foreign currency accounting. This course is co-listed with ACCT 5140. Prerequisite(s): ACCT 3103. An additional fee is associated with this course.

ACCT 4155 - Fraud Risk Management/Examination (3)

Course is a survey of white-collar/occupational fraud schemes, and how to identify, investigate, and mitigate them. The merits of criminal and civil legal action as a deterrent and means of recovery will be explored. We will examine the impact of criminologists on current investigation standards. Special topics also include expert witnesses, fraud in bankruptcy, and fraud in business acquisitions. The course will cover a wide array of concealed thefts in organizations, corruption in business and government, and financial statement frauds. The course will specify the impacts of fraud on financial statements, but no prior accounting knowledge will be assumed. This course is co-listed with ACCT 5155. Prerequisite(s): ACCT 4130. An additional fee is associated with this course. Spring.

ACCT 4161 - Data Analytics for Accountants (3)

This course will prepare accounting and business students to be a strategic business partner in the organization. The course will challenge students to think critically about whether and how data can improve business performance, create opportunities, and help manage risks. The course will also expose students to some of the most common business intelligence and analysis software packages currently used in organizations. This course is co-listed with ACCT 5160. An additional fee is associated with this course.

ACCT 4165 - Special Projects in Accounting (1-3)

Individualized or group study under the supervision of school faculty. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with ACCT 5165. Prerequisite(s): Consent of instructor. An additional fee is associated with this course. Offered as needed.

ACCT 4200 - Governmental Accounting (2)

An in depth coverage of the theory and practice of accounting for state and local governmental entities and not-for-profit entities. Prerequisite(s): Admission to B.S.B.A. program and ACCT 3102 with a grade of C or better. An additional fee is associated with this course.

ACST 1300 - Basic Statistics GE (3)

A study of elementary statistics for non-department majors. This course will focus on the concepts and reasoning of statistics, not on computation. Software is used to allow exploration of real-world data. Topics include descriptive statistics, sampling methods, characteristics of observational studies and experiments, statistical estimation, and tests of statistical hypothesis. Prerequisite(s): Placement according to University policy applies. High school algebra with a grade of C or better, MATH 1070 with a grade of C or better or MATH 1101 with a grade of C or better.

This course is equivalent to MOTR MATH 110

Statistical Reasoning in the Mathematical Sciences Knowledge Area.

ACST 1300R - Basic Statistics with Review GE (5)

A study of elementary statistics. Topics include descriptive statistics, basic design of surveys and experiments, inferential statistics, and tests of statistical hypothesis. This course is designed for student who do not meet the prerequisite requirements for ACST 1300 Basic Statistics. Along with the statistics content, this course also provides additional support and hands on experience for students. Prerequisite(s): Placement according to University policy applies.

This course is equivalent to MOTR MATH 110 Statistical Reasoning in the Mathematical Sciences Knowledge Area.

ACST 2310 - Statistics and Data Analysis (3)

A study of statistical thinking and data analysis. Topics include descriptive statistics, design of surveys and experiments, inferential statistics, hypothesis testing, categorical analysis, multiple regression analysis, and analysis of variance. Prerequisite(s): MATH 1111 with a grade of C or better or MATH 1111R with a grade of C or better or MATH 1150 with a grade of C or better ; or concurrent with MATH 1131 with a grade of C or better or MATH 1151 with a grade of C or better. An additional fee is associated with this course.

ACST 3311 - Introduction to Probability and Statistics (3)

This course provides a calculus based introduction to probability theory and statistics. Coverage includes probability and commonly used distributions, descriptive statistics, confidence intervals, hypothesis testing, correlation and simple linear regression. Prerequisite(s): MATH 1131 or MATH 1151. An additional fee is associated with this course. Fall.

ACST 4312 - Probability Models (3)

An in-depth study of probability theory and stochastic processes with their applications in fields such as computer science, management science, social science, and operations research. This course is co-listed with ACST 5312. Prerequisite(s): MATH 2153 with a grade of C or better or concurrently and ACST 3311 with a grade of C or better. An additional fee is associated with this course.

ACST 4313 - Review for Actuarial Exam P/1 (1)

Problem solving strategies from probability that are uniquely applied to actuarial science. *May be repeated.* Prerequisite(s): ACST 4312 with a grade of C or better. Corequisite(s): ACST 4312. An additional fee is associated with this course.

ACST 4315 - Mathematical Statistics (3)

Mathematical foundation of statistical inference. Topics include but are not limited to random sampling, sampling distributions, methods of estimation, properties of estimators, confidence intervals, hypothesis testing, and their applications. This course is co-listed with ACST 5315. Prerequisite(s): ACST 4312 with a grade of C or better. An additional fee is associated with this course.

ACST 4321 - Regression Analysis (3)

Applied statistical models and methods with an emphasis on regression analysis. This course is co-listed with ACST 5321. Prerequisite(s): ACST 3311 with a grade of C or better. An additional fee is associated with this course.

ACST 4322 - Time Series Models and Analysis (3)

Applied statistical models and methods with an emphasis on time series and forecasting. This course is co-listed with ACST 5322. Prerequisite(s): ACST 4321 with a grade of C or better. An additional fee is associated with this course.

ACST 4323 - Statistical Aspects of Experimental Design (3)

Calculus based statistical aspects of experimental designs that include randomization, replication, blocking, and factorial experiments. This course is co-listed with ACST 5323. Prerequisite(s): ACST 3311 with a grade of C or better. An additional fee is associated with this course.

ACST 4331 - SAS Programming for Statistical Analysis (3)

Introduction to SAS programming for statistical analysis, including reading, writing, managing, describing, and analyzing data, regression analysis, hypothesis testing, and analysis of variance. This course is co-listed with ACST 5361. Prerequisite(s): ACST 3311 with a grade of C or better. An additional fee is associated with this course.

ACST 4335 - Multivariate Statistical Analysis (3)

Review of regression and analysis of variance. The multivariate normal distribution, Hotelling's T-square distribution, Wishart distribution, discriminant analysis, multivariate analysis of variance, factor analysis. This course is co-listed with ACST 5331. Prerequisite(s): ACST 4321 or MATH 3710 with a grade of C or better. An additional fee is associated with this course. Fall.

ACST 4351 - Principles of Data Mining (3)

An in-depth study of data mining techniques such as visualizing and exploring data, decision tree and classification, logistic regression, support vector machines, cluster analysis, and predictive modeling for classification and regression. This course is co-listed with ACST 5351. Prerequisite(s): ACST 4321 with a grade of C or better. An additional fee is associated with this course.

ACST 4390 - Internship in Actuarial Science or Statistics (1-6)

Opportunity for students to gain knowledge in areas of actuarial science, statistics, or data analysis, both theoretical and applied, that would not normally be included as a part of the curriculum. Internship contract must be completed prior to beginning work/learning experience. A maximum of 6 semester hours may be applied to any one degree. *May be repeated for a maximum of 12 semester hours.* Prerequisite(s): Consent of the Actuarial Science and Statistics Committee. An additional fee is associated with this course.

ACST 4510 - Mathematics of Finance (3)

The basic measures of interest, annuities, discounted cash flow analysis, and their applications. This course is co-listed with ACST 5510. Prerequisite(s): MATH 1152 with a grade of C or better. An additional fee is associated with this course. Fall, Spring.

ACST 4511 - Review for Actuarial Exam FM/2 (1)

Problems from financial mathematics including modern financial analysis. *May be repeated.* Prerequisite(s): ACST 4510 with a grade of C or better. An additional fee is associated with this course.

ACST 4520 - Life Contingencies I (3)

Theory and applications of life contingency risks in the areas of insurance, valuation, and risk management. This course is co-listed with ACST 5520. Prerequisite(s): ACST 4312 with a grade of C or better and ACST 4510 with a grade of C or better. An additional fee is associated with this course.

ACST 4530 - Statistical Modeling (3)

A model-based study of statistical data that is used in decision-making. Models include aggregate loss models, and parametric and non-parametric models. This course is co-listed with ACST 5530. Prerequisite(s): ACST 4321 with a grade of C or better and ACST 4312 with a grade of C or better. An additional fee is associated with this course.

ACST 4540 - Insurance Modeling (3)

A model-based study of statistical data that is used in decision-making. Models include aggregate loss models, construction of empirical models, parametric models, and credibility models. This course is co-listed with ACST 5540. Prerequisite(s): ACST 4520 and ACST 4530 both with grades of C or better. An additional fee is associated with this course. Fall.

ACST 4645 - Senior Projects in Actuarial Science and Statistics (3)

A capstone experience for student majoring in Actuarial Science and Statistics, requiring students to integrate Actuarial Science or Statistics skills learned throughout their program of study to solve real world problems. The focus is on the use of technology, such

as SAS, R, Microsoft Excel, and Actuarial Software Prophet, to solve complex problems and how to clearly communicate the results of analysis to a non-technical audience. The course will also include research into Professional Code of Ethics and the employment opportunities in actuarial science and statistics. Prerequisite(s): At least 80 hours completed. Corequisite(s): For Actuarial Option concurrent with ACST 4520; for Statistics Option concurrent with ACST 4321. An additional fee is associated with this course.

ACST 4910 - Special Topics in Actuarial Science or Statistics (1-3)

Individual reading and research on some topics not included in the regular offerings of the school. *May be repeated for a maximum of 6 semester hours.* Corequisite(s): Only available to Actuarial Science and Statistics majors. An additional fee is associated with this course.

AERO 1010 - Heritage and Values of the United States Air Force I (2)

A survey course designed to introduce students to the United States Air Force and provides an overview of the basic characteristics, missions, and organization of the Air Force. Applies communicative skills. Leadership lab.

AERO 1020 - Heritage and Values of the United States Air Force II (2)

Continues introducing students to the United States Air Force and provides an overview of the basic characteristics, missions, and organization of the Air Force. Applies communicative skills. Leadership lab. Prerequisite(s): AERO 1010.

AERO 2010 - Team and Leadership Fundamentals I (2)

A survey course that focuses on laying the foundation for teams and leadership. The topics include skills that will allow cadets to improve their leadership on a personal level and within a team. The courses will prepare cadets for their field training experience where they will be able to put the concepts learned into practice. The purpose is to instill a leadership mindset and to motivate sophomore students to transition from AFROTC cadet to AFROTC officer candidate. Applies communicative skills. Leadership lab. Prerequisite(s): AERO 1020.

AERO 2020 - Team and Leadership Fundamentals II (2)

Continues laying the foundation for teams and leadership. The topics include skills that will allow cadets to improve their leadership on a personal level and within a team. The courses will prepare cadets for their field training experience where they will be able to put the concepts learned into practice. The purpose is to instill a leadership mindset and to motivate sophomore students to transition from AFROTC cadet to AFROTC officer candidate. Applies communicative skills. Leadership lab. Prerequisite(s): AERO 2010.

AERO 3010 - Leading People and Effective Communication I (3)

Focuses on teaching cadets advanced skills and knowledge in management and leadership. Special emphasis is placed on enhancing leadership skills and communication. Cadets have an opportunity to try out these leadership and management techniques in a supervised environment as juniors and seniors. Leadership lab. Prerequisite(s): AERO 2020.

AERO 3020 - Leading People and Effective Communication II (3)

Continues teaching cadets advanced skills and knowledge in management and leadership. Special emphasis is placed on enhancing leadership skills and communication. Cadets have an opportunity to try out these leadership and management techniques in a supervised environment as juniors and seniors. Leadership lab. Prerequisite(s): AERO 3010.

AERO 4010 - National Security Affairs/Preparation for Active Duty I (3)

Designed for college seniors and gives them the foundation to understand their role as military officers in American society. It is an overview of the complex social and political issues facing the military profession and requires a measure of sophistication commensurate with the senior college level. The final semester provides information that will prepare the cadets for Active Duty. Leadership lab. Prerequisite(s): AERO 3020.

AERO 4020 - National Security Affairs/Preparation for Active Duty II (3)

Continuation for college seniors and gives them the foundation to understand their role as military officers in American society. It is an overview of the complex social and political issues facing the military profession and requires a measure of sophistication commensurate with the senior college level. The final semester provides information that will prepare the cadets for Active Duty. Leadership laboratory. Prerequisite(s): AERO 4010.

AS 1000 - Introduction to Africana Studies (3)

This course provides a comprehensive introduction to the interdisciplinary field of Africana Studies, offering students a foundational understanding of the histories, cultures, and experiences of people of African descent across the globe. Through a combination of historical analysis, cultural exploration, and critical inquiry, students will engage with key themes, concepts, and debates that define Africana Studies. Spring.

AS 4000 - Special Projects in Africana Studies (3-9)

Study, interpretation, and discussion of special topics and problems in Africana Studies. *May be repeated for a maximum of 9 semester hours.* Fall, Spring.

AGRI 1000 - Exploratory Problems in Agriculture (1-3)

Individual or group work on introductory level technical problems in agriculture. Provide exploration of content not available through normal course offerings. Prerequisite(s): Consent of school.

AGRI 1100 - Strategies for Success in the UCM Agriculture Program (1)

Introduction to the agriculture faculty, facilities, and academic resources available to UCM agriculture students. Students will prepare a plan of study to ensure graduation in four years and will prepare resumes and learn job search skills needed to secure internships required for graduation. Must be taken during the first year of the agriculture program. Fall.

AGRI 1200 - Agriculture Mechanics (3: 2 lecture, 1 lab)

Basic skills in agricultural mechanics including mechanics safety, tool identification and use, electrical wiring, agriculture structures/carpentry, concrete, plumbing, arc and MIG welding, oxy-fuel welding and cutting, surveying, fence building and basic engine maintenance. An additional fee is associated with this course.

AGRI 1300 - Introduction to Plant Science (1: 1 lecture, 0 lab)

Emphasis on the structure/function relationships of anatomy, morphology, and physiology of agriculture crops.

AGRI 1310 - Crop Science (3: 3 lecture, 0 lab)

This course is designed to educate students about crop classifications, cropping systems, tillage, and principles and practices of grain, fiber, and oil seed crop production.

AGRI 1420 - Introduction to Animal Science (3)

Discuss the evaluation of basic biological systems of the farm animal livestock species including behavior, immunology, circulatory, muscular, skeletal, digestive, and reproductive systems and functions of those systems. In addition, societal issues regarding animal production will be discussed. An additional fee is associated with this course.

AGRI 1600 - Introduction to Horticulture Science (4: 3 lecture, 1 lab)

A basic introduction to plant science with an examination of the nature of science with an emphasis on horticulturally-significant plants, specifically vegetables, fruits, and ornamentals. The basic areas of plant taxonomy, anatomy, morphology, physiology, diversity, and practical knowledge needed to grow these plants will be covered. An additional fee is associated with this course.

AGRI 2110 - Agricultural Records (3)

Fundamental principles and practices of record buyers as applied to the organization and operation of agricultural enterprises.

AGRI 2120 - Agricultural Cooperatives (1)

Environment, organization and business function of modern agricultural cooperatives. Prerequisite(s): ECON 1011.

AGRI 2130 - Global Agriculture (3)

Interaction of culture and farming/food systems worldwide emphasizing the interaction of cultures with agricultural production/food systems and the influence this has on social, economic, governmental, and environmental factors.

AGRI 2140 - Agriculture Professional Development Seminar (1)

Seminar for students focusing on the job search process, employment opportunities, and related career problems in the fields of agriculture and related natural resources. Recommended for students in the sophomore or junior year. Fall, Spring.

AGRI 2315 - Forages and Pasture Management (3: 2 lecture, 1 lab)

Use of forage in grassland agriculture, identification of forage grasses and legumes, cultural practices including weed control, mechanization of forage harvesting and storage; types of pastures, different systems of grazing management and utilization of forages by farm animals.

AGRI 2320 - Introduction to Precision Agriculture (3: 3 lecture, 0 lab)

This course is designed to educate students on the fundamental components of precision agriculture. Topics include: the global positioning system (GPS), geographic information systems (GIS), remote sensing, yield monitoring, site-specific management (SPM), variable rate application (VRA), and data analysis and decision-making in modern agriculture. Spring, Summer.

AGRI 2330 - Soil Science (3)

Students will learn about the nature of soils and how soil is formed from parent materials. Students will also learn how soils are classified, what the soil physical properties are, and the ecology of soils in relation to the abiotic and biotic aspects of the soil environment. An additional fee is associated with this course. Fall.

AGRI 2331 - Soils Management (3: 2 lecture, 1 lab)

This course will focus on soil properties that can be directly altered by human activities. These include the management of plant nutrients, soil pH, soil water, topsoil erosion and how to utilize online soil data to make appropriate management decisions. There is a lab with this course. Spring.

AGRI 2425 - Introduction to Animal Production (3: 3 lecture, 0 lab)

Discuss the fundamental principles of farm animal livestock management and evaluation through the application of animal science methodologies to animal production techniques. An additional fee is associated with this course. Spring.

AGRI 2430 - Animal Handling (3: 3 lecture, 0 lab)

Discussion and experiential learning of the techniques, materials and methods of handling the farm animal livestock species in production, research and teaching operations. Fall, Spring.

AGRI 2535 - Agriculture Issues and Literacy 3

A course designed to provide a breadth of knowledge to increase the understanding, awareness, and critical analysis of contemporary consumer issues and their effect upon the social, political, economic and cultural aspects of society. Topics will include issues related to product consumption and production regarding environmental issues, biotechnology, animals, crops, career, economy and trade, policy, food quality, safety, and international issues. Fall, Spring.

AGRI 2615 - Fruit and Vegetable Production (3: 2 lecture 1 lab)

Students will learn about the commercial production practices, both nonorganic and organic, of selected fruit and vegetable crops commonly grown in Missouri. The use of greenhouse, high tunnel, low tunnel, hydroponics, pest and disease management as well as post-handling practices, packaging and marketing of these crops will be covered. Fall, Spring.

AGRI 2620 - Floral Design (3: 2 Lecture, 1 lab)

Students will learn how to apply design elements to create centerpieces, mixed bouquets, wedding compositions, funeral compositions, and holiday arrangements using the flowers, materials and tools appropriate for each floral composition. The business practices, pricing strategies, and marketing strategies unique to the floral industry are also covered. An additional fee is associated with this course. Fall, Spring.

AGRI 2625 - Beekeeping and Apiculture (3: 2 lecture 1 lab)

The biology of the bee and the craft of apiculture will be examined by exploring bee anatomy, physiology, colony social structure and language, pest/diseases and pollination ecology. Students will be introduced to the basic tools and knowledge to keep bees responsibly and productively and learn how to effectively communicate the importance of apiculture to the general public. Spring, Summer.

AGRI 3110 - Agri-Business Management (3)

Management functions and economics of agricultural organizations and operations, including input-output analysis, efficient allocations of resources, enterprise combinations, and budgeting analysis. Prerequisite(s): ECON 1011; and MATH 1111 or concurrently or MATH 1111R or concurrently. Fall.

AGRI 3120 - Distribution and Marketing Agriculture Products (3)

Principles governing the distribution, prices, and marketing of agriculture products. Prerequisite(s): ECON 1011. Fall.

AGRI 3130 - Agritourism Operations (3)

Emphasis on any activity, enterprise, or business that combines primary elements and characteristics of agriculture and tourism. Travel to state or regional agritourism operations will be required. Summer.

AGRI 3135 - Agritourism Event Management (3)

This course presents planning and practices applied to agritourism events and attractions. The course underscores that agritourism attractions and events need to be developed and managed entities. Focusing on determinant and execution of event success and the role and importance of comprehensive event planning. Students will gain an understanding of different types of agritourism events, the factors that go into planning them, and the expectations of participants. Students will plan or implement an agritourism event as a requirement of this course. Fall.

AGRI 3140 - Agricultural Analysis and Statistics (3)

Statistical analysis and experimental designs as applied to agriculture. Prerequisite(s): MATH 1111 or MATH 1111R. Fall.

AGRI 3200 - Farm Power and Machinery (3)

Mechanical work on the farm, including selection, cost, and care of farm machinery. Includes laboratory practices on tractors, gas engines, plows, mowers, and other farm machinery. An additional fee is associated with this course. Spring.

AGRI 3210 - Soil and Water Conservation (3)

Soil and water conservation. Use of farm level, laying out and establishing terraces, water ways, diversion channels, and farm ponds. Prerequisite(s): AGRI 2330 or AGRI 2331.

AGRI 3320 - Field Crop Management (3)

Management of crops, crop rotation, and crop utilization. Prerequisite(s): AGRI 1310 or AGRI 2315, and AGRI 2330.

AGRI 3350 - UAS Agriculture Applications (3:2 lecture, 1 lab)

This course focuses on the applications for unmanned aerial systems (UAS) in agriculture, including federal drone regulations, sensor types, mission planning, image capture, its processing using software, and interpretation. Fall.

AGRI 3410 - Animal Breeding and Genetics (2: 2 lecture, 0 lab)

Application of genetic principles for selection and mating of farm animal livestock through the use of phenotypic and genotypic analysis and breeding systems. Prerequisite(s): AGRI 1420 and AGRI 2425. Fall.

AGRI 3415 - Meat Science (2: 1 lecture, 1 lab)

Principles of meat processing, inspection, grading, sanitation, preservation and storage with an overview of muscle composition, structure, function, and nutritive value. An additional fee is associated with this course. Spring.

AGRI 3420 - Animal Nutrition (3: 2 lecture, 1 lab)

Basic principles of animal nutrition - study of the digestive tract anatomy, basic nutrients, factors affecting nutrient utilization, and feed formulation, including classification and composition of feedstuffs. Prerequisite(s): AGRI 1420. An additional fee is associated with this course. Fall.

AGRI 3425 - Specialty Livestock Production (1: 1 lab)

This course is designed to teach basic farm animal husbandry skills and introduce students to the specialty livestock that is important in Missouri agriculture. Focus is on hands-on learning in the classification, anatomy, nutrition, reproduction, nutrition, care, equipment/facilities, marketing and opportunities in the areas of equine, goats and poultry industries. (1 Laboratory) Prerequisite(s): AGRI 1420.

AGRI 3610 - Integrated Pest Management (3)

This course is designed to educate students about insect pest behavior, classification, and identification, pest scouting, and the use of various strategies, methods, and tools to keep the pest population below the economic threshold level. An additional fee is associated with this course.

AGRI 3615 - Greenhouse Management (3: 2 lecture; 1 lab)

Students will learn about greenhouse construction along with heating/cooling technologies as well the planting, irrigation, and fertigation technologies available for greenhouse crop production. Growth regulators, light, temperature and fertilizer measuring tools will also be covered as well as marketing, pricing strategies and business practices specific to greenhouse management. Prerequisite(s): AGRI 1600. Spring.

AGRI 3620 - Residential Landscape Design (3: 2 lecture, 1 lab)

Theory and practice of landscaping the home, farmstead, and small properties, including elementary design, soil preparation, selection of plant material, and cultural practices. An additional fee is associated with this course. Spring.

AGRI 3640 - Horticultural Propagation Materials (3: 2 lecture, 1 lab)

Includes materials, types of plants, structure of plants, and methods used in propagation. Prerequisite(s): AGRI 1600. An additional fee is associated with this course.

AGRI 3810 - Internship in Agriculture (1-3)

Provides experiences for students in cooperating agricultural businesses, agencies and other organizations. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): Consent.

AGRI 4000 - Special Projects in Agriculture (1-6)

Investigation of contemporary problems and issues in agriculture by selected individuals or groups. *May be repeated for a maximum of 9 semester hours.* An additional fee is associated with some sections of this course.

AGRI 4101 - Agricultural Capstone Experience (1)

This senior capstone course culminates in students demonstrating general knowledge in the agriculture core curricula, demonstrating completed knowledge in the student's chosen option within agriculture science, and a lecture series from influential agriculture leaders. An integration of agricultural knowledge and problem-solving skills will be applied to case studies in a seminar forum. Students will also have an opportunity to share insight into the direction and future of the Agriculture program by sharing comments on educational effectiveness. Prerequisite(s): 24 semester hours of agriculture courses and senior standing.

AGRI 4110 - Agricultural Futures Trading (3)

Examination of techniques used in pricing products in the agricultural commodities futures market. Emphasis on futures trading as a marketing tool with some consideration of alternative speculating techniques. Prerequisite(s): AGRI 3120.

AGRI 4115 - Agriculture and Food Law (3)

Agriculture and Food Law is a course designed to introduce students to laws and legal issues related to agriculture, agribusiness, and property as related to rural living and the food production system. It is not a course designed to give students legal advice and the material taught should not be interpreted as such. Topics to be covered include judicial process and types of law, tort law and product liability related to agricultural enterprises and the food system, inheritance law, and other legal issues facing owners or operators of our nation's natural resources. Prerequisite(s): Junior or senior standing or consent of instructor. Fall, Spring.

AGRI 4120 - International Agriculture (3)

Economic, cultural, governmental and environmental factors which influence agricultural production and trade among countries. This course is co-listed with AGRI 5120. Prerequisite(s): AGRI 2130 and AGRI 3120. Spring.

AGRI 4140 - Agricultural Policy (3)

History, principles, settings, objectives, and methods of policy development as applied to agriculture in our society. This course is co-listed with AGRI 5140. Prerequisite(s): AGRI 3110 and AGRI 3120. Spring.

AGRI 4150 - Natural Resource Economics (3)

Nature of natural resources; economic efficiency as basis for natural resource use; externalities in natural resource use; factors influencing environmental quality; alternate public policy tools for influencing natural resource use. This course is co-listed with AGRI 5150. Prerequisite(s): ECON 1010 and ECON 1011.

AGRI 4200 - Advanced Agriculture Mechanics (3: 2 lecture, 1 lab)

Designed to develop applied skills in agricultural mechanics for use in all agricultural areas dealing with construction of farm buildings and to complement other degree areas such as Horticulture in small gasoline engine overhaul and repair and to be trained with lifetime skills in the high demand job areas. Course content includes Ag mechanics safety, building a small portable building, concrete and repair and overhaul of small gasoline engines. Prerequisite(s): AGRI 1200. An additional fee is associated with this course.

AGRI 4300 - Soil Fertility and Fertilizers (3)

Theory and practice of utilizing agricultural fertilizers to maximize soil productivity. Prerequisite(s): AGRI 2330. Spring.

AGRI 4310 - Plant Breeding and Genetics (3)

The principles involved in the selection and development of economically important plants. Traditional and modern practices (cell culture and biotechnology) will be discussed. Prerequisite(s): AGRI 1600 or AGRI 2315 or BIOL 1111. An additional fee is associated with this course. Fall.

AGRI 4320 - Plant Diseases (3)

An introduction to plant diseases with emphasis on recognition and control of economically and environmentally important species. Prerequisite(s): AGRI 1600 or AGRI 1310 or AGRI 2315 or BIOL 1111. Fall.

AGRI 4330 - Soils Management (3)

Principles of soils management as applied to physical improvement and fertility maintenance of soils. Prerequisite(s): AGRI 2330.

AGRI 4340 - Weed Science and Management (3: 2 lecture, 1 lab)

This course relates the fundamental principles of weed science to weed management situations encountered in the field. Weed identification, weed population estimation, methods of weed management, types of herbicides, herbicide labels, herbicide formulations, calculations, and applications, modes of action of herbicides, and plant-herbicide-environment interactions will be emphasized. Prerequisite(s): AGRI 1310 Fall.

AGRI 4350 - Applications in Precision Agriculture (3:2 lecture, 1 lab)

Technological innovation, its adoption, and diffusion in the agricultural sector are the focus of this course. Students will work individually or in a group in the increasingly networked, digital, automated, and data-rich environment, and gain skills in agricultural and environmental data analysis and their application to make better crop and livestock management decisions. Prerequisite(s): AGRI 2320. Spring.

AGRI 4410 - Animal Health and Diseases (3)

Anatomy, physiology, disease control, parasitic control, and sanitation of farm animals. This course is co-listed with AGRI 5510. Prerequisite(s): AGRI 1420 and CHEM 1104. Spring.

AGRI 4415 - Animal Reproduction (3)

Reproductive physiology of farm animals with practice in evaluation of semen, artificial insemination, and methods of pregnancy diagnosis. Prerequisite(s): AGRI 1420. An additional fee is associated with this course.

AGRI 4430 - Animal Science: Beef (3)

Systems of beef production. Includes breeding, feeding, and management of commercial and purebred beef. This course is co-listed with AGRI 5430. Prerequisite(s): AGRI 1420. An additional fee is associated with this course. Spring.

AGRI 4435 - Animal Science: Pork (3)

Systems of pork production. Includes breeding, feeding, and management of commercial and purebred swine. This course is co-listed with AGRI 5435. Prerequisite(s): AGRI 1420. An additional fee is associated with this course. Spring.

AGRI 4440 - Advanced Beef Cattle and Swine Production (4: 3 lecture, 1 lab)

Management techniques utilized in commercial and purebred beef cattle and swine production. The four production segments for each industry will be covered. For each segment of the industry, appropriate information pertaining to reproduction, genetics and selection strategies, nutrition, and health management will be discussed in class lecture and performed in hands-on laboratories. Prerequisite(s): AGRI 1420 and AGRI 2425 An additional fee is associated with this course.

AGRI 4600 - Horticultural Plants I: Woody (3: 2 lecture, 1 lab)

Identification, description, climatic adaptation, classification, characteristics and best landscape use of woody horticultural trees and shrubs. This course is co-listed with AGRI 5600. Prerequisite(s): AGRI 1600 or BIOL 1111. An additional fee is associated with this course. Fall.

AGRI 4605 - Horticultural Plants II: Herbaceous (3: 2 lecture, 1 lab)

Identification, description, adaptation, classification, cultural characteristics and best use of herbaceous horticultural plants. This course is co-listed with AGRI 5605. Prerequisite(s): AGRI 1600. An additional fee is associated with this course.

AGRI 4610 - Turfgrass Science (3: 2 lecture, 1 lab)

Selection, identification, establishment and maintenance of turfgrasses. This course is co-listed with AGRI 5610. Prerequisite(s): AGRI 1600 and AGRI 2330. An additional fee is associated with this course.

AGRI 4800 - Topics in Agriculture (1-3)

Individual investigation of a special problem in agriculture in the student's major field not available under regular classes. May be accomplished by reports, surveys, discussions, bibliographies, experiments, and library research. *May be repeated for a maximum of 3 semester hours.* Prerequisite(s): Consent.

AGRI 4900 - Planning and Conducting Programs in Agricultural Education (2)

Development and organization of vocational agriculture programs at the secondary level to meet the needs of local schools and community. This is a professional education course.

AGRI 4910 - Supervised Agriculture Experience Programs in Agricultural Education (2)

Understandings and competencies required to establish, administer, and evaluate supervised agricultural experience programs. This is a professional education course.

AGRI 4920 - Lab Management in Agricultural Education (2)

The selection and organization of teaching materials for agriculture labs, planning facilities, selection of supplies essential in establishing and teaching agriculture labs. Prerequisite(s): AGRI 4900.

AGRI 4930 - Methods of Teaching Agricultural Education (2)

Fundamentals of Agricultural Education including: Foundations of Agricultural Education, methods of teaching Ag Ed, teaching special populations, and evaluation of the learning process. Prerequisite(s): Admission to Teacher Education Program.

AGRI 4940 - Secondary Field Experience II (1)

Experiences in the secondary school classroom that provide the teacher candidate more advanced involvement in the teaching-learning process. Prerequisite(s): Admission to Teacher Education Program; should be taken concurrently with AGRI 4930 during the Professional semester. Spring.

ANTH 1810 - Human Prehistory GE (3)

Surveys the empirical evidence of fossils and artifacts for human biological and cultural origins from circa five million to five thousand years ago.

ANTH 1820 - Cultural Anthropology GE (3)

Surveys the origin, development, and varieties of contemporary cultures, including non- Western; comparisons of technology, customs, groups, and institutions between and among these cultures; implications of earlier cultures for modern society.

This course is equivalent to MOTR ANTH 201 Cultural Anthropology in the Social & Behavioral Sciences Knowledge Area.
This is a sustainability course.

ANTH 2820 - Anthropology of Food (3)

Delves into how and why we eat what we eat. Students approach food, drink, spices, and drugs in terms of evolution and culture.

ANTH 2830 - Hoax and Myth in Anthropology (3)

The anatomy of significant archaeological hoaxes, outrageous claims, and anthropology in popular culture are examined. This course provides tools and critical thinking skills for evaluation of claims and proposed evidence in science and pseudo-science.

ANTH 2845 - Biological Anthropology (3)

This course uses evolution, anatomy, taxonomy, and behavior to study human variation and adaptations, primates, and our fossil ancestors.

ANTH 3810 - Applied Anthropology (3)

Applications of the four major subfields of anthropology: cultural anthropology, physical anthropology, archaeology, and linguistics.
This is a sustainability course.

ANTH 3820 - World Archaeology (3)

An examination of societies that are now extinct and an introduction to the field and laboratory methods used to reconstruct their cultures.

ANTH 3830 - Anthropological Linguistics (3)

Introduction to study of languages and their acquisition, phonology, morphology and syntax, orthography, modality and proxemics. Students also complete observations of language use among primates and human populations, and create their own languages.

ANTH 3840 - Human Variation (3)

Recent human physical variation is studied through the concepts of biogeography, microevolution, genetics, and anatomy. This course provides context to address differences and similarities of human groups around the world today.

ANTH 3850 - Globalization and Culture (3)

A survey of extant indigenous and non-Western cultures with a focus on 21st century cultural developments, and application of cross-cultural and material culture study methods.

ANTH 4810 - Forensic Anthropology (3)

The study of human skeletons and bone structure, including the proper identification of variations of age, sex, ancestry and causes of death.

ANTH 4815 - Special Projects in Anthropology (1-6)

Study, interpretation, and discussion of special topics and problems in anthropology. *May be repeated for a maximum of 15 semester hours.* This course is co-listed with ANTH 5815. Prerequisite(s): Consent of instructor.

ANTH 4820 - Anthropology of Gender (3)

Explores cultural factors influencing roles of women and men in a variety of cultures, from small foraging bands to large industrialized states. Topics include cultural influences on sexual equality, sexual hierarchy, heterosexuality, and homosexuality. This course is co-listed with ANTH 5820.

ANTH 4830 - Archaeological Field Research (3)

Field experience in which students learn archaeological methods of surveying, recording and excavation, as well as how and why we investigate and preserve sites.

ANTH 4835 - Anthropological Study Tour (3)

A faculty-led course abroad allowing students to incorporate and apply anthropological theories and practices in an international experience, such as assessing museum exhibits. This course is co-listed with ANTH 5835.

ANTH 4840 - Historical Archaeology (3)

The study of artifacts, architecture, and other material culture to address anthropological topics, such as race, gender, and class, within historic North America. This course is co-listed with ANTH 5840.

ANTH 4850 - Indigenous North America (3)

The anthropological study of the indigenous peoples of America north of Mexico through archaeology and ethnology.

ANTH 4860 - Museum Science (3)

Introduction to museum professionalism, including ethical and legal concerns, collections care, exhibition and interpretation, and curatorship. Includes field experience and practicum hours in museum collections.

ANTH 4870 - Ethnographic Methods (3)

Introduction to ethnography and ethnographic method, including IRB training, participant observation, data collection, data analysis, and writing ethnography. Students will perform their own ethnographic research. This course is co-listed with ANTH 5870.
This is a sustainability course.

ANTH 4880 - Human Evolution (3)

Fossils of human ancestors are assessed through the concepts of comparative anatomy, primate behavioral

ecology, macroevolution, and genetics, investigating what it means to be human through our ancestors and relatives. This course is co-listed with ANTH 5880. Prerequisite(s): Students are strongly encouraged to take ANTH 1810 and/or ANTH 2845 prior to this course.

ANTH 4885 - Practicum (1-6)

Field-based research and training for Anthropology majors, to include internships, lab practica, and conducting original research projects. Prerequisite(s): Anthropology major.

ANTH 4890 - Anthropology Senior Seminar (3)

A capstone course that integrates the ethics, theories, and methods of all subfields of anthropology through in-depth readings, discussion, research, and presentations. Required for all Anthropology majors.

ART 1010 - Special Projects in Art (1-3)

May be repeated as topics vary. Prerequisite(s): Consent of instructor. Offered as needed.

ART 1110 - Observational Drawing (3)

Basic principles of composition and perspective through problems in observational drawing. Fall, Spring, Summer.

This course is equivalent to MOTR PERF 105D Studio Art-Introduction to Drawing in the Humanities & Fine Arts Knowledge Area.

ART 1120 - Color and Wet Media Drawing (3)

Compositional drawing exploring color systems, mark, and gesture using various color and wet media. Prerequisite(s): ART 1110. An additional fee is associated with this course. Fall, Spring, Summer.

ART 1203 - iPhoneography (3)

An introduction to photography's ongoing importance in the digital era as a communication medium and fine art through the use of smartphones and tablets. This course explores both a conceptual foundation and a practical application of the photographic medium, investigating the many ways photography impacts our culture and our daily lives. Basic digital camera operation, composition, image design and image evaluation will be explored. Photographic applications (apps) and social network sharing apps will be utilized. Consideration of aesthetic qualities, concept, context and meaning through creation of original artwork. Only a smartphone is needed for this course.

ART 1211 - Photography I (3)

An introductory level course that explores both a conceptual foundation and a practical application of the photographic medium and photography's ongoing importance in the digital era as a communication form. Fundamental digital camera operations, photographic technique, digital capture, image design, lighting and image evaluation will be explored. Consideration of aesthetic qualities, learning to see photographically, basic concept development, and meaning will be examined through creation of original artwork. This course is designed for anyone wishing to develop creative skills and an appreciation of photography as both a fine and applied art. No previous experience with photography is required. An additional fee is associated with this course.

ART 1230 - Digital Imaging (3)

An introduction to current digital image editing methods, providing the photographer with the fundamental skills and knowledge needed to process their images. Instruction includes image correction, enhancement, and manipulation. Digital imaging is explored as a method for both improving imagery and as a sophisticated creative tool. An additional fee is associated with this course.

ART 1300 - Interior Design Drafting I (3)

This is an introductory course in freehand sketching, manual drafting and computer-aided drafting/design (CAD). The course introduces students to the sketching and drafting skills and techniques necessary for design communication and presentation of interior design solutions. Student owned laptop and software are required for this course. An additional fee is associated with this course.

ART 1315 - Foundation I (3: 0 lecture, 3 lab)

The first course of a year-long two-part course sequence, Foundation I and II introduce the use of the visual elements within the context of the principles of design. Student owned laptop and software are required for this course. One-hour non-credit lecture required. An additional fee is associated with this course. Fall, Spring.

ART 1325 - Foundation II (3: 0 lecture, 3 lab)

The second course of a year-long two-part course sequence, Foundation I and II introduce the use of the visual elements within the context of the principles of design. Student owned laptop and software are required for this course. One-hour non-credit lecture required. Prerequisite(s): ART 1315. An additional fee is associated with this course. Fall, Spring.

ART 1335 - Art Camp (3)

This course combines singular and group based art making prompts during a week-long 24/7 summer camping experience. Students will learn about and work with sound, video, performance, site specific art, and happenings in additional to traditional mediums/materials (drawing, painting, photo, etc.). Students will also learn to professionally curate and install a cohesive culminating exhibition of works created during, or inspired by, the Art Camp experience. Prerequisite(s): ART 1315 and ART 1325. Summer.

ART 1610 - Web Languages GE (3)

An introduction to computer code languages used in content creation for online media. Students will use HTML to structure web pages and place text, images, and multimedia, CSS to format elements for style and communication, and JavaScript to manage interactions in web accessible media.

ART 1620 - Web Graphics (3)

An introduction to the production of visual and graphical assets and their integration with web language code for design and communication in web accessible media. An examination of the social, political, cultural, and economic context of images and graphics online.

ART 1800 - Ideas and the Visual Arts GE (3)

Engages students in critical and creative thinking about broad topics in the visual arts ranging from questions about the nature of art (aesthetics), to describing and interpreting works of art (art criticism), to art historical and cultural contexts (art history), and elements and principles of art and design (studio art). Fall, Spring, Summer.

This course is equivalent to MOTR ARTS 100 Art Appreciation in the Humanities & Fine Arts Knowledge Area.

ART 1815 - Art History Survey I GE (3)

An introductory survey of art in the Western world from prehistoric origins through the Middle Ages (caves to cathedrals) using art historical description and interpretation based on the social, cultural, intellectual, political, and religious contexts that produced it. Fall.

This course is equivalent to MOTR ARTS 101 Art History I in the Humanities & Fine Arts Knowledge Area.

ART 1825 - Art History Survey II GE (3)

An introductory survey of art in the Western world from the Middle Ages to the art of today using art historical description and interpretation based on the social, cultural, intellectual, political, and religious contexts that produced it. Spring.

This course is equivalent to MOTR ARTS 102 Art History II in the Humanities & Fine Arts Knowledge Area.

ART 1835 - Global Arts and Culture GE (3)

A survey of the visual, cultural and aesthetic developments of sculpture, paintings, and architecture in non-Western traditions: Asian, African, Islamic Art, Oceanic Art and Art of the Americas.

ART 2010 - Special Projects in Art (1-3)

May be repeated as topics vary. Prerequisite(s): Consent of instructor. Offered as needed.

ART 2215 - History of Photography (3)

Surveys the social and technological developments of photography's beginning to contemporary imaging styles, photographers, and systems. Course includes discussion, written assignments, and critiques concerning the comparative analysis of various periods, schools, and particular individuals and their contributions to the art and science of photography. Prerequisite(s): ENGL 1020 or ENGL 1080.

ART 2300 - Interior Design Drafting II (3)

An advanced course building upon skill acquired in ART 1300 Interior Design Drafting I. The course offers advanced instruction on 3D modeling through building information modeling (BIM), parametric building design, and rendering necessary for design communication and presentation of interior design solutions. Student owned laptop and software are required for this course. Prerequisite(s): ART 1300. An additional fee is associated with this course.

ART 2305 - Interior Design Presentation Techniques (3)

The techniques necessary for the presentation of interior design solutions. Both traditional media and computer-aided technology will be implemented. Student owned laptop and software are required for this course. Prerequisite(s): ART 1325 and ART 2310. An additional fee is associated with this course. Fall.

ART 2310 - Interior Design Studio I (3)

An overview of the profession with an introduction to necessary skills for the practice of interior design: creative problem solving, space planning, drafting, presentation techniques. Student owned laptop and software are required for this course. Prerequisite(s): ART 1110 and ART 1315. An additional fee is associated with this course. Spring.

ART 2320 - Building Systems and Sustainability (3)

Provides an overview of construction and building systems as they relate to interior design. Provide knowledge of theoretical and technical content of interior design practice. Student owned laptop and software are required for this course. Prerequisite(s): ART 1120 and ART 2310 for art majors; CADD 1110 or consent of instructor for nonmajors. An additional fee is associated with this course.

ART 2330 - Interior Design Studio II (3)

A study of traditional interior design problems. An emphasis in architectural interior elements, interior surfaces, finishes, and application. Student owned laptop and software are required for this course. Prerequisite(s): ART 2320 for art majors; consent of instructor for nonmajors. An additional fee is associated with this course. Spring.

ART 2335 - 3-D Design (3)

Exploration of design on a three-dimensional level utilizing design principles in the development of structural forms and the manipulation of physical space. Prerequisite(s): ART 1315. An additional fee is associated with this course. Fall, Spring, Summer.

ART 2340 - Materials, Methods and Specifications (3)

Introduction to the materials utilized in interior design. Additional information on installation and appropriate use and care. Emphasis placed on developing and writing specifications. Student owned laptop and software are required for this course. Prerequisite(s): ART 2310. An additional fee is associated with this course.

ART 2350 - Interior Design Building Codes and Regulations (3)

To develop an understanding of the codes, regulations, guidelines and standards that affect the interior design of both residential and commercial buildings. Opportunities to work with and apply regulations to a wide range of interior scenarios. Prerequisite(s): ART 2320. Spring.

ART 2360 - Interior Design Environmental Systems (3)

Intermediate work in interior design involving environmental systems with emphasis placed on the understanding and application of acoustics, air quality and lighting design and documentation for interiors. Student owned laptop and software are required for this course. Prerequisite(s): ART 2320. Spring.

ART 2412 - Ceramics I (3)

Basic skills on the three pottery making methods: e.g., slab, coil, and pottery wheel with emphasis on aesthetic qualities. Wheel throwing will be accented. Basic experiences in kiln stacking and firing. An additional fee is associated with this course. Fall, Spring, Summer.

ART 2420 - Sculpture I (3)

Fundamentals in sculpture including additive, subtractive, and construction techniques. An additional fee is associated with this course. Fall, Spring.

ART 2511 - Painting I (3)

The creative art process with emphasis on the basic visual concepts and styles, ranging from the care and use of painting tools to the execution of paintings, and including some painting history. An additional fee is associated with this course. Fall, Spring, Summer.

ART 2610 - Introduction to Graphic Design and Illustration (3)

Basic orientation to the field of commercial art. Presentation skills, use of tools and materials. Creative problem solving in the areas of advertising, publication, graphic design, and illustration. Student owned laptop and software are required for this course. Prerequisite(s): ART 1110 and ART 1315. An additional fee is associated with this course. Fall, Spring.

ART 2620 - Typography (3)

Principles of design and usage of letter forms and alphabet styles provide the basis for experiments in spacing, arrangement, and integration of typographic and other graphic elements on the printed page. Student owned laptop and software are required for this course. Prerequisite(s): ART 1110 and ART 1315. An additional fee is associated with this course. Fall, Spring.

ART 2625 - History of Comics (3)

History of Comics is an informative and approachable overview of where comics began and where they are now. History of Comics will look at how both mainstream and alternative comics shape the current landscape of Art & Design. Students will learn to think and read critically throughout this course. Summer.

ART 2635 - Illustration in the Digital Frontier (3)

This is an open media class for students interested in exploring the graphic potential of the iPad Pro, Procreate, Adobe Creative Suite, Clip Studio Paint, and a number of digital drawing techniques. Within this course you will be challenged to explore emerging techniques within the Illustration, Comics, Animation, and Design space. This class is focused on exploration and growing your individual knowledge base to grow your go-to techniques as an artist in the 21st century. Summer.

ART 2710 - Introduction to Printmaking (3)

Designed to acquaint the student with the basics of various printmaking processes. An additional fee is associated with this course. Fall, Spring.

ART 3110 - Drawing in the Expanded Field (3)

Drawing in the Expanded field explores the intersection of drawing and other media and disciplines. Students will respond to drawing prompts that encourage investigation of mark making, experience of space, non-traditional approaches to drawing, and contemporary themes in drawing. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): ART 1120. Fall, Spring, Summer.

ART 3201 - Photography II (3)

This course reinforces technical and aesthetic skills mastered in Photography I and expands upon critical thinking skills of seeing, thinking, and creating to explore photography as a conceptual tool. Students will learn a structured approach to working with and thinking about photography to foster the development of long-term, self-directed, and conceptually coherent body of work. Students will develop an understanding and control of lighting as a means for creative control on location and in a studio environment. Students will develop an understanding of how we see and recognize color as a visual tool for image creation, communication and creativity. Prerequisite(s): ART 1211 An additional fee is associated with this course. Fall.

ART 3209 - Figure Construction (3)

The skeletal and muscular construction of the human figure as it relates to the action and proportions of the figure. Drawing from life. Prerequisite(s): ART 1110. An additional fee is associated with this course. Fall, Spring.

ART 3210 - Life Drawing (3)

Drawing from a live model with the emphasis on techniques. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): ART 3209. An additional fee is associated with this course. Fall, Spring.

ART 3211 - Photography III (3)

This course explores the creative possibilities of the photographic image through experimentation with a variety of processes, techniques, and approaches to working with and thinking about photography. Development of skills and techniques in film photography printing and experimentation. Participate in interdisciplinary dialogue about how photography does more than record the world and explores current trends, philosophies, hybrid forms, and techniques of photography. Prerequisite(s): ART 3201 and ART 2215. An additional fee is associated with this course.

ART 3221 - Art in Theory: Contemporary Practice (3)

Using a thematic approach, this course synthesizes art history, criticism, aesthetics, and ideation with the end goal of enhancing the relevance of theory for practicing artists, designers and educators. Investigating historical and contemporary exemplars, students will engage with assigned readings, writings, classroom discussions, and prompt-based production. Prerequisite(s): ART 1315 and ART 1325. Successful completion of the Sophomore Review. Fall, Spring.

ART 3314 - Fibers (3)

Basic course in the fundamentals and techniques of creating on and off loom structures and fabrics. *May be repeated for a maximum of 9 semester hours.* An additional fee is associated with this course. Fall, Spring.

ART 3320 - Professional Practice for Interior Design I (1)

Provides an introduction to business practices and procedures as they apply specifically to the professional practice of interior design. Students will develop a basic understanding of the interior design field and develop a plan for obtaining an internship. Student owned laptop and software are required for this course. Prerequisite(s): ART 2310. Spring, in even numbered years only

ART 3330 - Interior Design Studio III (3)

Involves intermediate level work in interior design studio problems related to retail and hospitality with an emphasis on experience design, safety and environmental comfort for interiors. Student owned laptop and software are required for this course. Prerequisite(s): ART 2330. An additional fee is associated with this course. Fall.

ART 3340 - Interior Detailing and Furniture Design (3)

The detailing of interior environments and furniture design to include casework and furnishings through a coordinated study of structure, style, and materials. Student owned laptop and software are required for this course. Prerequisite(s): ART 2320. An additional fee is associated with this course.

ART 3350 - Construction Documentation for Interior Design (3)

Studio course that engages students in the practice of communicating design intentions and construction quality to other building professionals through the creation of construction drawings. Partial set of construction documents utilizing Building Information Modeling (BIM) system will be created. Student owned laptop and software are required for this course. Prerequisite(s): ART 2330. An additional fee is associated with this course. Fall.

ART 3412 - Ceramics II (3)

Extended studio research in pottery design and forming. Technical methods in the preparation of clay bodies, glazes, and kiln firing and maintenance. *May be repeated for a maximum of 9 semester hours.*

Prerequisite(s): ART 2412. An additional fee is associated with this course. Fall, Spring, Summer.

ART 3420 - Sculpture II (3)

An intermediate level studio art course in sculpture focusing on the introduction of various 3D techniques, materials, media and advancing the student's ability to solve artistic problems. Prerequisite(s): ART 2420. An additional fee is associated with this course. Fall, Spring.

ART 3440 - Sculpture III (3)

An advanced-intermediate level studio art course in sculpture that builds on and adds to the student's repertoire of 3D techniques, materials, media and increases their ability to solve artistic problems. Prerequisite(s): ART 3420. An additional fee is associated with this course. Fall, Spring.

ART 3510 - Watercolor (3)

Application of principles of composition in the medium of transparent watercolor. *May be repeated for a maximum of 9 semester hours.* Fall, Spring, Summer.

ART 3511 - Painting II (3)

Study and practice in basic painting techniques. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): ART 2511. An additional fee is associated with this course. Fall, Spring, Summer.

ART 3513 - Painting II: Plein Air (3)

Working in the landscape utilizing direct observation to study and practice basic painting skills. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): ART 2511. Fall.

ART 3515 - Painting II: Figure (3)

Working from the figure utilizing direct observation to study and practice basic painting skills. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): ART 2511. An additional fee is associated with this course. Spring.

ART 3620 - Graphic Design 1A (3)

Studio course where students build upon foundation skills in graphic design and competencies in the areas of technology and critical & creative thinking to produce personal works that demonstrate an understanding of basic principles involved in communication design for a wide variety of client service and societal needs. Prerequisite(s): ART 2610 and ART 2620. An additional fee is associated with this course. Fall, Spring.

ART 3625 - Illustration Techniques (3)

The application of wet and dry media with various surfaces to achieve a range of visual effects with an emphasis on exploration and experimentation. Nineteenth and twentieth century illustrators' works are studied as a means of understanding visual possibilities and styles. Prerequisite(s): ART 2610. An additional fee is associated with this course. Fall.

ART 3630 - Graphic Design 1B (3)

Studio course where students build upon foundation skills in graphic design and competencies in the areas of technology and critical & creative thinking to produce personal works that demonstrate an understanding of basic principles involved in communication design for a wide variety of client service and societal needs. Prerequisite(s): ART 2610 and ART 2620. An additional fee is associated with this course. Fall, Spring.

ART 3635 - Illustration Concepts (3)

The interpretation of written and verbal information resulting in appropriate and successful visual solutions. Concept and visual vocabulary are stressed as a means of satisfying client needs. Students will begin to identify and build a personal illustrative style. Prerequisite(s): ART 2610. An additional fee is associated with this course. Spring.

ART 3640 - Graphic Design 2A (3)

Studio course where students build upon an understanding of principles and basic skills in graphic design to produce personal works that demonstrate an application of intermediate competency involved in communication design for a wide variety of client service needs. Students demonstrate an additional understanding of issues related to history, theory, and context of design works. Prerequisite(s): ART

3620 and ART 3630. An additional fee is associated with this course.

ART 3645 - Drawing Comics and Graphic Storytelling (3)

Comics & Graphic Storytelling challenges students to illustrate, write, and publish their own comics. The course takes an in-depth look at designing successful graphic narratives and refining stories for an illustrated page. Summer.

ART 3650 - Graphic Design 2B (3)

Studio course where students build upon an understanding of principles and basic skills in graphic design to produce personal works that demonstrate an application of intermediate competency involved in communication design for a wide variety of client service needs. Students demonstrate an additional understanding of issues related to history, theory, and context of design works. Prerequisite(s): ART 3620 and ART 3630. Fall, Spring.

ART 3680 - History of Graphic Design (3)

A survey of graphic design from pre-history through the digital age introduced by analysis of major works and movements of graphic design within the context of their time and influence on later works. Spring, Summer.

ART 3710 - Introduction to Screenprinting (3)

This intermediate level course is designed to introduce students to various techniques used in the screenprinting process as a means of artistic expression and production. To best facilitate a broad range of approaches and artistic sensibilities, instructor-led demonstrations will be given in various multi-color, multi-layer printing techniques to realize individual studio projects. Through this course, students will learn ways to incorporate both traditional and digital media in composition, design and mark-making strategies to create original prints through the screenprinting process. *May be repeated for a maximum of 12 semester hours.* Prerequisite(s): ART 2710. An additional fee is associated with this course. Fall, Spring.

ART 3720 - Print Media & Narrative Structures (3)

Explores the intersections of Graphic Design, Illustration and Studio Art through the application of a variety of print media. The projects in this course are designed to facilitate the development and expression of personal narratives, visual communication and storytelling through the creation of comics, zines and original prints. Through hands-on experiences; students will engage with materials and techniques including intaglio, monoprints, screen printing, block printing and letterpress printing in a manner that promotes the connection between digital and analog media and their application in contemporary art and design practices. *May be repeated for a maximum of 12 semester hours.* Prerequisite(s): ART 3710. An additional fee is associated with this course. Fall, Spring.

ART 3731 - Beyond the Frame: Printmaking in the Expanded Field (3)

This interdisciplinary course examines the printmaking discipline within a contemporary context by questioning the nature of the image and the multiple as it pertains to media specificity, permanence and ephemerality, mundanity and spectacle. Although printmaking is deeply rooted in history as a means of artistic production, it has always been an endeavor of innovation and discovery. By pushing the boundaries of print media and exploring the possibilities of its integration with other forms of media and artistic expression, students will create work that is not exclusively limited to traditional print media. Students are encouraged to explore the use of materials and methods that has the potential to incorporate elements of drawing, ceramics, sculpture, installation, photography, time based media and performance upon approval by the instructor. *May be repeated for a maximum of 12 semester hours.* Prerequisite(s): ART 2710. Fall, Spring.

ART 3741 - Print Media, Advocacy & Activism in Contemporary Practice (3)

Printmaking is an agent of propaganda. The ability to create, reproduce and disseminate text and images is not only a fundamental but necessary part of the human experience. In this course, we will examine the history and evolution of print media and its role in promoting social awareness, advocacy and activism through visual communication. Students will create work in the form of editioned prints, broadsides, posters, shirts, books, pamphlets and wheat paste campaigns as a way to promote and express their

individual identities and voices. Media and topics explored include instructor-led demonstrations in screen printing, lithography, letterpress, and block printing that students can implement to create a body of work in response to their research into topics such as ecology, environmentalism, human rights, etc. *May be repeated for a maximum of 12 semester hours.* Prerequisite(s): ART 2710. Fall, Spring.

ART 3800 - History of Furniture and Interiors I (3)

Surveys the influence of culture, significant events, and technology on the development of furniture and interior design from ancient civilizations through the fourteenth century. Fall.

ART 3850 - History of Furniture and Interiors II (3)

Surveys the influence of culture, significant events, and technology on the development of furniture and interior design from the fifteenth century (Baroque period) to present day. Student owned laptop and software are required for this course. Spring.

ART 3911 - Art Education Foundations and Literacy (2)

The first in a series of four art education methods courses and is designed to introduce students to current theory in the art education field, including holistic development, literacy in the visual arts, lesson planning, and studio processes. Prerequisite(s): ART 1110 and ART 1315. An additional fee is associated with this course. This is a professional education course. Fall.

ART 3915 - Methods of Teaching Art I: Media and Curriculum (2)

The art teacher's role in teaching art production, art history, art criticism and aesthetics, along classroom management for children ages 4 through 12, will be explored. Prerequisite(s): ART 1110, ART 1315, ART 3911. Corequisite(s): FLDX 3000. An additional fee is associated with this course. This is a professional education course. Spring.

ART 3916 - Studio Core One (3)

Part critique forum and part studio course, Studio Core gathers upper level students in Ceramics, Painting, Photography, Printmaking, and Sculpture to discuss critical, conceptual, and technical aspects of studio practice while developing a cohesive body of work. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): Six hours of studio art coursework in major discipline area and consent of instructor. Fall, Spring.

ART 4010 - Special Projects in Art (0-3)

This course allows the student to further investigate techniques and themes in studio and research special topics. *May be repeated as topics vary.* This course is co-listed with ART 5010. Prerequisite(s): Consent of instructor. Offered as needed.
This is a sustainability course.

ART 4020 - Studio Seminar (3)

Studio seminar is a professional practices course that presents upper level students with the tools to successfully navigate the business and presentation side of studio arts careers, including self-promotion, budgeting, income streams, CV and statement writing, documenting work, and preparing applications. All students will give an artist talk during the course and will propose, curate, and install a group exhibition in Gallery 115. Students perfect professional materials, create a five year plan, and prepare a project proposal for the thesis exhibition. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): Junior or senior year with permission of faculty. An additional fee is associated with this course. Fall, Spring.

ART 4211 - Photography IV (3)

Advanced level course involving the planning, preparation, and production of an exhibition-quality portfolio that reflects a personal style with clear and consistent intentions. This entails development and care of high quality photographic prints, print presentation and artist statement. Professional practices will be explored along with the development of professional materials. Critiques will be a regular part of the course. *May be repeated for a maximum of 12 semester hours.* Studio Art Lab. Prerequisite(s): ART 3211. An additional fee is associated with this course.

ART 4222 - Advanced Topics Photography (0-3)

Advanced investigation into contemporary photographic practice and trends. Topics will change each time offered, allowing students to repeat the course to examine a different specific issue that is not presently available in the curriculum. Allows students develop and shape a long-term photography project relevant to their photographic aesthetic, personal concerns, and professional ambitions aided by theoretical and critical readings, class discussions, and critiques to increase their expertise in seeing and problem solving. *May be repeated.* Prerequisite(s): ART 4211 and instructor consent. An additional fee is associated with this course.

ART 4310 - Interior Design Internship (1-3)

A required course for interior design majors operated in conjunction with various business firms, wherein students are afforded the opportunity of working alongside professional designers in the field. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): ART 3320. Fall, Spring, Summer.

ART 4320 - Professional Practice for Interior Design II (2)

Pursues a survey of business practices and procedures as they apply specifically to the professional practice of interior design. Exposure to contemporary issues in interior design (right to practice, business laws and ethics) coupled with the study of how interior design projects proceed from the Design Documentation Phase to the Project Closeout Phase help to prepare the entry-level interior designer for practice. Spring.

ART 4340 - Interior Design Studio IV (3)

Advanced work in interior design studio problems. Advanced programming and increasing emphasis on spatial development in predominantly commercial and/or institutional environments. Student owned laptop and software are required for this course. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): ART 3330 for art majors; consent of instructor for nonmajors. An additional fee is associated with this course. Spring.
This is a sustainability course.

ART 4350 - Interior Design Thesis I (3)

Summative course for the independent proposal of a unique interior design project. Preliminary work on portfolio and related documents necessary for a career placement search. Prerequisite(s): ART 4340. An additional fee is associated with this course.

ART 4360 - Interior Design Thesis II (3)

Design documentation and implementation of a unique interior design project previously proposed. Completing work on portfolio and related documents necessary for a career placement search. Prerequisite(s): ART 4350. An additional fee is associated with this course.

ART 4412 - Ceramics III (3)

Production of advanced ceramics projects with emphasis on the search for individual styles and choices of forming methods. Advanced study of glaze chemistry, clay body formulation, and kiln construction. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): ART 3412. An additional fee is associated with this course. Fall, Spring, Summer.

ART 4420 - Sculpture IV (3)

A repeatable advanced level studio art course in sculpture that allows students to consolidate and increase their skills and abilities while they build a significant body of sculptural work. *May be repeated.* Prerequisite(s): ART 3440. An additional fee is associated with this course. Fall, Spring.

ART 4424 - Advanced Topics Ceramics (0-3)

Advanced topics of contemporary interest in ceramics to further the development of individual styles and choices of forming methods. The course will require advanced study of glaze chemistry, clay body formation, kiln construction and operation. *May be repeated.* Prerequisite(s): ART 4412. An additional fee is associated with this course.

ART 4425 - Advanced Topics Sculpture (0-3)

Extended studio research to stress further development of individual concepts, ideas, and

personal aesthetics, in sculpture. Technical methods will be applied in the production of advanced sculpture. *May be repeated.* Prerequisite(s): ART 4420 and Instructor consent. An additional fee is associated with this course.

ART 4434 - Creative Bookbinding (3)

Introduction to the art and craft of the artist's book, including the technical and creative aspects of historical and contemporary bookbinding. *May be repeated for a maximum of 6 semester hours.* An additional fee is associated with this course. Spring.

ART 4511 - Painting III (3)

Application of principles of composition in the medium of oil or acrylic paint. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): ART 3511 or ART 3513 or ART 3515. An additional fee is associated with this course. Fall, Spring, Summer.

ART 4513 - Painting III: Plein Air (3)

Working in the landscape utilizing direct observation to develop advanced painting skills. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): ART 3511 or ART 3513 or ART 3515. Fall.

ART 4515 - Painting III: Figure (3)

Working from the figure utilizing direct observation to develop advanced painting skills. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): ART 3511 or ART 3513 or ART 3515. An additional fee is associated with this course. Spring.

ART 4522 - Advanced Topics Painting (0-3 lab)

Extended studio research to stress further development of individual concepts, ideas, and personal aesthetics, in painting. Students enrolled in this course will continue to develop and refine personal aesthetics and conceptual thinking through the creation of a substantive body of work initiated by the student and facilitated by the instructor. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): ART 3511 and Instructor consent. An additional fee is associated with this course.

ART 4600 - Graphic Design Internship (1-6)

An elective course for graphic design majors operated in conjunction with various business firms, wherein students are afforded the opportunity of working alongside professional designers in the field. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): A major on the undergraduate level of graphic design and with approval of school committee. Fall, Spring, Summer.

ART 4610 - Interactive Design (3)

An introduction to the field of digital visual communication. Integration of new technologies, concepts and methods will be explored. Prerequisite(s): ART 2610 and ART 2620. An additional fee is associated with this course. Spring.

ART 4620 - Graphic Design 3A (3)

Studio course where students demonstrate a mastery of graphic design principles and application to produce uniquely personal works that exhibit an understanding of the role and influence of design in contemporary society and industry. Students formulate specific plans and objectives related to accomplishing effective design works based on creative and aesthetic solutions to their research and identified opportunities. Prerequisite(s): ART 3640 and ART 3650. An additional fee is associated with this course. Fall, Spring.

ART 4625 - Advanced Illustration I (3)

The application of illustration techniques and concepts to advertising and editorial assignments in a simulated professional setting. Projects will stress the research and generation of visual references, working with art directors and editors, meeting tight deadlines. Prerequisite(s): ART 3635. An additional fee is associated with this course. Fall.

ART 4630 - Graphic Design 3B (3)

Studio course where students demonstrate a mastery of graphic design principles and application to produce uniquely personal works that exhibit an understanding of the role and influence of design in contemporary society and industry. Students formulate specific plans and objectives related to accomplishing effective design works based on

creative and aesthetic solutions to their research and identified opportunities. Prerequisite(s): ART 3640 and ART 3650. Fall, Spring

ART 4635 - Advanced Illustration II (3)

A continuation of ART 4625 with an emphasis on the business aspects of free-lance illustration. Prerequisite(s): ART 4625. An additional fee is associated with this course. Spring.

ART 4640 - Advanced Topics Graphic Design (3)

Advanced topics of contemporary interest in Graphic Design. Variable content. Prerequisite(s): ART 3620 and ART 3630.

ART 4720 - A Seat At The Table: Printmaking, Visual Identity, and Professional Development (3)

This course is designed to encourage and facilitate professional development opportunities for students to promote, display and sell their work at local and regional venues concurrent with the semester structure. Students enrolled in this course will have the opportunity to work with a variety of print media including screen printing, lithography, letterpress, and block printing to develop branding strategies and create a series of prints and other printed materials that reflect your personal aesthetics and visual identity. Topics to be explored include creating a series of thematic prints, developing personal logos as well as creating signage and promotional materials like cards, stickers, shirts and buttons. *May be repeated for a maximum of 12 semester hours.* Prerequisite(s): ART 2710. Fall, Spring.

ART 4730 - Printmaking Independent Studio (1-3)

This course is an upper level, independently directed studio experience. Students enrolled in this course will submit proposals to faculty that outline their individualized area of research and topics to be explored. Upon discussion and approval of the submitted proposal, students will work closely with faculty to gain the technical and conceptual insights necessary to develop a cohesive body of work in preparation for their senior exhibition and future professional endeavors. *May be repeated.* Prerequisite(s): ART 3720 and Instructor consent. An additional fee is associated with this course.

ART 4850 - Twentieth Century Art and Architecture (3)

Examines the development of Modern art and architecture in the Western world from its origins in the late nineteenth century to mid-twentieth century Postmodernism using critical and creative thinking about social, political, cultural, intellectual and aesthetic contexts embodied in the visual arts. This course is co-listed with ART 5850. Fall.

ART 4860 - Contemporary Art and Design (3)

Examines themes in contemporary art and design and their theoretical frameworks in a global community using critical and creative thinking about social, political, cultural, intellectual and aesthetic contexts embodied in the visual arts and global contemporary culture. This course is co-listed with ART 5860.

ART 4915 - Methods of Teaching Art II: Management and Assessment (3)

The second in a series of three art education methods courses and is designed to ensure that teacher education candidates have mastered specific techniques for teaching art in today's secondary schools Prerequisite(s): ART 3911, ART 3915; should be taken concurrently with FLDX 4970. An additional fee is associated with this course. This is a professional education course. Fall.

ART 4916 - Studio Core Two (3)

Part critique forum and part studio course, Studio Core gathers upper level students in Ceramics, Painting, Photography, Printmaking, and Sculpture to discuss critical, conceptual, and technical aspects of studio practice while developing a cohesive body of work. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): Six hours of studio art coursework in major discipline area and consent of instructor. Fall, Spring.

ART 4920 - Methods of Teaching Art III: Student Teaching Seminar (3)

Application of previous art methods and education course knowledge to preparing for student teaching placements, fulfilling program exit requirements, and developing skills for seeking employment. Prerequisite(s): Admission to Teacher Education Program; double majors must take a methods course for each major; should be taken during the Professional Semester. This is a professional education course. Fall, Spring.

AT 1610 - Introduction to Athletic Training (2)

The course is designed to acquaint the first year athletic training major with all aspects of the athletic training profession. Corequisite(s): AT 1611 and AT 1625. An additional fee is associated with this course. Fall.

AT 1611 - Introduction to Athletic Training Lab I (1)

Introduction to clinical athletic training emphasizing basic pre-professional skills sets. Corequisite(s): AT 1610 and AT 1625. An additional fee is associated with this course. Fall.

AT 1625 - CPR/First Aid/AED for Health Care Professionals (1)

Designed to prepare students to administer CPR/AED in a clinical setting. Prerequisite(s): Consent of instructor. An additional fee is associated with this course.

AT 1630 - Foundations of Athletic Training (2)

Provide the athletic training student with the foundation needed to recognize the cause of injuries, effectively manage injuries, and to prevent injuries from occurring. Prerequisite(s): AT 1610, AT 1611 and AT 1625. Corequisite(s): AT 1631 and AT 1650. An additional fee is associated with this course. Spring.

AT 1631 - Foundations of Athletic Training Lab II (1)

Provide the athletic training student with the clinical foundations to recognize the cause of, prevention of, and management of injuries. Prerequisite(s): AT 1610, AT 1611 and AT 1625. Corequisite(s): AT 1630 and AT 1650. An additional fee is associated with this course. Spring.

AT 1640 - Medical Terminology (1)

Terminology, note writing, and documentation techniques in sports medicine. A treatment cycle will be introduced. Prerequisite(s): AT 1610, AT 1611 and AT 1625. An additional fee is associated with this course. Spring.

AT 1650 - Responding to Emergencies for the Professional Rescuer (2)

Emergency care for accident, injury and illness situations involving the active population. Corequisite(s): AT 1630 and AT 1631. An additional fee is associated with this course.

AT 2610 - Orthopedic Assessment: Lower Extremity (2)

Common types of orthopedic/sports dysfunctions to the lower extremity. Viewpoints include: etiology and mechanism of injury, pathology, recognition and evaluation techniques, protocols, and prevention. Prerequisite(s): AT 1610, AT 1611, AT 1630, AT 1631, AT 1640, AT 1650, and KIN 1800. Corequisite(s): AT 2611. An additional fee is associated with this course. Fall.

AT 2611 - Orthopedic Assessment: Lower Extremity Lab III (1)

Evaluation of orthopedic injuries and conditions occurring to the lower extremity. Prerequisite(s): AT 1610, AT 1611, AT 1630, AT 1631, AT 1640, AT 1650, and KIN 1800. Corequisite(s): AT 2610. An additional fee is associated with this course. Fall.

AT 2620 - Orthopedic Assessment: Upper Extremity (2)

Common types of orthopedic/sports dysfunctions to the upper extremity will be discussed including mechanism of injury, pathology, recognition and evaluation techniques, protocols, and prevention. Prerequisite(s): AT 1610, AT 1611, AT 1630, AT 1631, AT 1640, AT 1650, AT 2610, AT 2611, KIN 1800 and KIN 2850. Corequisite(s): AT 2621 and KIN

2800. An additional fee is associated with this course. Spring.

AT 2621 - Orthopedic Assessment: Upper Extremity Lab IV (1)

Evaluation of orthopedic injuries and conditions occurring to the upper extremity. Prerequisite(s): AT 1610, AT 1611, AT 1630, AT 1631, AT 1640, AT 1650, AT 2610, AT 2611, KIN 1800 and KIN 2850. Corequisite(s): AT 2620. An additional fee is associated with this course. Spring.

AT 2630 - Therapeutic Modalities (3)

The theoretical knowledge for the clinical application of therapeutic modalities. Principles of the physiological effects and therapeutic indications and contraindications with application of these modalities. Prerequisite(s): AT 1610, AT 1611, AT 1625, AT 1630, AT 1631, AT 1640, AT 1650, AT 2610, AT 2611, and AT 2640. Corequisite(s): AT 2631 or consent of faculty advisor. An additional fee is associated with this course.

AT 2631 - Therapeutic Modalities Lab (1)

Students will apply the techniques and clinical skills related to the application of therapeutic modalities. Prerequisite(s): AT 1610, AT 1611, AT 1630, AT 1631, AT 1640, AT 1650, KIN 1800, and KIN 2850. Corequisite(s): AT 2630 or consent of faculty advisor. An additional fee is associated with this course.

AT 2640 - Introduction to Therapeutic Rehabilitation (2)

An introduction to therapeutic exercise, program design and implementation, and progression for exercises and conditions in the active population. Prerequisite(s): AT 1610, AT 1611, AT 1630, AT 1631, AT 1640. Corequisite(s): KIN 1800 or consent of faculty advisor. An additional fee is associated with this course.

AT 3610 - Care and Prevention of Injuries (3)

Accepted athletic training procedure in the care and prevention of athletic injuries. Prerequisite(s): KIN 1800. An additional fee is associated with this course. Fall, Spring.

AT 3620 - Clinical Athletic Training Lab V (2)

The application of athletic training skills and professional practice related to the clinical setting. Prerequisite(s): AT 2610, AT 2611, AT 2620, AT 2621. An additional fee is associated with this course. Fall.

AT 3630 - Therapeutic Rehabilitation (2)

Theoretical knowledge in the clinical application of rehabilitation programs, physical examinations, therapeutic exercises, open and closed chain exercises, muscle reeducation, special therapeutic techniques including aquatic therapy. Prerequisite(s): AT 1610, AT 1611, AT 1630, AT 1631, AT 1650, AT 2620, AT 2621, AT 2630, AT 2631, KIN 2850 and KIN 2800. An additional fee is associated with this course.

AT 3631 - Therapeutic Rehabilitation Lab (1)

Clinical skills relating to the rehabilitation of athletic injuries. Prerequisite(s): AT 1610, AT 1611, AT 1630, AT 1631, AT 1650, AT 2620, AT 2621, AT 2630, AT 2631, KIN 2850 and KIN 2800. An additional fee is associated with this course.

AT 3640 - Clinical Athletic Training Lab VI (2)

The application of athletic training skills and professional practice related to the clinical setting. Prerequisite(s): AT 2610, AT 2611, AT 2620, AT 2621, AT 2630, BIOL 3401 with a C grade or better, BIOL 3402 with a C grade or better. An additional fee is associated with this course. Spring.

AT 3650 - Sport and Exercise Pharmacology (2)

Discuss medications and their impact upon the active population. Issues in ethical concerns and legal implications will be addressed. Prerequisite(s): Junior standing. An additional fee is associated with this course. Fall.

AT 4610 - Clinical Athletic Training Lab VII (2)

The application of athletic training skills and professional practice related to the clinical setting. Prerequisite(s): AT 2610, AT 2611, AT 2620, AT

2621, AT 2630, and AT 2631. An additional fee is associated with this course. Fall.

AT 4620 - Clinical Athletic Training Lab VIII (2)

The application of athletic training skills and professional practice related to the clinical setting. Prerequisite(s): AT 2610, AT 2611, AT 2620, AT 2621, AT 2630, and AT 2631. An additional fee is associated with this course. Spring.

AT 4630 - Organization and Administration of Athletic Training (3)

Legal issues, budget and inventory management, facility designs and maintenance, daily supervision, scheduling, and administration of the athletic training facilities will be addressed. Prerequisite(s): AT 1610, AT 1611, AT 1630, AT 1631, AT 1650, AT 2620, AT 2621, AT 2630, AT 2631, AT 3620, KIN 2850 and KIN 2800 An additional fee is associated with this course. Spring.

AT 4640 - Senior Seminar in Athletic Training (2)

Culminating experiences for senior level athletic training students focusing on current topics in the Athletic Training Profession and career development issues. Prerequisite(s): Senior standing. An additional fee is associated with this course.

AT 4650 - Pathophysiology Lab for Athletic Training (1)

Clinical practice in patient care using instrumentation and hands-on application in performing differential assessments of common disease states and medical conditions for the Athletic Training Student. Prerequisite(s): KIN 2850 or BIOL 3402. Corequisite(s): HLTH 4370. An additional fee is associated with this course.

ATM 1010 - Contemporary Power Systems (3: 2 lecture, 1 lab)

Power sources and methods of transferring power. Theory of internal combustion engines. Laboratory experiences with emphasis on small gasoline engines. Each student must disassemble and overhaul at least one engine. An additional fee is associated with this course. Fall, Summer.

ATM 2110 - Engine Theory and Maintenance (4: 3 lecture, 1 lab)

Examines through practical application the theories of operation, construction, maintenance, disassembly, and assembly of motor vehicle engines and their supporting systems. Emphasis on operating principles and maintenance procedures. Prerequisite(s): ATM 1010 or background experience. An additional fee is associated with this course. Fall.

ATM 2124 - Automotive Braking Systems (4: 2 lecture, 2 lab)

Classroom and laboratory activity in the diagnosis, service and repair of automotive braking, anti-lock braking, traction control and stability control systems. Prerequisite(s): ATM 1010. An additional fee is associated with this course. Spring.

ATM 2130 - Automotive Electrical Systems (4: 2 lecture, 2 lab)

Procedures for testing, adjusting, repairing, and servicing of electrical components in automotive charging, starting, ignition, and accessory systems. Prerequisite(s): ATM 1010 and ENGT 1011 or concurrently. An additional fee is associated with this course. Fall.

ATM 2132 - Engine Performance I (4: 2 lecture, 2 lab)

Fuel and related emission control systems. Basic carburation, fuel injection, and emission control devices. Prerequisite(s): ATM 2130. An additional fee is associated with this course. Spring.

ATM 2140 - Manual Drivelines (3: 2 lecture, 1 lab)

In-depth classroom and laboratory experiences in the diagnosis, service and repair of manual transmissions and drivelines. Prerequisite(s): ATM 1010 or AGRI 3200. An additional fee is associated with this course. Fall.

ATM 2150 - Mobile Heating, Ventilating, Air-Conditioning (Mobile HVAC) (3: 2 lecture, 1 lab)

Designed to introduce technicians to mobile heating, ventilation, and air-conditioning systems. An additional fee is associated with this course. Spring.

ATM 3010 - Transportation Systems (3)

Characteristics and significance of transportation technology as applied to people, their society and economic systems, analyzed through a review of water, highway, rail, air and pipeline transport. An additional fee is associated with this course. Fall.

ATM 3110 - Automotive Engine Overhaul (4: 1 lecture, 3 lab)

Theory and practice of disassembling, cleaning, inspecting, and repairing automotive engines. Removal and overhaul of engine according to accepted industry practice is a required activity for each student in the course. Prerequisite(s): ATM 2110 or AGRI 3200. An additional fee is associated with this course. Spring.

ATM 3120 - Steering and Suspension Systems (4: 2 lecture, 2 lab)

Classroom and laboratory activity in the diagnosis, service and repair of automotive steering and suspension systems. Prerequisite(s): ATM 1010 or background experience. An additional fee is associated with this course. Fall.

ATM 3130 - Engine Performance II (4: 2 lecture, 2 lab)

Utilization of computerized diagnostic methods and equipment in testing and servicing computerized engines in conjunction with automotive tune-up. Prerequisite(s): ATM 2130 and ATM 2132. An additional fee is associated with this course. Fall.

ATM 3134 - Advanced Powerplant Systems (3: 2 lecture, 1 lab)

Designed to familiarize students with current and near-future automotive propulsion system technologies. It includes the study of advanced engine performance and diagnostic equipment with particular emphasis given to alternate fuel power-plant systems, electric vehicles, hybrid electric vehicles, fuel cells and other relevant topics pertaining to the advanced vehicle propulsion systems. Prerequisite(s): ATM 2132. An additional fee is associated with this course. Fall.

ATM 4025 - Motorcycle Systems Maintenance (3: 2 lecture, 1 lab)

Theory, maintenance and repair of motorcycles and systems. Special emphasis on diagnostics, repair, and adjustment procedures. Students will need to provide a motorcycle. An additional fee is associated with this course. Fall, in odd numbered years only.

ATM 4032 - Hydraulics and Pneumatics (3: 2 lecture, 1 lab)

Fluid power principles with practical application of hydraulics, pneumatics, and fluidics. This course is co-listed with ATM 5032. Prerequisite(s): MATH 1111 or MATH 1111R . An additional fee is associated with this course. Fall, Spring, Summer.

ATM 4038 - Advanced Hydraulics (3)

Hydraulic system analysis and troubleshooting along with servo and electronic control theory and application. This course is co-listed with ATM 5038. Prerequisite(s): ATM 4032. An additional fee is associated with this course. Fall, in even numbered years only

ATM 4110 - Automatic Transmissions (3: 2 lecture, 1 lab)

In-depth classroom and laboratory experiences in the diagnosis, service and repair of automatic transmissions and drivelines. Prerequisite(s): ATM 4032 or concurrently. An additional fee is associated with this course. Spring.

ATM 4112 - ATM Capstone Experience (3)

Integration of communication, technology, sociology, economics, and ecology with automotive manufacturing and engineering, management, and service operations. Emphasis on reciprocal effects of business and corporate practices, ethics, operations

and consumer protections. Prerequisite(s): ATM 4130 or concurrently. An additional fee is associated with this course. Spring.

ATM 4130 - ATM Comprehensive Vehicle Diagnostics (4: 1 lecture, 3 lab)

Designed as a capstone technical course for learners in the ATM major. The course is primarily lab-based, with most of the course work following diagnostic scenarios in the laboratory. Lab tasks will test the learner on their ability to diagnose vehicle failures on a complete vehicle scale that include all vehicle systems and how they function relative to each other, and will expand upon these areas via diagnostic and industry standard technical material and testing methods. Usage of the proper diagnostic processes, lab scopes, DVOM's, scan tools, and other diagnostic tools is required for success in this course. Prerequisite(s): ATM 3130. An additional fee is associated with this course. Spring.

ATM 4134 - Advanced Vehicle Systems (2)

A study of advanced peripheral electronic systems in automobiles. Emphasis is placed on systems as they pertain to hybrid and electric vehicles. Prerequisite(s): ATM 3134. An additional fee is associated with this course. Spring.

ATM 4150 - Diesel Technology (4: 3 lecture, 1 lab)

Survey of diesel engine theory, diagnosis, service and maintenance with an emphasis in diesel fuel and emission systems along with engine construction and operation. Alternative fuels for compression ignition engines are also covered. Prerequisite(s): ATM 2110 or AGRI 3200 and ATM 4032 or concurrently. An additional fee is associated with this course. Spring.

ATM 4410 - Intermodal Transportation (3)

Transportation (air, motor vehicle, pipeline, rail, and water) in the United States as seen from an integrated, intermodal viewpoint. Major aspects include systems analysis, organization, operations, financing, research and development, training, and regulation. Economic, environmental, social, and political factors are also considered. This course is co-listed with ATM 5410. An additional fee is associated with this course. Fall.

AVIA 1020 - Aeronautics (2)

An overview of aviation and aerospace related industries. Consideration is given to the development of aviation and resulting social and economic factors, theory of flight, problems of weather and navigation, occupational opportunities, and government interest, promotion and regulation. Fall, Spring.

AVIA 1211 - UAS Regulations and Applications (1)

Addresses applications and regulations pertaining to small Unmanned Aerial Systems (sUAS). At the end of the course, the student should be prepared to test for the Remote Pilot - sUAS Airman Certificate, as well as demonstrate understanding of sUAS applications. Students must show proof of U.S. Citizenship, U.S. permanent residency, be in possession of a current FAA sUAS airman certificate, have TSA approval for sUAS, or meet FAA and TSA requirements.

AVIA 1212 - sUAS Operations (1)

Addresses basic sUAS flight operations, which includes basic and advanced maneuvers, the use of GPS, and operating the mounted camera while flying. Students must show proof of U.S. Citizenship, U.S. permanent residency, be in possession of a current FAA sUAS airman certificate, have TSA approval for sUAS, or meet FAA and TSA requirements. Prerequisite(s): must possess a current sUAS Airman Certificate.

AVIA 1213 - sUAS Maintenance and Components (1)

Addresses the maintenance and repair of sUAS. Topics covered in this class includes field repairs, regular maintenance, and selecting properly rated components for various applications. Students must show proof of U.S. Citizenship, U.S. permanent residency, be in possession of a current FAA sUAS airman certificate, have TSA approval for sUAS, or meet FAA and TSA requirements.

AVIA 1215 - General A&P Applications (3)

General A&P related course and laboratory material necessary to transition from military to civilian applications. Prerequisite(s): Release from the Federal Aviation Administration (FAA sign-off) for General, Airframe, and Powerplant or permission of instructor.

AVIA 1216 - Airframe Applications (3)

The course provides a thorough study of Airframe related course material necessary to transition from military to civilian applications. Prerequisite(s): FAA authorization for General, Airframe, and Powerplant, or permission from the instructor.

AVIA 1217 - Powerplant Applications (3)

The course provides a thorough study of Powerplant related course material necessary to transition from military to civilian applications. Prerequisite(s): FAA authorization for General, Airframe, and Powerplant, or permission from the instructor.

AVIA 1218 - FAA Maintenance Regulations (3)

The course provides a thorough study of FAA Maintenance Regulations and Records keeping necessary to transition from military to civilian applications. Prerequisite(s): FAA authorization for General, Airframe, and Powerplant, or permission from the instructor.

AVIA 1310 - Private Ground School (4)

Basic ground school in support of flight training to prepare for the FAA examination for the Private Pilot Certificate. A fee is charged for pilot supplies and ground school materials. Fall, Spring.

AVIA 1330 - Principles of Helicopter Flight (2)

Provides basic helicopter aerodynamics to helicopter Private Pilot students including aircraft components, flight characteristics, and flight principles. Prerequisite(s): FLYA 1321 or Private Pilot Airplane certificate or equivalent.

AVIA 1903 - Aviation History (2)

Major events, people, and changing technologies in the development of the present day air transportation system.

AVIA 2040 - Aviation Management (3)

Aviation/airport management and administrative functions, issues, and problems involving both large and small airports, heliports, sea plane bases and related fixed base operations. Prerequisite(s): Sophomore standing. Fall, Spring, Summer.

AVIA 2310 - Propulsion Systems (3)

Operation and theory of aircraft propellers and both reciprocating and gas turbine engines. Laboratory activity includes testing and troubleshooting major functional components and systems. Fall, Spring.

AVIA 2325 - Instrument Ground School (4)

Instrument ground school subjects in support of flight training to prepare for FAA examination for instrument rating. Prerequisite(s): FLYA 1321 and AVIA 2345 or concurrently. Fall, Spring.

AVIA 2340 - Aircraft Systems and Components (3)

Design, construction and operation of aircraft mechanical, electrical hydraulic, and pneumatic systems with emphasis on trouble analysis, servicing methods, and safety precautions. Prerequisite(s): AVIA 2310 or concurrently. Fall, Spring.

AVIA 2345 - Glass Cockpits - G1000 (2)

Designed to introduce the concept of glass cockpits with particular reference to the features and operation of the G1000 system. Prerequisite(s): FLYA 1320. An additional fee is associated with this course.

AVIA 2350 - Aviation Weather (3)

Meteorology for pilots with information for understanding and interpreting aviation weather reports and forecasts, weather hazards including windshear, turbulence, icing and visibility restrictions. Prerequisite(s): AVIA 1310.

AVIA 3010 - Aerodynamics (3)

Theories of flight and factors affecting aircraft in flight, including drag, velocity, lift, thrust and wing loading. Comparative analysis of design features in modern aircraft. Fall, Spring.

AVIA 3022 - Aviation Internship (1-3)

Provides experience for students in participating organizations. Students rotate assignments, create written reports of their activities.

AVIA 3030 - Sport Aviation (2)

Sailplanes, hot air balloons, and related sport aircraft. Students will have flying experience in either sailplanes or hot air balloons. Flight fees are required to cover expenses of flight instruction. Principles of organizing fly-ins, air shows, and contests.

AVIA 3045 - Airport Management (3)

Airport operations and management principles and applications. Personnel, security, budgeting, contracts, maintenance and public relations.

AVIA 3046 - Airport Certification (3)

Provide students with a working knowledge of airport certification procedures (including marking, lighting, guidance signs, aircraft rescue and firefighting, fuel handling safety, airspace obstruction analysis, winter operations, etc.), and airport inspection procedures to be able to complete an airport inspection in accordance with federal regulations. An additional fee is associated with this course.

AVIA 3080 - Air Traffic Control (3)

Purposes, activities and operational procedures of air traffic control centers, towers and flight service stations. Study will include both standard and emergency services available from ATC/FSS systems.

AVIA 3255 - Metal Airframe Processing (3)

Theory and practice in the construction and repair of metal airframes.

AVIA 3305 - Commercial Ground School (3)

Commercial ground school subjects in support of flight training to prepare for FAA examination for Commercial Pilot Certificate. Prerequisite(s): FLYA 2313. Fall, Spring.

AVIA 3360 - Flight Instructor - Airplane (3)

Combines classroom and flight laboratory experience to prepare for FAA written examination and flight test for flight instructor rating. Prerequisite(s): FLYA 3317 or FLYA 3417. Corequisite(s): FLYA 3360.

AVIA 3370 - Transport Aircraft Systems (2)

Comparison of systems on major types of transport category aircraft and inflight management of those systems thru lecture, computer based training and simulation. Lab work will utilize cockpit procedures trainer and advance flight training device. Prerequisite(s): AVIA 2325, AVIA 2340; Admission to Professional Pilot degree program and junior standing. Must show proof of US Citizenship or TSA Clearance for Flight Training. Corequisite(s): AVIA 3372. An additional fee is associated with this course. Fall, Spring.

AVIA 3372 - Flight Management Systems (2)

Advanced study of transport aircraft systems and familiarization with use of Flight Management Systems. Use of airline dispatch release documents for the programming of the training device from preflight to shutdown. Lab work will utilize cockpit procedures trainer and advance flight training device. Prerequisite(s): AVIA 2340, AVIA 2325; Admission to Professional Pilot degree program; junior standing. Must show proof of US Citizenship or TSA Clearance for Flight Training. Corequisite(s): AVIA 3370. An additional fee is associated with this course.

AVIA 3620 - Principles of Aviation Accident Causation (3)

This class offers a survey of air carrier and general aviation incidents and accidents along with causation models and how barriers prevent accidents. The class will include a video colloquia of aviation accident and training videos to supplement textbook reading.

AVIA 3710 - Professional Ethics in Aviation (2)

The course introduces students to ethical issues in aviation such as theoretical frameworks, concepts of business ethics, employee responsibility, accessibility, diversity in aviation, ground issues regarding airports, air traffic control and security, decision-making, as well as health and the environment.

AVIA 4000 - Special Projects in Aviation Technology (1-3)

Investigation of contemporary problems and issues in power and transportation by selected individuals or groups. *May be repeated for a maximum of 6 semester hours.*

AVIA 4021 - Weight and Balance Loadsheet Development (1)

Designed to introduce the concept of weight and balance load and horizontal stabilizer trim sheets and methodology to design and develop such operational forms. Prerequisite(s): AVIA 3010.

AVIA 4030 - Airport Planning and Design (3)

Examine the criteria involved in the planning, design, development, and improvement of airports. Includes planning for normal operating procedures of modern airport facilities. This course is co-listed with AVIA 5030.

AVIA 4042 - Aviation Maintenance Management (3)

Introduces fundamental duties/responsibilities of a typical maintenance manager for FAR Part 91, 135 charter, 145 repair station, corporate, and airline operations. Fall, Spring.

AVIA 4060 - Aerospace Education (2-3)

Basic aerospace information dealing with the social, scientific, and technological importance of aviation and space with special applications for teachers who desire to utilize such information in the elementary and secondary school.

AVIA 4090 - Aviation Law (3)

Legal foundations and the federal and state regulatory functions which influence aviation and those who work in the industry. This course is co-listed with AVIA 5590. Prerequisite(s): Junior standing.

AVIA 4091 - Regulatory Policy Seminar (4: 2 lecture, 2 lab)

This seminar course surveys the evolution of federal civil aviation regulations in the United States including FAA requirements, regulations, and certifications including exposure to the aircraft design, manufacturing, maintenance, pilot, aircraft owner, operations, and airport regulatory environment. Fall.

AVIA 4095 - International Aviation (3)

Aviation issues in international aviation including ICAO regulations and other factors related to the operation of airplanes in a global environment.

AVIA 4096 - International Policy Seminar (3: 2 lecture, 1 lab)

This seminar course surveys the evolution of the international regulatory environment including international requirements, regulations, and certifications including exposure to the aircraft design, manufacturing, maintenance, pilot, aircraft owner, operations, and airport regulatory environment. Prerequisite(s): AVIA 4095 or concurrently. Spring.

AVIA 4100 - Airport Leadership - Administration and Planning (2)

The purpose of this course is to prepare students with foundational knowledge necessary for a job or career in airport management. This course will prepare students to pass the Certified Member (CM) exam administered by the American Association of Airport Executives (AAAE). Course may not be taken if student successfully completed CM certification. This course is co-listed with AVIA 5100. Prerequisite(s): AVIA 3045 or AVIA 3046. An additional fee is associated with this course.

AVIA 4101 - Airport Leadership - Operations and Communications (2)

The purpose of this course is to prepare students with foundational knowledge necessary for a job or career in airport management. The course will prepare students to pass the certified manager (CM) exam

administered by the American Association of Airport Executives (AAAE) and provide students with the opportunity to network with airport industry experts. At the end of this course the student will complete the AAAE CM Exam. This course is co-listed with AVIA 5101. Prerequisite(s): AVIA 3045 or AVIA 3046. An additional fee is associated with this course.

AVIA 4370 - Advanced Flight Crew Management (3)

Advanced flight crew operations with emphasis on the transition of the professionally qualified pilot into a highly skilled member of a flight management team with knowledge of cockpit resource management, high speed and high altitude flight techniques, turbine-powered operations and advanced avionics systems. Prerequisite(s): AVIA 3372. An additional fee is associated with this course. Fall, Spring.

AVIA 4380 - Flight Operations Management (3)

Airline flight operations management principles and applications. Fall, Spring.

AVIA 4420 - Air Transportation (3)

Organization and administration of the air transportation industry with attention to airline regulations, rate and route structures, air cargo and freight, scheduled and nonscheduled operations, and contract air transport. This course is co-listed with AVIA 5420. Prerequisite(s): Junior standing. Fall, Spring, Summer.

AVIA 4430 - Corporate Aviation Management (3)

Role, scope and purpose of business aviation. Managerial, administrative and financial business functions related to the use of business aviation aircraft. This course is co-listed with AVIA 5430. Prerequisite(s): Junior standing.

AVIA 4500 - Aviation Safety (3)

To develop a knowledge of contributing factors affecting aviation safety and fostering control methods and techniques to reduce accidents related to aircraft and the aviation field. This course is co-listed with AVIA 5550. Prerequisite(s): Junior standing. Fall, Spring, Summer.

AVIA 4610 - Physiological Human Factors (3)

A research based survey of aeromedical human factors including causes, symptoms, prevention and treatment of flight environment disorders. Altitude effects, spatial disorientation, body heat imbalance, visual anomalies and psychological factors are included as they relate to pilot performance and survival effectiveness. This course is co-listed with AVIA 5610. An additional fee is associated with this course.

AVIA 4810 - Space Exploration (3)

Examines present and future methods of space exploration. Topics include the technology & vehicles, dangers, benefits, costs, and practical and political importance of space exploration. Discussion topics include space stations, moon colonies, manned missions from Mercury through Apollo, and current international space missions. Prerequisite(s): Junior standing. Summer. Taught only as an online course.

AVIA 4999 - Integrative Studies Capstone (3)

Challenges the student to perform as an effective member of an air operations management team using critical thinking, decision making and ethics. Prerequisite(s): Junior standing.

BIOL 1000 - Biology Seminar I (.5)

An introduction to biology as an academic endeavor as well as the opportunities that exist for undergraduate students within their major at UCM. Prerequisite(s): Declaration of major in biology or related biological discipline.

BIOL 1003 - Introduction to the Sciences: Ecology GE (3)

Introduction to biological science with emphasis on scientific methodology, ecological concepts regarding populations, communities and ecosystems and the impact of humans on the natural world. No laboratory included. Not available to those with credit in BIOL 1004.

This course is equivalent to MOTR BIOL 100EC Essentials in Biology or MOTR BIOL 100LEC Essentials in Biology with Lab in the Natural Sciences Knowledge Area.

BIOL 1004 - Introduction to the Sciences: Ecology GE (4: 3 lecture, 1 lab)

Introduction to biological science with emphasis on scientific methodology, ecological concepts regarding populations, communities and ecosystems and the impact of humans on the natural world. Laboratory included. Not available to those with credit in BIOL 1003.

This course is equivalent to MOTR BIOL 100LEC Essentials in Biology with Lab in the Natural Sciences Knowledge Area.

BIOL 1005 - Introduction to Environmental Science GE (3)

Environmental science as an integrative study of human interaction with the environment that seeks to meet the needs of students with little background in science.

This course is equivalent to MOTR BIOL 100EV Essentials in Biology or MOTR BIOL 100LEV Essentials in Biology with Lab in the Natural Sciences Knowledge Area.

BIOL 1006 - Environmental Science/Ecology Lab GE (1:1 lab)

Introduction to biological science with emphasis on scientific methodology, ecological concepts regarding populations, communities and ecosystems, and the impact of humans on the natural world. Must be taken concurrently with BIOL 1003 or BIOL 1005.

This course is equivalent to MOTR BIOL 100LEC or MOTR BIOL 100LEV Essentials in Biology with Lab in the Natural Sciences Knowledge Area.

BIOL 1007 - Plants and Society (4: 3 lecture, 1 lab)

Introduction to science with an emphasis on the economic uses of plants that are important to society. The course introduces the student to basic vocabulary and principles of the study of economically important plants.

This course is equivalent to MOTR BIOL 100LB Essentials in Biology with Lab in the Natural Sciences Knowledge Area.

BIOL 1110 - Principles of Biology (3)

Examination of basic biological principles including the scientific method, biological molecules, cellular function and structure, photosynthesis, respiration, metabolism, cell mitosis, genetics, evolution, diversity, and ecology.

This course is equivalent to MOTR BIOL 150 Biology in the Natural Sciences Knowledge Area.

BIOL 1111 - Plant Biology (4: 3 lecture, 1 lab)

Examination of basic biological principles including the scientific method; macromolecules of life; cellular structure, function, and replication; and plant form, function and diversity. Laboratory included. An additional fee is associated with this course.

This course is equivalent to MOTR BIOL 150LB Biology with Lab in the Natural Sciences Knowledge Area.

BIOL 1112 - Animal Biology (4: 3 lecture, 1 lab)

Introduction to the evolution and classification of the metazoa with emphasis on the form and function of selected invertebrate and vertebrate animals. An additional fee is associated with this course.

This course is equivalent to MOTR BIOL 150LZ Biology with Lab in the Natural Sciences Knowledge Area.

BIOL 1500 - General Biology I - Essentials of Molecular and Cellular Biology (4: 3 lecture, 1 lab)

Introduction to cellular and molecular biology, including cell structure and function, cell chemistry, and Mendelian and molecular genetics through active learning and student engagement activities. Additional topics may include DNA technology and molecular evolution. Laboratories emphasize the scientific method, scientific reasoning, and modern methods to

study cells and biomolecules. An additional fee is associated with this course.

BIOL 1505 - General Biology II - Essentials of Organismal Biology (4: 3 lecture, 1 lab)

Introduction to organismal biology with emphasis on plant and animal functions including metabolism, nutrition, circulation of body fluids, gas exchange, defensive and immune responses to foreign invaders, reproduction, signaling systems, movement, and origin and diversity of life. Concepts of evolution will be emphasized throughout the course especially when mechanisms from diverse organisms are considered. Laboratories emphasize data acquisition, analysis and communication. Prerequisite(s): BIOL 1500. An additional fee is associated with this course.

BIOL 1510 - Investigative Biology (4: 3 lecture, 1 lab)

Interdisciplinary introduction to biological science using principles of science, chemistry and mathematics. Emphasis on biological molecules, cellular structures and functions, and genetics and molecular biology. Laboratories emphasize the scientific method, data collection and analyses, and quantitative reasoning. Prerequisite(s): Placement according to University policy applies. ACST 1300 or ACST 1300R or MATH 1111 or MATH 1111R or MATH 1131 or MATH 1150 or MATH 1151 with grades of C or better. An additional fee is associated with this course. Spring/Fall.

BIOL 2000 - Biology Seminar II (.5)

This course is designed to bring together key program faculty and the student's success advising team to guide self-assessment strategies intended to inform our majors on their progress toward their declared goals. This course will also serve to assist our majors in further exploring career options and cocurricular opportunities to establish the experience required to earn the next step in the path to completion.

BIOL 2010 - Human Biology GE (3)

An overview of human biology, emphasizing physiology, development, health, interpersonal and environmental interactions.

This course is equivalent to MOTR LIFS 100 Essentials in Human Biology in the Natural Sciences Knowledge Area.

BIOL 2012 - Exploratory Projects in Biology (1-4)

Students as a group learn specialized, introductory biology content not available through normal course offerings. *May be repeated for a maximum of 8 semester hours.* Prerequisite(s): Consent of school chair.

BIOL 2020 - General Ecology (3)

An introduction to the major concepts of ecology in the context of evolution and the ecology of populations, communities, and ecosystems.
This is a sustainability course.

BIOL 2510 - Basic Genetics GE (3)

Survey of heredity with emphasis on classical and modern genetics in context of human diversity, health and impact on society and the environment. Prerequisite(s): ENGL 1020 or ENGL 1080.

BIOL 2512 - Cell Biology (3)

A study of cellular structure and function to include macromolecules, DNA replication, transcription, and translation; cellular organelles, membranes, cytoskeleton, energetics, cell cycle, and cell signaling. Prerequisite(s): (BIOL 1110 or BIOL 1111 or BIOL 1112 or BIOL 1500 or BIOL 1510) and CHEM 1131.

BIOL 3000 - Cooperative Clinical (0-15)

A student's first semester of study at the clinical affiliate program.

BIOL 3001 - Biology Seminar III (.5)

Junior-level course for biology and clinical science majors to assess their progress toward degree completion. Designed to bring together key program faculty and the student's success advising team to guide final self-assessment strategies intended to inform our majors on their progress toward career goals. Approaches to building careers in biology, clinical science, and alternative pathways are discussed. Prerequisite(s): Sophmore standing.

BIOL 3211 - Comparative Anatomy (4: 2 lecture, 2 lab)

Comparative morphology of the early development and evolution of the organ systems of vertebrates. Laboratory study of representative vertebrates. Prerequisite(s): BIOL 1505. An additional fee is associated with this course.

BIOL 3213 - Developmental Biology (4: 2 lecture, 2 lab)

Addresses how multicellular eukaryotes (animals and plants) with diverse cell types arise from a single fertilized cell. Discussion of implications of developmental disorders on human health and ethical questions related to treatment. Prerequisite(s): BIOL 1112 and BIOL 1500 or BIOL 3402. An additional fee is associated with this course. Fall.

BIOL 3215 - Medical Terminology (3)

The language of medical and paramedical practices. Terminology related to organ systems of the body is presented with emphasis on Latin and Greek roots. *May not be repeated for credit.* Prerequisite(s): One biology course.

BIOL 3401 - Human Anatomy (3: 1 lecture, 2 lab)

The systematic study of human anatomy, including the integumentary, skeletal, muscular, nervous, cardiovascular, lymphatic and immune, respiratory, urinary, digestive, endocrine, and reproductive systems. Prerequisite(s): CHEM 1103 or CHEM 1104 or CHEM 1131. An additional fee is associated with this course.

BIOL 3402 - Human Physiology (5: 4 lecture, 1 lab)

The study of physiological processes of humans, including membranes, muscle, nervous, cardiovascular, respiratory, renal, gastrointestinal, endocrine and reproductive physiology. Prerequisite(s): BIOL 3401. An additional fee is associated with this course.

BIOL 3410 - Forensic Science (3)

Theoretical and hands-on applications of forensic science including types of deaths, taphonomy, toxicology, body fluid and blood analysis, ballistics and trace evidence determinations. Prerequisite(s): BIOL 2010 or BIOL 3401, and CHEM 1132. An additional fee is associated with this course.

BIOL 3413 - Immunology (3)

A survey of the field of immunology including the types of immune responses, antibody synthesis, antigen-antibody interactions, hypersensitivity, immunity to infection, and the design of laboratory techniques for immunological screening. Prerequisite(s): BIOL 3401 or BIOL 3431. Spring.

BIOL 3414 - Histology (3: 2 lecture, 1 lab)

The functional morphology of selected tissues at the light microscopic level. Laboratory involves practice in slide reading. Prerequisite(s): BIOL 3211 or BIOL 3402 or BIOL 3431. An additional fee is associated with this course. Fall.

BIOL 3431 - Animal Physiology (4: 2 lecture, 2 lab)

Animal functions in terms of their needs for oxygen, food, energy, temperature, water, movement, information, and integration. Prerequisite(s): BIOL 1505 and (BIOL 1112 or AGRI 3410); and BIOL 2512; and CHEM 1131. An additional fee is associated with this course.
This is a sustainability course.

BIOL 3500 - Cooperative Clinical II (0-15)

A student's second semester of study at the clinical affiliate program.

BIOL 3511 - Genetics (4: 3 lecture, 1 lab)

Hereditary principles and their application to classical and molecular genetics. Laboratories emphasize inquiry-based learning applied to exercises using Mendelian genetics and DNA technology. Prerequisite(s): BIOL 2510 or BIOL 1110 or BIOL 1500 or BIOL 1510 or BIOL 3402; and CHEM 1131; and MATH 1111 or MATH 1111R or MATH 1150 or MATH 1151 or ACST 1300 or ACST 1300R . An additional fee is associated with this course. Fall.

BIOL 3610 - Basic Microbiology (3)

A lecture-only introduction to the basic microbial concepts including various microbial classes, genetics, habitats, cell structure, metabolism, modes of transmission, and control methods. Not available for Biology majors, Areas 4, 5, 6. Prerequisite(s): BIOL 1505 or BIOL 3402; and CHEM 1104 or CHEM 1131.

BIOL 3611 - Microbiology (4: 3 lecture, 1 lab)

An introduction to the major groups of microorganisms including their cell structure, metabolism, genetics, and ecology. Emphasis is placed upon the bacteria and viruses. Prerequisite(s): BIOL 1505 or BIOL 3402 with a grade of C or better; and CHEM 1104 or CHEM 1131 with a grade of C or better. An additional fee is associated with this course.

BIOL 3650 - Fundamentals of Bioinformatics I (3)

Introduction to fundamentals of bioinformatics algorithms, methods and models for sequence alignment and search. Computational tools for collecting, storing, aligning, searching sequences, and discovering evolutionary relationships. Prerequisite(s): BIOL 2512 and CS 2030 with grades of C or better. Spring.

BIOL 3709 - Dendrology (4: 3 lecture, 1 lab)

The classification, ecology, economics, identification, morphology, and distribution of woody plants. Prerequisite(s): BIOL 1111.

BIOL 3711 - Plant Identification (4: 3 lecture, 1 lab)

A basic course in plant identification, using classification, nomenclature, collection and preservation techniques. Involves much field and lab work. Prerequisite(s): AGRI 1600 or BIOL 1111 or BIOL 1500 or BIOL 1505.

BIOL 3712 - Field Techniques in Biology (4: 1 lecture, 3 lab)

Provides an introduction to the flora, fauna, ecoregions, and natural communities of Missouri. Focuses on basic and widely used field techniques in ecology, fisheries, wildlife management, forestry, and botany. Involves mostly field work with a minor lecture component. Prerequisite(s): BIOL 1111, BIOL 1112 and BIOL 2020. An additional fee is associated with this course.

BIOL 3721 - Wildlife Management (3)

Wildlife resources of North America and their importance in our economic and cultural life; biological methods of preservation, restoration and management. Prerequisite(s): BIOL 2020.
This is a sustainability course.

BIOL 4001 - Ecology Senior Seminar (.5-1)

Capstone course for biology majors where assessments are completed including a nationally administered exit exam, ACAT in Biology. Strategies for building careers in ecological, wildlife and conservation biology are discussed. Prerequisite(s): Senior standing.

BIOL 4002 - Life Science Senior Seminar (.5-1)

Capstone course for biology majors where assessments of student achievements are completed including a nationally administered exit exam, MFT in Biology. Strategies for work/life balance and building careers in molecular, cellular and physiological/biomedical biology are discussed. Prerequisite(s): Senior standing.

BIOL 4003 - Radiologic Technology Senior Seminar (1)

Capstone course for radiologic technology majors where assessments are completed including a nationally administered exit exam, ACAT in Biology. Strategies for building careers in radiologic technology and hospital settings are discussed. Prerequisite(s): Enrollment in the last semester before clinicals.

BIOL 4011 - Special Problems in Biology (1-4)

Individual work under supervision of a staff member. Problems may be undertaken in any field of biology. *May be repeated for a maximum of 4 semester hours.* Prerequisite(s): Consent of instructor.

BIOL 4012 - Special Projects in Biology (0-8)

May be repeated for a maximum of 9 semester hours. With permission of the school chair, majors in medical technology may repeat for a maximum of 30 semester hours. This course is co-listed with BIOL 5012. Prerequisite(s): Consent of instructor.

BIOL 4013 - Biostatistics (3)

Covers the conceptualization, implementation, analysis, and communication of research in biology. This course is co-listed with BIOL 5113. Prerequisite(s): MATH 1111, MATH 1111R, MATH 1150, or consent of instructor.

BIOL 4014 - Internship in Biology (1-9)

Practical experience working within the various components of the Biology discipline. Only 4 credit hours total may be used to satisfy approved biology electives. This course is co-listed with BIOL 5014. Prerequisite(s): Declaration of major in the Biology with at least 60 hours of credit.

BIOL 4015 - Clinical Immunohematology (4)

Clinical Immunohematology, a component of the Medical Technology Clinical Internship as part of the last year of the degree. Prerequisite(s): Acceptance into an affiliated Clinical Laboratory Science/Medical Technology Program. Summer.

BIOL 4016 - Clinical Urinalysis (2)

Clinical Urinalysis, a component of the Medical Technology Clinical Internship as part of the last year of the degree. Prerequisite(s): Acceptance into an affiliated Clinical Laboratory Science/Medical Technology Program. Summer.

BIOL 4017 - Clinical Microbiology (7)

Clinical Microbiology, a component of the Medical Technology Clinical Internship as part of the last year of the degree. Prerequisite(s): Acceptance into an affiliated Clinical Laboratory Science/Medical Technology Program. Fall.

BIOL 4018 - Clinical Immunology (5)

Clinical Immunology, a component of the Medical Technology Clinical Internship as part of the last year of the degree. Prerequisite(s): Acceptance into an affiliated Clinical Laboratory Science/Medical Technology Program. Fall.

BIOL 4019 - Clinical Biochemistry (7)

Clinical Biochemistry, a component of the Medical Technology Clinical Internship as part of the last year of the degree. Spring.

BIOL 4020 - Clinical Hematology (4)

Clinical Hematology, a component of the Medical Technology Clinical Internship as part of the last year of the degree. Prerequisite(s): Acceptance into an affiliated Clinical Laboratory Science/Medical Technology Program. Spring.

BIOL 4021 - Clinical Special Topics (1)

Clinical Special Topics, a component of the Medical Technology Clinical Internship as part of the last year of the degree. Prerequisite(s): Acceptance into an affiliated Clinical Laboratory Science/Medical Technology Program. Spring.

BIOL 4022 - Clinical Education / Practice IV (4-6)

A component of the Radiologic Technology Internship as part of the last year of the degree. Prerequisite(s): Acceptance into a JCERT accredited affiliated program.

BIOL 4023 - Radiographic Anatomy and Physiology (0-8)

A component of the Radiologic Technology Internship as part of the last year of the degree. Prerequisite(s): Acceptance into a JCERT accredited affiliated program.

BIOL 4024 - Radiographic Positioning and Procedure (2-4)

A component of the Radiologic Technology Internship as part of the last year of the degree. Prerequisite(s): Acceptance into a JCERT accredited affiliated program.

BIOL 4025 - Medical Imaging (2-10)

Includes all aspects of digital imaging acquisition and display. Included are topics regarding understanding of the components, principles and operation of digital imaging systems. Factors that impact image acquisition, display, archiving and retrieval are discussed. Guidelines for selecting exposure factors and evaluating images within the digital system assist students to bridge between film based and digital imaging systems.

BIOL 4026 - Radiation Biology and Protection (2-3)

Continues covering the fundamentals of basic radiation biology as well as basic radiation safety theory. Biology topics will include the fundamental principles of radiation biology, molecular and cellular radiobiology and the early and late effects of radiation. Radiation protection topics will include Health Physics practices, considerations for design of equipment and facilities, as well as procedures for ensuring the safety of radiation workers, patients, and members of the public.

BIOL 4027 - Pathology I (2-3)

Examination of pathologic conditions related to various radiologic procedures. Introduction to pathology is the study of significant diseases, which present radiologic findings. Studies will include the diagnosis, etiology, symptoms, treatment and radiographic correlations of pathologic conditions with relationship to cell pathology, inflammation, bone and joint disease, gastrointestinal system, respiratory, urinary system, male and female reproduction system. How to select proper exposure factors for the pathology that is in existence and how the pathology will appear on radiographic images.

BIOL 4028 - Clinical Education / Practice V (2-6)

A clinical experience with limited supervision for continued emphasis in application and evaluation of procedures involving all aspects of radiology. The student will continue to expound on Clinical Education 301, 302, 303 and 404 exams.

BIOL 4029 - A&P Cross Sectional Anatomy (0-3)

Study of cross sectional anatomy of the head, chest, abdomen and extremities with correlation to Computed Tomography (CT) and Magnetic Resonance Imaging (MRI).

BIOL 4030 - Pathology II (0-3)

Examination of pathologic conditions related to various radiologic procedures. Introduction to pathology is the study of significant diseases, which present radiologic findings. Studies will include the diagnosis, etiology, symptoms, treatment and radiographic correlations of central nervous system, cardiovascular, endocrine system, fluid and hemodynamic disorders and liver, pancreas, biliary systems, neoplasia, breast, skin and muscles. How to select proper exposure factors for the pathology that is in existence and how the pathology will appear on radiographic images.

BIOL 4031 - Quality Assurance / Equipment Operations (2-3)

Quality control and quality assurance in the radiology department. Test tools and equipment utilized to ensure appropriate images. State and federal guidelines which are applicable to film screen radiography as well as digital radiography equipment. Laboratory experiments will be conducted to reinforce didactic lessons.

BIOL 4032 - Imaging Modalities (2-3)

To offer the students information about numerous imaging modalities available in the field of radiologic technology.

BIOL 4033 - Radiography Curriculum Review / Seminar (2-3)

The student will participate in testing modules provided by The College of St. Catherine's Developmental Testing Program for Radiography located in Minneapolis MN. The tests are comparative to registry examination questions. The results of the

tests submitted on behalf of the SLH class of 2009 will be compared to student scores across the United States participating in the same type of testing program.

BIOL 4034 - Correctec (2-3)

Correctec has developed numerous computer programs to help radiography students learn the content required to be successful technologists and to pass the nationally required examination, the American Registry of Radiologic Technologists (ARRT). Correctec incorporated the review materials into an online review course. The online review course individualizes the learning experience by giving immediate feedback and review of the subject being tested. Additionally, the course is frequently updated to reflect the latest changes in terminology and content in the subject area. Students will submit units to instructor at specific intervals throughout the semester.

BIOL 4035 - Clinical Education / Practice VI (2-6)

Course emphasizes the development of expertise in all radiographic procedures with indirect supervision in proven competency areas and direct supervision in other related radiology areas. The student will continue to expound on Clinical Education 301, 302, 303, 404 and 405 exams.

BIOL 4100 - Cooperative Clinical III (0-15)

A student's third semester of study at the clinical affiliate program.

BIOL 4102 - Evolution (3)

Lecture and discussion of current and historical evolutionary theory. The process of scientific investigation will be contrasted with non-scientific methods. This course is co-listed with BIOL 5102. Prerequisite(s): BIOL 2020 or GEOS 1004.

BIOL 4210 - Ichthyology (3)

A thorough examination of the biology of fish with special emphasis on the fish of Missouri. Students will be expected to develop a detailed knowledge of the literature on ichthyology. This course is co-listed with BIOL 5210. Prerequisite(s): BIOL 1505 and BIOL 1112. Corequisite(s): BIOL 4210L. An additional fee is associated with this course.

BIOL 4210L - Ichthyology Lab (1: 1 lab)

A thorough examination of the biology of fish with special emphasis on the fishes of Missouri. Students will learn/understand the taxonomy, ecology, evolutionary history, and geographic distribution of fishes. Students will learn fish identification and field techniques used for specimen collecting. This course is co-listed with BIOL 5210L. Prerequisite(s): BIOL 1505 and BIOL 1112. Corequisite(s): BIOL 4210.

BIOL 4216 - Animal Behavior (3)

The objective of this course is to provide you with an overview of the evolutionary and mechanistic approaches to understanding how and why animals behave the way they do. As well as providing examples of how behavioral patterns contribute to an animal's chances of survival and reproductive success, this course will provide a window into the various levels of analysis that researchers use to explain the often complex ways animals behave. After taking this course, you will appreciate the importance of animal behavior in ecology and evolution, the proximate and ultimate drivers of behavior, and the approaches researchers use to generate this knowledge. This course is co-listed with BIOL 5216. Prerequisite(s): BIOL 1500 and BIOL 1505 and BIOL 2020. Spring.

BIOL 4221 - Mammalogy (2)

A thorough examination of the Class Mammalia, including evolution, systematics, form, function, and ecology. Students will be expected to develop a detailed knowledge of the history and literature in the field of mammalogy. This course is co-listed with BIOL 5221. Prerequisite(s): BIOL 1112 and BIOL 2020. Corequisite(s): BIOL 4221L. An additional fee is associated with this course.

BIOL 4221L - Mammalogy Lab (2: 2 lab)

A thorough examination of the Class Mammalia with special emphasis on the mammals of Missouri. This laboratory provides hands-on experience in mammal identification and reinforces concepts taught in BIOL 4221 by addressing the taxonomy, ecology, and geographic distribution of mammals in Missouri. This

course is co-listed with BIOL 5221L. Prerequisite(s): BIOL 1112 and BIOL 2020. Corequisite(s): BIOL 4221.

BIOL 4222 - The Biological Perspective (3)

An examination of current issues from a biological perspective including the impact of biology on history and culture. For biology majors. Prerequisite(s): 22 semester hours of biology.

BIOL 4223 - Ornithology (2)

An examination of the ecology, evolution, behavior, and physiology of birds. This course is co-listed with BIOL 5223. Prerequisite(s): BIOL 1112 and BIOL 2020. Corequisite(s): BIOL 4223L. An additional fee is associated with this course.

BIOL 4223L - Ornithology Lab (2: 2 lab)

An examination of the ecology and biology of birds with special emphasis on the field study of locally occurring species. This course reinforces concepts taught in BIOL 4223. This course is co-listed with BIOL 5223L. Prerequisite(s): BIOL 1112 and BIOL 2020. Corequisite(s): BIOL 4223.

BIOL 4232 - Herpetology (2)

A thorough examination of the classes Amphibia and Reptilia, including systematics, evolution and ecology of these groups with special attention to identification of local forms. This course is co-listed with BIOL 5232. Prerequisite(s): BIOL 1112 and BIOL 2020. Corequisite(s): BIOL 4232L. An additional fee is associated with this course.

BIOL 4232L - Herpetology Lab (2: 2 lab)

A thorough examination of the classes Amphibia and Reptilia, including systematics, evolution, and ecology of these groups with special attention to identification of local forms. This course provides hands-on experience with anatomical and morphological characters of native amphibian and reptile species of Missouri, as well as standard capture/trap methods, and standard survey/monitoring techniques. This course is co-listed with BIOL 5232L. Prerequisite(s): BIOL 1112 and BIOL 2020. Corequisite(s): BIOL 4232.

BIOL 4311 - Parasitology (4: 2 lecture, 2 lab)

Animal parasites, with emphasis on identification, morphology, biology, life histories, and host-parasite relationships. This course is co-listed with BIOL 5311. Prerequisite(s): BIOL 1505 with a grade of C or better or BIOL 1112 with a grade of C or better and 30 semester hours. An additional fee is associated with this course. Fall.

BIOL 4312 - Entomology (2)

An introduction to the systematics, morphology, physiology, evolution, and ecology of insects. This course is co-listed with BIOL 5312. Prerequisite(s): BIOL 2020. Corequisite(s): BIOL 4312L. An additional fee is associated with this course.

BIOL 4312L - Entomology Lab (2: 2 lab)

An introduction to the systematics, morphology, evolution, and ecology of insects. This laboratory provides hands-on experience capturing, trapping, curating and identifying insect specimens. This course reinforces concepts taught in BIOL 4312. This course is co-listed with BIOL 5312L. Prerequisite(s): BIOL 2020. Corequisite(s): BIOL 4312.

BIOL 4400 - Endocrinology (2)

Examination of the physiology of endocrine glands and the roles of each hormone in the regulation of growth, metabolism, and reproduction. Examples will be selected from humans and domestic species. This course is co-listed with BIOL 5400. Prerequisite(s): BIOL 3431.

BIOL 4403 - Environmental Physiology (4: 3 lecture, 1 lab)

Physiological responses and adaptations to alterations in natural and man-generated environmental factors such as temperature, light cycles, pressure, water, ions, radiation, vibration, chemicals, microorganisms, and exercise. Prerequisite(s): BIOL 3431. An additional fee is associated with this course.

BIOL 4411 - Plant Physiology (4: 2 lecture, 2 lab)

Life processes occurring in plants, the factors affecting these processes, their measurement, and the significance of these processes to the growth of the plant. This course is co-listed with BIOL 5411. Prerequisite(s): AGRI 1600 or BIOL 1111; and CHEM 1104 or CHEM 1131. An additional fee is associated with this course.

BIOL 4412 - Wildlife Diseases (4: 3 lecture, 1 lab)

Introduction to causes and mechanisms of wildlife diseases including the pathobiology of the disease, zoonosis, and the wide range of pathogens and diseases impacting the different classes of animals. Discussion on the significance of disease on populations, domestic/wildlife/human interface, and the implications on conservation and management. This course offers hands on training in microbiology fundamentals, necropsy, disease detection, field sampling and diagnostic testing. This course is co-listed with BIOL 5412. Prerequisite(s): BIOL 1112. An additional fee is associated with this course.

BIOL 4500 - Cooperative Clinical IV (0-15)

A student's fourth semester of study at the clinical affiliate program.

BIOL 4511 - Cytogenetics (4: 3 lecture, 1 lab)

Examination of cellular and molecular mechanisms in cell division and their role in evolution and human health. Laboratory exercises include techniques for experimentally manipulating chromosomes and use of computer and video techniques. Prerequisite(s): BIOL 2512; and CHEM 1104 or CHEM 1131. An additional fee is associated with this course.

BIOL 4514 - Molecular Biology (3)

Emphasizes how biological molecules interact to express cellular phenotypes. Transcriptional and translational controls of gene expression and the latest biotechnological advances are discussed. This course is co-listed with BIOL 5514. Prerequisite(s): BIOL 3511 and CHEM 1132. Spring.

BIOL 4515 - Molecular Technology (3: 2 lecture, 1 lab)

Emphasizes the proper use of laboratory equipment, molecular techniques, experimental design, and data analysis. Questions and experiments encountered in molecular biology are addressed. This course is co-listed with BIOL 5515. Prerequisite(s): BIOL 3511 and CHEM 1132. An additional fee is associated with this course.

BIOL 4516 - Hematology/Virology (3)

The study of blood and viruses. Topics include hematopoiesis, coagulation, viral replication, host responses to viruses, and normal and diseased host responses. This course is co-listed with BIOL 5516. Prerequisite(s): BIOL 3511 and BIOL 2512.

BIOL 4517 - Serology Laboratory (1)

A combined immunology, hematology, and virology laboratory emphasizing cellular components and identification and differentiation by technological methodologies. This course is co-listed with BIOL 5517. Prerequisite(s): BIOL 3213 or BIOL 3414 or BIOL 3611 or BIOL 4311. An additional fee is associated with this course.

BIOL 4650 - Fundamentals of Bioinformatics II (3)

Advanced computational methods and tools for predicting phylogenetic, structure, gene and regulatory mechanisms. Computational analysis of microarrays. Prerequisite(s): BIOL 3511 and BIOL 3650 with grades of C or better.

BIOL 4709 - Plant Ecology (4: 2 lecture, 2 lab)

Concepts and methods pertaining to the collection and analysis of ecological data. Fundamental principles of interactions between plants and their environment will be addressed. This course is co-listed with BIOL 5709. Prerequisite(s): BIOL 1111; BIOL 2020; BIOL 3709 or BIOL 3711.

BIOL 4710 - Limnology (4: 2 lecture, 2 lab)

Ecology of aquatic populations, communities, and ecosystems will be emphasized. Both lentic and lotic habitats will be examined. Field trips at additional expense to the students are part of this course. Prerequisite(s): BIOL 2020.

BIOL 4711 - Animal Ecology (3)

Ecological principles and concepts pertaining to populations, communities, and ecosystems with special emphasis on animals. This course is co-listed with BIOL 5711. Prerequisite(s): BIOL 1112 and BIOL 2020. Corequisite(s): BIOL 4711L. An additional fee is associated with this course.

BIOL 4711L - Animal Ecology Lab (1: 1 lab)

Ecological principles and concepts pertaining to populations, communities, and ecosystems with special emphasis on animals. Both field work with local examples and laboratory work are part of this course. This course reinforces concepts taught in BIOL 4711. This course is co-listed with BIOL 5711L. Prerequisite(s): BIOL 1112 and BIOL 2020. Corequisite(s): BIOL 4711.

BIOL 4722 - Conservation Biology (3)

This is a synthetic course applying the multidisciplinary approaches of ecology, biogeography, evolution, genetics and economics to the global biodiversity crisis. This course is co-listed with BIOL 5722. Prerequisite(s): BIOL 2020.

BIOL 4919 - Wildlife Policy and Law (3)

Introduction to the principles of wildlife policy and law in North America. This course will survey the history of wildlife law in the U.S. and examine the evolution of wildlife law by examining specific legislation. It will also familiarize students with ecosystem and wildlife issues that shape wildlife law, as well as public attitudes toward the value of ecosystems and wildlife. This course is co-listed with BIOL 5919. Prerequisite(s): BIOL 2020 or (CJ 1000 and BIOL 1003) or (CJ 1000 and BIOL 1005). Sometimes offered online.

BIOL 4950 - Laboratory Intern (1)

Under direct supervision, students will assist in the preparation, supervision, and assessment (with the exception of grading) of laboratory activities in the Department of Biological and Clinical Sciences. *May be repeated for a maximum of 2 semester hours.*

BIOL 4953 - Ecology Field Course (1-6)

Advanced field methods and analysis of the physical, chemical, and ecological aspects of diverse marine ecosystems. On a rotating basis, the field course may focus on marine, northern temperate woods, and alpine systems. *May be repeated as topics vary.* Prerequisite(s): Consent of instructor.

BADM 1400 - Business Orientation (1)

Business Orientation is designed to facilitate students' orientation to the School of Business Administration (SoBA) and the University of Central Missouri. This course is available for Business Administration students and will count for free elective credit. Topics will include university resources, academic skills, time management, setting and achieving goals, as well as future careers choices within the six HCBPS emphasis areas including Accounting, Economics, Finance, Marketing, Management, and Computer Information Systems. Fall.

BADM 1500 - Foundations of Business (1)

The course will present an introduction to economics, accounting, marketing, finance, and management. Other areas to be examined include business organization, networking, workplace communication, and decision-making. Students will develop soft skills needed to enhance an individual's interactions, job performance and career prospects. Fall.

BADM 1505 - Job Shadowing (2)

The course will pair a High School student and a local employer. Areas examined include daily routine and operations of business positions, skills and responsibilities associated with the profession, and actual decision-making issues faced by an organization. Spring.

BADM 2000 - Orientation to HCBPS (0)

Seminar course to orient and inform transfer students regarding Harmon College of Business and Professional Studies (HCBPS) and UCM requirements, policies, and procedures.

BLAW 2720 - Legal Environment of Business (3)

Survey of a number of areas of law that are important to persons as citizens and as participants in economic

activity. Included are the legal process, business ethics, contracts, torts, constitutional law, agency, business organization, and employment law. Fall, Spring, Summer.

BLAW 3721 - Law of Business Transactions (3)

Comprehensive discussion of laws concerning the formation and performance of contracts, sale of goods transactions, creation and transfer of negotiable instruments and selected other areas of commercial law. Prerequisite(s): BLAW 2720. An additional fee is associated with this course. Fall, Spring, Summer.

BLAW 4740 - Employment Law (3)

Current analysis of legal issues in the workplace relating to the employment process. Focus covers a broad spectrum, including Title VII/Equal Employment Opportunity, Fair Labor Standards Act, OSHA, ERISA and labor law. Policy issues involving discrimination, affirmative action and sexual harassment will be covered, as well as applied topics such as the legality of the hiring process. This course is co-listed with BLAW 5740. Prerequisite(s): BLAW 2720. An additional fee is associated with this course. Fall.

BTE 1200 - Applied Lab for Essentials of Managing Information (1)

Reinforcement activities for students with limited background in computer applications and tools, along with tutoring to prepare students for CTE 1210 Essentials of Managing Information.

BTE 1530 - Keyboarding (2)

Touch operation of alphabetic, numeric, and symbol keys found on most computer keyboards, word processors, and typewriters; introduction to document formatting.

BTE 1532 - Intermediate Keyboarding (3)

Emphasis on building speed and accuracy. Includes document formatting. Prerequisite(s): Prior instruction in touch keyboarding.

BTE 2560 - Organizational Administration and Event Planning (3)

Provides students with foundational knowledge of organizational administrative procedures including examination of leadership styles, and strategies for planning, conducting, and following up events.

BTE 3110 - Consumer Finance and Economics (3)

Competencies related to income, taxes, money management, spending, use of credit, saving, and investing. Issues and strategies for responsible personal financial management across the life-span.

BTE 4210 - Methods of Teaching Business and Marketing Education (3)

Prepares student as teachers of business education by assisting in the development of instructional methods and techniques for student-oriented classroom instruction. This course is co-listed with BTE 5210. Prerequisite(s): Admission to Teacher Education Program; senior standing, or by school approval. This is a professional education course.

BTE 4241 - Coordination of Cooperative Education Programs (3)

Organizing and implementing cooperative career and technical education programs. This course is co-listed with BTE 5241.

BTE 4260 - Special Topics in Business Teacher Education (1-3)

Topics will be listed in appropriate course schedules. May be used to teach specific microcomputer software or to cover other critical topics in business education as new technologies develop. This course is co-listed with BTE 5260. Prerequisite(s): Senior standing.

BTE 4280 - Implementing Business and Marketing Education Programs (3)

Addresses information needed to design, implement, and maintain vocational career and technology education programs, and lab management and resources. This course is co-listed with BTE 5280. Prerequisite(s): Admission to Teacher Education Program or approved alternative pathway to certification. This is a professional education course.

BTE 4510 - Desktop Publishing for Business (3)

Includes business desktop publishing concepts that utilize basic to intermediate design principles for creating comprehensive document layouts with polished professional-looking images. This course is co-listed with BTE 5510.

BTE 4535 - Data Input Technologies (2)

Technologies and processes for managing data in an information system. Emphasizes efficient input methods and alternative technologies along with appropriate document formatting and information management. Prerequisite(s): Keyboarding speed of 35 wpm with 95 percent or higher accuracy on a 5-minute timed writing.

BTE 4550 - Publishing Applications for Business (2)

Business publishing using application tools and production fundamentals for print or web-ready documents and pages. Explores effective web communication techniques and principles of e-business. This course is co-listed with BTE 5550.

BTE 4560 - Emerging Technologies for Business (2)

Students will explore current and emerging technologies that focus on information management, dynamic communication, and collaboration in the digital business environment, considering attributes and benefits. This course is co-listed with BTE 5560. Sometimes offered online.

CTE 1000 - Introduction to Career and Technical Education (1)

An introduction to the fields associated with the profession of teaching Career & Technical Education in Missouri public schools. Will help set the stage for students who are planning to teach in the CTE fields.

CTE 1210 - Managing Information Using Computer Applications GE (2)

Application of current and emerging software to gather, evaluate, communicate, and manage information for academic and professional success while adhering to academic guidelines for research and data management. Fall, Spring, Summer.

CTE 1300 - Introduction to Engineering Design (3)

Use engineering-related, problem-solving skills in design development processes. Create, analyze, and communicate model product solutions using solid modeling computer design software. Fall, Spring.

CTE 1500 - Power and Energy for Educators (3)

This course will focus on power and energy as it pertains to current transportation, including the history, theory, and practical application of varying power and energy systems. Students will examine the history of power and energy and focus on the theory of two-stroke engines, four-stroke engines, diesel engines, and electric motors. Fall, Spring.

CTE 2000 - Technology and Society GE (3)

Explores the nature of technology, technological systems found in all cultures, the control of technology, and implications for change.

CTE 2060 - Technical Writing GE (3)

Technical writing basics, techniques, and applications. Uses a practical focus so students internalize the skills necessary to produce clear and effective documents and reports. Prerequisite(s): ENGL 1020 or ENGL 1080 with grades of C or better.

This course is equivalent to MOTR ENGL 110 Technical Writing in the Written Communications Knowledge Area.

CTE 3000 - Technology for Teaching (1)

Designed to assist preservice educators in implementing instructional technology in the classroom to effectively deliver lesson content, learn the basics of 1:1 implementation, and design engaging lessons based on current educational pedagogy and technology models. Recommended pairing with either FLDX 2150 or FLDX 4970. Prerequisite(s): Admission to the teacher education program. Fall, Spring.

CTE 3116 - Creative Thinking for a Better World (3)

Understanding and applying formal creative thinking techniques as a responsibly-engaged member of society in order to affect positive change for a better world.

CTE 3710 - Organization & Management of Comprehensive CTE Programs (3)

This course has been designed to provide preservice CTE Educators with a deeper understanding of Career and Technical Education. Course content includes information on the development and operations of a comprehensive CTE program in accordance with DESE, legal, and legislative requirements that directly impact CTE education. This course also includes instruction on the safe and effective sponsorship of CTSO-related programs. Prerequisite(s): CTE 4145 or concurrent enrollment. Corequisite(s): FLDX 3000 and CTE 4973. This is a professional education course. Spring.

CTE 4000 - Special Projects in Career and Technical Education (1-3)

Investigation of contemporary problems and issues in career and technical education by selected individuals or groups *May be repeated.* Prerequisite(s): Written contract/proposal with objectives and written school consent.

CTE 4022 - Teaching/Administration Intern (1-3)

Provides a mentored administration/teaching experience at the secondary/post-secondary level. Evaluation by on-site mentor and Internship Coordinator. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with CTE 5022. Prerequisite(s): CTE 4145, CTE 4160, and school chair consent.

CTE 4090 - Special Problems in Career and Technology Education (1-3)

Meets student needs for additional research and/or laboratory experience in the development of technical knowledge and skills in the areas of technology and occupational education. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): Written contract/proposal with objectives and written school consent.

CTE 4100 - CTTE 1 - Curriculum & Assessment (3)

Introduce new CTE teachers to the developmental characteristics of students, curriculum mapping developing a scope sequence, and the role of CTE in public schools, including the mission of CTE. In addition, an introduction on using formative and summative assessments, along with becoming familiar with district policies and grading procedures will be presented. This course is co-listed with CTE 5010.

CTE 4110 - Foundations of Career and Technical Education (3)

Synthesizes Career and Technical Education's history, past and current issues, legislation, and philosophical foundations. This course is co-listed with CTE 5110.

CTE 4115 - Lab Management & Safety (3)

Students will learn to plan and equip engineering and technology labs based on curriculum and educational standards. Students learn to develop a lab safety program. Prerequisite(s): Junior standing or consent of instructor.

CTE 4120 - CTTE 2 - Curriculum & Methods (1)

Familiarize new CTE teachers with techniques for motivating students to learn. Instructional methods and strategies will be explored including reinforcing effort and providing recognition. Teachers will continue work on curriculum mapping along with developing unit and lesson plans. This course is co-listed with CTE 5020. Prerequisite(s): CTE 4100. Corequisite(s): CTE 4130. Sometimes offered as hybrid. Spring.

CTE 4125 - Methods of Teaching ETTE (3)

The course will introduce students to problem-based learning pedagogical techniques, guided inquiry, as well as develop expertise in the delivery/presentation

phase of instruction. Prerequisite(s): Admission to the Teacher Education Program. CTE 4145 should either have been completed or taken concurrently.

CTE 4130 - CTTE 3 - Curriculum, Methods, & Planning (2)

New CTE teachers will learn instructional planning techniques including lesson planning, unit planning, and the continuation of curriculum mapping. Teachers will work on instructional methods such as identifying similarities and differences, nonlinguistic representation, identifying learning styles, and cooperative learning. This course is co-listed with CTE 5030. Prerequisite(s): CTE 4100. Corequisite(s): CTE 4120. Sometimes offered as hybrid. Spring.

CTE 4140 - New Teacher Institute (3)

Develop teaching/instructional management skills needed to perform effectively in classrooms/laboratories. Includes structured activities designed to assist beginning vocational-technical teachers during their first teaching years. This course is co-listed with CTE 5015.

CTE 4145 - Curriculum & Literacy Development in CTE (3)

Assist new in-service and pre-service educators in selecting, organizing, and delivering course content, including federal and state guidelines, and literacy development, for career and technology education courses and programs. This course is co-listed with CTE 5145. This is a professional education course.

CTE 4150 - Vocational Guidance (3)

Facilitate awareness and ability in vocational guidance. Includes problems, methods, and procedures for assisting individuals in choosing, preparing for, entering, and progressing in their vocation. This course is co-listed with CTE 5245.

CTE 4160 - Methods of Teaching Career and Technical Education (3)

Principles and techniques of presenting information, giving demonstrations and facilitating student learning including managing the learning environment. This course is co-listed with CTE 5260. Prerequisite(s): For BS degree, CTE 4145. For BSE degree, Admission to Teacher Education Program or instructor approval. This is a professional education course.

CTE 4165 - Performance Assessment in Career and Technical Education (3)

Designed to assist CTE educators and administrators in critiquing, planning, developing, implementing, evaluating, and improving student performance assessments in the cognitive, affective, and psychomotor domains. This course is co-listed with CTE 5265. Prerequisite(s): Consent of instructor.

CTE 4180 - Adult Education and Training (3)

Principles, objectives, philosophies, organization, administration, and supervision of adult education and training programs within career and technical education and/or industry teaching and learning environments. This course is co-listed with CTE 5280.

CTE 4210 - CTTE 4 - Current Topics in CTE (2)

Provides additional, just-in-time content for CTE teachers in curriculum, assessment, and special needs. Topics will include Missouri Learning Standards, academic integration, and 21st Century skills. Prerequisite(s): CTE 4130. Corequisite(s): CTE 4220. Sometimes offered as hybrid. Fall.

CTE 4220 - CTTE 5 - Management, Guidance, & Special Needs (2)

New CTE teachers will learn to design interventions and consequences for problem behaviors in the CTE classrooms and to adjust lessons to accommodate special needs learners. They will learn the difference between accommodations and modifications for students with special needs and how to communicate program requirements and skills for IEP development. Vocational guidance concepts will also be introduced in this course. Prerequisite(s): CTE 4130. Corequisite(s): CTE 4210. Sometimes offered as hybrid. Fall.

CTE 4230 - CTTE 6 - Work & Project Based Learning (2)

CTE teachers will learn to design high quality projects using project based learning. They will explore resources for career and college preparedness for students and begin working on professional teaching portfolios, as part of expectations for vocational guidance. Prerequisite(s): CTE 4220. Corequisite(s): CTE 4240. Sometimes offered as hybrid. Spring.

CTE 4240 - CTTE 7 - College and Career Readiness (2)

CTE teachers will revise curriculum maps and present professional teaching portfolios along with a college and career readiness project (vocational guidance expectations). Prerequisite(s): CTE 4220. Corequisite(s): CTE 4230. Sometimes offered as hybrid. Spring.

CTE 4972 - CTE Principles and Content Reading (2)

Designed to build on and apply the knowledge base of content area literacy and will serve as an introduction to the fields included in teaching Career Education. Work in this course will focus on the larger CTE unit but individual assignments will be based on the students' certification area.

CTE 4973 - CTE Classroom and Lab Management Techniques (1)

Designed to provide students with a content specific class management experience that reflects the unique needs of a lab-based classroom. This is a professional education course.

CTE 4974 - Educational Evaluation and Strategies (2)

Prepares students to enter the teaching profession in the public school, giving the preservice teacher instruction in the design and use of formative and summative assessment strategies to promote student learning. This course is to be taken during the senior block. Prerequisite(s): Admission to the Teacher Education Program. Corequisite(s): CTE 4160 and FLDX 4970. This is a professional education course.

CHEM 1005 - Survival Skills for College Chemistry (2)

Preparatory course to enhance success in General Chemistry by exploring concepts of chemistry and further developing algebraic and logic skills for solving applied chemical problems.

CHEM 1103 - Introduction to the Sciences: Chemistry GE (3)

Introduction to the basic concepts of chemistry and scientific methodology, emphasizing the connections between chemistry, technology, and all things in a modern world. Not available to those with credit in CHEM 1104.

This course is equivalent to MOTR CHEM 100 Essentials in Chemistry in the Natural Sciences Knowledge Area.
This is a sustainability course.

CHEM 1104 - Introduction to the Sciences: Chemistry GE (4: 4 lecture, 0 lab)

Introduction to the basic concepts of chemistry and scientific methodology, emphasizing the connections between chemistry, technology, and all things in a modern world. Laboratory included. Not available to those with credit in CHEM 1103. An additional fee is associated with this course.

This course is equivalent to MOTR CHEM 100L Essentials in Chemistry with Lab in the Natural Sciences Knowledge Area.

CHEM 1131 - General Chemistry I GE (5: 5 lecture, 0 lab)

First of a two course sequence that introduces the fundamental principles of chemistry and the reactivity of chemical elements and compounds. This course emphasizes modern atomic theory, structure and behavior of atoms and molecules, physical properties of matter, chemical reactions and energy relations, periodicity, and the mole concept and its applications. Includes laboratory experience. Prerequisite(s): Placement according to University policy applies. Passing score on a mathematics examination approved by the chemistry faculty, or MATH 1111 or MATH 1111R with grades of C or better. An additional fee is associated with this course.

This course is equivalent to MOTR CHEM 150L

Chemistry with Lab in the Natural Sciences Knowledge Area.

CHEM 1132 - General Chemistry II (5: 5 lecture, 0 lab)

Continuation of CHEM 1131. This course emphasizes intermolecular forces, solutions, kinetics, acid-base chemistry, chemical equilibria, thermodynamics and electrochemistry. Includes laboratory experience. Prerequisite(s): CHEM 1131 with a grade of C or better. An additional fee is associated with this course.

CHEM 1603 - Elementary Organic and Biochemistry (3)

An introduction to organic chemistry and biochemistry for those who need no additional chemistry training. Laboratory not included. Not available for those with credit in CHEM 1604. Prerequisite(s): CHEM 1103 or CHEM 1104 or high school chemistry.

CHEM 1604 - Elementary Organic and Biochemistry (4: 4 lecture, 0 lab)

A brief introductory course in organic chemistry and fundamental concepts of biochemistry with emphasis on physiological, nutritional, and comparative aspects. Includes laboratory experience. May not be used for credit in chemistry major and minor programs on the Bachelor of Arts and Bachelor of Science degrees. Prerequisite(s): CHEM 1104. An additional fee is associated with this course.

CHEM 1911 - Introductory Chemistry Laboratory Experience (1:1 lab)

Introduction to the basic chemistry laboratory techniques and scientific methodology, emphasizing the connections between chemistry and the modern world. Prerequisite(s): Consent.

CHEM 3111 - Inorganic Chemistry (4: 4 lecture, 0 lab)

An intermediate level inorganic course with emphasis on main group and organometallic chemistry. Laboratory included. Prerequisite(s): CHEM 1132 with a grade of C or better and CHEM 3341 with a C or better. An additional fee is associated with this course.

CHEM 3212 - Quantitative Analysis (4: 4 lecture, 0 lab)

Intermediate level course that introduces students to principles and techniques employed in proper quantitative chemical analysis. Application of chemical principles to the separation and determination of elements and compounds will be covered. Includes laboratory experience. Prerequisite(s): CHEM 1132 with a grade of C or better. An additional fee is associated with this course.

CHEM 3341 - Organic Chemistry I (4: 4 lecture, 0 lab)

A lecture and laboratory course in the chemistry of carbon compounds. Prerequisite(s): CHEM 1132 with a grade of C or better. An additional fee is associated with this course.

CHEM 3342 - Organic Chemistry II (4: 4 lecture, 0 lab)

A continuation of CHEM 3341. Prerequisite(s): CHEM 3341 with a grade of C or better. An additional fee is associated with this course.

CHEM 3421 - Biochemistry (3)

Provides a foundation in biochemistry. Topics covered include amino acids, proteins, lipids, membranes, carbohydrates, enzyme kinetics and mechanisms, and carbohydrate metabolism. Prerequisite(s): CHEM 3341 with a grade of C or better.

CHEM 3920 - Communication Skills in Chemistry (2)

Techniques for searching the chemical literature, writing scientific reports and papers, and making effective oral presentations using audiovisual aids to effectively convey technical ideas and information. Prerequisite(s): a minimum of 17 semester hours of chemistry. Students are encouraged to enroll during their junior year.

CHEM 4010 - Special Topics in Chemistry (1-4)

Topics of contemporary significance not given in-depth coverage in regularly offered courses. *May be repeated as topics vary.* Prerequisite(s): Consent of instructor.

CHEM 4111 - Advanced Inorganic Chemistry (3)

An advanced study of inorganic compounds with a focus on the transition elements and current issues. Prerequisite(s): CHEM 3111 with a grade of C or better.

CHEM 4231 - Instrumental Analysis (4: 4 lecture, 0 lab)

A study, including applications, of instrumental methods of chemical analysis. Prerequisite(s): CHEM 3212 and (PHYS 1102 or PHYS 2122) with grades of C or better. An additional fee is associated with this course.

CHEM 4313 - Advanced Organic Chemistry (3)

A lecture survey of general topics not covered in the CHEM 3341-CHEM 3342 sequence, and an extension to topics of current interest in organic chemistry. Prerequisite(s): CHEM 3342 with a grade of C or better.

CHEM 4323 - The Organic Chemistry of Biological Pathways (3)

The Organic Chemistry of Biological Pathways is an advanced organic chemistry class for students that want a deeper understanding of the chemical reactions that take place in living organisms. Course content pays particular attention to arrow-pushing mechanisms of reactions found in common metabolism pathways. In the process, students are exposed to a variety of modern tools for studying reaction mechanisms (e.g., protein crystal structure analysis, kinetic isotope effects, site-directed mutagenesis). Finally, the course introduces students to primary peer-reviewed literature from scientific journals that supports mechanistic hypotheses discussed in the course. Prerequisite(s): CHEM 3342 with a grade of C or better. Fall.

CHEM 4421 - Advanced Biochemistry (3)

Catabolic and anabolic metabolism of biomolecules, catalytic mechanisms and regulation of enzymes, nucleic acid structure and function, and computer resources. Prerequisite(s): CHEM 3342 and CHEM 3421 with grades of C or better.

CHEM 4431 - Biochemistry Laboratory (2)

Introduction to biochemical literature, computer based resources, and experimental techniques used to purify and characterize biomolecules. Prerequisite(s): CHEM 3421 with a grade of C or better. An additional fee is associated with this course.

CHEM 4531 - Physical Chemistry: Thermodynamics and Kinetics (4: 4 lecture, 0 lab)

Kinetic-molecular theory of gases, thermodynamics, chemical equilibria, and chemical kinetics. Laboratories are project-based and include calorimetry and spectroscopy. Laboratory included. Prerequisite(s): CHEM 1132, CHEM 3212, MATH 1151, and (PHYS 1102 or PHYS 2122) with grades of C or better. An additional fee is associated with this course.

CHEM 4532 - Physical Chemistry: Quantum Mechanics and Spectroscopy (4: 4 lecture, 0 lab)

Quantum mechanics, atomic and molecular structure, spectroscopy, electrical and magnetic properties of molecules. Laboratories include atomic and molecular spectroscopy, molecular modeling, and mathematical modeling. Laboratory included. Prerequisite(s): CHEM 1132, CHEM 3212, MATH 1151, and (PHYS 1102 or PHYS 2122) with grades of C or better. An additional fee is associated with this course.

CHEM 4900 - Chemical Research for Teachers (1-2)

Faculty supervised project terminating in a written and oral report. One semester assisting in or preparing materials for a chemistry laboratory course, prior to

student teaching, also recommended. Prerequisite(s): CHEM 3212 and consent of instructor.

CHEM 4910 - Research in Chemistry (1-5)

Individual work on a chemical research project under supervision of a staff member. Project will terminate in a written and oral presentation. *May be repeated for a maximum of 10 semester hours.* Prerequisite(s): Consent of instructor and school. An additional fee is associated with this course.

CHEM 4911 - Special Problems in Chemistry (1-3)

Individual work under supervision of a staff member. *May be repeated for a maximum of 3 semester hours.* Prerequisite(s): Consent.

CHIN 1701 - Elementary Chinese I GE (3)

Fundamental principles of pronunciation, vocabulary and idiomatic expressions of spoken Mandarin Chinese. Not open to native speakers or advanced students without permission of school chair.

This course is equivalent to MOTR LANG 105 Foreign Language I in the Humanities & Fine Arts Knowledge Area.

CHIN 1702 - Elementary Chinese II GE (3)

Continuation of CHIN 1701. Not open to native speakers or advanced students without permission of school chair. Prerequisite(s): CHIN 1701.

This course is equivalent to MOTR LANG 106 Foreign Language II in the Humanities & Fine Arts Knowledge Area.

CHIN 2790 - Special Topics in Chinese (1-3)

Individual or group work by selected students in carefully chosen fields for intermediate level study. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): 6 semester hours of Chinese and consent of the school chair.

CHST 1000 - First Year Foundations For the College of Health, Science, and Technology (1)

A one hour course designed to introduce students to the University of Central Missouri, the College of Health, Science and Technology, College Faculty and major.

CHST 2000 - Orientation to CHST (0)

Seminar course to orient and inform transfer students regarding College of Health, Science, and Technology (CHST) and UCM requirements, policies, and procedures.

COMM 1000 - Public Speaking GE (3)

A study and practice of basic principles involved in discovering, arranging, delivering, and evaluating ideas in speech situations. Fall, Spring.

This course is equivalent to MOTR COMM 110 Fundamentals of Public Speaking in the Oral Communications Knowledge Area.

COMM 1050 - Communication in Practice GE (3)

Provides the student with the opportunity to understand and practice the lifelong process toward communication competency in three specific contexts: interpersonal, small group, and presentational settings.

This course is equivalent to MOTR COMM 100 Introduction to Communications in the Oral Communications Knowledge Area.

COMM 1100 - Communication Pathways (1)

Students will explore the various ways the communication discipline impacts society, personal and professional dynamics, and the media. Students will also be introduced to the department, and the many ways to become involved in the practice of communication and digital media. Fall, Spring.

COMM 1200 - Introduction to Mass Communication GE (3)

Students get an introduction to the development of Mass Media and their impact on individuals and our society. Fall, Spring.

This course is equivalent to MOTR SBSC 100

Introduction to Mass Communications in the Social & Behavioral Sciences Knowledge Area.

COMM 1390 - Forensics I (1)

This is a practicum where students learn about public speech and/or debate and participate in sanctioned speech and debate tournaments. *May be repeated for a maximum of 3 semester hours.* Fall, Spring.

COMM 1500 - Writing Across the Media (3)

This course introduces students to the wide variety of writing styles used in contemporary media industries. Students will learn to write for print, broadcast, film, and new media platforms. Prerequisite(s): ENGL 1020 or ENGL 1080. Fall, Spring, Summer.

COMM 1519 - Media Aesthetics (3)

Students will focus on the analysis and production of fundamental image and sound elements in digital media production through the lens of still digital photography. Fall, Spring.

COMM 1520 - Introduction to Digital Journalism (3)

Students learn fundamental skills of conceptualizing an audience-centered approach to information gathering and multiplatform journalism storytelling, including visual, audio, digital, and social media concepts. Prerequisite(s): COMM 1500. Fall.

COMM 1630 - Web Content and Promotion Strategies (3)

An introduction to the role of a web manager and the skills utilized in managing and promoting a professional web presence.

COMM 1700 - Dale Carnegie: Skills for Success (2)

Serves to enhance students' self-confidence and provide them knowledge to be successful in their vocational pursuits.

COMM 2000 - Media Literacy GE (3)

Explores the relationships between media, its consumers, and producers. Integrates cultural, technological, and economic perspectives on mass media and visual communication. Fall, Spring, Summer.

This course is equivalent to MOTR SBSC 100 Introduction to Mass Communications in the Social & Behavioral Sciences Knowledge Area.

COMM 2010 - Interpersonal Communication (3)

Survey of communication concepts impacting our important relationships including romantic, family, and friendship. Covers the patterns involved in establishing and maintaining effective relationships, managing conflict, and promoting tolerance for human diversity. Fall, Spring.

COMM 2320 - Foundations of Rhetorical Theory (3)

Nature and functions of rhetoric across various communication situations. Spring.

COMM 2330 - Teamwork and Group Dynamics (3)

Students will examine how communication impacts the formation and dynamics of small groups and teams. Students will analyze the importance of climate, leadership, decision-making, and roles in both social and professional groups and teams. Fall, Spring.

COMM 2340 - Argumentation and Debate (3)

Principles of analysis, evidence, reasoning, briefing, refutation, case construction, preparing and evaluating arguments. Practical experience with different types of debate.

COMM 2350 - Intercultural Communication (3)

This course studies communication between cultures, both domestic and international. It explains how differences such as age, gender, socio-economic class, race, sexual identity, etc. can impact

interactions, and what we can do to make those interactions more positive.

COMM 2370 - Special Topics in Communication Studies (1-3)

Contemporary and/or unique topics related to Communication Studies; and are not offered in the regular schedule of courses. *May be repeated for a maximum of 6 semester hours.* Spring.

COMM 2380 - Workplace Communication (3)

Students will examine the practice, trends, and issues of human communication in organizational contexts. This course provides students skills in case analysis, infographic production, and presentation as a consultant's craft. Fall.

COMM 2410 - Multimedia Production (3)

This course equips students with basic theories and skills of visual communication, image creation and modification, and web design to enable production of graphics and websites. Fall, Spring, Summer.

COMM 2411 - Audio Production (3)

An introduction to the science of sound and the operation of professional audio equipment and software. Prerequisite(s): COMM 1500. Fall, Spring, Summer.

COMM 2412 - Introduction to Digital Video (3)

An introduction to the equipment and techniques of planning, shooting, lighting, recording sound, and editing for video. Prerequisite(s): COMM 1500 and COMM 1519 or for BFA Studio Art Photography Majors ART 1211. Fall, Spring, Summer.

COMM 2530 - Visual News Production (3)

Effective use of photography to communicate in the digital media. Prerequisite(s): COMM 1519. As Needed.

COMM 2700 - Dale Carnegie: Effective Communication and Human Relations (3)

Students will enhance communication and interpersonal relation skills, build self-confidence, and develop knowledge and practice in communicating effectively both in interpersonal and public settings. Fall, Spring.

COMM 3000 - Film Appreciation GE (3)

Students will develop the vocabulary, analytical skills, and historical context with which to effectively study movies for the types of meaning they carry, thereby facilitating a greater appreciation for the art of motion pictures. Fall, Spring, Summer.

COMM 3050 - Cinematography (3)

A practical introduction to the art and craft of motion picture creative image control, focusing on the essential principles, concepts, and tools of lighting and cinematography. Prerequisite(s): COMM 2412.

COMM 3100 - Communication Analytics and Insights (3)

Students will design, conduct, and analyze both quantitative (survey) and qualitative (interviews) research studies. This course provides an overview of the concepts, methods, and tools by which communication research is conducted. Students will develop skills in gathering, organizing, interpreting, and presenting research information using competent and ethically valid methods. Fall, Spring, Summer.

COMM 3101 - Essential Communication Concepts (3)

Students will critically examine and critique concepts/theories from the field of communication including mass media; relational communication; organizational communication; and cultural communication. Students will be able to identify elements of objective and interpretive theories and communicate how these concepts relate to society and themselves. Fall, Spring, Summer.

COMM 3120 - Career Readiness for Digital Media Production (1)

Career Readiness for Digital Media Production will serve as a halfway point in the program in which students' performance is evaluated and a clear plan

for students' junior and senior years is developed. Prerequisite(s): COMM 2410, COMM 2411 and COMM 2412. Spring.

COMM 3200 - Digital Media Practicum (1-3)

Practical application of Digital Media Production in a campus setting. *May be repeated for a maximum of 3 semester hours.* Prerequisite(s): Consent of instructor. Fall, Spring, Summer.

COMM 3201 - Muleskinner Practicum (1-3)

Practical application of Digital Media Production at the University of Central Missouri's student news outlet, The Muleskinner. Prerequisite(s): Instructor consent.

COMM 3202 - KMOS Practicum (1-3)

Practical application of Digital Media Production at KMOS-TV. *May be repeated for up to 3 hours.* Prerequisite(s): Consent of instructor. Fall, Spring.

COMM 3203 - UCM Radio-The Beat Practicum (1-3)

Practical application of Digital Media Production at UCM Radio-The Beat, campus radio station. *May be repeated for up to 3 hours.* Prerequisite(s): COMM 2411 and consent of instructor. Fall, Spring.

COMM 3204 - CTV Practicum (1-3)

Practical application of Digital Media Production at Central TV. *May be repeated for up to 3 hours.* Prerequisite(s): Instructor consent. Fall, Spring.

COMM 3220 - Performance for the Media (3)

The theory and practical application of vocal performance in support of traditional and new media. Prerequisite(s): COMM 2411 and COMM 2412. Spring.

COMM 3275 - Screenwriting (3)

Students will emerge with the knowledge necessary to take a story idea from the initial stages and develop it into a fully realized and professionally formatted screenplay. Prerequisite(s): COMM 1500. Fall, Summer, Sometimes online.

COMM 3315 - Improving Listening Abilities (3)

Theories and principles for improving listening in a variety of communication situations. Fall, Summer.

COMM 3320 - Communication of Social Movements (3)

Focuses on how the communicative acts of social movements adapt to the constituencies they are attempting to change. Prerequisite(s): COMM 1000. Fall.
This is a sustainability course.

COMM 3325 - Nonverbal Communication (3)

Provides a summary of the key theories and research in Nonverbal Communication. The course examines selected scholarship on the codes of nonverbal communication; e.g., space and territoriality; physical appearance, body alteration and modification; movement and touch; and paralanguistics. Fall.

COMM 3327 - Improving Interviewing Skills (3)

Theory and purposes of interviewing, emphasizing the principles and practice of interviewing skills. Spring.

COMM 3390 - Forensics II (1)

Participation in intercollegiate (non-novice) forensics-debate, oratory, extemporaneous speaking, discussion, and oral interpretation. *May be repeated for a maximum of 3 semester hours.* Fall, Spring.

COMM 3391 - Teaching High School Speech and Debate (3)

Students are introduced to teaching and coaching practices and strategies relevant to high school speech and debate including: debate, public address, limited preparation events, and oral interpretation events.

COMM 3400 - History of American Film (3)

This course is a survey of the American film industry that examines the technological, economic, and

aesthetic developments in American cinema, from the invention of motion-pictures to the present day. Fall.

COMM 3450 - Digital Video Editing (3)

Students will advance their motion picture editing skills using non-linear editing systems, focusing on the integration of video, audio, and graphics along with a study of historical and theoretical approaches. Prerequisite(s): COMM 2412. Fall, Spring.

COMM 3475 - Multicam Studio Production (3)

Students will prepare and produce multi-camera programming in a television studio environment, including experience in both production and on-air talent. Prerequisite(s): COMM 1500 and COMM 1519. Fall.

COMM 3500 - Multiplatform Journalism Storytelling (3)

This course equips students to gather information, conceptualize, shoot, write and edit in basic journalism coverage. Students will develop effective, strategy-based storytelling skills through production and publication necessary for engaging journalism. Prerequisite(s): COMM 2411 and COMM 2412.

COMM 3505 - Introduction to High School Video Production (1)

The high school journalism teacher will learn about single camera operation, lighting, graphics, talent position, voice, body and performance. Prerequisite(s): admission to the journalism minor, Bachelor of Science in Education. COMM 2412. Summer.

COMM 3520 - Publication and Production Editing (3)

Course will emphasize the creation of high-quality design and videos for print, social media and mobile platforms. Students learn how to create professional content customized for social media sites; about current industry trends and preferred practices for publication design and production directing; and editing compelling stories for multiple digital platforms. Prerequisite(s): COMM 2411 and COMM 2412. Spring.

COMM 3535 - Multimedia Journalism (3)

Techniques of presenting news across media platforms (print, broadcast, and online) and through social media. Spring.

COMM 3540 - Sports Reporting (3)

This class develops students' skills for researching and gathering information for writing and broadcasting sports news, features and advances. It also provides a firm grasp of the role sports journalism plays in the media and the effect sports coverage has on society. Prerequisite(s): COMM 1500. Fall, Summer.

COMM 3561 - Sports Production (3)

Provides students with a foundation in live sports television broadcasting. Students will gain experience in preproduction, producing, directing, graphics development, and camera operation for live sporting events. Prerequisite(s): COMM 1519. Fall.

COMM 3730 - Conflict Management (3)

An examination of communication factors which contribute to conflicts and an analysis of their resolution. Spring, in odd numbered years only

COMM 4100 - Podcasting and Radio Production (3)

Students will receive practical experience in radio station management and in production of radio content, including live radio shows, live remotes, PSAs, and podcasts. The history, development and future of the radio industry will also be explored. This course is co-listed with COMM 5100. Prerequisite(s): COMM 2411 or MUS 2410. Fall.

COMM 4120 - Motion Graphics and Effects (3)

Students apply theories of composition, color, typography, and design to dynamic graphics for film and broadcast including keyframe animation, kinetic type, compositing, and video effects. This course is co-listed with COMM 5110. Prerequisite(s): COMM 2410 and COMM 2412. Spring.

COMM 4130 - Audio for Digital Cinema (3)

Students learn sound acquisition on a film set, post-production for sound, Foley effects, and sweetening as they produce the sound design for short films. This course is co-listed with COMM 5140. Prerequisite(s): COMM 2411 and COMM 2412; or MUS 2410. Spring.

COMM 4160 - Advanced Sports Broadcasting (3)

This course provides students advanced experience in sports television broadcasting. Students will gain experience in preproduction, producing, directing, announcing, graphics development and camera operation. This course is co-listed with COMM 5160. Prerequisite(s): Consent of instructor. Spring.

COMM 4200 - Special Topics in Mass Media (1-9)

Departmentally selected topics of contemporary interest in mass media or specialized areas of the media; variable content. *May be repeated for a maximum of 9 semester hours (only 6 hours will apply to the major).* This course is co-listed with COMM 5200. Fall, Spring.

COMM 4235 - Media Promotions (3)

Students will learn to effectively use social media, blogs, web videos, stories and other promotional tools by studying the history and practice of content marketing, branded entertainment, gamification, and transmedia storytelling. This course is co-listed with COMM 5235. Prerequisite(s): COMM 2410, COMM 2411 and COMM 2412.

COMM 4240 - Media Management (3)

Students will gain an understanding of the principles and issues of managing contemporary media organizations. The course focuses on the challenges and opportunities of management and familiarizes students with management level problem-solving tools and techniques, especially as they apply to media entities. This course is co-listed with COMM 5240. As Needed.

COMM 4250 - Digital Media Law, Ethics and Diversity (3)

This course introduces students to the various bodies of law that regulate the media industry, applies the law to the work of journalists and producers of digital media, and examines ethical issues in the field of digital media production. This course is co-listed with COMM 5251. Prerequisite(s): Junior standing, Senior standing. Fall, Spring.

COMM 4270 - Family Communication (3)

Integrates theories, models, and research on how humans exchange information in families; explores the changing nature of the family; and examines how families influence subsequent interpersonal behaviors. This course is co-listed with COMM 5271. Spring.

COMM 4280 - Mass Media and Society (3)

Critical examination of the interaction between audiences and media. This course is co-listed with COMM 5281. Spring, in odd numbered years only

COMM 4285 - Women and Minorities in Media (3)

The study of women and minorities, their contributions and images, in a variety of media. This course is co-listed with COMM 5285. Prerequisite(s): COMM 1200 or COMM 2010.

COMM 4290 - Special Projects in Mass Communication (1-3)

Individual study/research in mass communication. *May be repeated for a maximum of 3 semester hours.* This course is co-listed with COMM 5290. Prerequisite(s): Written consent. Fall, Spring.

COMM 4295 - Digital Media Production Internship (1-6)

A practical training experience for the application of digital media. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): Completion of the pre-admission requirements for internship placement and departmental approval. Fall, Spring, Summer.

COMM 4300 - Special Projects in Speech Communication (1-3)

May be repeated for a maximum of 6 semester hours. This course is co-listed with COMM 5301. Prerequisite(s): Consent. Fall, Spring.

COMM 4320 - Influence in Society (3)

Students will examine the role of attitudes and persuasive theories to critically analyze influence occurring in society; including face to face, media, and social media settings. Students will also create a persuasive campaign to enhance their critical thinking and practical communication skills. This course is co-listed with COMM 5320. Spring, Summer.
This is a sustainability course.

COMM 4330 - Theories of Interpersonal Communication (3)

An in-depth study of selected theories and supporting research findings of the communication process as it occurs in informal face-to-face situations. This course is co-listed with COMM 5331. Prerequisite(s): COMM 2010.

COMM 4333 - Social Media Strategies (3)

Students will practice writing and creating content for diverse social media platforms with a focus on ethically engaging audiences, promoting messages through strategic campaigns, and optimizing media content to suit the unique capabilities of different social media channels. Spring.

COMM 4335 - Gender Communication (3)

Gender as it influences communication processes in intrapersonal, interpersonal, group, public and mediated contexts. This course is co-listed with COMM 5335. Prerequisite(s): COMM 2010. Fall.

COMM 4340 - Rhetorical Analysis and Society (3)

An examination of the Foundations and development of rhetorical theory with an emphasis on rhetorical criticism research. This course is co-listed with COMM 5340.

COMM 4350 - Professional Communication (3)

Students will examine and practice communication skills related to their transition into professional careers. This course provides students skill competencies in preparation and delivery of presentation of information and self, in writing, in person, and on digital platforms. Prerequisite(s): Completion of 90 semester hours. Fall.

COMM 4370 - Special Topics in Communication (1-3)

The study of subjects not included in school's regular offering. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with COMM 5370. Prerequisite(s): Consent. Fall, Spring.

COMM 4390 - Contemporary Communication (3)

Public address as it functions in contemporary society in a variety of traditional and mass media settings. This course is co-listed with COMM 5390. Spring, in even numbered years only

COMM 4412 - Narrative Production (3)

Students study the process, vocabulary, and advanced production techniques of motion picture storytelling to develop and produce short fiction films. This course is co-listed with COMM 5412. Prerequisite(s): COMM 3050 and COMM 3450. Spring.

COMM 4435 - Advanced Multicam Production (3)

This class provides students with an advanced experience in sports television broadcasting, as well as the techniques and skills of producing a studio television show, including producing, writing, reporting, and editing. This course is co-listed with COMM 5435. Prerequisite(s): COMM 3561 or COMM 3475. Spring.

COMM 4490 - Senior Capstone Seminar (1)

Preparation of online portfolio and demo reel representing the student's best work along with preparation for entering the job market. Designed to be taken in the last semester of a student's

coursework. Prerequisite(s): COMM 3120 and Senior status. Fall, Spring.

COMM 4500 - History of the American Press (3)

Development of the American press from colonial days to modern times; factors affecting the shape and contents of the press in contemporary society. This course is co-listed with COMM 5500. Summer.

COMM 4510 - Magazine Design and Production (3)

The magazine process from the collection of raw material through layout and design to the circulation of the finished product. This course is co-listed with COMM 5510. Prerequisite(s): COMM 1520, COMM 3520, and COMM 2530. As Needed.

COMM 4535 - Contemporary Journalism Production (3)

Students will receive practical experience creating content across all platforms, while developing skills in research, writing, editing, and design. Students will generate strategy-based productions delivered through a variety of formats including print, broadcast, online, and social media; through critical thinking about content and design. This course is co-listed with COMM 5535. Prerequisite(s): COMM 2411 and COMM 2412. Spring.

COMM 4550 - Advanced Screenwriting (3)

In this course, students will write the first-draft of a feature-length screenplay. Writing a feature differs significantly from writing a short screenplay, and over the course of the semester, students will build on their foundational screenwriting knowledge through writing assignments and workshops. In addition, students will learn how to work with a writing partner, adapt source material, and write query letters to agents and producers. This course is co-listed with COMM 5550. Prerequisite(s): COMM 3275. Spring.

COMM 4560 - Documentary Production (3)

Documentary production techniques and process from research and planning through postproduction along with a survey of the genre, its history, and its screen grammar. This course is co-listed with COMM 5560. Prerequisite(s): COMM 3450. Fall.

COMM 4565 - Corporate and Freelance Production (3)

Students work on client-based productions, from preproduction planning to shooting, editing, and distribution, preparing them for both corporate and freelance production opportunities. This course is co-listed with COMM 5565. Prerequisite(s): Senior status. Fall, Spring.

COMM 4570 - History of International Film (3)

An introduction to international film history, focusing in particular on certain movements and themes made important for technological, aesthetic, social and economic reasons. This course is co-listed with COMM 5570. Prerequisite(s): COMM 3000. Spring.

COMM 4571 - Methods of Teaching Journalism (3)

This class is intended for majors who are preparing to teach journalism and/or lead a production team. They will learn methods, materials, and organization of the intermediate and secondary journalism program, including development of administrative content, curricular design and development in instructional structures. This course is co-listed with COMM 5571. Summer.

COMM 4700 - Dale Carnegie: High Impact Presentations (1)

Enables students to plan and organize professional presentations; create and maintain a positive impression; and communicate ideas with clarity and force.

COMM 4780 - Communication Leadership and Practice in Organizations (3)

A consideration of theories and principles of communication structures and systems within organizations. This course is co-listed with COMM 5780. Spring.

COMM 4781 - Strategic Communication Audits (3)

The assessment and measurement of human interaction within professional settings. This course is co-listed with COMM 5781. Fall.

COMM 4785 - Internship in Speech Communication (1-6)

The application of speech communication principles and theories in business, industry, and government settings. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): COMM 4780 with a grade of C or better. Fall, Spring.

COMM 4790 - Senior Capstone (1)

Prepares the student for the senior assessment public Showcase that provides evidence of the student's achievement in the Communication Studies program. All students must 1) be accepted into Communication, and 2) apply for graduation before they will be allowed to enroll in the course. Fall, Spring.

CD 1000 - Introduction to Communication Disorders (3)

Etiology, incidence, and characteristics of communicative disorders.

CD 2000 - The Bases of Speech and Language (2)

Intended for nonmajors; basics of normal communication, overview of communication impairments in children and effective instructional strategies, principles of collaboration with SLPs. This is a professional education course.

CD 2301 - American Phonetics (3)

Sound system of American English with emphasis on the international phonetic alphabet and dialects.

CD 3301 - Anatomy and Physiology of Speech and Swallowing (2)

The anatomical and physiological bases for normal production of speech and swallowing.

CD 3304 - Speech Science (3)

An introduction to basic physiological and acoustical properties of human communication. Prerequisite(s): Admission to the undergraduate program in speech-language pathology.

CD 3503 - Principles of Clinical Management (3)

Fundamental clinical concepts as a foundation for diagnosis and intervention in communication disorders. Requires 5 clock hours of clinical observation. Prerequisite(s): Admission to the undergraduate program in speech-language pathology.

CD 4102 - Counseling Persons with Communication Disorders and Their Families (2)

Application of counseling and interviewing theory to individuals with communication disorders of all ages and their families. Ample opportunity to apply knowledge will be provided. Prerequisite(s): Admission to the undergraduate program in speech-language pathology or with departmental approval.

CD 4103 - Introduction to Evidence Based Practice in Communication Disorders (2)

Introduction to the use of current research results to make clinical decisions regarding client care. Prerequisite(s): Admission to the undergraduate program in speech-language pathology.

CD 4401 - Language Development (3)

Theories and sequence of normal language acquisition.

CD 4402 - Language Acquisition in Children with Developmental Disabilities (2)

Intended for non-majors; theories and sequences of language development with emphasis on language acquisition and deficiencies exhibited by children with various developmental disabilities. This is a professional education course.

CD 4404 - Assessment and Treatment of Language-Based Literacy Disorders (3)

Addresses language and cognitive systems involved in encoding, decoding, and comprehension as related to reading, spelling, and writing disorders and the impact of oral language disorders (phonological, morphological, syntactical and semantic systems) on the development of literacy skills. Application of literacy research to assessment and intervention of language disorders that impact reading, spelling, and writing will be provided. Students will investigate the crucial role speech-language pathologists and other professionals play in early identification of children at risk. This course requires 5 clock hours of observation for undergraduate students only. This course is co-listed with CD 5404. Prerequisite(s): Admission to the undergraduate program in speech-language pathology or with school approval.

CD 4501 - Basic Neuroscience for Speech-Language Pathologists (2)

An introduction to human nervous system structure and function, with special emphasis on neural processing for normal speech, language, hearing and swallowing. Prerequisite(s): Admission to the undergraduate program in speech-language pathology or with departmental approval.

CD 4504 - Introduction to Articulation and Phonological Disorders (3)

An introduction to articulation and phonological disorders; diagnostic procedures and treatment approaches; knowledge of multicultural issues related to these disorders. Requires 5 clock hours of clinical observation. Prerequisite(s): Admission to the undergraduate program in speech-language pathology. An additional fee is associated with this course.

CD 4505 - School-age Issues in Communication Disorders (3)

Types of language and literacy disorders; formal/informal assessment procedures of language and literacy skills; intervention procedures for the re mediation of language and literacy disorders. Requires 5 clock hours of clinical observation. Prerequisite(s): Admission to the undergraduate program in speech-language pathology.

CD 4510 - Multicultural Issues in Communication Disorders (2)

Focused study of various issues important to multiculturalism and diversity when assessing and treating individuals with communication disorders from diverse backgrounds. Prerequisite(s): Admission to the undergraduate program in speech-language pathology or with departmental approval.

CD 4512 - Best Practices in Early Childhood Intervention (3)

Nature of communication disorders in the birth - five population, special emphasis on assessment and intervention models. Requires 5 clock hours of clinical observation. Prerequisite(s): Admission to the undergraduate program in speech-language pathology or with departmental approval.

CD 4701 - Introduction to Audiology (3)

Hearing impairment as related to basic acoustics and psycho acoustics, anatomy and physiology of the ear, and theories of hearing. Prerequisite(s): Admission to the undergraduate program in speech-language pathology.

CD 4706 - Hearing Measurement (3)

Hearing measurement procedures including pure tone and speech audiometry and some site of lesion testing. Prerequisite(s): CD 4701 and admission to the undergraduate program in speech-language pathology.

CD 4708 - Aural Rehabilitation (3)

Effects of hearing impairment of verbal communication. Principles and methods of aural rehabilitation. This course is co-listed with CD 5608. Prerequisite(s): CD 4706.

CD 4802 - Undergraduate Clinical Practicum I (1)

Orientation to specialized practice in the management of communication disorders for first time clinicians. Prerequisite(s): Admission to the undergraduate program in speech-language pathology or consent of school chair; overall GPA of 3.20; a grade of C or better in all previous CD courses, and CD 3503, CD 4701, and either CD 4504 or CD 4505; the remaining CD 4504 or CD 4505 must be taken concurrently with

the first semester of clinical practicum. An additional fee is associated with this course.

CD 4803 - Undergraduate Clinical Practicum II (1)

Specialized practice in the management of communication disorders. Prerequisite(s): Admission to the undergraduate program in speech-language pathology or consent of school chair; overall GPA of 3.20; a grade of C or better in all previous CD courses, and CD 3503, CD 4701, CD 4802 and either CD 4504 or CD 4505. An additional fee is associated with this course.

CD 4900 - Special Topics in Communication Disorders (1-3)

Selected topics of contemporary interest in speech-language pathology and audiology; variable content. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): Consent of school.

CIS 1600 - Business Information Management GE (3)

Students will learn how to acquire information based on the organizational needs, including how to convert data into information, how to perform queries, and how to store and present information in an appropriate format which facilitates informed decision making. Special emphasis will be placed on using business productivity tools such as Microsoft Office to achieve course objectives.

CIS 1612 - Ethics in Information Technology (3)

Introduces students to the wide variety of issues and controversies related to cyber ethics. Emphasis will be placed on global and cross cultural issues and frameworks. Students will analyze how various actions related to Information Technology affect individuals, organizations, and society. Students will develop their critical thinking skills (by analyzing updated cases in real business scenarios and in "what would you do" scenarios), make decisions made on ethical principles, and develop their communication skills vial oral presentations and written reports.

CIS 1625 - Programming With Visual C# (3)

Introduces fundamental concepts and implementations of programming using Visual C#. It focuses on Windows form applications covering aspects such as development of user interface, control structures, and data processing. The course also covers the object-oriented aspects of programming such as writing classes, and using objects. Hands-on learning is emphasized with a focus on the development of applications for business problems. An additional fee is associated with this course.

CIS 2625 - Web Application Architecture (3)

A survey of client-side and server-side web technologies and how they work together to deliver dynamic web content. Students will create a web site to address an organizational need using integrated technologies. Prerequisite(s): CIS 1625.

CIS 2665 - Principles of Data Communications and Local Area Networking (3)

Overview of the fundamental concepts needed to develop and work with a data communications system. Hardware, software, network topology, network design and implementation is covered with a particular emphasis on the application of theory to solving business data communication needs. Prerequisite(s): CIS 1600.

CIS 3625 - Business Application Development with Java (3)

Designed to build upon object-oriented concepts and the principles underlying the design and implementation of organizational information systems using the Java programming language. Java is widely used to develop systems and application based programs. Flexibility, portability/platform independence, support for object-orientation, and the availability of classes to handle complex programming tasks make Java an ideal choice for software development projects. The course adopts a hands-on approach and entails extensive programming. Prerequisite(s): CIS 2625. An additional fee is associated with this course.

CIS 3630 - Management Information Systems (3)

Focuses on topics that help general managers make better Information System and/or Information Technology decisions. Often general managers must participate in the process of integrating IS/IT into the organization, and need knowledge of IS methods to interact with other IS/IT managers and employees effectively. Cases and actual hands-on applications are used to illustrate the importance of aligning end users and information resources with corporate resources and strategy. Ethical issues such as information privacy, access, and accuracy will be included. IBE section will evaluate and present a solution to a real life IT/IS problem, as determined by the IBE company plan. Prerequisite(s): CIS 1600. An additional fee is associated with this course.

CIS 3650 - Database Management Systems (3)

Principles and fundamental concepts of relational database, including relational database design, implementation and management. Special emphasis is placed on data modeling, data normalization, database design and implementation with structured query language (SQL). Prerequisite(s): CIS 1600. An additional fee is associated with this course.

CIS 3660 - Analysis and Design of Computer Information Systems (3)

This course covers concepts and techniques of information systems analysis and design with a focus on the object-oriented methodologies and tools. Unified Modeling Language (UML) is used to create analysis and design models of information systems to meet organizational needs, including IT security. Students will learn and practice the managerial aspects of analysis and design such as IT project management, elicitation and documentation of system requirements and change management. Prerequisite(s): CIS 1625. An additional fee is associated with this course.

CIS 3665 - Cloud Computing and Data Communication Technologies (3)

Topics covered include cloud computing, virtualization, and data communication technologies. The concepts covered enable the students to pursue one or more Azure and AWS certifications. Prerequisite(s): CIS 2665. An additional fee is associated with this course.

CIS 3670 - User Experience Design (3)

Principles and guidelines for developing interface designs. Foundational theory, the design / development process and testing for web and application software interfaces will be addressed. Prerequisite(s): CIS 2625 and CIS 3660. An additional fee is associated with this course.

CIS 3685 - Integrative Business Experience Practicum (3)

Students will apply concepts from the concurrent courses to their own start-up business venture and to community service. Corequisite(s): special sections of MGT 3315, MKT 3405 and CIS 3630. An additional fee is associated with this course.

CIS 3690 - Internship in Big Data and Business Analytics (3-9)

Opportunity for students to gain theoretical knowledge and practical application within a particular field of specialization. May not be taken in the last semester of the senior year. Enrollment can be for 3 to 9 semester hours. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): Admission to B.S.B.A program; 60 semester hours and overall GPA of 2.50 or above or permission of Internship Program Director. An additional fee is associated with this course.

CIS 3695 - Internship in Computer Information Systems (3-9)

Opportunity for students to gain theoretical knowledge and practical application within a particular field of specialization. May not be taken in the last semester of the senior year. Enrollment can be for 3 to 9 semester hours. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): 60 semester hours and overall GPA of 2.50 or above or permission of intern program Director. An additional fee is associated with this course.

CIS 4610 - Special Projects (1-3)

Special projects offerings in computer information systems. Part of the course requirements can be met by working on company projects approved by the adviser. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with CIS

5710. Prerequisite(s): Consent of instructor and admission to the B.S.B.A. program. An additional fee is associated with this course.

CIS 4625 - Information Security Management (3)

The course will identify and prioritize threats to information assets, define security strategy, present architecture plan to respond intruders, describe legal implications, address privacy issues and present a disaster recovery plan after an incident. Prerequisite(s): CIS 2665. An additional fee is associated with this course.

CIS 4635 - Seminar in Business Computer Applications (2-3)

Business applications and programming techniques will be studied and prepared for presentation and discussion. Prerequisite(s): At least one programming course. An additional fee is associated with this course.

CIS 4640 - Web Application Development (3)

Examination and implementation of advanced client-side and server-side frameworks with other web technologies in support of business problem solutions. Students will create a comprehensive web site to address an organizational need using integrated technologies. Prerequisite(s): CIS 2625. An additional fee is associated with this course.

CIS 4645 - Network and System Security (3)

Course provides an in-depth knowledge of securing enterprise networks. Topics include network traffic, intrusion signatures, security policy, VPN, ID, A&D firewalls, and risk analysis. Prerequisite(s): CIS 2665. An additional fee is associated with this course.

CIS 4650 - Big Data Architecture (3)

Planning, design and implementation of network architecture needed to support Big Data projects, including clustering, virtualization, and software defined networks for big data infrastructure. This course is co-listed with CIS 5750. Prerequisite(s): CIS 2665. An additional fee is associated with this course.

CIS 4655 - Software Engineering (3)

An advanced course in the systematic approach to the specification, development, operation, maintenance, and retirement of software. Topics include formal specification tools, developmental strategies, software metrics, verification and validation techniques. This course is co-listed with CIS 5755. Prerequisite(s): CIS 3660 and Admission to the B.S.B.A. program. An additional fee is associated with this course.

CIS 4660 - Advanced Applications Development Using JAVA (3)

Develop object-oriented web-based Graphical User Interface (GUI) applications for business using JAVA as the programming language. This course is co-listed with CIS 5760. Prerequisite(s): CIS 3625 with a grade of C or better, CIS 3650 and Admission to the B.S.B.A. program An additional fee is associated with this course.

CIS 4665 - Data Communication and Distributed Data Processing (3)

Topics covered include managing and monitoring cloud and distributed data communication networks. The concepts covered enable the students to pursue one or more Azure certifications. This course is co-listed with CIS 5765. Prerequisite(s): CIS 2665 and Admission to the B.S.B.A. program. An additional fee is associated with this course.

CIS 4670 - Applications Development Using Visual C# (3)

The course covers advanced concepts and techniques of programming in Visual C#. It focuses on desktop and web-based application development implementing more advanced techniques in Windows based applications, advanced notions of object-oriented programming and development of applications that access databases. The course adopts a hands-on approach with a focus on the development of applications for business problems. Prerequisite(s): CIS 3625, CIS 2665, and CIS 3650 and Admission to the B.S.B.A. program. An additional fee is associated with this course.

CIS 4675 - Mobile Business Application Development (3)

Major emphasis will be in developing business applications for deployment on smart phones, tablets and other mobile devices. Responsive web-based application development will extend a basic knowledge of web technologies to include applicable frameworks. Introductory mobile application development will be explored using a code-one-deploy-all environment. Testing will be conducted using iPads/Tablets as well as phone emulators. Topics in this course include user interaction design issues specific to mobile devices, data issues for mobile devices, and location-aware and other context-aware services. Prerequisite(s): CIS 2625 and CIS 3650. An additional fee is associated with this course.

CIS 4678 - Fundamentals of Enterprise Resource Planning (3)

This course introduces students to fundamental concepts in Enterprise Resource Planning enabling students from any discipline to develop a solid foundation of business processes in IT enabled organizations. Students will gain access to SAP software and data to develop the required skills to configure and manage basic organizational processes in an ERP system, integrate data and transactions in business processes such as sales, production and procurement and evaluate organizational opportunities and challenges in the design and implementation of ERP systems. Prerequisite(s): CIS 3630 or ACCT 2960. An additional fee is associated with this course. Fall, Spring.

CIS 4680 - Data Resource Management (3)

Designing and administering data resources with consideration of advanced data concepts, database programming, administration and security, transaction management, data mining, data warehousing, and multimedia data processing. This course is co-listed with CIS 5780. Prerequisite(s): CIS 3650 or admission to the MS in CIS & IT or admission to MBA (Information Systems area or Data Analytics and Business Intelligence area). An additional fee is associated with this course.

CIS 4681 - Big Data for the Enterprise (3)

The student will gain knowledge and skills required to address Big Data problems in business. These skills include Big Data management, processing, and analytics as well as technical hands-on skills. The student will have experience processing Big Data for applications such as sentiment analysis of user-generated content on the web. Prerequisite(s): CIS 3650. An additional fee is associated with this course.

CIS 4683 - Big Data Visualization & Reporting (3)

Focuses on big data visualization and reporting tools and skills for business. Major topics to cover include basic statistical modeling theory and methods, advanced visualization techniques such as text analysis, dashboard reports design and mechanics, scorecard management, spatial data model and graphics, and real-time streaming Big Data visualization. Interesting business use cases will be presented and analyzed in the class. Prerequisite(s): CIS 3650. An additional fee is associated with this course.

CIS 4685 - Cloud and Network: Planning, Design, and Security (3)

Topics covered include cloud and network planning, design and securing cloud architecture. The concepts covered enable the students to pursue one or more AWS certifications. Prerequisite(s): CIS 3665 or concurrent. An additional fee is associated with this course.

CIS 4686 - Business Applications of Machine and Deep Learning (3)

Organizations can harness the benefits of the data that they collect by appropriately using the deep learning techniques to create business value. This course will cover basics of machine learning, deep learning and its application to solve complex business problems. Students will learn how Neural Networks, and other machine and deep learning tools and techniques are used in business decision making like fraud detection, audit, product marketing etc. This course emphasizes on the implementation of deep learning algorithms to find solutions to contemporary business needs by using appropriate tools and techniques. This course is co-listed with CIS 5686. Prerequisite(s): CIS 3625 or CIS 3650. Fall.

CIS 4688 - ERP Configuration and Implementation (3)

This course provides students an opportunity to use SAP software to gain hands-on experience in configuring an ERP system. Students will learn to configure business rules governing processes, manage Business Process Integration (BPI) activities and, conduct Business-to-Business (B2B) transactions in complex organizational structures. Students will also compete in groups to manage the fictitious organizations configured by them thereby gaining an in-depth understanding of the impact of ERP systems on organizational performance. Prerequisite(s): CIS 4678. An additional fee is associated with this course. Fall, Spring.

CIS 4690 - Systems Architecture and Development (3)

Information architecture options for systems development with consideration of security. Project management. Major project incorporating software, hardware and networking components. To be taken last semester. Prerequisite(s): (CIS 3625, CIS 3650, and CIS 4685 or concurrently) or (CIS 3670, CIS 4680, and (CIS 4660 or CIS 4670)) and Admission to the B.S.B.A. program. An additional fee is associated with this course.

CS 1000 - Computers and Modern Society GE (3)

The technical, social, legal, ethical, and economic implications of computing and the controversies they raise from a computer scientist's perspective.

This course is equivalent to MOTR PHIL 102P Introduction to Ethics - Business and Professional in the Humanities & Fine Arts Knowledge Area.

CS 1010 - Introduction to Computer Science (3)

Introduction to the basic concepts of computer science. Topics include basic computer organization and systems, data representation, algorithms, Boolean logic, gates, system software, computer networks, information security, encryption, simulation, and modeling. An additional fee is associated with this course.

CS 1020 - Introduction to Biomedical Informatics (3)

Intended for all students interested in a better understanding and use of personal and publicly available healthcare information. An additional fee is associated with this course.

CS 1030 - Python Programming I (3)

Introduction to the basic concepts of computer programming. Topics include basic computer organization and systems, data representation, algorithms, selections, loops, functions, lists, elementary programming, and applications. An additional fee is associated with this course.

CS 1040 - Orientation to Computer Science and Software Engineering (1)

This course is designed to help the first-year student to actively explore critical thinking, develop a sense of belonging to UCM and the School of Computer Science and Mathematics, develop self-awareness and responsibility, and gain an increased interest in the Computer Science and Software Engineering programs. An additional fee is associated with this course.

CS 1100 - Computer Programming I (3)

An introduction to computer programming in the structured programming paradigm using a modern high-level programming language. Topics include foundational programming concepts, data types, variables, operators, selections, loops, methods, and arrays. An additional fee is associated with this course. Fall, Spring.

CS 1110 - Computer Programming II (3)

A continuation of CS 1100. Topics include object-oriented software design methodologies such as classes, objects, strings and text I/O, inheritance, polymorphism, interfaces, GUI basics, graphics, and event-driven programming. Prerequisite(s): CS 1100 with a grade of C or better. An additional fee is associated with this course. Fall, Spring.

CS 1820 - Video Game Design and Analysis (3)

An introduction to the game design process through analysis of video games and the historical evolution of gaming. Topics include game historical elements,

platforms, player modes, genres, gaming as a business, story and character, gameplay, level, interface, and simple game prototype development. An additional fee is associated with this course.

CS 2030 - Python Programming II (3)

This course is a continuation of CS 1030. Topics include object-oriented software design methodologies such as classes, objects, strings and text I/O, inheritance, multi-dimensional lists, tuples, sets, dictionaries, scripting, and various Python libraries. Prerequisite(s): CS 1030 with a grade of C or better or consent of instructor. An additional fee is associated with this course.

CS 2300 - Data Structures (3)

An introduction to fundamental data representations and abstract data types. Lists, arrays, collections, trees, heaps, and hash maps are discussed. Recursion, dynamic storage allocation, and sorting are investigated. Prerequisite(s): CS 1110 with a grade of C or better. An additional fee is associated with this course.

CS 2400 - Discrete Structures (3)

Basic logic, sets and relations, proof techniques, induction and recursion, principles of counting, permutations and combinations, discrete probability, graphs and trees. Prerequisite(s): (CS 1030 with a grade of C or better or CS 1100 with a grade of C or better) and (MATH 1111 with a grade of C or better or MATH 1111R with a grade of C or better or MATH 1131 with a grade of C or better or MATH 1150 with a grade of C or better or MATH 1151 with a grade of C or better or ACST 1300 with a grade of C or better or ACST 1300R with a grade of C or better). An additional fee is associated with this course.

CS 2820 - Game Programming (3)

Covers virtually all aspects of game programming, while still maintaining the depth necessary to truly understand and appreciate state-of-the-art processes. Topics include game programming languages, game architecture, mathematical concepts, collision detection, game physics, graphics, animation, artificial intelligence, audio programming, networking, as well as audio visual design and production including 3D modeling, texturing, lighting, etc. Prerequisite(s): CS 1100 with a grade of C or better or Instructor consent. An additional fee is associated with this course.

CS 3100 - Programming Languages (3)

Discussing the design issues of programming language constructs, formal methods of describing the syntax and semantics, implementation techniques, lexical and syntax analysis. Prerequisite(s): CS 2300 with a grade of C or better. An additional fee is associated with this course.

CS 3110 - Applications Programming in C# and .NET (3)

An introduction to the C# programming language and the Microsoft .NET framework. Emphasis on hands-on experience in software development. Topics include Visual Studio, C# programming language, debugging, LINQ, Windows Forms, WPF, and ASP.NET. Prerequisite(s): CS 1110 with a grade of C or better. An additional fee is associated with this course.

CS 3120 - Client Side Web Programming (3)

Introduction to client-side web programming: HTML5, cascading style sheets (CSS3), JavaScript, graphics, web browsers, and Ajax-enabled web applications. Prerequisite(s): CS 1030 with a grade of C or better or CS 1100 with a grade of C or better. An additional fee is associated with this course. Fall.

CS 3200 - Computer Organization and Architecture (3)

Logical structure of digital computers, representation of information, addressing mechanisms, and assembly programming. Design alternatives in computer architecture including instruction set architectures, memory subsystem organization, datapath and control of a processor, and pipelining. Prerequisite(s): CS 1110 with a grade of C or better. An additional fee is associated with this course.

CS 3400 - Discrete Structures II (4)

Advanced course work in discrete structures. Topics include graphs and digraphs, matching, network flows, advanced counting with generating functions, and finite state machines. Prerequisite(s): CS 2400. An additional fee is associated with this course.

CS 3420 - Linear Algebra for Scientists and Engineers (3)

Basic topics and tools of linear algebra are discussed. Covers matrices and determinants with operations, solving systems of linear equations in several ways, properties of R^n, linear combinations, inner product, eigenvalues and eigenvectors. Prerequisite(s): CS 1110 or CS 2030 with a grade of C or better; and ACST 1300 or ACST 1300R or MATH 1111 or MATH 1111R or MATH 1131 or MATH 1150 or MATH 1151 with a grade of C or better. An additional fee is associated with this course.

CS 3500 - C and UNIX Environment (3)

An introduction of C and UNIX system programming. Topics include use of pointers, dynamic memory allocation, input and output, files and directories, and fundamentals of UNIX system programming. Prerequisite(s): CS 1110 with a grade of C or better. An additional fee is associated with this course.

CS 3800 - Applications Development with VB.NET (3)

An introduction to the Microsoft Visual Basic .NET programming language. Emphasis on using .NET classes to design, implement, and test a variety of object oriented desktop applications which incorporate rich graphical user interfaces and event-driven programming. Prerequisite(s): CS 1100 with a grade of C or better. An additional fee is associated with this course.

CS 3840 - Computer Networking (3)

General principles and concepts of computer networks with emphasis on four layers of the network protocol stack such as application, transport, network, and data link layers. Topics include the structure of the Internet, client-server/p2p models and related protocols, TCP/IP, packet-switching, routing algorithms/protocols, multiple access protocols, and LAN technologies. Prerequisite(s): CS 2400 with a grade of C or better. An additional fee is associated with this course.

CS 3850 - Game Development 2D (3)

An introduction to higher level technical aspects of 2D computer game development. Topics include game development framework, game programming, design and creating games using popular game engines and tools. Prerequisite(s): CS 1110 with a grade of C or better. An additional fee is associated with this course.

CS 4000 - Special Problems in Computer Science (1-3)

Individual reading and research on some topics not included in the regular offerings of the school. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): CS 2300 with a grade of C or better. An additional fee is associated with this course.

CS 4020 - Internship (1-3)

Opportunity for students to gain knowledge in areas of computer science, cybersecurity or software engineering, both theoretical and applied, that would not normally be included as part of the school's curriculum. Internship contract must be completed prior to beginning work/learning experience. *May be repeated for a maximum of 6 semester hours. A maximum of 6 semester hours may be applied to any one degree.* Prerequisite(s): Consent of Program Coordinator. An additional fee is associated with this course.

CS 4110 - Mobile Applications Programming with Android (3)

A course on design and programming of applications for Android mobile devices. Topics include: application lifecycle, MVC design, Android layouts, application design, memory usage and threads, audio and video, database management, location and maps. This course is co-listed with CS 5120. Prerequisite(s): CS 2300 with a grade of C or better. An additional fee is associated with this course.

CS 4120 - Advanced Applications Programming in Java (3)

A continued exploration of the Java programming language with an emphasis in utilizing more advanced features of the language in software development. Topics include generics, multithreading, networking, JavaFX, databases, servlets, and JSP. This course is co-listed with CS 5220. Prerequisite(s): CS 2300 with a grade of C or better. An additional fee is associated with this course.

CS 4130 - Server Side Web Programming (3)

Introduction to server-side web programming using current languages, databases, and related technologies. The student will learn to develop dynamic web sites and interactive web application with PHP, NodeJS, and databases. Prerequisite(s): CS 3120 with a grade of C or better. An additional fee is associated with this course.

CS 4150 - Object-Oriented Programming and Data Structures (3)

Fast-paced coverage of object-oriented programming in Java and data structures. Not available to those with credit in CS 1100, CS 1110 or CS 2300. An additional fee is associated with this course.

CS 4160 - Advanced Applications Programming in Python (3)

Advanced applications development with Python. Topics include GUI programming, metaclasses, decorators, multiprocessing, multithreading, network programming, databases with Python, web services, Python web frameworks, and Flask. This course is co-listed with CS 5160. Prerequisite(s): CS 2030 with a C or better or consent of instructor. An additional fee is associated with this course. Fall.

CS 4170 - Object Oriented Programming - Python (3)

Introduction to the basic concepts of computer programming. Topics includes basic computer organization and systems, data representation, algorithms, selections, loops, functions, elementary programming, and applications. This course will also include object-oriented software design methodologies such as classes, objects, inheritance and polymorphism, strings and text I/O, exception handling, inheritance, multidimensional lists, tuples, set, dictionaries, scripting, and various Python libraries. Not available to those with credit in CS 1030, or CS 2030. An additional fee is associated with this course. Fall, Spring.

CS 4300 - Algorithm Design and Analysis (3)

Techniques needed to analyze and design algorithms are discussed. It covers a large number of classical algorithms and their complexity. Topics such as sorting, graph algorithms, and NP-completeness are discussed. Prerequisite(s): CS 2300 with a grade of C or better and CS 2400 with a grade of C or better. An additional fee is associated with this course.

CS 4500 - Operating Systems (3)

An introduction to operating systems. Topics include: processes, threads, CPU scheduling, process synchronization, deadlock, memory management, file systems, mass-storage structure, I/O systems, and case studies. Prerequisite(s): CS 2300 with a grade of C or better and CS 3500 with a grade of C or better. An additional fee is associated with this course.

CS 4600 - Database Theory and Applications (3)

An introduction to database theory and applications. Topics include: E-R model, relational database design, normalization theory, SQL, application design and development, security, and database administration. A significant application-oriented project will be required. This course is co-listed with CS 5200. Prerequisite(s): (CS 2400 with a grade of C or better or MATH 2410 with a grade of C or better) and CS 2300 with a grade of C or better. An additional fee is associated with this course.

CS 4610 - Introduction to Cloud Computing (3)

An introduction and broad view of cloud computing and its applications. Topics include datacenter architectures, distributed computing models and technologies, Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), Software-as-a-Service (SaaS), virtualization, microservices and containerization, security issues, commercial cloud computing platforms such as Amazon Web Services, Google Cloud Platform, and Microsoft Azure. This course is co-listed with CS 5610. Prerequisite(s): CS 2300 with a grade of C or better or CS 2400 with a grade of C or better or consent of instructor. An additional fee is associated with this course.

CS 4660 - Introduction to Cloud Services (3)

Fundamentals and advanced techniques required for a cloud practitioner. Topics include fundamentals of AWS cloud and its basic global infrastructure, basic/advanced core services, security aspects, and

cost management. Topics also include fundamentals of Google cloud and Microsoft Azure. This course prepares students for the AWS Certified Cloud Practitioner certification. This course is co-listed with CS 5660. Prerequisite(s): CS 2400 with a grade of C or better or Instructor consent. An additional fee is associated with this course.

CS 4700 - Artificial Intelligence (3)

This course provides opportunities to learn the elements and techniques of artificial intelligence and how they apply to daily life. Concepts and methods are illustrated with real-world applications. This course is co-listed with CS 5700. Prerequisite(s): (CS 2400 with a grade of C or better or MATH 2410 with a grade of C or better) and CS 2300 with a grade of C or better and Junior status. An additional fee is associated with this course.

CS 4710 - Introduction to Machine Learning (3)

Provides opportunities to learn various machine learning techniques to model data for classification and prediction. Concepts and methods are illustrated with real-world applications. This course is co-listed with CS 5710. Prerequisite(s): CS 1110 with a grade of C or better or MATH 1152 with a grade of C or better; and Junior status. An additional fee is associated with this course.

CS 4720 - Neural Network and Deep Learning (3)

This course provides opportunities to learn fundamental concepts and techniques for neural network and deep learning and their applications. Concepts and methods are illustrated with real-world applications. This course is co-listed with CS 5720. Prerequisite(s): Consent of instructor or CS 1030, CS 2300, and (CS 4710 or CS 5710). An additional fee is associated with this course.

CS 4810 - Computer Graphics (3)

An introduction to computer graphics. Topics include: basic geometric primitives, transformations, clipping, viewing, color models, animation, and rendering. Programming: using OpenGL and appropriate languages. This course is co-listed with CS 5810. Prerequisite(s): CS 2300 with a grade of C or better and CS 3500 with a grade of C or better. An additional fee is associated with this course.

CS 4830 - Game Development 3D (3)

An introduction to higher level technical aspects of 3D computer game development. Topics include game development framework, game programming, design, and creating games using popular game engines and tools. Prerequisite(s): CS 1110 with a grade of C or better. An additional fee is associated with this course.

CS 4920 - Senior Project (3)

Semester- long senior capstone project in which teams design, plan, implement, test, and deploy a software development project. Selected topics in software development, group dynamics, project management, and ethics and professional responsibility. Includes a formal presentation to the Computer Science faculty. Prerequisite(s): CS 4600 with a grade of C or better and SE 3910 with a grade of C or better. An additional fee is associated with this course.

CMGT 1300 - Introduction to Construction Management (3: 2 lecture, 1 lab)

General survey of the organization and functioning of the construction industry: legal, ethical, business, and management aspects. An additional fee is associated with this course.

CMGT 1301 - Seminar in Construction Management (1)

Forum to provide students an opportunity to learn about current events in the construction industry using guest speakers, open discussion, service projects and field trips. An additional fee is associated with this course.

CMGT 2020 - Statics (3)

An introduction to the basic concepts of strengths of materials and statics as they relate to the design and analysis of materials, machines, and structures. Prerequisite(s): MATH 1111 with a grade of C or better or MATH 1111R with a grade of C or better; and MATH 1112 with a grade of C or better. An additional fee is associated with this course.

CMGT 2100 - Construction Geoscience (4: 3 lecture, 1 lab)

The study of physical geology as applied in engineering practice. Emphasis is on surficial geology and soils, employing both field and laboratory investigation methods. Topics include hydrogeology, waste disposal, slope stability, engineering properties of soil and rock, mapping, and site characterization. An additional fee is associated with this course.

CMGT 2301 - Intermediate Seminar in Construction Management (1)

Forum to provide students an opportunity to learn about current events in the construction industry using guest speakers, open discussion, service projects and field trips. Students will participate in shaping the on campus discussion of contemporary issues related to the construction industry. Prerequisite(s): CMGT 1301 An additional fee is associated with this course.

CMGT 2310 - Construction Plans and Specifications (3)

An introductory course to construction management which provides a survey of print reading and specification interpretation for light, civil, heavy highway and utility construction. An additional fee is associated with this course.

CMGT 2325 - Project Cost Estimating (3)

A quantitative take-off and survey of materials and productivity standards for industrial projects. Prerequisite(s): CMGT 2310 or CADD 1110 or CADD 1111. An additional fee is associated with this course.

CMGT 2340 - Surveying and Construction Layout (3: 2 lecture; 1 lab)

Theory and practice of plane, topographic, and construction surveying and layout including care and use of instruments, note taking and computations. Prerequisite(s): MATH 1112. An additional fee is associated with this course.

CMGT 2350 - Construction Materials (3: 2 lecture, 1 lab)

The purpose of this course is to provide construction management students an opportunity to become familiar with the properties of aggregates, cement, concrete, asphalt, steel, masonry, and timber. The knowledge and understanding of these properties will help them design and build safe products and structures. Students will also get an in-depth look at Portland Cement Concrete (PCC) mixture designs and asphalt concrete (AC) mixture designs. They will be able to follow standard procedures in determining properties of materials and will be able to interpret the results of tests conducted in the laboratory. During the concrete laboratory portion of the class students will be able to obtain their American Concrete Institute (ACI) Grade I certification. Prerequisite(s): MATH 1111 with a grade of C or better or MATH 1111R with a grade of C or better; and CMGT 1300 with a grade of C or better or ENGT 1500 with a grade of C or better. An additional fee is associated with this course.

CMGT 3010 - Applied Construction Practices (3: 2 lecture; 1 lab)

Theory and practices of residential and light construction industry, methods, and materials. Hands-on laboratory activities with hand and power tool safety and effective use and jobsite safety support theory content. An additional fee is associated with this course.

CMGT 3020 - Applied Strength of Materials (3)

Selection and application of sizes, shapes, and materials required for the construction of a member for a machine or structure in order to resist an applied load in a safe and economical manner. Prerequisite(s): CMGT 2020 with a grade of C or better. An additional fee is associated with this course.

CMGT 3301 - Advanced Seminar in Construction Management (1)

Forum to provide students an opportunity to learn about current events in the construction industry using guest speakers, open discussion, service projects and field trips. Students will engage upcoming students in the construction program by sharing internship experiences. Prerequisite(s): CMGT 2301, SOT 3022. An additional fee is associated with this course.

CMGT 3320 - Principles of Construction Management (3)

Principles of construction contracting with related information on forms of business ownership, management, land development, labor relations, and project safety. Prerequisite(s): CMGT 1300 and CMGT 2310. An additional fee is associated with this course.

CMGT 3330 - Building Codes and Code Administration (3)

In-depth study of national, state, and local regulations applicable to specification and performance of building construction standards. Prerequisite(s): CMGT 2310, or consent of instructor. An additional fee is associated with this course.

CMGT 3350 - Building Structures: Methods & Materials (3: 2 lecture, 1 lab)

The types and processes of building structures including the materials and methods as applied to the structures: wood, steel, and concrete. Prerequisite(s): CMGT 2310, CMGT 2340 and CMGT 2350. An additional fee is associated with this course.

CMGT 3355 - Construction Planning and Scheduling (3)

Theory and use of construction scheduling to control the acquisition, movement, storage, and utilization of workers and/or material with emphasis given to the Critical Path Method (CPM). Prerequisite(s): CMGT 2325. An additional fee is associated with this course.

CMGT 4310 - Construction Safety (3)

Construction safety and health conditions on the job as they relate to workers, supervisors, inspectors, and the public. This course is co-listed with CMGT 5310. Prerequisite(s): CMGT 2310 or junior standing. An additional fee is associated with this course.

CMGT 4325 - Advanced Estimating and Cost Analysis (3: 2 lecture, 1 lab)

An advanced course in construction cost estimating utilizing the computer and associated professional software to assist the estimator. This course is co-listed with CMGT 5325. Prerequisite(s): CMGT 2310 and CMGT 2325. An additional fee is associated with this course.

CMGT 4330 - Mechanical Systems for Buildings (3)

Mechanical systems integrated with buildings and other equipment. This course is co-listed with CMGT 5330. Prerequisite(s): CMGT 2310 or junior standing. An additional fee is associated with this course. This is a sustainability course.

CMGT 4340 - Solar Energy for Building Construction (3)

An analysis of solar energy systems and components as they apply to types of structure, sites, and climate regions. This course is co-listed with CMGT 5340. An additional fee is associated with this course.

CMGT 4355 - Computer-Based Project Control (3: 2 lecture, 1 lab)

An advanced course in construction project scheduling utilizing the computer and associated professional software to assist the project scheduler. This course is co-listed with CMGT 5355. Prerequisite(s): CMGT 3355. An additional fee is associated with this course.

CMGT 4380 - Heavy Construction: Methods and Materials (3)

Explores heavy construction methods and materials. Included are the concepts of site investigation, heavy construction means and methods, heavy construction material characteristics and costs, heavy equipment types and uses, and equipment costs, production rates and unit cost of production. This course is co-listed with CMGT 5380. Prerequisite(s): CMGT 2310; and MATH 1111 or MATH 1111R. An additional fee is associated with this course.

CMGT 4400 - Construction Operations (3)

A detailed study of the knowledge, processes and operational procedures involved in a commercial construction project. Prerequisite(s): CMGT 2310, CMGT 2325, CMGT 3320 and CMGT 3355 and

senior standing. An additional fee is associated with this course.

CJ 1000 - Introduction to Criminal Justice GE (3)

The history, nature and function of the criminal justice system in America. Special attention is given to the philosophical basis underlying this system and to the problems associated with crime control in a democratic society. At each stage of the process, major issues confronting the system are examined. Fall, Spring. Sometimes offered online.

This course is equivalent to MOTR CRJS 101 Introduction to Criminal Justice in the Social & Behavioral Sciences Knowledge Area.

CJ 1001 - Introduction to Law (3)

Intro to Law/Mock Trial is a class for students interested in the legal system, court procedures, and understanding law in everyday life, as well as developing public speaking and critical thinking skills necessary for conducting a Mock Trial. Students will learn about the American legal system through traditional study and by preparing and participating in an in-class criminal Mock Trial. Spring.

CJ 1002 - Community Relations (3)

This course focuses on the dynamics of police and community relationships. Psychological and sociological aspects of police-community relations from the perspectives of the police and ethnic groups, the debate of unequal justice under the law, and efforts towards partnership are introduced. Spring.

CJ 1605 - Orientation to the Criminal Justice Major (1)

Course gives student opportunity to become acquainted with academic tools used and techniques for success in major; to be taken immediately upon declaration of major. Prerequisite(s): major in Criminal Justice.

CJ 2010 - Ethics in Criminal Justice (3)

Provides an overview of the major moral philosophies and allows students to understand how ethical theories may be applied to ongoing problems and issues. It also reviews laws and policies that exist, as well as rules of conduct and protocol, and it identifies the legal and extralegal factors that influence these laws, policies, and rules. By evaluating critical issues in law enforcement, courts, and corrections, students will be given the opportunity to better understand the complexities involved with decision-making by criminal justice practitioners/professionals. Prerequisite(s): CJ 1000 with a grade of C or better.

CJ 2405 - International Policing (3)

Overview of international policing operations includes an examination of organizational and administrative operations, duties of various police organizations, police relations with the public.

CJ 2700 - Introduction to Juvenile Justice (3)

An examination of the origins, philosophy and objectives of the juvenile justice system. Focus is on the operation, legal processes, current trends and roles of the various actors within the juvenile justice system. Fall, Spring.
This is a sustainability course.

CJ 3000 - History of Corrections and Penal Institutions (3)

Historical analysis of the development of corrections and penal institutions and the influence of social thought and philosophy on this development. Prerequisite(s): CJ 1000 with a grade of C or better.

CJ 3005 - Introduction to Firearms Proficiency (3)

Introduction to firearms and their implications within the field of criminal justice, with lab component to provide firsthand firearms experience. Prerequisite(s): Criminal Justice major or minor or consent of school. An additional fee is associated with this course. Fall, Spring.

CJ 3006 - Corrections (3)

An overview course in correctional theory and practice. Traces the historical development of corrections with emphasis on changing social standards and philosophies. Examines the various types of correctional institutions, their mission, physical structure, management, and problems. Also

examines probation and parole, including theory, practice and major issues confronting these correctional alternatives. Prerequisite(s): CJ 1000 with a grade of C or better. Fall, Spring. Sometimes offered online.

CJ 3010 - Policing a Democratic Society (3)

An in-depth look at the relationship between law enforcement and American society. Focus is on police-community relations, the police sub-culture, and the need for police objectives to conform to constitutional procedures. Prerequisite(s): CJ 1000 with a grade of C or better. Fall, Spring. Sometimes offered online.

CJ 3020 - Comparative Justice Systems (3)

An examination of comparative crime rates among nations and the world's major models of justice systems.

CJ 3030 - Federal Law Enforcement (3)

A comprehensive examination of the history and development of federal law enforcement in the United States, the current structure and jurisdictional responsibilities of various federal law enforcement agencies, the role of the federal government in homeland security efforts, and career opportunities within the federal law enforcement community. Students will additionally explore hiring practices within the federal government with a concentration on techniques to be successfully employed in the federal law enforcement agency of choice.

CJ 3101 - Management and Leadership in Law Enforcement (3)

The principles and practices common to the effective management of American law enforcement agencies. Prerequisite(s): CJ 1000 with a grade of C or better. Offered as needed.

CJ 3104 - Institutional Operations (3)

An examination of the procedures of correctional institutions and of the problems encountered in the classification, care and treatment of incarcerated offenders. Prerequisite(s): CJ 3006 with a grade of C or better.

CJ 3190 - Criminal Justice Report Writing (3)

The criminal justice process is dependent on accurate documentation. A concise, complete, and properly written report is critical for success in all areas of a criminal justice practitioner's career. More importantly, criminal justice professionals can spend approximately 50-75 percent of their time writing administrative and research reports. This course provides a study of the techniques of communicating facts, information, and ideas effectively in a simple, clear, and logical manner in the various types of criminal justice system reports (including letters, memoranda, directives, and administrative reports). Emphasis is placed on criminal justice terminology, organization of information, interviewing skills, investigative notetaking and report writing, and presentation of testimony in court. Hands-on activities will provide step-by-step guided practice for students to improve their overall report writing skills. Technological trends related to current criminal justice reporting will be also examined.

CJ 3300 - Criminal Law and Procedure (3)

An examination of the major legal principles concerning the definition of crimes and defenses and the legal parameters of criminal investigation and prosecution. Prerequisite(s): CJ 1000 with a grade of C or better.

CJ 3310 - Law of Corrections (3)

An examination of federal and state laws and resultant judicial interpretation regarding the substantive and procedural protections applied in the correctional setting with regard to the rights of the confined. Prerequisite(s): CJ 3300 with a grade of C or better. Spring.

CJ 3400 - Criminal Investigation (3)

Principles involved in the investigation of crimes with particular attention given to its historical origins, the investigator, organization and management of the investigative function, and investigative methods; including crime scene processing, suspect identification and use of information sources. Consideration is also given to the investigation of specific crimes. Fall. Summer.

CJ 3405 - Homicide Investigation (3)

Study of homicide investigation including tactics, procedures, problems, forensic techniques, and legal issues. Recommended that students complete CJ 3400 prior to taking this course. Spring.

CJ 3450 - Computer Crime Investigation (3)

Covers the world of computer forensics and computer crime. This includes the seizing and handling of digital evidence, investigating Internet facilitated offenses, victimology, criminal profiling and legal considerations. Students will complete a variety of hands-on projects throughout the course. Spring.

CJ 3600 - Research in Criminal Justice and Criminology (3)

This course provides an introductory examination of research in criminal justice and criminology. It is designed to teach students basic scientific research methods, including proper research terminology, how to use and interpret that terminology, along with becoming proficient in APA format. Students will understand how and why various research methods work in various scientific knowledge-gathering operations within criminal justice and criminology. Fall, Spring. Sometimes offered online.

CJ 3605 - Criminal Justice Career Readiness (1)

Junior Seminar is designed to prepare students for a successful transition into a criminal justice career or transition to graduate school. Prerequisite(s): CJ 1605 with a grade of C or better.

CJ 4000 - Special Projects in Criminal Justice Administration (1-3)

Individual or group study of problems in special areas of interest. *May be repeated.* This course is co-listed with CJ 5001.

CJ 4001 - Contemporary Issues in Law Enforcement (3)

A series of lectures and class participation exercises presenting selected topics currently confronting law enforcement and the public they serve. *May be repeated for a maximum of 9 semester hours.*

CJ 4002 - Criminal Justice Philosophy and Policy (3)

An examination of various areas or criminal justice philosophy, theory, and policy, including an analysis of the role, creation and function of public policy. This course is co-listed with CJ 5002.

CJ 4003 - Advanced Criminology (3)

An analysis of theoretical perspectives addressing causes and correlates of crime, with attention given to typologies, victim and offender issues, as well as policy implications of various perspectives on crime. This course is co-listed with CJ 5003.

CJ 4006 - Probation, Parole and Community Corrections (3)

An examination of the roles of probation, parole and other community correctional methods as they relate to other elements of the criminal justice system. Prerequisite(s): CJ 3006 with a grade of C or better.

CJ 4010 - Criminal Justice International Study (3)

Credit granted for study in a school approved program or study tour in a foreign country. *May be repeated for a maximum of 9 semester hours.* This course is co-listed with CJ 5010. Prerequisite(s): Consent.

CJ 4020 - Crime, Justice and Social Diversity (3)

Examines how issues of crime and justice are played out in the context of a diverse society. Diverse populations include those of income, race, ethnicity, gender, sexual identity and preference, age, immigration, and other disenfranchised elements of society. The course will focus on four major issues: 1) how diverse populations are socially constructed in American society; 2) how the law affects and has affected diverse populations in American society; 3) the differential response of the criminal justice system to various populations; and 4) how victimization impacts diverse groups. The course will emphasize historical patterns in conjunction with current critical issues regarding diversity and the criminal justice system. Prerequisite(s): CJ 1000, CJ 3600, and CJ 4503 with grades of C or better; senior status.

CJ 4060 - Victimology (3)

An examination of the many facets of crime victimization including the victim, the offender, society-at-large, and the dynamics of the victim-offender relationship. Prerequisite(s): CJ 1000 with a grade of C or better.

CJ 4070 - Drug Policy (3)

An examination of policies on the criminalization of drugs, ranging from their possession to their distribution, including issues of legalization and the societal and political impact of the war on drugs. Prerequisite(s): CJ 1000 with a grade of C or better.

CJ 4080 - Criminal Justice and the Media (3)

An examination of media presentations of criminal justice issues and their impact on criminal justice policy and public opinion. Prerequisite(s): CJ 1000 with a grade of C or better.

CJ 4090 - Miscarriages of Justice (3)

An examination of the nature of wrongful convictions and miscarriages of justice in the criminal justice system. This course is co-listed with CJ 5090. Prerequisite(s): CJ 1000 with a grade of C or better.

CJ 4190 - Interpersonal Communication Skills for Criminal Justice (3)

This course is designed as a comprehensive overview of the various communication methods utilized within the criminal justice field, including oral, non-verbal, and written skills. Students will be introduced to various techniques, theories, and issues in order to increase their competency as effective tactical communicators. These techniques include Verbal Judo and the Reid Interviewing and Interrogation Process. The communication skills will be enhanced by the completion of practical exercises designed to improve their overall usage of the various communication modes.

CJ 4302 - Evidence and Courtroom Procedure (3)

Rules of evidence as they relate to the prosecution and defense of criminal cases. It is recommended that students complete CJ 3300.

CJ 4321 - Civil Remedies in Criminal Justice (3)

State and federal legal liabilities and remedies in criminal justice and policy implications. Prerequisite(s): CJ 3300.

CJ 4330 - Criminal Justice and the Mental Health Systems (3)

The relation of the criminal justice system and the mental health process; legal concepts regarding the mentally disabled. Prerequisite(s): CJ 1000 with a grade of C or better.

CJ 4390 - The Death Penalty (3)

An examination of the jurisprudence, history and current issues about the death penalty.

CJ 4403 - Sexual Assault and the Criminal Justice System (3)

In-depth study of sexual assault and sex offenders. Investigation into the motivation of sex offenders, the victim's responses to assault, and investigative procedures. This course is co-listed with CJ 5403. Spring.

CJ 4420 - Organized Crime (3)

An analysis of both the historical development of organized crime and its current impact on society. The enforcement, prosecutorial, judicial, and legislative actions utilized to combat organized crime will be examined. This course is co-listed with CJ 5420. Fall, Spring. Sometimes offered online.

CJ 4433 - Crime Mapping (3)

An examination of the theoretical and practical aspects of crime mapping and the temporal and spatial analysis of crime.

CJ 4444 - Terrorism (3)

Study of violent political and religious movements around the world and the difficulties they pose to the institutions of justice in a democratic society. This course is co-listed with CJ 5444. Taught only as an online course.

CJ 4488 - Homeland Security (3)

Introduction to homeland security with focus on risks and hazards confronting the U.S., along with varied programs and agencies responsible for responding to these threats. This course is co-listed with CJ 5488. Prerequisite(s): CJ 1000 with a grade of C or better.

CJ 4503 - Criminology (3)

An investigation of the perspectives of causation of norm-violating behavior. Emphasis will be placed on rule violating behaviors as defined by the criminal law and on potential policy implications for the criminal justice system. Prerequisite(s): CJ 1000 with a grade of C or better.

CJ 4601 - Directed Studies (1-6)

Individual research and study in student's field of interest as approved and directed by major professors. *May be repeated for a maximum of 6 semesters hours.* Prerequisite(s): Consent.

CJ 4602 - Internship in Criminal Justice (1-6)

Practical experience in the operation of various components of the criminal justice system. *May be repeated for a maximum of 12 semester hours.* Prerequisite(s): Consent.

CJ 4605 - Senior Seminar in Criminal Justice (1)

Capstone course for a final opportunity to assess a student's general performance in the criminal justice major. Prerequisite(s): CJ 3605 with a grade of C or better and senior major in Criminal Justice.

CJ 4701 - Juvenile Law & Policy (3)

The jurisdiction of juvenile courts, role of law enforcement agents, judicial process, fact-finding hearings, dispositions, waivers, appeals, philosophy of the juvenile court with attention to the legal rights of children, and comparative analyses of juvenile codes.

CJ 4702 - Juvenile Corrections (3)

An analysis of the theories, concepts, practices and special problems of juvenile corrections, including a review of contemporary juvenile correctional systems and discussion of recent research concerning the juvenile institution and the various field services.

CJ 4703 - International Juvenile Justice (3)

An overview of international juvenile justice, through an examination of how the international society reacts to juvenile misbehavior and various juvenile justice models.

CJ 4704 - Dynamics of Delinquent Behavior (3)

This course is designed to inform students about why juveniles commit delinquent acts, from minor offenses to serious criminal behavior. This class will discuss what juvenile delinquency is (how it is defined and measured) and juvenile development. This course will also include an overview of the theories of juvenile delinquency, deviant behavior, and youth culture. Beyond a theoretical background, this course will also examine the role that external influences (such as school, family, media, etc.) play in juvenile delinquency and discussion of special populations within juvenile offenders and victims.

CJ 4920 - Gender and Crime (3)

This course focuses on exploring the relationship between gender and crime through four main components: (1) females and offending, (2) females and victimization/survivorship, (3) responses to both, and (4) females as criminal justice practitioners. This course will provide explanations for why women are less likely to commit crimes than their male counterparts, explore motivations for when they do engage in criminal activity, discuss why they are victimized at higher rates for certain offenses, and debate how effective the criminal justice system and other programming has been at addressing both gender-specific offending and victimization. The class will finish with a look at the unique challenges to women as practitioners in the criminal justice system.

This course is co-listed with CJ 5920. Prerequisite(s): CJ 1000 with a grade of C or better.

CDM 2000 - Special Activities in Crisis and Disaster Management (3)

Engaged learning and service learning experiences that provide a context to information presented in the classroom. Emergency services, military, and field experiences contribute to knowledge. *May be repeated.*

CDM 3000 - Introduction to Crisis and Disaster Management (3)

Natural, technological, and man-caused crises and disasters. All-hazards mitigation, preparedness, response, and recovery systems. Roles and responsibilities of government, non-governmental organizations, business, industry, communities and individuals.

CDM 3035 - Emergency Response Planning (3)

Management of resources during operations. Emphasis on warning systems, emergency operations centers, and incident command systems. Topics include human behavior, public health and safety. Prerequisite(s): CDM 3000 or permission.

CDM 3225 - Hazardous Materials Emergency Response (3)

Properties of hazardous materials. Development and implementation of plans/programs required for safe response. Utilization of tools and techniques during response to spills and releases. Prerequisite(s): CDM 3000 or permission.

CDM 3400 - Community Risk Reduction (3)

Concept and practice of risk analysis. Integration of mitigation pre-incident, post-disaster recovery and redevelopment. Formation of disaster resilient communities, including sociological and political considerations. Prerequisite(s): CDM 3000 or permission.

CDM 4000 - Special Topics in Crisis and Disaster (3)

Exploration of emerging issues in the management of crises and in depth examination of special topics impacting on disasters. *May be repeated.* This course is co-listed with CDM 5000.

CDM 4015 - Catastrophic Readiness (3)

Exploration of catastrophic events, as contrasted with disasters, requiring unique strategies, techniques, and tools to achieve effective response and recovery for the community and nation. This course is co-listed with CDM 5015.

CDM 4035 - Disaster and Society (3)

Impact of disasters on social systems. Disaster mythology; individual and community response. Communications within affected groups and organizations. Prerequisite(s): CDM 3000 or permission.

CDM 4100 - Emergency Medical Technician I (3)

This course will introduce basic life support and pre-hospital emergency medical care, including airway management, oxygen therapy, special patient populations and EMS operations. Instruction is presented using interactive online curriculum, classroom lectures, and hands-on practical training. Prerequisite(s): Must be 18 years of age to receive State of Missouri EMT licensure. Corequisite(s): CDM 4115.

CDM 4115 - Emergency Medical Technician Clinical (3)

Field experiences in hospital emergency department and ambulance settings, including patient assessment, medical emergencies, and traumatic injuries. Upon successful completion of the course requirements and the state practical examination, students will be eligible to apply for and take the National Registry cognitive examination. Prerequisite(s): Must pass a criminal background check to complete clinical experiences. Corequisite(s): CDM 4100.

CDM 4175 - Public Health Disaster Management (3)

Examines the public health response to emerging infections, biological incidents, and health issues that arise as a consequence of disasters. Roles, responsibilities, and ethical considerations in planning and responding to public health emergencies are explored, with special consideration to vulnerable populations.

CDM 4200 - Disaster Management Technology (3)

Technologies used in support of all phases of disaster management. Technological systems studied include four areas: Transportation, information & communication, biotechnology, and the built environment.

CDM 4215 - Environmental Disasters (3)

Examine man-made, industrial, and technological events that produce environmental disasters. Explore the sociopolitical issues that contribute to environmental disasters. This course is co-listed with CDM 5215. Only offered online.

CDM 4245 - Managerial Issues in Hazardous Materials (3)

Addresses managerial concerns of a hazardous materials manager at the community/organization level. Emphasis is placed on regulatory compliance and risk management. Other subjects covered include response planning, transportation and storage, ecosystem impacts and remediation. Prerequisite(s): CDM 3000 or permission.

CDM 4400 - Research Issues in Crisis and Disaster Management (3)

Introduces the research process, methodology, and data analysis including case studies, qualitative, and quantitative approaches in disaster research. Ethical topics include research integrity, human subjects protections, and academic honesty. Prerequisite(s): CDM 3000 or consent.

CDM 4515 - Safety and Health for Emergency Responders (3)

Principles of risk management for emergency services organizations. Emphasis is placed upon supervisory and managerial responsibilities for responder safety and health.

CDM 4535 - Emergency Services Management (3)

Principles of management for emergency services, including community-focused leadership, strategic planning, and integrated administrative skills.

CDM 4575 - Emergency Services Personnel Management (3)

Personnel management, organizational development, recruitment and selection, performance management systems, and collective bargaining in the context of emergency services.

CDM 4715 - Business Continuity Planning (3)

Planning methodologies utilized by business and industry. Risk identification, business impact analysis, and the adoption of alternative recovery methods for critical processes. This course is co-listed with CDM 5715. Prerequisite(s): CDM 3000.

CDM 4735 - Critical Infrastructure (3)

Critical Infrastructure is vital to the economic and national security and must be protected from intentional and unintentional human acts and natural disasters. The course investigates dependencies and interdependencies, risk methodologies, security strategies and tactics to protect those critical infrastructures. This course is co-listed with CDM 5735. Taught only as an online course.

CDM 4745 - Crisis Management (3)

Systematic study of crisis in business and industry; vulnerability analysis, disaster-resistant companies, crisis communications strategies, employee support services, and public relations. This course is co-listed with CDM 5745. Prerequisite(s): CDM 3000.

CDM 4800 - Integrated Emergency Management (3)

Analyzes relationships between public and private sector networks. Assess factors influencing multi-organization coordination during all phases of disaster

management. Build and implement a professional development plan. Prerequisite(s): CDM 3000 or permission, and senior standing.

CDM 4900 - Technology Application Studies (3)

Individual or group study of emerging technology applications related to crisis and disaster management. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): CDM 4200 or permission.

CDM 4910 - Field Exercise Project (3)

Individual or group participation in approved community, institutional, or agency emergency exercises or disaster drills. Prerequisite(s): Junior standing.

CDM 4990 - Practicum in Crisis and Disaster Management (3-6)

Service learning experiences based upon student preparation, interest, and career development. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): departmental approval and junior standing.

CYBR 1040 - Orientation to Cybersecurity (1)

This course is designed to help the first-year student to actively explore critical thinking, develop a sense of belonging to UCM and the School of Computer Science and Mathematics, develop self-awareness and responsibility, and gain an increased interest in the Cybersecurity program. An additional fee is associated with this course.

CYBR 1500 - Command Line Environments (3)

Introduction to Linux command line, Windows command prompt, and Windows PowerShell. Writing Bash scripts, Batch files to automate command-line based tasks. An additional fee is associated with this course.

CYBR 1800 - Introduction to Cybersecurity (3)

Introduction to common issues of cyber security from end-user perspectives. Topics include technical and social constructions of cyber space, malicious content, Email security, social media related risk, secure online activity, protection of privacy, cultural and ethical dimensions of cyber security. An additional fee is associated with this course.

CYBR 2500 - Computer Systems Administration (3)

Introduction to Windows and Linux system administration. Students will learn basics of server systems and system administration tasks, including computer networking, file system management, user/group management, LDAP/Active Directory, and security of systems. Student's hands-on skills will be emphasized. Prerequisite(s): CYBR 1500 with a grade of C or better. An additional fee is associated with this course.

CYBR 3130 - Secure Programming (3)

Introduction to secure and reliable programming practices. Topics include security loophole identification, conversion of noncompliant code to compliant code, and best defensive programming practices. Prerequisite(s): CS 1030 with a grade of C or better or CS 1100 with a grade of C or better. An additional fee is associated with this course.

CYBR 3300 - Introduction to Cryptography (3)

Cryptographic algorithms and their applications. Topics include block ciphers, message authentication, key negotiation, key management, and attack models. Prerequisite(s): CS 2400 with a grade of C or better. An additional fee is associated with this course.

CYBR 3510 - Systems Security (3)

Introduction to security of database systems and operating systems. Topics include: SQL, database access control, database integrity control, database encryption, database backup; processes, thread, virtual memory, file systems, Windows and Linux security architecture, OS virtualization security, and PowerShell automation security. Prerequisite(s): CYBR 2500 with a grade of C or better. An additional fee is associated with this course.

CYBR 3520 - Introduction to Cyber-Physical Systems Security (3)

Introduction to securing systems that interact with the physical world, including industrial control systems, distributed control systems/SCADA, critical infrastructure, and the Internet of Things. Includes hands-on labs and discussion of policy and governance, ethics, emerging standards, and best practices. Prerequisite(s): CYBR 1800 with a grade of C or better and CS 1030 with a grade of C or better or CS 1100 with a grade of C or better. An additional fee is associated with this course.

CYBR 3820 - Usable Privacy and Security (3)

Focuses on the underlying human factors of information security and highlights the tradeoff between usability and security. Upon successful completion of the course, students will be able to understand the principles of designing usable security and privacy systems. Topics include usability for security, introduction to HCI design methodologies, passwords, secondary authentication, privacy tools, security warnings, smartphone apps, privacy policies and notices, usable encryption, browser privacy and security, SSL and PKIs, social networks and privacy, rust and mental models. Prerequisite(s): CYBR 1800 with a grade of C or better and ACST 1300 with a grade of C or better or ACST 1300R with a grade of C or better or ACST 2310 with a grade of C or better. An additional fee is associated with this course.

CYBR 3830 - Economics of Cybersecurity (3)

Focuses on the underlying economic factors of cybersecurity and highlights the incidents of security failures that happen due to misaligned incentives rather than to the lack of suitable technical protection mechanisms. Topics include economic perspective of cybersecurity, cultural perspective of cybersecurity, blockchain technology, economics of privacy, economics of malware, economics of authentication, the information security business, economics of vulnerabilities, copyrights and rights management, cybercrime cost measurement, theoretical models, forensic economics. Prerequisite(s): CYBR 1800 with a grade of C or better. An additional fee is associated with this course.

CYBR 4010 - Special Topics in Cybersecurity (3)

Individual reading and research on more specialized and recent topics in cybersecurity not included in the regular offering of the school. Prerequisite(s): CS 2300 with a grade of C or better or CS 2400 with a grade of C or better. An additional fee is associated with this course.

CYBR 4140 - Web Application Security (3)

Identification and prevention of security vulnerabilities in web applications. Topics include Web Fundamentals, Authentication, Secure User Input, Secure Configuration, Secure Web Development, and attack vectors such as Session Hijacking, SQL Injection, Cross-Site Scripting (XSS), Cross-Site Request Forgery, XML External Entity. This course is co-listed with CYBR 5240. Prerequisite(s): CS 2400 with a grade of C or better and Junior status. An additional fee is associated with this course.

CYBR 4610 - Cloud Security (3)

Introduce cloud security from fundamentals to advanced and practical topics. Topics include cloud security fundamentals, threat models and risks/vulnerabilities of cloud computing, technical security principles and controls for cloud data, cloud platforms and infrastructure, and cloud application, the Cloud Control Matrix (CCM) and CAIQ, and scripting and automation in the cloud. This course prepares students for the $(ISC)_2$ Certified Cloud Security Professional certification exam. This course is co-listed with CYBR 5610. Prerequisite(s): NET 1060 with a grade of C or better and CYBR 2500 with a grade of C or better; or CS 3840 with a grade of C or better. An additional fee is associated with this course. Spring.

CYBR 4820 - Introduction to Information Assurance (3)

Formal models and principles of computer security to achieve information assurance. Topics include security policies in an enterprise, multi-level security models, access control models and implementation, security evaluation, security risk assessment, legal and ethical aspects of security. This course is co-listed with CYBR 5820. Prerequisite(s): CS 2400 with a grade of C or better. An additional fee is associated with this course.

CYBR 4840 - Ethical Hacking (3)

Introduction to hacking techniques and exploits for ethical purpose. Topics include pen test planning and scoping, rules of engagement, reconnaissance, port scanning, OS finger printing and version scanning, vulnerability scans, exploitation, post-exploitation strategies and pivoting, password attacks, and social engineering. This course is co-listed with CYBR 5840. Prerequisite(s): NET 1060 with a grade of C or better and CYBR 2500 with a grade of C or better; or CS 3840 with a grade of C or better. An additional fee is associated with this course.

CYBR 4850 - Computer and Network Forensics (3)

Digital forensics including computers, mobile devices, and network traffic. The course covers different types of software tools and techniques in order to perform forensic investigations. Topics include introduction to digital forensics, data acquisition, computer forensics analysis, mobile forensics analysis, network log and traffic acquisition, and network forensics analysis. This course is co-listed with CYBR 5850. Prerequisite(s): CS 2300 with a grade of C or better or CYBR 2500 with a grade of C or better. An additional fee is associated with this course.

CYBR 4920 - Software Security (3)

Introduction to software security. Topics include Set-UID programs, environment variables, Shellshock attack, buffer overflow attack, return-to-libc attack, return oriented programming, format string vulnerability, race condition vulnerability, Dirty COW, reverse shell, Fuzzing, Shellcode development, SEH Overwrite Exploits, and Android repackaging attack. This course is co-listed with CYBR 5920. Prerequisite(s): CS 3500 or CYBR 3130. An additional fee is associated with this course.

CYBR 4940 - Threat Intelligence and Incident Response (3)

Introduce advanced skills and tools for threat intelligence and incident response. Topics include network evidence acquisition, log aggregation and analysis, NetFlow analysis, and full-packet hunting. This course is co-listed with CYBR 5940. Prerequisite(s): CYBR 4840. An additional fee is associated with this course.

DANC 1110 - Modern Dance I (2)

Introduction and practice of basic modern dance concepts and techniques with an emphasis on creative movement dynamics, rhythmic and spatial aspects, and alignment. Spring.

DANC 1120 - Ballet Dance I (2)

Introduction and practice of basic ballet dance concepts and fundamental techniques with an emphasis on alignment and classical ballet vocabulary and positions.

DANC 1130 - Tap Dance I (2)

Introduction and practice of basic tap dance concepts and techniques with an emphasis on stylized steps and terminology coordinated with the rhythmic structure of tap dance. Fall.

DANC 1140 - Jazz Dance I (2)

Introduction and practice of basic jazz dance concepts and techniques with an emphasis on movement dynamics, isolation, syncopation, and alignment.

DANC 1270 - Ballroom Dance I (1)

Introduction and practice of basic dance steps, rhythms, fundamentals and partnering techniques for 4-6 smooth and Latin ballroom dance styles.

DANC 2100 - Dance Appreciation GE (3)

An introductory survey of dance as a performing art which will prepare the student for greater enjoyment and appreciation of various dance forms.

DANC 3110 - Modern Dance II (2)

Modern II continues to explore the basic elements of modern dance technique and new ways of moving while emphasizing strength, endurance, balance and extended combinations. Prerequisite(s): Designed for students with at least one year of formal dance training. DANC 1110 or permission of the instructor. Spring Even Years.

DANC 3120 - Ballet Dance II (2)

Ballet II continues development of the basic fundamentals of classical ballet technique and vocabulary with an emphasis on alignment, sequence development, and performance quality. Prerequisite(s): Designed for students with at least one year of formal ballet training. DANC 1120 or permission of the instructor. Fall.

DANC 3130 - Tap Dance II (2)

Continues building basic and intermediate tap dance concepts and techniques with an emphasis on stylized steps and terminology coordinated with the rhythmic structure of tap dance. Prerequisite(s): Designed for students with at least one year of formal tap training. DANC 1130 or permission of the instructor. Spring Odd Years

DANC 3140 - Jazz Dance II (2)

Continues to explore the basic elements and fundamentals of jazz dance technique and vocabulary while emphasizing movement dynamics, isolation, syncopation, alignment and artistic expression. Prerequisite(s): Designed for students with at least one year of formal dance training. DANC 1140 or permission of the instructor. Fall.

DANC 3210 - Musical Theatre Dance (3)

Introduction and practice of basic musical theatre dance concepts and techniques with an emphasis on gaining performance skills in different styles of musical theatre dance choreography. Spring.

DANC 4210 - Choreography I (3)

Introduction to the craft and creative process of choreography through the means of exploration, improvisational movement, and developing basic movement themes and solo/duet works. Fall.

DSA 1000 - Introduction to Data Analytics (3)

Study and application of the data analysis lifecycle which includes data acquisition, data management, data preparation and integration, data analysis and visualization to make informed decisions. Professional responsibilities regarding data privacy, governance, and stewardship will also be explored. An additional fee is associated with this course.

DSA 3200 - Introduction to Data Visualization (3)

Various visualization techniques to expose underlying information and tools for visualization of data. Concepts and methods are illustrated with applications. Prerequisite(s): CS 1100 or CS 1030 with a grade of C or better, and ACST 1300, ACST 1300R , ACST 2310, or ACST 3311 with a grade of C or better. An additional fee is associated with this course.

DSA 4100 - Programming Foundations for Data Science and AI (3)

Introduction to Data Processing with Python. Topics include Data Crawling, Clearing, Reorganizing and Visualization using state-of-the-art Python Packages and Tools. This course is co-listed with DSA 5100. Prerequisite(s): CS 2030 with a grade of C or better or Instructor consent. An additional fee is associated with this course.

DSA 4200 - Advanced Data Visualization (3)

This course covers the principles, techniques, and tools for effective data visualization. Topics include data visualization for business intelligence, statistical analysis, dashboard design, and Web visualization. This course is co-listed with DSA 5200. Prerequisite(s): DSA 3200 with a grade of C or better or Instructor consent. An additional fee is associated with this course.

DSA 4400 - Statistical Foundations for Data Science and AI (3)

Statistical foundations for data science and artificial intelligence and their applications. Topics including probability distributions review, descriptive statistics, hypothesis testing, Bayesian rule, linear and logistic regression analysis, analysis of variance and statistical programming language R. This course is co-listed with DSA 5400. Prerequisite(s): ACST 1300 with a grade of C or better or ACST 1300R with a grade of C or better; and CS 2030 with a grade of C or better. An additional fee is associated with this course.

DSA 4600 - NoSQL Database Systems (3)

This course provides opportunities to learn a new class of non-relational databases known as NoSQL. Topics include data models, MongoDB, design patterns, and NoSQL in the cloud. This course is co-listed with DSA 5600. Prerequisite(s): CS 4600 with a grade of C or better or Instructor consent. An additional fee is associated with this course.

DSA 4620 - Big Data Analytics (3)

This course provides an introduction to big data analytics. Topics include data analytics, data mining, MapReduce framework, and Spark framework. This course is co-listed with DSA 5620. Prerequisite(s): CS 2300 with a grade of C or better and CS 2400 with a grade of C or better or instructor consent. An additional fee is associated with this course.

DSA 4920 - Senior Project (3)

Semester-long senior capstone project in which teams integrate the data science and analytics knowledge acquired in core courses to produce an end-to-end solution to a complex project in a real world application domain area. Includes a formal presentation to the Computer Science faculty. Prerequisite(s): DSA 4100 with a a grade of C or better and DSA 4200 with a grade of C or better. An additional fee is associated with this course.

CADD 1100 - Orientation to Design/Drafting (1)

Orientation to the philosophy, development, and current trends in the professional preparation for careers in design/drafting. An additional fee is associated with this course.

CADD 1110 - Fundamentals of Drafting (3: 3 lecture, 0 lab)

Introduction to the graphic language of technical drawing and communications. Multiview and pictorial technical drawing using freehand, manual and computer-aided drafting techniques. An additional fee is associated with this course.

CADD 1111 - Drafting for CMGT (3)

Streamlines the content of Basic AutoCAD, Residential Architectural Drawing, and Civil Drafting. This course is for Construction Management (CMGT) majors and will serve as the prerequisite for advanced drafting courses required in the CMGT curriculum. Prerequisite(s): Only for CMGT majors. An additional fee is associated with this course.

CADD 1170 - AutoCAD Applications (3: 3 lecture, 0 lab)

AutoCAD Applications include the application of Computer-Aided Drafting (CAD) to the solution of technical drawing problems for the industry. Prerequisite(s): CADD 1110 with a grade of C or better or concurrently or CTE 1300. An additional fee is associated with this course.

CADD 1180 - Introduction to Building Info Modeling (3: 3 lecture, 0 lab)

This course is an introduction to Building Information Modeling (BIM), which surveys the application of Revit in fundamentals for architectural drawings. An additional fee is associated with this course.

CADD 2100 - Sophomore Design/Drafting Seminar (0.5)

Seminar for study of current topics in design/drafting through discussions, activities, and outside speakers. Students will continue to develop leadership skills, relationships with peers and faculty and plan a successful career. Prerequisite(s): CADD 1100. An additional fee is associated with this course.

CADD 2140 - Advanced 3D Modeling (3: 3 lecture, 0 lab)

Advanced industrial applications of computer-aided drafting systems. Three dimensional modeling and design using interactive graphics techniques and standard design elements. Prerequisite(s): CADD 1110 with a grade of C or better or CTE 1300. An additional fee is associated with this course.

CADD 2150 - Descriptive Geometry for Engineering Technology (3: 3 lecture, 0 lab)

A basic course in graphic science for engineers, drafters or drafting teachers. Prerequisite(s): CADD 1110 with a grade of C or better or CTE 1300 with a grade of C or better. An additional fee is associated with this course.

CADD 2160 - Structural Design & Detailing (3: 3 lecture, 0 lab)

A study of structural systems utilizing metal, concrete, masonry, and wood, including the design of structures and the development of appropriate engineering calculations and working drawings. Prerequisite(s): CADD 1170 with a grade of C or better and CMGT 2020. An additional fee is associated with this course.

CADD 2172 - MicroStation Applications (3:3 lecture, 0 lab)

MicroStation applications is used to solve technical drawing problems in both 2D and 3D for various industries. An additional fee is associated with this course. Fall, Spring.

CADD 3022 - Internship in Design and Drafting (1-6)

Provides practical application and experience in cooperating industry and business. Students submit written reports. Evaluation by on-job supervisor and internship coordinator. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): 20 semester hours of program offerings, minimum undergraduate GPA of 2.00, and permission of the program coordinator. An additional fee is associated with this course.

CADD 3100 - Junior Design/Drafting Seminar (0.5)

Seminar for study of current topics in design/drafting through discussions, activities, and outside speakers. Students will continue to develop leadership skills, relationships with peers and faculty and plan a successful career. Prerequisite(s): CADD 2100. An additional fee is associated with this course.

CADD 3120 - Mechanical 3D Modeling & Detailing (3: 3 lecture, 0 lab)

Working drawings of machine parts, using tables, tolerancing, sheet metal and welding drawings. Prerequisite(s): CADD 2140 with a C or better and ENGT 2530. An additional fee is associated with this course.

CADD 3150 - Civil Drafting (3: 3 lecture, 0 lab)

Civil drafting problems using survey data applicable to grading cuts and fills, drainage systems, municipal utilities, plotting and zoning are studied. Drawings are developed using manual and computer-aided drafting techniques. Prerequisite(s): CADD 1170 with a grade of C or better. An additional fee is associated with this course.

CADD 3160 - Residential Architectural Drawing (3: 3 lecture, 0 lab)

Principles of planning residential structures including selection of materials, methods of construction, and development of detailed working drawings. Prerequisite(s): CADD 1170 and CADD 1180 with grades of C or better. An additional fee is associated with this course.

CADD 3170 - Design Automation (3: 3 lecture, 0 lab)

Computer-aided drafting including operating systems, programming languages, macros, networks, and the customization of software. Prerequisite(s): CADD 1170 with a grade of C or better. An additional fee is associated with this course.

CADD 3175 - Advanced MicroStation (3: 3 lecture, 0 lab)

Advanced applications of MicroStation for the solution of technical drawing problems for industry. Management of CADD hardware and applications software. An additional fee is associated with this course.

CADD 3180 - Advanced Structural Design (3:3 lecture, 0 lab)

Advanced applications of structural design utilizing Tekla Structures. Three-dimensional modeling and in-depth detail design of structures and working drawings. Prerequisite(s): CADD 2160 with a grade of C or better. An additional fee is associated with this course. Spring.

CADD 4100 - Senior Design/Drafting Seminar (1)

Seminar for study of current topics in design/drafting through discussions, activities, and outside speakers. Students will continue to develop leadership skills, relationships with peers and faculty and plan a successful career. Prerequisite(s): CADD 3100. An additional fee is associated with this course.

CADD 4114 - Advanced Technical Problems in Design/Drafting (1-3)

Individual or group work on advanced technical problems in design/drafting. Provide exploration of content not available through normal course offerings. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): 2.50 GPA, written contract/proposal with objectives and written school consent. An additional fee is associated with this course.

CADD 4124 - Geometric Dimensioning and Tolerancing Principles for Engineering Technology (3: 3 lecture, 0 lab)

Basic theory and application of geometric dimensioning and tolerancing practices applicable to working drawings of machine parts. Prerequisite(s): CADD 3120 with a grade of C or better and ENGT 2530. An additional fee is associated with this course.

CADD 4150 - Applied Civil Design/Drafting (3: 3 lecture, 0 lab)

3D modeling applications for design objects such as contours, survey points, land surfaces, and road alignments. These concepts will assist graduates working in the fields of civil design and engineering. Prerequisite(s): CADD 1111 or CADD 3150 with a grade of C or better. An additional fee is associated with this course.

CADD 4160 - Computer Graphics & Technical Presentations (3)

Computer Graphics & Technical Presentations is an advanced course, which surveys the application of software and input devices to various presentation methods. The purpose of this course is to develop skills and knowledge in using the computer to prepare proposals, guides, and other presentation graphics in technical communication. This course is intended for students in technical fields where visual presentation is integral to the nature of the work. An additional fee is associated with this course.

CADD 4162 - Commercial Architectural Design/Drafting (BIM) (3: 3 lecture, 0 lab)

Commercial architectural plans and problems are studied and drawings are developed using CADD techniques including BIM. Prerequisite(s): CADD 1180 with a grade of C or better, CADD 2160 with a grade of C or better and CMGT 2020. An additional fee is associated with this course.

CADD 4171 - Production Design/Drafting (3: 3 lecture, 0 lab)

Tool and die, jig and fixture, casting, weldment, and hydraulic/pneumatic plumbing design problems are studied and drawings are developed using manual and computer-aided drafting techniques. This course is co-listed with CADD 5171. Prerequisite(s): CADD 2140 with a grade of C or better and CADD 3120 with a grade of C or better and ENGT 2530. An additional fee is associated with this course.

CADD 4172 - MEP (Mechanical, Electrical & Plumbing) & Industrial Piping Design/Drafting (3: 3 lecture, 0 lab)

MEP (Mechanical, Electrical & Piping/Plumbing) systems are designed, and drawings are developed using CADD techniques including BIM. An additional fee is associated with this course.

CADD 4174 - Machine Design (3: 3 lecture, 0 lab)

Drafting problems involving the elements of the designing and/or redesigning of mechanisms and machines. Prerequisite(s): CADD 2140 with a grade of C or better and CADD 3120 with a grade of C or better; CMGT 2020 and ENGT 2530. An additional fee is associated with this course.

CADD 4175 - Advanced 3D Analysis and Rapid Prototyping (3: 3 lecture, 0 lab)

Advanced course which surveys the application of computer drafting and design systems and how they relate to 3D analysis and rapid prototyping. Prerequisite(s): CADD 2140 with a grade of C or better and CMGT 2020. An additional fee is associated with this course.

CADD 4180 - Industrial Design (3: 3 lecture, 0 lab)

Study and application of the design process and design principles related to industrial products. This course is co-listed with CADD 5180. Prerequisite(s): CADD 2140 with a grade of C or better. An additional fee is associated with this course.

CADD 4210 - Innovations Management for CADD (3)

Applied innovation management principles are analyzed and synthesized by Design & Drafting Technology majors. Design & Drafting Technology-focused topics include: industry dynamics, technological innovation, innovation strategies, collaboration, product innovation management, and product development team management and innovation deployment strategies with case studies for each focused topic. Prerequisite(s): 27 hours of CADD classes. An additional fee is associated with this course.

CADD 4500 - Substation Design (3: 3 lecture, 0 lab)

Electrical systems including substation layouts, design considerations, and IEEE standards are studied and schematic drawings are developed using CADD techniques. Prerequisite(s): CADD 1170 and CADD 2140 with grades of C or better. An additional fee is associated with this course.

D&N 1300 - Introduction to Dietetics (1)

Overview dietetics and nutrition including history, current trends and career opportunities.

D&N 2310 - Early Childhood Nutrition and Health (2)

Application of principles of nutrition, significance of food habits, including the influences of family living, cultural patterns, and commercialization in relation to the health of young children.

D&N 3340 - Nutrition (3)

Digestive process and fundamental principles of nutrition and their application to the feeding of individuals. Prerequisite(s): CHEM 1104 or CHEM 1131 with grades of C or better. Fall, Spring.

D&N 3350 - Community Nutrition (3)

Public health nutrition and nutrition care delivery in community programs. Prerequisite(s): D&N 3340 with a grade of C or better.

D&N 3360 - Entrepreneurship for Dietetics Professionals (3)

Identifies and develops dietetic entrepreneurial opportunities in a rapidly changing employment environment. Prerequisite(s): D&N 3340.

D&N 4341 - Child Nutrition (2)

Nutritive requirements of mothers during pregnancy and lactation and of children during early childhood. Bases of determining reliability of nutrition information. This course is co-listed with D&N 5341. Prerequisite(s): D&N 3340.

D&N 4342 - Medical Nutrition I (3)

Role of nutrition in the prevention and dietary treatment of disease. This course is co-listed with D&N 5342. Prerequisite(s): BIOL 3401, BIOL 3402, D&N 3340 and CHEM 1604 with grades of C or better. Fall.

D&N 4343 - Medical Nutrition II (3)

A case study oriented approach to nutritional medicine with an in-depth emphasis on pathophysiology and the nutritional care plan in the prevention and treatment of disease. This course is co-listed with D&N 5343. Prerequisite(s): D&N 4342 with a grade of C or better. Spring.

D&N 4345 - Senior Dietetics Seminar* (3)

Philosophy and current issues and trends in dietetics. Group and individual problems which will lead to investigation of individual research problem. Prerequisite(s): senior standing. Fall.

D&N 4350 - Special Problems in Foods and Nutrition (2-3)

An in-depth study of specific aspects of nutrition/foods with a focus on research, clinical, community, or management areas. Group and/or individual problems will be addressed and presented in a variety of formats including poster sessions, research reports, and oral presentations at local/regional science meetings. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): senior standing.

D&N 4351 - Geriatric Nutrition (2)

Dietary needs and feeding of the elderly. This course is co-listed with D&N 5351. Prerequisite(s): D&N 3340.

DRED 2010 - Introduction to Safety Education (3)

Provides a background in safety that will give insight to the possible accident situations present in various school situations.

DRED 2020 - Driver Task Analysis (3)

Curriculum content overview for driver and traffic safety education in secondary schools; classroom instruction and laboratory experience; driving skills and abilities of future teachers are evaluated. Prerequisite(s): DRED 2010.

DRED 2030 - Developing Vehicle Operation Skills and Competencies (3)

A methods and materials course for driver education in the secondary schools. Techniques of teaching beginning drivers in both classroom and laboratory settings. Practicum arranged as a portion of the course. Prerequisite(s): DRED 2020. Summer.

DRED 2040 - Developing Classroom Knowledge (3)

Operation, maintenance, and techniques of teaching with driving simulators and multiple-car driving ranges. Practicum arranged as a portion of the course. Prerequisite(s): DRED 2030. Summer.

ECON 1010 - Principles of Macroeconomics GE (3)

An introduction to principles underlying the operation of modern industrial countries. Special attention is given to the determinants of income and employment.

This course is equivalent to MOTR ECON 101 Introduction to Macroeconomics in the Social & Behavioral Sciences Knowledge Area.

ECON 1011 - Principles of Microeconomics GE (3)

An introduction to the functioning of a market economy. Emphasis is on behavior of consumers and business firms and the resulting allocation of resources and distribution of income. Fall, Spring, Summer.

This course is equivalent to MOTR ECON 102 Introduction to Microeconomics in the Social & Behavioral Sciences Knowledge Area.

ECON 2010 - Orientation to the Economics Major (2)

Familiarize economics majors with the CPI program, general outcomes, assessment activities (portfolio assessment), and future opportunities for economics majors. Prerequisite(s): ECON 1010 or ECON 1011. Fall.

ECON 2033 - Economic Applications in Sports (3)

This applications course is designed to investigate questions related to the contribution of professional and recreational sports to social welfare. It includes an exploration of the business of professional and amateur sports. Not open to economics majors as a major or elective course. Spring, Summer.

ECON 3010 - Intermediate Macroeconomics (3)

Develop various theoretical frameworks for studying the forces affecting income, employment, and output in the economic system of the United States. Attention is given to the impact that government and other countries may have on these variables. Prerequisite(s): ECON 1010. An additional fee is associated with this course.

ECON 3013 - Public Finance (3)

The role of government in the modern mixed economy with emphasis on the impact of tax and expenditure policies on resource allocation and income distribution. Prerequisite(s): ECON 1011. An additional fee is associated with this course.

ECON 3020 - Money and Banking (3)

Money and banking structures including the Federal Reserve System and how it affects the economy. Monetary and National Income Theory are used to analyze economic policy. Prerequisite(s): ECON 1010. An additional fee is associated with this course. Fall, Spring.

ECON 3030 - Intermediate Microeconomics (3)

Conventional theory of consumption, production, pricing, and resource allocation. Prerequisite(s): ECON 1011. An additional fee is associated with this course. Fall, Spring.

ECON 3035 - Internship in Economics (1-6)

Opportunity for students to gain theoretical knowledge and practical application within a particular field of specialization. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): Admission to BSBA program, 60 semester hours and overall GPA of 2.50 or above, or consent of internship director. An additional fee is associated with this course. Fall, Spring, Summer.

ECON 3065 - Labor Economics (3)

Survey of the labor force, wage and employment theories, economic insecurity including unemployment, trade unionism and collective bargaining from the standpoint of public policy. Prerequisite(s): ECON 1010 and ECON 1011. An additional fee is associated with this course.

ECON 4000 - Senior Seminar in Economics (3)

The major will complete a research paper demonstrating the ability to address a research question (topics will vary) by applying theory and presenting empirical evidence and will prepare an oral presentation of the research project. Prerequisite(s): ECON 3010 and ECON 3030. An additional fee is associated with this course. Fall, Spring.

ECON 4010 - International Economics (3)

Principles underlying international trade and finance and analysis of current problems and related policies. This course is co-listed with ECON 5010. Prerequisite(s): ECON 1010 and ECON 1011. An additional fee is associated with this course. Fall.

ECON 4015 - Mathematical Economics I (3)

A survey of mathematics including theory of sets, calculus, differential and difference equations, linear programming, matrices, and their application in economics. This course is co-listed with ECON 5015. Prerequisite(s): ECON 1011 and FIN 2801 or MATH 1131 or MATH 1151. An additional fee is associated with this course.

ECON 4016 - Mathematical Economics II (2)

A continuation and more advanced study in the application of mathematical tools in economics. This course is co-listed with ECON 5016. Prerequisite(s): ECON 4015. An additional fee is associated with this course.

ECON 4020 - Natural Resource Economics (3)

Nature of natural resources; economic efficiency as basis for natural resource use; externalities in natural resource use; factors influencing environmental quality; alternate public policy tools for influencing natural resource use. This course is co-listed with ECON 5020. Prerequisite(s): ECON 1010 and ECON 1011. An additional fee is associated with this course.

ECON 4030 - Directed Studies in Economics (1-3)

Intensive study of significant economic topics. *May be repeated for a maximum of 9 semester hours.* This course is co-listed with ECON 5030. An additional fee is associated with this course.

ECON 4050 - Comparative Economic Systems (3)

Analysis of alternate patterns of economic control, planning, and market structures. The experience of British socialism, American capitalism, and Soviet-type central planning is emphasized. This course is co-listed with ECON 5050. An additional fee is associated with this course.

ECON 4052 - Regional and Urban Economics (3)

Geographic regions and urban areas as economic systems with emphasis on location theory and economic policy in the regional/urban environments. Prerequisite(s): ECON 1011. An additional fee is associated with this course.

ECON 4054 - Sports Economics (3)

Designed to investigate questions relating to the contribution of professional and recreational sports to social welfare. This includes exploring the decision to participate, use public funding for sport facilities, and labor market issues. The general objective of this course is to help the student learn to apply economic concepts and ideas to the sports industry. Because of the applied nature of this course, problem solving and modeling are key skills for success. This course is co-listed with ECON 5054. Prerequisite(s): ECON 1011. An additional fee is associated with this course.

ECON 4060 - Game Theory (3)

Provides game theoretical tools used widely in economics to study situations in which various decision-makers interact. Applications include political science and biology. Prerequisite(s): ECON 1011 and MATH 1111. An additional fee is associated with this course. Spring.

ECON 4065 - Managerial Economics (3)

Designed to apply economic theory and statistical methods to managerial decision making. Allocation and pricing problems of business are key focuses. Prerequisite(s): ECON 3010, ECON 3030 and FIN 3801. An additional fee is associated with this course.

ECON 4070 - Industrial Organization (3)

An analysis of selected economic problems of current interest dealing primarily with the structure of American industry, with emphasis on the conduct and performance of large firms. Prerequisite(s): ECON 1011. An additional fee is associated with this course.

ECON 4075 - Time Series Analysis (3)

The course will introduce, develop and apply forecasting models to decision making problems. The interpretation and accuracy of forecasting models will also be explored. This course is co-listed with ECON 5075. Prerequisite(s): ECON 1010, ECON 3030 and FIN 3801. An additional fee is associated with this course. Spring.

ECON 4080 - Econometrics I (3)

Mathematical techniques and problems used in the quantitative approach to economic theory. This course is co-listed with ECON 5080. Prerequisite(s): ECON 3010 or ECON 3030; and FIN 3801. An additional fee is associated with this course.

ECON 4085 - Predictive Analytics (3)

Introductory course in data mining and predictive model development. Students will be introduced to database tools for collecting, retrieving, and applying data mining processes, as well as building predictive models for decision making. Students who earned undergraduate credit for ECON 4085 may not take ECON 5085 for graduate credit. This course is co-listed with ECON 5085. Prerequisite(s): FIN 3801. An additional fee is associated with this course. Fall, Spring.

ECON 4090 - Analytical Applications to Business (3)

An advanced course in predictive model applications. Students will be exposed to different models in financial economics, and datasets, to make informed business decisions. This course is co-listed with ECON 5090. Prerequisite(s): FIN 3801 and ECON 4085. An additional fee is associated with this course.

EDFL 1400 - University and Teacher Education Foundations I (1)

This course is designed to engage the first-year teacher education student in gaining a sense of belonging through interacting with campus, community, and educational resources; developing self-awareness of social and civic responsibility;

encouraging habits of life-long learning and critical thinking.

EDFL 1500 - University and Teacher Education Foundations II (1)

This course is designed to give the first-year teacher education student a sense of belonging through interacting with campus, community, and educational resources. The teacher education student will have the opportunity to grow academically, pre-professionally, personally and civically through participation in an education-related service-learning experience, developing self-awareness of social and civic responsibility.

EDFL 1830 - Introduction to Academic Literacy (3)

Application of critical thinking to develop academic literacy. Emphasizes critical reading and purposeful interaction with various text structures, genres, and other media across academic disciplines. Prerequisite(s): Placement according to University policy applies. Course restricted to freshmen and sophomores or by instructor consent.

EDFL 2100 - Introduction to the Teaching Profession (3)

An overview of the teaching profession with emphasis on instructional planning, assessment, collaboration with stakeholders, creating a productive classroom environment and understanding the social and cultural factors that influence the profession. Corequisite(s): Should be taken concurrently with FLDX 2150 during the sophomore year. This is a professional education course.

EDFL 2240 - Educational Psychology GE (3)

Furnishes the prospective teacher with the psychological concepts, principles, theories, research findings, and techniques relevant to guiding the educative process. It is strongly recommended that BSE and BME majors take this course concurrently with EDFL 2100 and FLDX 2150 during the sophomore year. This is a professional education course.

EDFL 2250 - Introduction to English Language Learners and Culturally Responsive Pedagogy (2)

Candidates are introduced to English Language Learners and examine ways to assess first language competencies; identify and apply the six developmental levels of second language acquisition; technologies and resources for engaging and supporting achievement across academic content areas, and instructional and assessment strategies for bridging ELL progress. Paralinguistics, scaffolding, semiotics and other basic linguistic skills are explored. In addition, candidates examine the philosophical and conceptual frames for professional stance in terms of racial identity; socioeconomic status; sexual orientation; gender; ethnic and religious considerations and approaches and resources for respectful interactions with students and families that celebrate, value, and enhance success in the classroom community and culture. This is a professional education course.

EDFL 3210 - Methods of Reading Instruction (3)

Fundamental concepts, skills, attitudes and methods of developing, promoting and managing reading instruction. The course includes tutoring and teacher-aide field experiences outside of class hours. Prerequisite(s): cumulative GPA of 2.50; EDFL 2100 and FLDX 2150 and EDFL 2240. This is a professional education course.

EDFL 3215 - Teaching Reading in Content Fields (3)

An examination of reading comprehension strategies, study skills, concept development, and critical thinking, especially with regard to the reading demands of content subjects and the needs of typical and atypical learners. Prerequisite(s): EDFL 3210. This is a professional education course.

EDFL 3230 - Introduction to Language, Literacy and Literature in the Middle Level Classroom, Block One (4)

An introduction to instructional practices appropriate for middle level content area teachers, implementing culturally responsive reading and writing programs in the classroom. Topics include teaching reading

provisions, young adult literature, writing, speaking and listening; unit planning and evaluation. Field experience in a middle school is required. Prerequisite(s): EDFL 2100, EDFL 2240 and FLDX 2150. This is a professional education course.

EDFL 3240 - Application of Content Area Literacy for Middle Level Learners, Block Two (4)

Prepares middle level teachers to address language, literacy and literature within content area instruction, focusing on promoting basic and higher-order literacy across the disciplines. Field experience in a middle school is required. Prerequisite(s): EDFL 2100, EDFL 2240, EDFL 3230 and FLDX 2150. This course can be taken concurrently with MLED 4135 and EDFL 4230. This is a professional education course.

EDFL 3410 - Children's Literature (3)

Familiarity with various types of literature for children, principles for selecting excellent children's books, and methods of presentation for integration of children's literature into the early childhood, elementary and special education curriculum. The course includes resources and strategies for addressing different learning needs and culturally diverse populations. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100 and FLDX 2150. This is a professional education course.

EDFL 4000 - Special Projects in Education (1-6)

Individual or group study of problems in special areas of interest. *May be repeated for a maximum of 6 semester hours.*

EDFL 4074 - Methods of Teaching Middle and Secondary School Social Studies (3)

Prepares students with middle and secondary school instructional strategies, student activities, and assessments to plan and implement in the social studies classroom, especially during observation and student teaching. This course is taken by middle school and alternative certification students who are pursuing middle or secondary school certification. Methods is taken prior to the student teaching semester unless teaching with a provisional license or a Temporary Authorization Certificate (TAC). This is a professional education course.

EDFL 4105 - Foundations of Teaching and Learning (3)

An analysis of the historical and theoretical foundations of education including philosophical, social and cultural influences along with ethical and legal issues. Emphases on critical thinking and problem solving surrounding curriculum planning, instructional strategies, and assessment. This course is co-listed with EDFL 5105. Prerequisite(s): Department consent required.

EDFL 4150 - Methods for Teaching ESOL (3)

This course explores different approaches, methods, techniques and strategies for teaching English to Speakers of Other Languages (ESOL). Candidates are introduced to effective classroom practices that address the needs of culturally and linguistically diverse English learners in all contexts and settings. This course is co-listed with EDFL 5150. Prerequisite(s): Advisor consent. Fall.

EDFL 4210 - Introduction to Content Area Literacy (2)

Provides an introduction to content area literacy, or the reading, writing, and critical thinking in and across the various disciplines for secondary and K-12 certification areas, along with instructional interventions for students with reading deficits. This course is co-listed with EDFL 5211. Prerequisite(s): EDFL 2100 and FLDX 2150 and EDFL 2240. This is a professional education course.

EDFL 4212 - Literacy in the Disciplines I (2)

Designed to build on and advance the knowledge-base of EDFL 4210 including focus on discipline-specific applications of content area literacy unique to differing secondary subjects, for all students, including second language learners. This course is co-listed with EDFL 5212. Prerequisite(s): EDFL 2100 EDFL 2240, FLDX 2150; EDFL 4210 or concurrently. This is a professional education course.

EDFL 4220 - Analysis and Correction of Reading Disabilities (2)

A focus on assessment of students' reading abilities and selecting appropriate teaching methods and materials to meet individual needs in reading instruction. The course includes a practicum, or field experience component, which permits application of learning and instructional decision-making. Prerequisite(s): Admission to Teacher Education Program; EDFL 3215 or EDFL 3230 or EDFL 4210. Corequisite(s): EDFL 4250. This is a professional education course.

EDFL 4230 - Response to Intervention for Middle School English Language Arts: Block Three (4)

Prepares pre-service English Language Arts teachers to meet the needs of middle school readers and writers at all levels, including Tiers 2 & 3 of Response to Intervention (RTI). The course focuses on assessments that drive instruction and appropriate methods, materials and strategies for the improvement of reading and writing. A middle school field component includes application of learning and instructional decision-making. Prerequisite(s): EDFL 2100, EDFL 2240, EDFL 3230 and FLDX 2150. This course is also designed to be taken concurrently with EDFL 3240 and MLED 4135. This is a professional education course.

EDFL 4235 - Methods of Teaching Middle Level English Language Arts (3)

A study of the purposes and methods of teaching language arts in the middle grades, with specific focus on culturally responsive teaching as it relates to adolescents. Topics include research-based approaches to teaching reading, writing, listening and speaking; literature-based units; enhancing access to non-fiction; the writing process; philosophies and theories related to the teaching and learning of English Language Arts; resources; national and state standards for ELA. Prerequisite(s): Admission to Teacher Education; EDFL 2100, FLDX 2150, EDFL 2240. This course may be taken concurrently with EDFL 3230 or EDFL 3240 or EDFL 4240. This is a professional education course.

EDFL 4240 - Integrated English Language Arts Curriculum & Assessment for Middle Level Learners: Block Four (4)

Theory and research models for culturally responsive English Language Arts at the middle level are connected to the development of Common Academic Standards (CAS) and initial teaching and assessment in the classroom with a required middle school field component. Candidates develop, implement, assess and reflect upon reading, writing, speaking, listening, representing and the use of technology to enhance literacy for on-track and at-risk middle school learners. Prerequisite(s): EDFL 2100, EDFL 2240, EDFL 3230, EDFL 3240 and FLDX 2150. This is a professional education course.

EDFL 4250 - Practicum in Reading (1)

A supervised field experience in the assessment of reading, analysis of reading difficulties, and educational decision-making in planning and teaching appropriate lessons. Prerequisite(s): Admission to Teacher Education Program, EDFL 3215 or EDFL 3230 or EDFL 4210. Corequisite(s): EDFL 4220. This is a professional education course.

EDFL 4300 - Educational Assessment and Evaluation (2)

Instruction in the design, selection, and implementation of educational assessments, the generation and management of student data, and the interpretation and use of data to make instructional decisions. Prerequisite(s): Admission to Teacher Education Program.

EDFL 4460 - K-12 Curriculum for ELL (3)

This course offers an introduction to elementary through high school English Language Teaching (ELT) and learning. Students will design and develop curricular materials including lesson plans and teaching materials to be used with English Language Learners (ELL) of all english proficiency levels. Students will experiment with different theories of world language learning methods, assessment, and the use of technology in the English language classroom. Not available to those with credit in EDFL 5460. Prerequisite(s): Advisor consent. Spring.

EDFL 4530 - Sociolinguistics (3)

This course will provide students an introduction to the basic concepts, scope, and methodology of the science of sociolinguistics in its historical and

descriptive aspects, including topics and issues in current sociolinguistic and applied linguistics studies. Not available to those with credit in EDFL 5530. Prerequisite(s): Advisor consent. Fall.

EDFL 4535 - Assessment of English Language Learners in K-12 (3)

This course explores assessment of English Language Learners (ELLs) in K-12 schools in the United States. Candidates are introduced to the core concepts and terminology concerning assessment, different forms of assessment, assessment procedures for identifying and placing ELLs in English Language Development (ELD) programs and exiting them from these programs, and the concept of fair, effective and appropriate language and content assessments for ELLs in K-12. This course is co-listed with EDFL 5535. Prerequisite(s): Consent of advisor. Spring.

EDFL 4960 - K-12 Clinical Field Experience with ELL (3)

Students will develop proficiency in the application of instructional strategies designed to support the needs of ELL in a K-12 classroom. Students will complete a minimum of 90 hours of supervised ELL instruction in an approved K-12 educational setting. Not available to those with credit in EDFL 5960. Prerequisite(s): Advisor consent. Spring.

EDFL 4970 - Secondary Teaching and Behavioral Management (2)

An analysis of the teaching/learning process with emphasis on instructional planning, component teaching skills and adolescent behavior management. This course should be taken no earlier than one semester prior to student teaching. Prerequisite(s): Admission to Teacher Education Program. Corequisite(s): FLDX 4970. This is a professional education course.

EDFL 4971 - K-12 Content Area Literacy (1)

Designed to build on and apply the knowledge-base of EDFL 4210 for teachers receiving certification in K-12 subject areas by focusing on discipline-specific theory-into-practice of content area literacy. The student work in this course, under unified learning objectives, becomes individualized based on the students' certification areas. This course is co-listed with EDFL 5971. Prerequisite(s): EDFL 2100, EDFL 2240, FLDX 2150; EDFL 4210 or concurrently. This is a professional education course.

EDFL 4972 - Literacy in the Disciplines II (2)

Designed to build on and apply the knowledge-base of EDFL 4210 and EDFL 4212, by focusing on discipline-specific theory-into-practice of content area literacy. The student work in this course, under unified learning objectives, becomes individualized based on the students' certification areas. This course is co-listed with EDFL 5972. Prerequisite(s): EDFL 2100, EDFL 2240, FLDX 2150; EDFL 4210 and EDFL 4212 or concurrently. This is a professional education course.

EDFL 4973 - Classroom Management in Content Areas (1)

Provides information to help students develop proactive strategies to manage the classroom environment and student behavior in their specific content area. Emphasis is placed on the students' development of a personal and unique classroom management plan. National & international standards and best teaching practices form the basis as stated by the Interstate New Teacher Assessment and Support Consortium (INTASC). This is a professional education course.

EDFL 4974 - Content Specific Assessment (1)

Instruction in the design and use of content specific formative and summative assessment strategies to promote student learning and facilitate instructional decision making. Prerequisite(s): Admission to Teacher Education Program. This is a professional education course.

EET 2300 - Calculus for Electronics Engineering Technology (3)

Methods of integration, partial derivatives, double integrals, derivatives and integrals in polar coordinates; empirical curve fitting, power series expansions, first and second-order differential equations; and use of software. Prerequisite(s): TECH 2040.

EET 2320 - Advanced Digital Circuitry (3)

Design of sequential networks, iterative networks, sequential networks with MSI integrated circuits, sequential networks using PLDs, state machines, asynchronous sequential networks, use of software for design analysis. Prerequisite(s): ENGT 1050.

EET 2330 - Transform Analysis (3)

Waveform analysis, Laplace transforms and their application to circuit analysis; Fourier analysis, use of z-transforms in discrete-time systems, and analysis software. Prerequisite(s): TECH 2040 or MATH 1131; and ENGT 2048.

EET 3034 - Electronic Instruments and Measurements (4: 3 lecture, 1 lab)

Design, operation and calibration of a variety of test instruments. Emphasis will be upon measurement procedures not normally practiced in introductory electronics courses. Prerequisite(s): ENGT 1050 or ENGT 2048 or concurrently. An additional fee is associated with this course.

EET 3048 - Control of Electrical Machinery (4: 3 lecture, 1 lab)

Analysis and application of electrical and electronic controls for industrial equipment. Programmable Logic Controllers are emphasized as well as techniques in engineering design. Prerequisite(s): ENGT 1011 or ENGT 1027 or consent of instructor. An additional fee is associated with this course.

EET 3310 - Microprocessor Systems Design (3)

Microprocessor/microcontroller internal architectures and timing; single and multiprocessor bus structures; memory subsystem design, designing polled I/O hardware/firmware, interrupt driven I/O hardware/firmware design, DMA, design of multiprocessor systems, segmentation and memory management, bit-sliced architectures, and use of manufacturer data sheets and application notes. Prerequisite(s): TECH 2040 and ENGT 2060.

EET 3320 - Introduction to Data Communications (3)

Fundamentals of data transmission, data encoding, multiplexing techniques, circuit and packet switching; local area networking, ISDN, frame relay, ATM, local area networking, and protocol analysis. Prerequisite(s): ENGT 2060, EET 2330 or concurrently.

EET 3330 - Introduction to Communication Systems (3)

Signal spectra, noise, AM transmitters, AM superheterodyne receivers, sideband systems, frequency modulation, phase modulation, phase-locked loops, FM transceivers, transmission lines, waveguides, radiowave propagation, antennas, and use of CAE software. Prerequisite(s): EET 2330 and EET 3310.

EET 3340 - Control Systems Design (3)

Introduction to analog control systems analysis and design including control system components, models of physical systems, state-variable models, system responses, control system characteristics, stability analysis, and use of CAE software. Prerequisite(s): ET 2058, EET 2300 or concurrently, and EET 2330.

EET 4300 - Special Projects in Electronics Engineering Technology (1-3)

Investigation of contemporary problems and issues in electronics engineering technology by selected individuals or groups. *May be repeated for a maximum of 6 semester hours.*

EET 4320 - Advanced Control Systems Design (3)

Root-locus analysis and design; frequency response, modern control design, discrete-time systems, sampled-data systems, analysis and design of digital control systems; an introduction to nonlinear system analysis, and use of CAE software for the design, analysis, and simulation of control systems. Prerequisite(s): EET 3310 and EET 3340.

EET 4330 - Digital Signal Processing Systems Design (3)

An introduction to the engineering fundamentals of digital signal processing. Emphasis is placed on the

design, implementation, and testing of finite impulse response filters, infinite impulse response filters, adaptive digital filters, and sampling rate converter-decimators using DSP software design packages. Prerequisite(s): ENGT 2065, EET 2320, EET 2330, and EET 3310.

ET 1020 - General Electronics (3)

A general overview of several areas of electronics including the study of electronic measurements, active and passive devices, receiver and transmitter theory, basic digital theory, and electronic controls. Prerequisite(s): Not open to electronics majors or minors. An additional fee is associated with this course.

ET 1026 - DC Circuit Analysis (4: 3 lecture, 1 lab)

Analysis and application of D.C. principles to passive networks. Laboratory experience in the use of basic test instruments. Prerequisite(s): MATH 1111 or taken concurrently or MATH 1111R or taken concurrently. An additional fee is associated with this course.

ET 2058 - Operational Amplifiers-Theory and Applications (4: 3 lecture, 1 lab)

A study of integrated circuit operational amplifiers, their characteristics and a wide range of applications. Construction and testing of numerous circuits. Prerequisite(s): ENGT 2048. An additional fee is associated with this course.

ET 3014 - Analog-Digital Circuitry (4: 3 lecture, 1 lab)

Counters, shift registers, monostable multivibrators, memories, A/D and D/A converters, phase-locked loops, digital simulation software, and troubleshooting digital circuits using current industry standard techniques. Prerequisite(s): ENGT 1050. An additional fee is associated with this course.

ET 3022 - AC and DC Machines (4: 3 lecture, 1 lab)

Basic principles of alternating and direct current motors and generators including construction, theory of operation, industrial uses and maintenance considerations. Prerequisite(s): ENGT 3017. An additional fee is associated with this course.

ET 3038 - Audio Systems (4: 3 lecture, 1 lab)

Principles of sound and acoustics: audio amplifiers, microphones, speakers, mixers, and equalizers; magnetic tape and disc recording; audio measurement techniques. Prerequisite(s): ENGT 2048. An additional fee is associated with this course.

ET 3041 - Communication Systems (3)

Provides a study of receiver and transmitter circuits and systems. Modulation methods, signal propagation, and antenna design. In class practical laboratory exercises will include alignment, measurement, and troubleshooting techniques. Additionally students will be introduced to digital signal processing and microwave technology. Prerequisite(s): ENGT 2048 or concurrently. An additional fee is associated with this course.

ET 4014 - Advanced Technical Problems in Electronics (1-4)

Individual/group work on recent developments and advanced technical concepts. Experimentation and technical exploration of content not available through formal course offerings. *May be repeated for a maximum of 8 semester hours.* An additional fee is associated with this course.

ET 4031 - Introduction to Process Control (4: 3 lecture, 1 lab)

Implementation, evaluation, tuning and troubleshooting of process control systems. Selection of sensing devices and final control elements. Emphasis on laboratory activities. Application of microprocessor-based systems including programmable controllers. Prerequisite(s): ENGT 3017. An additional fee is associated with this course.

ET 4044 - Video Systems (4: 3 lecture, 1 lab)

Television cameras and the composite video signal. VHF, UHF, cable, and satellite TV distribution systems. Television receiver and monitor circuitry and troubleshooting techniques. Prerequisite(s): ENGT 2048. An additional fee is associated with this course.

ET 4048 - Advanced Communication Systems (4: 3 lecture, 1 lab)

Mobile radio repeater systems and signaling modes; spread spectrum communications; commercial broadcast installations; microwave signal sources; amplifiers; waveguides and cavities; antennas and radar systems. Prerequisite(s): ET 3041. An additional fee is associated with this course.

ECEL 1400 - University and Teacher Education Foundations I (1)

This course is designed to engage the first-year teacher education student in gaining a sense of belonging through interacting with campus, community, and educational resources; developing self-awareness of social and civic responsibility; encouraging habits of life-long learning and critical thinking. Fall.

ECEL 1500 - University and Teacher Education Foundations II (1)

This course is designed to give the first-year teacher education student a sense of belonging through interacting with campus, community, and educational resources. The teacher education student will have the opportunity to grow academically, pre-professionally, personally and civically through participation in an education-related service-learning experience, developing self-awareness of social and civic responsibility. Spring.

ECEL 2110 - Diversity and Social Justice GE (3)

Provides an analysis of social justice with an emphasis on cultural interaction to better understand human diversity issues, diverse perspectives, one another, and one's own sense of self.

ECEL 2510 - Concepts in Elementary Social Studies I (2)

The purpose of this course is to provide pre-service teachers primarily with content related to teaching social studies in the elementary grades. Teaching skills, attitudes, evaluative devices and assessment related to early history and geography education competencies for the elementary learners will also be introduced.

ECEL 2520 - Concepts in Elementary Social Studies II (2)

The purpose of this course is to provide pre-service teachers primarily with content related to teaching social studies in the elementary grades. Teaching skills, attitudes, evaluative devices and assessment related to early history and geography education competencies for the elementary learners will also be introduced.

ECEL 2610 - Life & Earth Science for Teachers (3)

An inquiry driven course in life sciences (biology and applied earth/space sciences) consistent with national, state, and local standards designed for teacher candidates and content standards for elementary grades. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100 and FLDX 2150 or concurrently; general education science with lab.

ECEL 2620 - Physical Science and Engineering Design for Teachers (3)

An inquiry driven course in physical science and applied engineering design consistent with national, state and local standards designed for teacher candidates and content standards for elementary grades. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100, and FLDX 2150 or concurrently; general education science with lab.

ECEL 2830 - Early Childhood Principles and Observation (3)

Provides students a critical understanding concerning the application of educational principles in order to make professional decisions about young children (birth-8). Requires a minimum of 30 hours of practical experience.

ECEL 2850 - Integration of Arts & Movement in Early Childhood and Elementary Classrooms (3)

Designed to extend the knowledge base of teacher candidates receiving certification in birth-6th grade by

focusing on integrating the arts (art, music, drama), movement, and physical education into content specific instruction. Students will develop the knowledge, skills, and strategies needed to incorporate creative expression of art, drama, music and movement into the early childhood/elementary classroom integrated curriculum. Prerequisite(s): EDFL 2100 and EDFL 2240.

ECEL 2900 - Technology in Education Seminar I (1)

Will provide pre-service teachers introduction to, demonstration of, and practice with technology used in education in a workshop format. Topics change to reflect current instructional technology practices.

ECEL 2901 - Technology in Education Seminar II (1)

Will provide pre-service teachers introduction to, demonstration of, and practice with technology used in education in a workshop format. Topics change to reflect current instructional technology practices in schools and ethical use of technology.

ECEL 3100 - Early Childhood Assessment and Screening (2)

Part of the integrated content methods block for early childhood. Clinical Program Block I for early childhood education must be taken with no exceptions or substitutions. An integrative approach to understanding the development of and teaching the early childhood learner (preK-K) which includes a focus on the interdependence of language and literacy development; methods and concepts in the content areas of communication arts, mathematics, social studies/economics, and science education; and early childhood assessment and screening. The teacher candidate will learn methods of assessment, observation, enrichment and intervention while working in a preschool or kindergarten environment. Competencies related to teaching strategies, content, technology, differentiation, skills, attitudes, evaluative devices, and assessments will be modeled and practiced in the corequisite practicum experience. Prerequisite(s): Application to Clinical Pathway, completion of Clinical Candidate Expectations Contract, 2.75 cumulative GPA, 3.00 major GPA, and current and clear background check.

ECEL 3150 - Early Childhood Practicum (2)

Part of the integrated content methods block for early childhood. Competencies related to teaching strategies, content, technology, differentiation, skills, attitudes, evaluative devices, and assessments will be practiced in a preK-K field placement. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100, FLDX 2150, and departmental consent. Corequisite(s): ECEL 3830 and ECEL 3850. This is a professional education course.

ECEL 3151 - Young Learner Practicum (Grades 1-3) (2)

Part of the integrated content methods block for the young learner (grades 1-3). Competencies related to teaching strategies, content, technology, differentiation, skills, attitudes, evaluative devices, and assessments will be practiced in a Grades 1-3 field placement. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100, FLDX 2150, and departmental consent. Corequisite(s): ECEL 3310, ECEL 3510, ECEL 3610, and ECEL 3810. This is a professional education course.

ECEL 3152 - Intermediate Learner Practicum (Grades 4-6) (2)

Part of the integrated content methods block for the intermediate learner (grades 4-6). Competencies related to teaching strategies, content, technology, differentiation, skills, attitudes, evaluative devices, and assessments will be practiced in a Grades 4-6 field placement. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100, FLDX 2150, and departmental consent. Corequisite(s): ECEL 3320, ECEL 3520, ECEL 3620, and ECEL 3820. This is a professional education course.

ECEL 3220 - The Teaching of Language Arts (3)

An integrative approach to teaching the communication arts of reading, writing, listening, and speaking in the elementary curriculum. Prerequisite(s): Cumulative GPA of 2.50; EDFL 2100 and EDFL 2240 and FLDX 2150.

ECEL 3225 - Acquisition of Language and Literacy (3)

Emphasizes the theories and sequence of normal language acquisition and skills, as well as attitudes and methods of developing, promoting and managing emergent literacy instruction. Candidates should enroll in this course concurrently with the first clinical block. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100 and FLDX 2150. This is a professional education course.

ECEL 3230 - Teaching English Language Arts in the Elementary Classroom (3)

An integrative approach to teaching the communication arts of reading, writing, listening, and speaking in the elementary curriculum. Prerequisite(s): Cumulative GPA of 2.75;ECEL 3225.

ECEL 3300 - Literacy and Communication Arts for Early Childhood (1)

An integrative approach to understanding the development of and teaching the early childhood learner (preK-K) which includes a focus on the interdependence of language and literacy development; methods and concepts in the content areas of communication arts, mathematics, social studies/economics, and science education; and early childhood assessment and screening. The teacher candidate will learn methods of assessment, observation, enrichment and intervention while working in a preschool or kindergarten environment. Competencies related to teaching strategies, content, technology, differentiation, skills, attitudes, evaluative devices, and assessments will be modeled and practiced in the corequisite practicum experience. Prerequisite(s): Application to Clinical Pathway, completion of Clinical Candidate Expectations Contract, 2.75 cumulative GPA, 3.00 major GPA, and current and clear background check. Corequisite(s): ECEL 3100, ECEL 3150, ECEL 3400, ECEL 3500, ECEL 3600 and ECEL 3800.

ECEL 3310 - Literacy and Communication Arts for the Young Learner (2)

Part of the integrated content methods block for the young learner (grades 1-3). Candidates will develop an understanding of the skills of reading, writing, speaking, listening, viewing and visually representing and the means to integrate these skills across the curriculum in grades 1 - 3. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100, FLDX 2150, and departmental consent. Corequisite(s): ECEL 3151, ECEL 3510, ECEL 3610 and ECEL 3810.

ECEL 3320 - Literacy and Communication Arts for the Intermediate Learner (2)

Part of the integrated content methods block for the intermediate learner (grades 4-6). Candidates will develop an understanding of the skills of reading, writing, speaking, listening, viewing and visually representing and the means to integrate these skills across the curriculum in grades 4 - 6. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100, FLDX 2150, and departmental consent. Corequisite(s): ECEL 3152, ECEL 3520, ECEL 3620 and ECEL 3820.

ECEL 3325 - Language Acquisition and Literacy Development (4)

This course emphasizes the theories and sequence of normal language acquisition and skills, as well as attitudes and methods of developing, promoting and managing emergent literacy instruction. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100, and FLDX 2150. Corequisite(s): Candidates should enroll in this course concurrently with the first clinical block.

ECEL 3400 - Language Development (2)

An integrative approach to understanding the development of and teaching the early childhood learner (preK-K) which includes a focus on the interdependence of language and literacy development; methods and concepts in the content areas of communication arts, mathematics, social studies/economics, and science education; and early childhood assessment and screening. The teacher candidate will learn methods of assessment, observation, enrichment and intervention while working in a preschool or kindergarten environment. Competencies related to teaching strategies, content, technology, differentiation, skills, attitudes, evaluative devices, and assessments will be modeled and practiced in the corequisite practicum experience. Prerequisite(s): Application to Clinical Pathway, completion of Clinical Candidate Expectations Contract, 2.75 cumulative GPA, 3.00 major GPA, and current and clear background check. Corequisite(s): ECEL 3100, ECEL 3150, ECEL 3300, ECEL 3500, ECEL 3600 and ECEL 3800.

ECEL 3430 - Strategies for Teaching Elementary Social Studies & Science (2)

The purpose of this course is to provide pre-service teachers with teaching methods, content, skills, attitudes, evaluative devices and assessment related to social studies and science education competencies. Prerequisite(s): EDFL 2100, EDFL 2240, POLS 1510, and HIST 1350 or HIST 1351.

ECEL 3468 - Community, School and Family Connections (3)

Focuses on the interactions among community, school and family systems relative to existing and emerging paradigms. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100, FLDX 2150.

ECEL 3500 - Social Studies for Early Childhood (1)

An integrative approach to understanding the development of and teaching the early childhood learner (preK-K) which includes a focus on the interdependence of language and literacy development; methods and concepts in the content areas of communication arts, mathematics, social studies/economics, and science education; and early childhood assessment and screening. The teacher candidate will learn methods of assessment, observation, enrichment and intervention while working in a preschool or kindergarten environment. Competencies related to teaching strategies, content, technology, differentiation, skills, attitudes, evaluative devices, and assessments will be modeled and practiced in the corequisite practicum experience. Prerequisite(s): application to Clinical Pathway, completion of Clinical Candidate Expectations Contract, 2.75 cumulative GPA, 3.00 major GPA, and current and clear background check. Corequisite(s): ECEL 3100, ECEL 3150, ECEL 3300, ECEL 3400, ECEL 3600 and ECEL 3800.

ECEL 3510 - Social Studies and Economics for the Young Learner (1)

Part of the integrated content methods block for the young learner (grades 1-3). Candidates will develop an understanding of the social studies and economics concepts taught in grades 1-3 and the means to integrate these skills across the curriculum. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100, FLDX 2150, and departmental consent. Corequisite(s): ECEL 3151, ECEL 3310, ECEL 3610 and ECEL 3810.

ECEL 3520 - Social Studies and Economics for the Intermediate Learner (1)

Part of the integrated content methods block for the young learner (grades 4-6). Candidates will develop an understanding of the social studies and economics concepts taught in grades 4-6 and the means to integrate these skills across the curriculum. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100, FLDX 2150, and departmental consent. Corequisite(s): ECEL 3152, ECEL 3320, ECEL 3620 and ECEL 3820.

ECEL 3600 - Science for Early Childhood (1)

An integrative approach to understanding the development of and teaching the early childhood learner (preK-3rd grade) which includes a focus on science education. The teacher candidate will learn concepts, strategies, and integrated activities supporting learning in the early childhood classroom (preK-3rd grade) through scientific discovery. Competencies related to teaching strategies, content, technology, differentiation, skills, attitudes, evaluative devices, and assessments will be modeled and practiced during the experience.

ECEL 3610 - Science for the Young Learner (1)

Part of the integrated content methods block for the young learner (grades 1-3). Candidates will develop an understanding of the science concepts taught in grades 1-3 and the means to integrate these skills across the curriculum. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100, FLDX 2150, and departmental consent. Corequisite(s): ECEL 3151, ECEL 3310, ECEL 3510 and ECEL 3810.

ECEL 3620 - Science for the Intermediate Learner (1)

Part of the integrated content methods block for the intermediate learner (grades 4-6). Candidates will develop an understanding of the science concepts taught in grades 4-6 and the means to integrate these skills across the curriculum. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100, FLDX 2150, and

departmental consent. Corequisite(s): ECEL 3152, ECEL 3320, ECEL 3520 and ECEL 3820.

ECEL 3800 - Math for Early Childhood (1)

An integrative approach to understanding the development of and teaching the early childhood learner (preK-3rd grade) which includes a focus on mathematical education within the context of play. The teacher candidate will learn concepts, strategies, and integrated activities supporting learning in the early childhood classroom (preK-3rd grade) through mathematical discovery. Competencies related to teaching strategies, content, technology, differentiation, skills, attitudes, evaluative devices, and assessments will be modeled and practiced during the experience. Corequisite(s): ECEL 3600.

ECEL 3810 - Mathematics for the Young Learner (2)

Part of the integrated content methods block for the young learner. Course examines the teaching and learning of mathematics in grades 1-3.

ECEL 3820 - Mathematics for the Intermediate Learner (2)

Part of the integrated content methods block for the intermediate learner. Course examines the teaching and learning of mathematics in grades 4-6.

ECEL 3830 - Early Childhood Curriculum (3)

Part of the integrated content methods block for the early learner (PreK-K). This course introduces students to curriculum, instruction and assessment in Early Childhood Education. The course provides candidates with knowledge and experience in developing and implementing integrated, developmentally and culturally appropriate curriculum for early childhood (birth-age 8). Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100, FLDX 2150, and departmental consent. Corequisite(s): ECEL 3150 and ECEL 3850.

ECEL 3850 - Development and Learning Through Play (3)

Part of the integrated content methods block for the early learner (PreK- K). Provides theoretical and empirical perspectives connecting play to young children's learning and development. Develops knowledge and skills to implement play-based curriculum in diverse settings. Prerequisite(s): EDFL 2100, EDFL 2240, EDSP 2100, FLDX 2150, and departmental consent. Corequisite(s): ECEL 3150 and ECEL 3830.

ECEL 3851 - Practicum in Early Childhood (1)

Student observation and participation with preschool children. Students work with 2, 3 and 4-year old children. Prerequisite(s): HDFS 1220 or PSY 2220 or PSY 3220; and ECEL 2830.

ECEL 4000 - Special Projects in Education (1-6)

Individual or group study of problems in special areas of interest. *May be repeated for a maximum of 6 semester hours.*

ECEL 4120 - Curriculum Design and Assessment (3)

This course prepares the teacher candidate to use formal and informal assessment strategies to evaluate student learning and to design units of instruction that meet individual needs of children. This course is co-listed with ECEL 5120. Prerequisite(s): Departmental consent. Corequisite(s): ECEL 4140, ECEL 4400 and MATH 3800.

ECEL 4140 - Communication Arts Integration (4)

This course prepares the teacher candidate to apply a balanced communication arts program within a school setting. An integrative approach to teaching the communication arts will be emphasized as relevant to early and elementary literacy programs. Clinical Program Senior Block I must be taken without exceptions or substitutions; 280 field hours across 2 different grade levels in a designated clinical site are required as part of Senior 1. This course is co-listed with ECEL 5140. Prerequisite(s): Departmental consent.

ECEL 4150 - Student Teaching Professional Seminar (2)

Culminating experience synthesizing theory and practice taken with student teaching for early childhood, elementary, and double majors in elementary education. Prerequisite(s): Admission to Teacher Education Program; cumulative GPA of 2.50; ECEL 4400. Must be taken as part of student teaching placement with FLDX 4495 or FLDX 4496 (See description of Professional Education Semester.)

ECEL 4160 - Senior Practicum for Elementary and Early Childhood Education (1)

This practicum course is part of the senior block for elementary and early childhood education majors. Competencies related to teaching strategies, content, technology, differentiation, skills, attitudes, evaluative devices, and assessments will be practiced in the classroom placements during the first semester as a senior. Prerequisite(s): Departmental consent. This is a professional education course.

ECEL 4400 - Classroom Management and Interactions (3)

This course seeks to provide the preservice teacher with authentic and applicable classroom management knowledge and strategies that enhance and enrich teaching and learning. This course is co-listed with ECEL 5400. Prerequisite(s): Departmental consent. Corequisite(s): ECEL 4120 and MATH 3800. This is a professional education course.

ECEL 4800 - Curriculum Design and Assessment in Mathematics (2)

This course prepares the teacher candidate to use formal and informal assessment strategies to evaluate students' learning of mathematics and to design units of mathematical instruction that meet individual needs of children. Prerequisite(s): Departmental consent. Corequisite(s): ECEL 4120, ECEL 4140, and ECEL 4400.

ECEL 4850 - Mathematics Curriculum, Assessment, and Instruction (3)

This course prepares the teacher candidate to plan instruction of mathematics, use formal and informal assessment strategies to evaluate students' learning of mathematics, and to design units that meet individual needs of children. This course is co-listed with ECEL 5890. Prerequisite(s): Departmental consent.

ENGT 1000 - Principles of Engineering (3)

This introductory course explores the wide variety of careers in engineering and technology and covers various technology systems and manufacturing processes. An additional fee is associated with this course.

ENGT 1010 - Materials for Manufacturing and Construction (3)

Construction materials, including sources, characteristics, uses, and standard sizes and packaging, with relative values of different grades. An additional fee is associated with this course.

ENGT 1011 - Applied Electricity (4: 3 lecture, 1 lab)

Provides basic theory together with appropriate lab experiences for introductory technical training in electrical principles including basic circuits, Ohm's Law, A.C. and D.C. theory, as well as generation and application of electrical energy. An additional fee is associated with this course.

ENGT 1012 - Global Production Technology (2)

Study of production technology along with the problems, successes and challenges of the application of technology globally. An additional fee is associated with this course.

ENGT 1027 - AC Circuit Analysis (3)

Designed to provide an introduction to the fundamental laws of the sine-wave alternating current source. Applications of AC principles with regard to resistive, reactive, and complex impedance circuits will be analyzed. Phasor analysis of series, parallel, and series-parallel impedances, resonance, and filter circuits will be analyzed. Electronic Computer Aided Software will be used to analyze selected passive component circuits. Prerequisite(s): ENGT 1011. An additional fee is associated with this course.

ENGT 1050 - Digital Principles and Applications (3: 2 lecture, 1 lab)

Binary numbers, logic gates, Boolean algebra, parity generation and detection, arithmetic circuits, flip-flops and latches, and troubleshooting digital circuits using current industry standard techniques. Prerequisite(s): ENGT 1011. An additional fee is associated with this course.

ENGT 1120 - Welding (3: 2 lecture, 1 lab)

Study and practice of four basic welding processes: oxyacetylene, metallic arc, MIG and TIG. An additional fee is associated with this course.

ENGT 1400 - Fundamentals of Engineering Design (3)

This course introduces the graphic language of technical drawings and communications used to represent mental images. Students will practice visualization, interpret and use engineering drawings, and model physical objects using 3D and 2D methods. An additional fee is associated with this course.

ENGT 1500 - Orientation to Engineering Technology (3)

An introduction to Engineering Technology as an academic endeavor including the consideration of sub disciplines, program requirements, and professional opportunities. In addition, this course will provide students a chance to learn about current events in the engineering field through the use of guest speakers, open discussions, informative field trips, and career development opportunities. An additional fee is associated with this course.

ENGT 1501 - Seminar in Engineering Technology (1)

Forum to provide students an opportunity to learn about current events in the engineering field through the use of guest speakers, open discussions, and informative field trips. Students should expect to share cost of field trips and professional materials. *Must be repeated for a minimum of 2 semester hours.* An additional fee is associated with this course.

ENGT 1510 - Introduction to Manufacturing Processes (3: 2 lecture, 1 lab)

An overview of the primary processes and a basic knowledge of secondary manufacturing processes which are classified as separating, casting, forming, conditioning, assembling, and finishing. An additional fee is associated with this course.

ENGT 2040 - Engineering Material Science (4: 3 lecture, 1 lab)

Study of materials and their testing for construction, engineering and manufacturing: sources, characteristics, applications, standard sizes, packaging, testing theory, inspection and testing per ASTM standards. An additional fee is associated with this course.

ENGT 2048 - Active Electronic Devices (4: 3 lecture, 1 lab)

Theory, operation, and analysis of Integrated Active Devices and Discrete Semiconductor Active Devices. Basic digital and common analog circuit configurations. Prerequisite(s): ENGT 1027 or concurrently. An additional fee is associated with this course.

ENGT 2060 - Microprocessors: Theory and Application (3: 2 lecture, 1 lab)

The fundamental concepts of microprocessors including software development and hardware design. Design of input/output interface circuits together with numerous applications to industrial controls. Prerequisite(s): ENGT 1011 or ENGT 1050 or concurrently. An additional fee is associated with this course.

ENGT 2065 - Computer Programming for Engineering Technology (3)

The purpose of this course is to provide an introduction to the programming skills and practices needed to develop high-level software. C++ language is being taught because of its extremely wide usage in industry. Students will write, compile, troubleshoot, and demonstrate a variety of homework/assignments to enhance the understanding of programming concepts. Prerequisite(s): ENGT 1050 or

concurrently. An additional fee is associated with this course.

ENGT 2500 - Applied Computer Technology (2)

Develops computer literacy through a study of microcomputers, peripherals and applications, and software. An additional fee is associated with this course.

ENGT 2515 - Applied Manufacturing Processes (3: 2 lecture, 1 lab)

The manufacturing processes used to fabricate and form engineering materials into useful products. Includes laboratory experiences using the common materials and basic processes. Prerequisite(s): ENGT 1510. An additional fee is associated with this course.

ENGT 2530 - Machine Tool Technology (3: 2 lecture, 1 lab)

An introduction to machine tools with experiences in turning, drilling, milling, grinding, and related bench work. Assigned projects. An additional fee is associated with this course.

ENGT 2600 - Lean Enterprises (3)

Exploration and applied engineering principles of lean systems for manufacturing and services. Value-added theories and processes experienced include: process mapping, just-in-time, Kanban, 5S, Kaizen, error-proofing, work optimization, productive maintenance and supply chain management. An additional fee is associated with this course.

ENGT 3001 - New and Existing Energy Technology (3)

Explores the world of conventional and sustainable energy and how it will affect society as a whole. Topics of the course include society's energy dependence, energy depletion, electricity and the utility industry, hydrocarbons as a fuel source, nuclear energy, hydropower energy, sustainable energy and energy strategies of the future. An additional fee is associated with this course.

ENGT 3017 - Programmable Logic Controllers (4: 3 lecture, 1 lab)

Analysis of selected industrial controls and components to include transducers, sensors, time delay circuits, motor controls, and thyristors. Emphasis on commercial programmable logic controller installation and programming. Practical applications of industrial electronic devices and systems and further development of troubleshooting skills. Prerequisite(s): ENGT 1011. An additional fee is associated with this course.

ENGT 3020 - Circuit Analysis and Implementation (3: 2 lecture, 1 lab)

Research, analyze, and construct a variety of circuits using state-of-the-art technologies. Students will use the internet and published materials to construct projects. Prerequisite(s): ENGT 2048 or concurrent. An additional fee is associated with this course.

ENGT 3023 - Engineering Technology Internship (1-6)

Provides practical application and experience in cooperating industry and business. Students submit written reports. Evaluation by on-job supervisor and internship coordinator. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): 20 semester hours of program offerings, minimum undergraduate GPA of 2.00, and permission of the Engineering Technology program coordinator. An additional fee is associated with this course.

ENGT 3120 - Advanced Welding Technology I (3: 2 lecture, 1 lab)

Designed to provide students with a study and practice of advanced welding and cutting processes: automated plasma arc cutting, axial spray transfer, pulse and pulse on pulse transfer, out of position GMAW and SMAW as well as GTAW of aluminum and stainless steel base metals. Prerequisite(s): ENGT 1120. An additional fee is associated with this course.

ENGT 3130 - Composite Technology I (3)

Fundamental principles of materials, basic design theory, manufacturing processes, inspection and

repair concepts. An additional fee is associated with this course.

ENGT 3200 - Energy Production and Transmission (3)

Explores how electric power is produced, transmitted and distributed. Topics of the course include: the generation of electricity (conventional and nonconventional), electric transmission systems, electric distribution systems and power quality. Prerequisite(s): ENGT 1027. An additional fee is associated with this course.

ENGT 3210 - Manufacturing in the Aerospace Industry (3)

Manufacturing activities required in order to plan, organize, schedule, control and direct manufacturing activities in the environment of an aerospace industry. An additional fee is associated with this course.

ENGT 3300 - Energy Conservation (3)

Encompasses how energy is measured, supplied, analyzed and conserved. Topics covered in this course include: the measurement of energy, environmental impacts of energy consumption, competition in the energy industry, energy audits and analysis techniques, energy monitoring, energy efficiency and low energy building design. An additional fee is associated with this course.

ENGT 3400 - Manufacturing Design (3)

A course focusing on design as it relates to manufacturing with specific emphasis on jigs and fixtures. Students will incorporate knowledge of manufacturing methods to creatively solve production requirements using 3D modeling systems. Prerequisite(s): ENGT 1400, ENGT 2040, ENGT 2530, MATH 1131, and PHYS 1101. An additional fee is associated with this course.

ENGT 3450 - Applied Mechanics of Materials for Engineering Technology (3: 2 lecture, 1 lab)

Application of the laws of material mechanics using real world problems and computer simulations. Studies will include the analysis of cables, frames, trusses, beams, machines and mechanisms. Prerequisite(s): ENGT 1400, MATH 1131, PHYS 1101 and ENGT 2040. An additional fee is associated with this course. Fall, Spring.

ENGT 3501 - Computer Programming for Manufacturing (3)

Students will study control logic, data acquisition, data storage and computer programming as they relate to manufacturing. Prerequisite(s): CTE 1210. An additional fee is associated with this course.

ENGT 3510 - Project Management for Engineering Technology (3)

Planning and controlling the manufacturing process including materials, machines, people, and suppliers. An additional fee is associated with this course.

ENGT 3520 - Engineering Economy (3)

Elements that influence the cost of manufactured products, the process of determining manufacturing costs, cost justification, value analysis and cost reduction analysis. Prerequisite(s): ECON 1010. An additional fee is associated with this course.

ENGT 3530 - Inspection and Quality Control (3)

Principles and methods of controlling the quality of manufactured products. Emphasis will be on gauging and inspection. An additional fee is associated with this course.

ENGT 3550 - Principles of Numerical Control (3)

Introduction to N/C Machining Operations. Includes laboratory work in writing and executing manual program on N/C Machine Tools. An additional fee is associated with this course.

ENGT 3562 - Computer Numerical Control (CNC) (3: 2 lecture, 1 lab)

Concepts presented and analyzed include CNC machine set-up, tooling selection, part set-up, inspection methods, programming, industrial machining centers, flexible manufacturing systems

and rapid prototyping systems. An additional fee is associated with this course.

ENGT 3600 - Applied Thermodynamics (3)

Introduction to the basic concepts of thermodynamic systems and their application in engineering situations. Dynamics of energy through the air, gas or other media as well as basic properties of gases, liquids and vapors, including adiabatic and isothermal processes, energy and energy transfer mechanisms, enthalpies/analysis of systems, first and second laws of thermodynamics and the performance characteristics of heat engines. Prerequisite(s): ENGT 1400, MATH 1131 and PHYS 1101. An additional fee is associated with this course.

ENGT 4000 - Special Projects in Engineering Technology (1-6)

Investigation of contemporary problems and issues in engineering technology by selected individuals or groups. *May be repeated for a maximum of 6 semester hours.* An additional fee is associated with this course.

ENGT 4060 - Aerospace Manufacturing Safety (3)

Safety, health and environmental issues in aerospace manufacturing with an emphasis on the management of safety programs in manufacturing industries. An additional fee is associated with this course.

ENGT 4110 - Engineering Technology Problem Solving (3)

Designed for students preparing for careers in engineering technology. Student teams will analyze manufacturing problems, propose solutions, and present recommendations. Prerequisite(s): senior standing. An additional fee is associated with this course.

ENGT 4120 - Hydrology and Drainage Design (3)

Study of basic hydraulic engineering and hydrology concepts focused on open channel flow, and culvert design. In addition this course studies the fundamental principles and applications of water distribution systems, wastewater collection systems, as well as water and wastewater treatment processes. Prerequisite(s): CMGT 2100. An additional fee is associated with this course.

ENGT 4140 - Soils and Foundation Design (3)

Basic principles of soil mechanics and foundation design and their application to civil engineering. Soils topics include the identification and classification of soils, permeability, soil strengths, drainage and frost action, compaction and stabilization, and evaluation of highway subgrades. Standard laboratory soil tests are performed to determine the physical and mechanical properties of soils. This knowledge is then applied to engineering designs such as excavation bracing, soil stabilization, geotextiles, spread footings, pile foundations, retaining walls, and earth retaining structures. Prerequisite(s): CMGT 2100. An additional fee is associated with this course.

ENGT 4150 - Concrete and Steel Design (3)

A course concentrating on design equations for both elements comprised of reinforced concrete and structural steel for the design of beams, columns, and other structural elements which meet code-prescribed limits. Prerequisite(s): CMGT 3020 An additional fee is associated with this course.

ENGT 4160 - Transportation Systems Design (3)

The principles and practices of transportation systems - highway, mass transit, rail, waterways, and air transportation are covered. Special emphasis is placed on highway planning and design, construction, and safety. Highway design principles, including environmental impact, traffic studies, location planning, horizontal and vertical alignment studies, intersections and interchanges, earthwork, drainage, and pavement design are studied. Prerequisite(s): CMGT 2020. An additional fee is associated with this course.

ENGT 4180 - Water and Wastewater Systems Design (3)

Studies the fundamental principles and applications of water distribution systems, wastewater collection systems, and water and wastewater treatment processes. Topics include current methods and

procedures employed in drinking water system demands; water distribution systems; water treatment processes; wastewater system demands; wastewater collection systems; including gravity sewers, force mains, pump stations, and permitting requirements. Prerequisite(s): ENGT 4120. An additional fee is associated with this course.

ENGT 4200 - Ethical and Legal Issues in the Energy Industry (3)

Covers the foundational economic and ethical issues related to the energy industry as well as the laws that guide and manage it. Topics covered in this course include: the economics of energy, ethics in the energy industry, energy policy, administration of energy regulations, energy decision making, and industry overviews of the major energy sources. An additional fee is associated with this course.

ENGT 4221 - Manufacturing Problem Solving (3: 2 lecture, 1 lab)

A micro-level look at issues that directly affect processes, procedures, and management within the manufacturing industry. This course is co-listed with ENGT 5221. An additional fee is associated with this course.

ENGT 4300 - Energy Markets and Structures (3)

Covers how energy markets are structured and regulated as well as the dynamics of current energy markets. In addition the course investigates how utilities make money, concepts of market restructuring, and the future of the electricity business. An additional fee is associated with this course.

ENGT 4400 - Energy Facilities Management (3)

Covers the variety of topics, issues and variables related to the control and operation of electric power systems. In this course students will learn about power system components, calculations related to the generation, distribution and loads on a power system, electromagnetic phenomena, electromechanical dynamics, and voltage and frequency stability. An additional fee is associated with this course.

ENGT 4500 - Mechanical Engineering Design (3)

This course will concentrate on the design and redesign of mechanisms and machines for a variety of purposes which will utilize the principles of kinematics and physics, as well as other related subjects. Common machine elements such as transmission elements (gears, belts, chains, brakes, clutches, etc.), screws, fasteners, springs, and cams among others will be analyzed. Designs will be tested virtually with loads using relevant software and finite element analysis. Prerequisite(s): ENGT 3400 and ENGT 3450. An additional fee is associated with this course.

ENGT 4520 - Robotics and Automation (3: 3 lecture, 0 lab)

Automated manufacturing equipment, computer integrated manufacturing systems, and the use of industrial robots. Computer programming background recommended. This course is co-listed with ENGT 5520. An additional fee is associated with this course.

ENGT 4530 - Advanced Robotics, Vision, Automation & Controls (3: 2 lecture, 1 lab)

The advanced study of automated manufacturing equipment which will include the integration of industrial robots, vision systems, automation, and control systems. Prerequisite(s): ENGT 4520. An additional fee is associated with this course. Spring.

ENGT 4550 - Simulation in Engineering Technology (3)

Collection of methods and applications to simulate the behavior of manufacturing and service systems. Emphasis on hands-on time with software utilizing case studies and lab exercises. Prerequisite(s): senior standing. An additional fee is associated with this course.

ENGT 4580 - Quality Systems Engineering (3)

The principles and practices of Total Quality Managements and the decision making tools and techniques utilized by professionals in today's successful industries. This course is co-listed with ENGT 5580. An additional fee is associated with this course.

ENGT 4590 - Computer Integrated Manufacturing (CIM) (3: 2 lecture, 1 lab)

Emphasis on product planning and engineering, production planning, control, and execution. Includes integration of computer numerical control (CNC) machines, robotics, material handling, and quality control. This course is co-listed with ENGT 5590. Prerequisite(s): ENGT 4520. An additional fee is associated with this course.

ENGT 4750 - Lean Six Sigma (3)

Exploration and applied engineering principles of Lean Six Sigma for manufacturing and services. Value-added theories and processes experienced include: process improvement, strategic planning, costs of quality, performance measures, project management, DMAIC problem solving, statistics, control charts, process capability, reliability, design of experiments (DOE), failure modes and effects analysis (FMEA), and Lean Six Sigma. Prerequisite(s): ENGT 2600. An additional fee is associated with this course.

ENGT 4950 - Seminar in Engineering Technology Management (3)

Capstone course for Engineering Technology Management majors applying and analyzing skills in teamwork, problem-solving, and evaluation of current issues through case studies. Prerequisite(s): senior standing. An additional fee is associated with this course.

ENGL 090 - Bridge to College Writing (0-2)

An abbreviated basic writing course taught by an approved UCM English faculty member, while also fostering an interest in English Literature. This course is meant to provide students additional assistance and enable them to strengthen their writing skills quickly prior to enrolling in a required general education writing and/or literature course.

ENGL 1000 - Introduction to College Writing (3)

Classroom and tutorial instruction in the process of developing paragraphs and longer essays with emphasis placed on mechanics, usage, and sentence structure. Prerequisite(s): Placement according to University policy applies. Fall, Spring.

ENGL 1020 - Composition I GE (3)

The logic and rhetoric of expository writing. Prerequisite(s): Placement according to University policy applies. ENGL 1000. Fall, Spring, Summer.

This course is equivalent to MOTR ENGL 100 Composition I in the Written Communications Knowledge Area.

ENGL 1021 - Writing Workshop (3)

A co-requisite course that focuses on providing additional support for succeeding in ENGL 1020. Provides intensive instruction in a small workshop setting that allows for further practice in writing coherent paragraphs and essays for specific audiences through close instruction on drafting, revising, and editing, and instruction in grammar, mechanics, and usage. Prerequisite(s): Placement according to University policy applies. Corequisite(s): ENGL 1020

ENGL 1030 - Composition II GE (3)

Advanced writing involving research and the construction of academic arguments. Prerequisite(s): ENGL 1020 or equivalent. Fall, Spring, Summer.

This course is equivalent to MOTR ENGL 200 Composition II in the Written Communications Knowledge Area.

ENGL 1080 - Advanced Composition GE (3)

The logic and rhetoric of expository writing taught at an advanced level, involving research. Prerequisite(s): Placement according to University policy applies. Fall, Spring, Summer.

ENGL 1180 - Spoken English as a Second Language (3)

Guided practice for non-native English speakers in comprehending and producing oral English for academic purpose. *May be repeated for a maximum of 6 semester hours.* Fall, Spring.

ENGL 1190 - Written English as a Second Language (3)

Guided practice for non-native English speakers in writing English for academic purposes. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): ENGL 1180 or consent of the English as a Second Language Committee. Fall, Spring.

ENGL 2010 - Introduction to Reading Poetry and Drama GE (3)

Introduces students to techniques of close-reading and critical writing about literature. Surveys a wide range of authors, forms, and periods. Prerequisite(s): ENGL 1020 and (ENGL 1030 or CTE 2060); or ENGL 1080 with a grade of C or better. Fall, Spring.

This course is equivalent to MOTR LITR 100 Introduction to Literature in the Humanities & Fine Arts Knowledge Area.

ENGL 2020 - Introduction to Reading Fiction GE (3)

Introduces students to techniques of close-reading and critical writing about literature. Surveys a wide range of authors, forms, and periods. Prerequisite(s): ENGL 1020 and (ENGL 1030 or CTE 2060); or ENGL 1080 with a grade of C or better. Fall, Spring.

This course is equivalent to MOTR LITR 100F Introduction to Literature in the Humanities & Fine Arts Knowledge Area.

ENGL 2050 - Creative Writing (3)

Introduces students to terminology and techniques in writing and analyzing poetry and fiction; lecture and workshop format. Fall, Spring.

ENGL 2200 - American Literature to 1865 (3)

An introduction to major American authors and works from the colonial period to the Civil War. Prerequisite(s): ENGL 1020 and (ENGL 1030 or CTE 2060); or ENGL 1080 with a grade of C or better. Fall, Spring, Summer.

This course is equivalent to MOTR LITR 101A American Literature in the Humanities & Fine Arts Knowledge Area.

ENGL 2205 - Introduction to American Literature GE (3)

An introduction to major American authors and works. Prerequisite(s): ENGL 1020 and (ENGL 1030 or CTE 2060); or ENGL 1080 with a grade of C or better. Fall, Spring, Summer.

This course is equivalent to MOTR LITR 101B American Literature in the Humanities & Fine Arts Knowledge Area.

ENGL 2210 - British Literature to 1798 (3)

An introduction to major British authors and works from 700 to 1798. Prerequisite(s): ENGL 1020 and (ENGL 1030 or CTE 2060); or ENGL 1080 with a grade of C or better. Fall, Spring, Summer.

This course is equivalent to MOTR LITR 102A British Literature I in the Humanities & Fine Arts Knowledge Area.

ENGL 2215 - Introduction to British Literature GE (3)

An introduction to major British authors and works. Prerequisite(s): ENGL 1020 and (ENGL 1030 or CTE 2060); or ENGL 1080 with a grade of C or better. Fall, Spring, Summer.

This course is equivalent to MOTR LITR 102B British Literature in the Humanities & Fine Arts Knowledge Area.

ENGL 2220 - Introduction to World Literature GE (3)

An introduction to major works of world literature. Prerequisite(s): ENGL 1020 and (ENGL 1030 or CTE 2060); or ENGL 1080 with a grade of C or better. Fall, Spring, Summer.

This course is equivalent to MOTR LITR 200 World Literature in the Humanities & Fine Arts Knowledge Area.

ENGL 2230 - Literature and Film (3)

Reading and discussion of selected novels and film scripts combined with laboratory viewing sessions. Offered as needed.

ENGL 2240 - Literature and the Arts (3)

A course relating literature to the arts of painting, sculpture, architecture, music, and the dance. Offered as needed.

ENGL 2270 - Fiction by Women Around the World (3)

Novels and short stories by women around the globe. Offered as needed.

This course is equivalent to MOTR LITR 106 Women's Literature in the Humanities & Fine Arts Knowledge Area.

ENGL 3040 - Advanced Rhetoric (3)

Practice in the devices of effective writing. Spring.

ENGL 3051 - Intermediate Poetry Writing (3)

Poetry writing at an intermediate level; written and oral analysis of students' creative work; preparation of individualized portfolio (may include research); workshops. Prerequisite(s): ENGL 2050.

ENGL 3052 - Intermediate Fiction Writing (3)

Fiction writing at the intermediate level; written and oral analysis of students' creative work; preparation of individualized portfolio; workshops. Prerequisite(s): ENGL 2050.

ENGL 3053 - Intermediate Creative Nonfiction (3)

Creative nonfiction writing at the intermediate level; written and oral analysis of students' creative work; preparation of individualized portfolio; workshops. Prerequisite(s): ENGL 2050. Fall, Spring.

ENGL 3110 - English Grammar (3)

A comparative study of English grammars with strong emphasis on traditional grammar and including structural and transformational approaches.

ENGL 3120 - History of English Language (3)

Growth and nature of the English language. Fall.

ENGL 3230 - Special Topics in Gothic Literature (3)

Designed to cover topics in the literature of horror and the supernatural of interest to English majors and non-majors. Offered as needed.

ENGL 3240 - Critical Approaches to Literature (3)

Introduces students to literary criticism and its practical application through the study of literary texts and critical essays, and through writing assignments. Fall, Spring.

ENGL 3660 - Studies in Literature and Philosophy (3)

An interdisciplinary approach to the study of literature and philosophy. Course instructors will change to fit the particular topic of the course. Offered as needed.

ENGL 3830 - Young Adult Literature and Reading Instruction (3)

Reading course intended for those who will teach high school English. This is a professional education course. Spring.

ENGL 3840 - Composition and Evaluation (3)

Techniques of writing and evaluating composition for those planning to teach. This is a professional education course. Fall.

ENGL 3990 - Special Topics in English (1-3)

Individual or group work by qualified students in areas such as creative writing, literature, or language. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): approval of school chair. Offered as needed.

ENGL 4051 - Advanced Poetry Writing (3)

Poetry writing at advanced level; written and oral analysis of published works and of students' submissions; preparation of individualized portfolio;

individualized research into publishing. Prerequisite(s): ENGL 3051.

ENGL 4052 - Advanced Fiction Writing (3)

Fiction writing at advanced level; written and oral analysis of published works and of students' submissions; preparation of individualized portfolio; individualized research into publishing. Prerequisite(s): ENGL 3052.

ENGL 4053 - Advanced Creative Nonfiction Writing (3)

Non-fiction prose writing at advanced level; written and oral analysis of published works and of students' submissions; preparation of individualized portfolio; individualized research into publishing. Prerequisite(s): ENGL 2050. Offered as needed.

ENGL 4054 - Practicum in Editing and Publishing (3)

Hands on experience in editing and publishing in such areas as literary editing and publishing, technical writing, books editing, legal writing, and others. Prerequisite(s): Consent of instructor. Spring.

ENGL 4055 - Writing Genre Fiction (3)

Explores form and formula in genre-writing; examines masterpieces of fantasy, mystery, horror, and science fiction from the writers' perspective as students attempt to write these forms. Prerequisite(s): ENGL 2050 and ENGL 3052. Offered as needed.

ENGL 4056 - Special Topics in Creative Writing (3)

Individual or group work by qualified students in creative writing. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): ENGL 2050. Offered as needed.

ENGL 4061 - Advanced Technical Writing and Copy Editing (3)

Designed to help students develop their technical and professional writing skills to produce documents that are readable, accessible, suitable, and usable for a variety of audiences. Includes exposure to editing types and writing styles common in industry practice, such as copy editing and layout processes with emphasis on editing for accuracy, fairness, readability, and design. Copy editing, substantive editing and reorganization of technical documents will be covered in this course. Prerequisite(s): CTE 2060. Fall.

ENGL 4062 - Professional and Technical Writing Practicum (3)

Focus on the ethics of technical writing: providing honest, accurate, and usable information, which will warn users of dangerous processes; understand the legal expectations of technical writers; and reconciling personal and professional ethics. Encourages internships. Prerequisite(s): ENGL 4061. Spring.

ENGL 4110 - Linguistics (3)

Introduction to the study of language as a system of human communication. This course is co-listed with ENGL 5410.

ENGL 4120 - Language and Culture (3)

Exploration of the nature of culture and its impact on perceptions, communication, behavior, and ways of learning with emphasis on its influence on school achievement. This course is co-listed with ENGL 5420.
This is a sustainability course.

ENGL 4240 - Senior Capstone in Literature (3)

Senior seminar devoted to a core topic, theory, or figure(s) in literature. Prerequisite(s): senior standing or permission of the instructor. Spring.

ENGL 4310 - Chaucer (3)

Life and times of Chaucer with extensive reading in his major works. This course is co-listed with ENGL 5310.

ENGL 4330 - Renaissance English Writers (3)

Literary figures of the Elizabethan and Jacobean periods, excluding Shakespeare. This course is co-listed with ENGL 5330.

ENGL 4340 - Old and Middle English Literature (3)

Literary genres and contributions from Beowulf to 1500 (excluding Chaucer). This course is co-listed with ENGL 5340.

ENGL 4360 - Shakespeare (3)

Study seven or more Shakespearean plays, including comedies, histories, tragedies and romances, with attention to Renaissance backgrounds, literary analysis, and theatrical traditions. This course is co-listed with ENGL 5360. Fall, Spring.

ENGL 4390 - Special Topics in Medieval and Renaissance Literature (3)

Study, analysis, and interpretation of special topics in Medieval and Renaissance literature. This course is co-listed with ENGL 5390.

ENGL 4450 - The Age of Milton (3)

English poetry, prose, and drama of the Puritan and Restoration times. This course is co-listed with ENGL 5450.

ENGL 4460 - Wits and Satirists: 1660-1800 (3)

Fiction, poetry, essays and drama during the times of Pope and Johnson. This course is co-listed with ENGL 5460.

ENGL 4490 - Special Topics in 17th and 18th Century Literature (3)

Study, analysis, and interpretation of special topics in seventeenth and eighteenth century literature.

ENGL 4500 - Nineteenth Century English Novel (3)

Representative novels from Austen through Gaskell. This course is co-listed with ENGL 5500.

ENGL 4510 - Romantic Poets and Essayists (3)

Major poets and essayists of the English Romantic period. This course is co-listed with ENGL 5510.

ENGL 4540 - Victorian Poetry (3)

Representative poetry of the British Victorian period. This course is co-listed with ENGL 5540.

ENGL 4560 - British Women Writers (3)

Study of major works by British women writers, with an introduction to feminist criticism. This course is co-listed with ENGL 5560.

ENGL 4590 - Special Topics in 19th Century Literature (3)

Study, analysis, and interpretation of special topics in nineteenth century literature. This course is co-listed with ENGL 5590.

ENGL 4610 - American Renaissance (3)

The works of Emerson, Hawthorne, Thoreau, and Melville. This course is co-listed with ENGL 5610.

ENGL 4620 - Early American Literature (3)

Major figures of colonial, federal, and early nineteenth-century literature. This course is co-listed with ENGL 5620.

ENGL 4640 - American Realists and Naturalists (3)

Works of Twain, Howells, James, Dreiser, Chopin, and Crane. This course is co-listed with ENGL 5640.

ENGL 4660 - Women Writers of the United States (3)

Study of major works by women writers of the United States, with an introduction to feminist criticism. This course is co-listed with ENGL 5660.

ENGL 4670 - Ethnic American Literature (3)

A survey of America's old and new ethnic writing, with particular emphasis on Native, Asian, Hispanic, and African American writers and a general emphasis on

other groups. This course is co-listed with ENGL 5670.

ENGL 4680 - African American Literature (3)

A survey of African American writers from the Colonial period to the present with emphasis on twentieth-century writers. This course is co-listed with ENGL 5680. Fall.

This course is equivalent to MOTR LITR 105AA Multicultural Literature in the Humanities & Fine Arts Knowledge Area.

ENGL 4690 - Special Topics in Traditionally Underrepresented Literature (3)

Study, analysis, and interpretation of special topics in traditionally underrepresented literature. This course is co-listed with ENGL 5690.

ENGL 4700 - British Fiction 1890 to Present (3)

Representative fiction by major British authors from 1890 to the present. This course is co-listed with ENGL 5700.

ENGL 4710 - Modern American Fiction (3)

Representative fiction by major American writers from 1900 to the present. This course is co-listed with ENGL 5710.

ENGL 4720 - Modern British Poetry (3)

British poetry of the twentieth century. This course is co-listed with ENGL 5720.

ENGL 4730 - Modern American Poetry (3)

American poetry of the twentieth century. This course is co-listed with ENGL 5730.

ENGL 4750 - Postcolonial Literature (3)

Twentieth and twenty-first century literature of countries which were formerly European colonies. This course is co-listed with ENGL 5750.

ENGL 4790 - Special Topics in 20th and 21st Century Literature (3)

Study, analysis, and interpretation of special topics in twentieth and twenty-first century literature. This course is co-listed with ENGL 5790.

ENGL 4810 - Seminar in Teaching English (2-3)

May be repeated with different offerings such as Individualizing Instruction, Teaching Traditional Grammar, How to Teach the Novel, Techniques of Theme Grading, Teaching Creative Writing, or Teaching Prosody. May be repeated for a max of 6 semester hours. This course is co-listed with ENGL 5910. Offered as needed.

ENGL 4825 - Assessment and Professionalism in TESL (3)

Exploration of guidelines for ESL services, support, and advocacy; standards for achievement; and interpretation of formal and informal assessments of students, courses, and programs.

ENGL 4835 - Second Language Acquisition (3)

Survey of second-language acquisition research and theories and their implications for pedagogy. Students who earned undergraduate credit in ENGL 4835 may not take ENGL 5120 for graduate credit. This course is co-listed with ENGL 5120.

ENGL 4890 - Methods of Teaching English (3)

Prerequisite(s): Admission to Teacher Education Program; double majors must take a methods course for each major. This is a professional education course. Fall, Spring.

ENGL 4972 - Content Literacy in Secondary English/Language Arts (3)

Addresses ways to improve and enhance English and Language Arts students' reading comprehension and writing proficiency. This is a professional education course.

ENGL 4973 - Classroom Management in Secondary English/Language Arts (1)

Addresses strategies for creating a classroom environment that facilitates effective learning in the field of English and Language Arts. This is a professional education course.

ENGL 4974 - Assessment and Differentiation in Secondary English/Language Arts (2)

Strategies for the creation and use of assessment of learning and differentiation in the English Language Arts classroom. This is a professional education course.

ENGL 4990 - Special Projects in English (1-3)

May be repeated for a maximum of 6 semester hours. This course is co-listed with ENGL 5990. Offered as needed.

ENT 1501 - Youth Entrepreneurship Program (2)

Provides knowledge to start and maintain a business, helps students understand how to be an entrepreneurial employee, and informs students on business related careers. The curriculum is designed to give real word experience and knowledge to potential entrepreneurs and innovators from K-12 in a summer program environment. Along with specific business skills students will be encourage to pursue higher education. Prerequisite(s): Enrollment by summer program director in the Youth Entrepreneurship Program.

ESE 1200 - Foundations of Leadership Skills (3)

Aims to introduce students to basic business concepts and begin to develop the analytical, communication, and research skills necessary for success as a leader. Students use entrepreneurial skills to find solutions to social, cultural or environmental problems.

ESE 1300 - Introduction to Entrepreneurship and Business (3)

Introduces several types of entrepreneurship (start-up, corporate intrapreneurship, family business) as well as external and internal forces that effect the decisions in any business venture. May not be taken for credit by students who have completed in excess of 12 semester hours of B.S.B.A. courses.

ESE 3335 - Entrepreneurial Internship (1-3)

As a result of participating in the Entrepreneurship and Social Enterprise Internship / Internship course, students will be able to: apply theory and classroom learning to an actual business environment; examine and test their ability to launch a product or service venture; gain practical work experience in their product or service venture's industry or in an entrepreneurial environment; develop communication and human relations skills. An additional fee is associated with this course.

ESE 3350 - Special Projects in Entrepreneurship (1-3)

Junior level course in entrepreneurship or social entrepreneurship theory, practice, methods and strategies taught on an individual or group basis to advanced entrepreneurship students. *May be repeated for a maximum of 6 semester hours.* An additional fee is associated with this course.

ESE 3710 - Entrepreneurial Business Planning (3)

Prepares learners to design and evaluate new business ventures, continue family ventures, or engage in small business. Participants develop the ability to identify innovative product and/or service opportunities or to exploit existing business models in support of a new business. Students interact with successful entrepreneurs from different industries who give workshops on their area of expertise. Each business plan includes thorough research and detailed financial projections for revenue generation and cost structure. Hands-on experiences include applying classroom concepts to real-world products or services. Plans made in this class are further developed and launched in Commercialization. An additional fee is associated with this course. Spring. This is a sustainability course.

ESE 3715 - Entrepreneurial Business Planning Lab (1)

Teams of entrepreneurial students participate actively each week on-site with ESE faculty and senior students to gain experience in growing and running a new venture. Students will focus on urgent business aspects of the companies developed and launched through course ESE 3710, ESE 3720 and ESE 4710. Such aspects include reaching the target market, choice of sales approach to initial customers, changes to initial business strategy, and day to day operations, management and administration. Students are expected to work 4-6 hours weekly. Corequisite(s): ESE 3710. An additional fee is associated with this course.

ESE 3720 - Business As a Force for Good (3)

Different approaches and considerations including social entrepreneurship; BCorps, non-profits, Diversity, Equity, Inclusivity (DEI); corporate social responsibility (CSR); environmental, social & governance (ESG), sustainable development goals (SDG) can provide the impetus for and become forces for positive change in the world. Students will have the opportunity to develop and evaluate their own business plan or an existing business to identify opportunities for positive change and recommend actions for improvement. An additional fee is associated with this course. Fall and Spring.
This is a sustainability course.

ESE 3725 - Social Enterprise Lab (1)

Teams of entrepreneurial students participate actively one day a week on-site with ESE faculty and senior students to gain experience in growing and running a new venture. Students will focus on urgent social responsibility aspects of the companies developed and launched through course ESE 3710, ESE 3720 and ESE 4710. Such aspects include creating a sustainable social enterprise, creating a venture that promotes social justice, and implementing social responsibility in all business practices. Students are expected to work 4-6 hours weekly. Corequisite(s): ESE 3720. An additional fee is associated with this course.

ESE 3750 - Special Projects in Entrepreneurship (0-3)

Junior level course in entrepreneurship or social entrepreneurship theory, practice, methods and strategies taught on an individual or group basis to advanced entrepreneurship students. *May be repeated for a maximum of 6 semester hours.* An additional fee is associated with this course.

ESE 3845 - Small Business Operations Analysis (3)

Many small businesses have a disconnect between the business plan and the management of day to day operations. This course is intended to provide the necessary practice of using relevant software for functions such as (but not limited to): setting up and charting accounts; recording transactions with customers, vendors and employees; understanding and analyzing small business financial reports; and, developing decision processes for future operations. Sales forecasting, revenue management, labor management, production management, cost projections, and financial statements are created and interpreted. A decision-based project is created, presented and completed. Prerequisite(s): ACCT 1101. Students are encouraged to enroll in both ESE 4710 and ESE 3845 during the same semester. An additional fee is associated with this course. Fall.

ESE 4200 - Service Project in Leadership (1)

Leadership is the ability to influence a group of people towards a goal. Using an entrepreneurial approach, students ideate, create, plan and implement a service project. The students' vision is imparted through their leadership skills and management of volunteers as their project is completed. Students receive feedback from UCM faculty and from advisors at the National Society of Leadership and Success (NSLS). You need not be in a position of authority to take this course. You must be a member of the NSLS, have completed the first two levels of NSLS induction. Prerequisite: complete the first two levels of NSLS induction. Prerequisite(s): Complete the first two levels of NSLS induction. An additional fee is associated with this course.

ESE 4710 - Commercialization (3)

Designed to prepare students to design, prototype and commercialize new products or services. Will examine the commercialization
process including: Research, Prototype Development, Commercialization Paths, Early Stage Marketing, Intellectual Property, & Licensing. Other related topics include business plan issues, such as business entity, cash flow, sources of money, and pitching to investors. Students must bring their own business

product or service plans to work on. Each student will launch their own business idea. Students are encouraged to enroll in both ESE 4710 and ESE 3845 during the same semester. Prerequisite(s): ESE 3710. An additional fee is associated with this course. Fall.
This is a sustainability course.

ESE 4715 - ESE Commercialization Lab (1)

Teams of entrepreneurial students participate actively one day a week on-site with ESE faculty and senior students to gain experience in growing and running a new venture. Students will gain hands-on leadership experience in launching and running a startup business. Such experience may include: choosing initial markets, approaching new customers, and communicating product value. Students are expected to work 4-6 hours weekly. Corequisite(s): ESE 4710. An additional fee is associated with this course.

ESE 4750 - Special Projects (0-3)

Senior level special projects in social entrepreneurship theory, practice, methods and strategies taught on an individual or group basis. Additionally, this may be used to denote the completion of the Peace Corps Prep Certificate requirements. *May be repeated for a maximum of 6 semester hours.* An additional fee is associated with this course.

ESE 4850 - Entrepreneurial or Social Venture Start-up (1-3)

As an option within the Entrepreneurship and Social Enterprise sequence of courses, students will be able to get continuing support for their recently launched enterprise in ESE 4710 Commercialization. Students will work directly with faculty and experienced entrepreneurs on the sustainability and growth of the new business. An additional fee is associated with this course.

EMM 3825 - Events Management (3)

Theoretical and practical foundations for effective twenty-first century event management including research, design, planning, coordinating, and evaluating of professional events. It will be an experiential, hands on learning class. Class will discuss definitions, categories of event planning, and current issues/trends of event management. Students will be assigned event projects in the semester which they will be expected to participate in pitching, planning, and proposing an event to an external client. In addition, students will shadow the planning and execution of events on the campus and in the community. Prerequisite(s): MGT 3385 or MKT 3485 or FIN 3885 or concurrently. An additional fee is associated with this course. Fall.

EMM 3835 - Internship in Events (3-9)

Provides industry experience for students in the BSBA in Events Marketing and Management. Appropriate internships should have students working closely with the marketing, planning, and/or execution of professional events. Three credit hours must be with same employer. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): Junior Standing, admission to the BSBA and a 2.5 GPA. An additional fee is associated with this course.

EMM 4825 - Advanced Events Management (3)

Gives students with a snapshot of professional event planning and execution. Developing fundamental knowledge and skills in event management, students improve the capabilities of critical thinking and problem solving with diverse cases and examples. All students play roles of event managers to complete a comprehensive understanding on professional event planning, services, and project management for business meeting/festival/convention/wedding. This course builds on the basic skills learned in EMM 3825 Events Management and requires students to plan and execute more advance event(s). Prerequisite(s): Senior standing, MKT 3450, and EMM 3825. An additional fee is associated with this course. Spring.

FCSE 2000 - FCS Student Organizations (1)

An introduction to Family Careers and Community Leaders of America (FCCLA) student organization, its structure, benefits, and programs available for public schools of Missouri.

FCSE 3120 - Family Resource Management (3)

Effective and efficient management of family resources to maximize personal and family satisfactions. Fall, Spring, Summer.

FCSE 3710 - Foundations of Family Consumer Sciences Education (3)

The philosophy of vocational family and consumer sciences education, curriculum development and implementation, department management, career development, and student organization management. Prerequisite(s): EDFL 2100 and FLDX 2150. Spring.

FCSE 4000 - Special Projects in Family and Consumer Sciences (1-3)

Investigation of contemporary problems and issues in family and consumer services. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with FCSE 5000.

FCSE 4740 - Methods of Teaching Family and Consumer Sciences (3)

Prepares the student to teach in family and consumer sciences by assisting in the development of instructional methods and techniques for student-oriented classroom instruction. This course is co-listed with FCSE 5840. Prerequisite(s): Admission to Teacher Education Program, 15 semester hours of Family and Consumer Sciences and FCSE 3710 with a grade of C or better.

FAME 1010 - Digital PreMedia Fundamentals (3)

Fundamental instruction and practice in Adobe Creative Cloud software applications including Photoshop, Illustrator, and InDesign, and other relevant digital production tools. Students will practice using software for application in marketing materials, branding, and products. Students will create projects to apply designs to different products using technology. An additional fee is associated with this course.

FAME 1400 - Principles of Fashion Merchandising (3)

Students will explore all segments of the fashion industry and identify careers within each area. An overview of fashion products from concept to consumer is covered with an emphasis on consumer demand and trend cycles for wholesale and retail markets.

FAME 1445 - Fashion Seminar 1 (1)

Students will start to develop leadership skills, relationships with peers and faculty and a plan for a successful career at UCM and beyond. Participation in committee work, professional organizations, and service learning will help students learn to communicate effectively, analyze situations and make informed decisions.

FAME 1450 - Fundamentals of Apparel Design and Construction (3: 2 lecture, 1 lab)

An introductory course with an emphasis on the construction of apparel goods using computerized equipment and software. Students will apply the elements and principles of design to basic garment components and fit. Students will create projects that exhibit creativity and quality workmanship in a laboratory setting. An additional fee is associated with this course.

FAME 2425 - Apparel Quality Analysis (3)

Students will learn the importance of quality assurance, product standards, tolerances, and specifications in producing quality apparel products. Based on current industry standards and terminology, students will compare and evaluate commercially-produced apparel products.

FAME 2440 - Professional Work Experience (1-3)

Supervised work experience in an approved business establishment with an emphasis on textile, apparel and/or accessory merchandise. Students broaden their knowledge base and develop skills that apply to career interests within a fashion-related business. *May be repeated for a maximum of 6 semester hours.*

FAME 2442 - Textile Science (3)

This class explores the characteristics of fibers, yarns, fabric construction, and finishing processes. Textile behavior, performance and maintenance as they relate to end products and consumer use will be

addressed. An additional fee is associated with this course.

FAME 2445 - Fashion Seminar 2 (1)

An opportunity to continue developing leadership skills, relationships with peers and faculty, and planning for a successful career at UCM and beyond. Through committee work, membership in a professional organization, service learning, mentoring and hands-on learning experiences, students will learn to communicate effectively and value others' opinions, analyze situations, and make informed decisions; all skills that will help them to be successful in college and a future career in the fashion industry. Prerequisite(s): FAME 1445.

FAME 2450 - Advanced Apparel Design & Construction (3: 2 lecture, 1 lab)

Students will create garments with advanced garment construction techniques and fabrics using specialized equipment in a laboratory setting. Knitwear, tailoring, pattern/ fit modification, finishing, and application of specialized techniques will be addressed. Prerequisite(s): FAME 1450. An additional fee is associated with this course.

FAME 3010 - Social Media, Mobile Apps, and Content Management (3: 3 lecture, 0 lab)

Students will explore social media in a business context for raising brand awareness, attracting new customers, and enhancing consumer engagement for increased sales. Content management fundamentals, creation of interactive content, and analysis of content reach and engagement will be practiced. Students will create compelling visual and video content for application in multiple industries. Prerequisite(s): FAME 1010 or equivalent Adobe product course.

FAME 3415 - Product Development for Consumers (3)

Students will study diverse target markets and their fashion needs as related to price and product segments. Apparel products that meet consumer needs will be developed using current computer software. Prerequisite(s): FAME 2425.

FAME 3430 - Professional Image Management (3)

Image management is designed for individual professional development in a respective career field. This course is designed to prepare students for internships and career paths with an emphasis on resume development, best business dress practices, interviewing techniques, and appropriate etiquette rules. This course will also challenge individual decision-making processes through written representation and oral presentation for total image management.

FAME 3434 - Fashion History of Costume (3)

This class will follow the evolution of dress from the earliest beginnings through the twenty-first century with an emphasis on western civilizations. The impact of social, economic, political, environmental, and religious customs associated with dress will be analyzed.

FAME 3435 - Fashion Buying (3)

Through a buying simulation, students will apply market research to create merchandising, mark-up, mark-down, and sales plans using wholesale mathematic formulas. Current computer software will be utilized to create appropriate documents used by buyers. Prerequisite(s): FAME 2425.

FAME 3440 - Visual Merchandising and Fashion Promotion (3)

Students will evaluate and practice visual merchandising strategies for apparel, accessories, and home fashions to include windows, walls, and store layouts. In addition, students will learn about other fashion promotion strategies including signing, special event (fashion show) production, and print media.

FAME 3442 - Sustainability for Consumer Products (3)

Students will gain knowledge about sustainable practices and an awareness of how companies can reduce their environmental impact while increasing profits. This class will also address the production and sale of sustainable textile products used by consumers.
This is a sustainability course.

FAME 3445 - Fashion Seminar 3 (1)

An opportunity for leadership, developing relationships with peers and faculty, and planning for a successful career at UCM and beyond. Through committee work, membership in a professional organization, service learning, and hands-on learning experiences, students will learn to communicate effectively and value others' opinions, analyze situations, and make informed decisions; all skills that will help them to be successful in college and a future career in the fashion industry. Prerequisite(s): FAME 1445.

FAME 4400 - Branding and Fashion Technology (3)

Students will understand the evolution of brands and evaluate cohesive branding strategies. Current industry technology will be used to research branding trends and create branding materials for digital global markets using hands-on engaged learning. Prerequisite(s): FAME 1010.

FAME 4410 - Materials for Interior Furnishings (3)

A concentrated study of materials used for residential and commercial environments that include window and wall coverings, upholstered furniture, floor coverings, linens and accessories. Textile fabrics appropriate for various architectural period styles will be covered as well as trends for sustainable products. This course is co-listed with FAME 5410. An additional fee is associated with this course.

FAME 4414 - Advanced Technical Problems in Fashion (3: 3 lecture, 0 lab)

Individual or group work on advanced technical problems in Fashion/Apparel Merchandising. Provide exploration of content not available through normal course offerings. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with FAME 5414. Prerequisite(s): Minimum cumulative GPA of 2.50, written contract/proposal with objectives/learning competency and written school consent. An additional fee is associated with this course.

FAME 4424 - Pattern Design (3)

The design and construction of garments from a basic pattern, using the principles of art as applied to dress design. This course is co-listed with FAME 5424. Prerequisite(s): FAME 3430 and 3 semester hours of clothing construction. An additional fee is associated with this course.

FAME 4425 - Fashion Entrepreneurship (3)

Students will create a business plan based on fashion industry trends and consumer needs. Current computer software will be used to create retail sales plans and analyze profit/loss statements. Fashion retail personnel needs and store operations and management strategies will also be addressed. This course is co-listed with FAME 5425. Prerequisite(s): FAME 3435.

FAME 4430 - Merchandising Applications (3)

Builds upon the necessary understanding, knowledge, and working applications of the basics for profitable fashion merchandising. Prerequisite(s): ACCT 1101. Corequisite(s): FAME 4444.

FAME 4433 - Sourcing in the Global Market (3)

An analysis of economic, political, and cultural systems affecting international textile and apparel trade. An emphasis on sourcing, corporate social responsibility, technology, government policies, and relationships in the global fashion marketplace. This course is co-listed with FAME 5433.

FAME 4442 - Advanced Textiles (3)

Comparative study of factors influencing the properties of fibers and fabrics as well as the performance of textile and apparel products. Lab period is used to test textile performance with standardized test procedures. This course is co-listed with FAME 5442. Prerequisite(s): CHEM 1104 and FAME 2442. An additional fee is associated with this course.

FAME 4444 - Fashion Merchandising (3)

Principles and practices of fashion manufacturing and merchandising. Prerequisite(s): FAME 3415, MKT 3410. Corequisite(s): FAME 4430.

FAME 4445 - Senior Seminar in Fashion and Apparel Merchandising (3)

Philosophy, current issues and trends in fashion and apparel merchandising will be covered. Focus on problem-solving styles leading to group and individual research problems. This course is co-listed with FAME 5445. Prerequisite(s): senior standing. An additional fee is associated with this course.

FAME 4450 - Special Problems in Textiles and Clothing (2-3)

Group or individual research, creative endeavors, entrepreneurship or service projects to address current trends and careers in the fashion industry. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with FAME 5450.

FAME 4490 - Internship in Fashion and Apparel Merchandising (1-3)

Students will participate in a management training program to broaden intellectual awareness while gaining practical fashion industry experience. Performance-based goals and learning experiences will be evaluated by a company supervisor in coordination with the faculty instructor. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with FAME 5490. Prerequisite(s): FAME 2440.

FLDX 2150 - Introductory Field Experience (1)

Introductory experiences in the classroom that provide opportunities for becoming involved with students and professional teachers in the school setting. Includes 30 hours of public school classroom observation. Students must have a background check on file. There is a fee for the background check. Corequisite(s): EDFL 2100. An additional fee is associated with this course. This is a professional education course.

FLDX 3000 - Field Experience in the Content Area (1)

A midlevel practicum for K-12 and Secondary teacher education students. Includes 30 hours of public school classroom observation. Students must have a background check on file. There is a fee for the background check. Prerequisite(s): EDFL 2100, EDFL 2240, FLDX 2150, and EDSP 2100. Corequisite(s): Should be taken concurrently with professional education courses. This is a professional education course. Fall, Spring.

FLDX 4395 - Student Teaching in Special Education I (1-12)

Application for Student Teaching must be made with the Director of Clinical Services and Certification. Requires a directed field experience. Prerequisite(s): Special methods course in special education in one or more certification areas (EDSP 4423, EDSP 4440, or EDSP 4450). Should be taken with FLDX 4396 or FLDX 4468 or FLDX 4495. This is a professional education course.

FLDX 4396 - Student Teaching in Special Education II (1-12)

Requires a directed field experience. Corequisite(s): FLDX 4395. This is a professional education course.

FLDX 4468 - Student Teaching I (1-12)

Taken in the Professional Semester for all education majors. This course is co-listed with FLDX 5468. Prerequisite(s): Admission to Teacher Education Program. This is a professional education course.

FLDX 4493 - Student Teaching Early Childhood (1-12)

To be taken in the Professional Semester for early childhood majors and double majors in elementary education. Prerequisite(s): Admission to Teacher Education Program; cumulative GPA of 2.50; ECEL 4400. Should be taken concurrently with FLDX 4496 or FLDX 4395, depending on the sequence followed. (See description of Professional Education Semester.) This is a professional education course.

FLDX 4495 - Student Teaching Elementary I (1-12)

To be taken in the Professional Semester. For elementary majors, double majors in elementary education and special education, K-12 majors and elementary physical education. Prerequisite(s):

Admission to Teacher Education Program; ECEL 4400. Should be taken concurrently with FLDX 4496 or FLDX 4498 or FLDX 4468 or FLDX 4395, depending on the sequence followed. (See description of Professional Education Semester.) This is a professional education course.

FLDX 4496 - Student Teaching Elementary II (1-12)

To be taken in the Professional Semester. For elementary classroom majors and majors which provide K-12 certification (except speech pathology). Prerequisite(s): Admission to Teacher Education Program. Corequisite(s): FLDX 4495 or FLDX 4595. This is a professional education course.

FLDX 4497 - Student Teaching Middle School I (1-12)

To be taken in the Professional Semester. For middle school majors, double majors in elementary education, special education, or secondary education. Prerequisite(s): Admission to Teacher Education Program; MLED 4340. Students must have a background check on file. Should be taken concurrently with FLDX 4498 or FLDX 4468 or FLDX 4496 or FLDX 4395, depending on sequence followed. This is a professional education course.

FLDX 4498 - Student Teaching Middle School II (1-12)

To be taken in the Professional Semester. For middle school majors. Prerequisite(s): Admission to Teacher Education Program; a background check must be on file; should be taken concurrently with FLDX 4497 or FLDX 4495 or FLDX 4595 or FLDX 4395. This is a professional education course.

FLDX 4595 - Student Teaching II (1-12)

To be taken in the Professional Semester for all education majors. Prerequisite(s): Admission to Teacher Education Program. This is a professional education course.

FLDX 4970 - Field Experience II in the Content Area (1)

Requires a minimum of 50 hours of co-teaching with a public school classroom teacher. Should be taken no earlier than one semester prior to student teaching. Students must have a background check on file. There is a fee for the background check. Prerequisite(s): Admission to Teacher Education Program. Corequisite(s): EDFL 4970. This is a professional education course.

FIN 1820 - Personal Finance GE (3)

For the student who desires information on managing his/her own personal income. Fall, Spring.

FIN 2801 - Business Statistics I (3)

Emphasizes the statistical foundation for the analysis of business and economic data with concentration on the areas of descriptive statistics, probability, probability distributions, and sampling distributions in order to provide the groundwork for further study in statistical analysis. Prerequisite(s): MATH 1111 or MATH 1111R or equivalent. Fall, Spring, Summer.

FIN 3801 - Business Statistics II (3)

Provides students with basic statistical inference procedures of estimation. It covers confidence intervals, hypothesis testing, simple and multiple linear regression analysis directed towards business applications. Prerequisite(s): FIN 2801. An additional fee is associated with this course. Fall, Spring, Summer.

FIN 3811 - Investments (3)

An analysis of investment planning, decision-making and problem solving including investment policy statements, portfolio strategies, asset allocation, security selection, and performance monitoring. Not open to students with a major or minor in finance. An additional fee is associated with this course.

FIN 3818 - Cryptocurrency Blockchain & FinTech (3)

In this class, you learn the principles of Cryptocurrency, Blockchain and FinTech. Topics include the fundamentals of money, basic cryptography, HASH algorithms & digital signatures, Blockchain architecture, Proof of Work/Stake, Wallets and Exchanges. We take a close-up look at Bitcoin,

Ethereum, Altcoins, Digital Tokens and NFTs. We also look at Initial Coin Offerings, Bitcoin Economics, Cryptocurrency Blunders, Business on the Blockchain, Cryptocurrency Policy and the Future of Cryptocurrency and the Blockchain. Prerequisite(s): BSBA degree students: ECON 1010 or FIN 1820 or FIN 2801 or ACCT 2102.

Non-BSBA degree students: 60 CR and course work exposing you to the fundamentals of money, valuation and/or analysis. Such work includes courses in mathematics, actuarial science, statistics, computer science, computer information systems, physics and other analytical disciplines. Fall, Summer.

FIN 3835 - Internship in Finance (1-6)

Opportunity for students to gain theoretical knowledge and practical application within a particular field of specialization. May be repeated with consent of school chair and internship director. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): Admission to the BSBA program, 60 semester hours and overall GPA of 2.50 or above, or consent of internship director. An additional fee is associated with this course. Fall, Spring, Summer.

FIN 3850 - Principles of Finance (3)

An introduction to corporate financial decision-making, including financial analysis, working capital management, capital budgeting, long-term financing, and international finance. Prerequisite(s): ACCT 1101 and FIN 2801. An additional fee is associated with this course. Fall, Spring, Summer.

FIN 3861 - Financial Management I (3)

Organization goals and tools of financial management. Analysis of case materials illustrating problems encountered by firms of various sizes and operating characteristics. Examination of adjustment of financial policy of business to changing conditions. Prerequisite(s): FIN 3850, or a declared major in Actuarial Science and Mathematics with completion of ACST 4510. An additional fee is associated with this course. Fall, Spring.

FIN 3881 - Financial Institutions and Markets (3)

An analytic study of financial institutions, financial markets, and monetary policy. Prerequisite(s): FIN 3850 and [ECON 3020 or declared minor in Finance]. An additional fee is associated with this course. Fall, Spring.

FIN 3885 - Integrative Business Experience Practicum (3)

Students will apply concepts from the concurrent courses to their own start-up business venture and to community service. Corequisite(s): special sections of MGT 3315 , MKT 3405 and FIN 3850. An additional fee is associated with this course. Fall, Spring.

FIN 3891 - Security Analysis (3)

Classification and analysis of securities, markets, and industries. Formulation of investment policy for institutions and aggressive personal investors. Not available for credit to students who received credit in FIN 3811. Prerequisite(s): FIN 3801 or concurrently and FIN 3850. Corequisite(s): FIN 3893. An additional fee is associated with this course. Fall, Spring.

FIN 3893 - Credit and Financial Statement Analysis (3)

This is an introductory course in analysis of financial statements and on short term credit analysis (i.e. solvency of loans and trade credit) and long term credit analysis (i.e. the characteristics of corporate bonds and the bond markets). Prerequisite(s): FIN 3801 or concurrently and FIN 3850. Corequisite(s): FIN 3891. An additional fee is associated with this course. Fall, Spring.

FIN 4800 - Special Projects in Finance (1-3)

Individualized or group study under the supervision of school faculty. *May be repeated for a maximum of 12 semester hours.* Prerequisite(s): Consent of instructor. An additional fee is associated with this course.

FIN 4805 - Advanced Personal Financial Planning (3)

Develops ability to synthesize financial planning knowledge in order to analyze complex client case scenarios. Emphasis on characteristics of the

financial planning profession. Prerequisite(s): ACCT 2930, FIN 3891, RMI 3803 and RMI 4804; or RMI 3803, RMI 4804, FIN 5840 and Admission to the Master of Arts in Accounting. An additional fee is associated with this course. Spring.

FIN 4815 - Investment Portfolio Administration (3)

Application of security analysis and investment decision concepts to case problems and computer simulated investment situations. Additional readings in selected portfolio management theories. Prerequisite(s): FIN 3891 and Admission to the B.S.B.A. program. An additional fee is associated with this course. Spring.

FIN 4817 - Managing Financial Derivatives (3)

Applied analysis of pricing and hedging techniques for managing investments in derivative contracts (forward, futures, options, and swap contracts) involving the application of concepts and strategies to case problems and computer simulations. Students who earned undergraduate credit for FIN 4817 may not take FIN 5817 for graduate credit. This course is co-listed with FIN 5817. Prerequisite(s): FIN 3850 and Admission to the B.S.B.A. program or a declared major in Actuarial Science and Mathematics with completion of ACST 4510. An additional fee is associated with this course.

FIN 4820 - International Finance (3)

An intensified study of international banking and finance as it relates to international trade and the multinational corporation and the financing of imports and exports. Students who earned undergraduate credit for FIN 4820 may not take FIN 5825 for graduate credit. Prerequisite(s): FIN 3850 and Admission to the B.S.B.A. program. An additional fee is associated with this course. Spring.

FIN 4821 - Professional Financial Analysis (3)

Develop competences in financial assets, administration procedures and other areas supporting financial analysis. Upon completion students sit for the Chartered Financial Analyst Level I examination. Prerequisite(s): FIN 4815, FIN 4817, FIN 4820, ACCT 3102. An additional fee is associated with this course.

FIN 4830 - Directed Readings in Finance (3)

Intensive study of significant financial topics. An additional fee is associated with this course.

FIN 4831 - Student Managed Investment Fund (3)

The course provides students advanced hands-on experience in stock analysis and asset valuation at a professional level, selecting stocks and investing 'real money'. *May be repeated for a maximum of 6 hours with consent of instructor.* This course is co-listed with FIN 5831. Prerequisite(s): FIN 3891, FIN 3893, application and consent of the instructor. An additional fee is associated with this course. Fall, Spring, Summer.

FIN 4862 - Financial Management II (3)

Application of the theories and tools of financial decision making and control to case problems and business problem simulations. Prerequisite(s): FIN 3861 and Admission to the B.S.B.A. program. An additional fee is associated with this course.

FIN 4880 - Bank Management (3)

Study and analysis of the problems of management of commercial banks with an emphasis on investment and loan portfolios. This course is co-listed with FIN 5880. Prerequisite(s): FIN 3881 or concurrently and Admission to the B.S.B.A. program. An additional fee is associated with this course. Fall.

FLYA 1320 - Private Flight A (1)

Increase student's knowledge and experience to operate aircraft in solo flight and night conditions. First or Second class medical required. An additional fee is associated with this course, which covers the following hours: Pre-Post (5), Ground (3.5), Dual Flight (22.5), Solo Flight (2.5), Dual AATD (4). Fall, Spring, Summer.

FLYA 1321 - Private Flight B (1)

Increase the student's knowledge and aeronautical experience to operate an airplane on dual and solo cross-country flights. First or Second class medical required. Prerequisite(s): FLYA 1320. An additional

fee is associated with this course, which covers the following hours: Pre-Post (4), Ground (2), Dual Flight (26), Solo Flight (9), Dual AATD (3). Fall, Spring, Summer.

FLYA 2313 - Instrument Flight A (1)

Increase the student's knowledge and aeronautical experience in maneuvering the aircraft solely by reference to the flight instruments. Includes the use of full and partial panel reference. First or Second class medical required. Prerequisite(s): Private Pilot Certificate. An additional fee is associated with this course, which covers the following hours: Pre-Post (6), Ground (1), Dual Flight (7), Dual AATD (8). Fall, Spring, Summer.

FLYA 2314 - Instrument Flight B (1)

Increase the student's knowledge and aeronautical experience in IFR cross-country and emergency procedures. Prerequisite(s): FLYA 2313. An additional fee is associated with this course, which covers the following hours: Pre-Post (7), Ground (3), Dual Flight (25), Dual AATD (6). Fall, Spring, Summer.

FLYA 3310 - Commercial Flight A (1)

Increase the student's knowledge and aeronautical experience in dual and solo cross country flying in both day and night conditions. First or Second class medical required. Prerequisite(s): Private Pilot Certificate. An additional fee is associated with this course, which covers the following hours: Dual Flight (14), Solo Flight (6). Fall, Spring, Summer.

FLYA 3311 - Commercial Flight B (1)

Increase the student's knowledge and aeronautical experience in solo and cross country flying. Prerequisite(s): FLYA 3310. An additional fee is associated with this course, which covers the following hours: Pre-Post (2), Ground (2), Dual Flight (10), Solo Flight (10). Fall, Spring, Summer.

FLYA 3312 - Commercial Flight C (1)

Increase the student's knowledge and aeronautical experience in solo cross country flying. Prerequisite(s): FLYA 2314. An additional fee is associated with this course, which covers the following hours: Ground (0.5), Dual Flight (13.5), Solo Flight (9.5). Fall, Spring, Summer.

FLYA 3315 - Commercial Flight D (1)

Increase the student's knowledge and the skill necessary to safely fly a complex aircraft. Prerequisite(s): FLYA 3312. An additional fee is associated with this course, which covers the following hours: Pre-Post (3.5), Ground (12.5), Dual Flight (10), Solo Flight (8), Dual AATD (3). Fall, Spring, Summer.

FLYA 3316 - Commercial Flight E (1)

Increase the student's knowledge and provide the skill necessary to safely fly a complex aircraft. Additionally, the commercial flight maneuvers are introduced. Prerequisite(s): FLYA 3315. An additional fee is associated with this course, which covers the following hours: Pre-Post (9), Ground (8), Dual Flight (8), Solo Flight (10), Dual AATD (1). Fall, Spring, Summer.

FLYA 3317 - Commercial Flight F (1)

Increase the student's knowledge and provide the aeronautical skill necessary for the issuance of the Commercial Pilot Certificate. Prerequisite(s): FLYA 3316. An additional fee is associated with this course, which covers the following hours: Pre-Post (3.5), Ground (8.5), Dual Flight (12), Solo Flight (5), Dual AATD (2). Fall, Spring, Summer.

FLYA 3330 - Multi-Engine Certificate (1)

Classroom and laboratory instruction to provide aeronautical knowledge and skills for multi-engine pilot certification. Prerequisite(s): FLYA 3317. An additional fee is associated with this course, which covers the following hours: Pre-Post (5), Ground (10), Dual Flight (20). Fall, Spring, Summer.

FLYA 3360 - Flight Instructor Lab - Airplane (1)

During this course, the student will learn the analysis and performance of all the maneuvers required for private and commercial pilot certification from the right seat of the training aircraft. In addition the student will acquire the instructional knowledge of the elements of each of the maneuvers and procedures including the

recognition, analysis, and correction of common student errors. An additional fee is associated with this course, which covers the following hours: Pre-Post (10), Ground (10), Dual Flight (20).

FLYA 3362 - Flight Instructor - Instrument (1)

Instruction, flight training, and practice teaching to obtain the aeronautical skills and knowledge necessary for Flight Instructor, Instrument certificate. Prerequisite(s): AVIA 3360. An additional fee is associated with this course, which covers the following hours: Ground (6), Dual Flight (13).

FLYA 3364 - Flight Instructor - Multi-Engine (1)

Instruction, flight training and practice teaching to obtain the aeronautical skills and knowledge necessary for the Multi-Engine add-on to the Flight Instructor certificate. Prerequisite(s): FLYA 3330 and AVIA 3360. An additional fee is associated with this course, which covers the following hours: Ground (18), Dual Flight (10).

FLYA 3415 - Commercial Flight D Multiengine (1)

Classroom and laboratory instruction to provide aeronautical knowledge and skills to safely operate a multiengine aircraft. This course will prepare the student for the addition of a multi-engine class onto their Private Pilot Certificate. Prerequisite(s): FLYA 3312. An additional fee is associated with this course, which covers the following hours: Pre-Post (8), Dual Flight (16), Dual AATD (6). Fall, Spring, Summer.

FLYA 3416 - Commercial Flight E Multiengine (1)

Classroom and laboratory instruction to provide aeronautical knowledge and skills for a high performance endorsement. Both IFR and VFR cross-countries will be performed. Prerequisite(s): FLYA 3415. An additional fee is associated with this course, which covers the following hours: Ground (2), Dual Flight (18). Fall, Spring, Summer.

FLYA 3417 - Commercial Flight F Multiengine (1)

Classroom and laboratory instruction to provide aeronautical knowledge and skills to pass the Commercial Pilot AMEL Practical Test. Prerequisite(s): FLYA 3416. An additional fee is associated with this course, which covers the following hours: Pre-Post (2), Ground (2), Dual Flight (20), Dual AATD (6). Fall, Spring, Summer.

FLYA 3430 - Single Engine Add-On (1)

Classroom and laboratory instruction to provide aeronautical knowledge and skills for single-engine addition to an existing commercial pilot certificate. Prerequisite(s): FLYA 3417. An additional fee is associated with this course, which covers the following hours: Pre-Post (2.5), Ground (2.5), Dual Flight (10). Fall, Spring, Summer.

FOOD 2320 - Sanitation and Safety (1)

Sanitation and Safety procedures, ServSafe Certification, and Hazard Analysis & Critical Control Points (HACCP) Certification.

FOOD 2322 - Food Preparation (3: 2 lecture, 1 lab)

Apply the properties, food science and preparation of grains, fruits, vegetables, milk products, protein foods, fats, sugar products, and flour mixtures through laboratory experiences. Prerequisite(s): CHEM 1104 with a grade of C or better. An additional fee is associated with this course. Fall, Spring, Summer.

FOOD 3332 - Quantity Food Production and Service (3: 2 lecture, 1 lab)

Principles and standard methods of quality food production, menus, and service in institutions and their application in work experience. Laboratory involves planning and preparing catered events and working at outside foodservices sites. Prerequisite(s): A grade of C or better in FOOD 2320 and FOOD 2322. Fall, Spring.
This is a sustainability course.

FOOD 3334 - Advanced Food Systems Management (4)

Organization and management in food service areas including the systems approach to foodservice

organization, managing quality, the menu, food product flow and kitchen design, procurement, food production, distribution and service and safety, sanitation and maintenance, management principles, leadership & organizational change, administrative responsibilities, decision making, communication & balance, management of human & financial resources, meals satisfaction & accountability. Prerequisite(s): ACCT 1101 or ACCT 2100 or concurrent. Spring.

FOOD 4326 - Experimental Foods (3: 2 lecture, 1 lab)

An experimental approach to the study of factors which influence the behavior of foods. Group and individual experiments. This course is co-listed with FOOD 5326. Prerequisite(s): FOOD 2322 with a grade of C or better. An additional fee is associated with this course.

FREN 1201 - Elementary French I GE (3)

Fundamental principles of French pronunciation, the building of basic vocabulary of words and expressions, studies in structure, oral work, and reading selections. Not open to native speakers or students who have had three years of high school French without the permission of the school chair.

This course is equivalent to MOTR LANG 101 French I in the Humanities & Fine Arts Knowledge Area.

FREN 1202 - Elementary French II GE (3)

A continuation of French I. Increased attention to grammar. Not open to native speakers or students who have had four years of high school French without the permission of the school chair. Prerequisite(s): FREN 1201.

This course is equivalent to MOTR LANG 102 French II in the Humanities & Fine Arts Knowledge Area.

FREN 2201 - Intermediate French I GE (3)

Reading, conversation, vocabulary, and idiom drill. Prerequisite(s): FREN 1202.

FREN 2202 - Intermediate French II GE (3)

Continuing development of the ability to use the language on the intermediate level. Prerequisite(s): FREN 2201.

FREN 2290 - Special Topics in French (1-3)

Individual or group work by selected students in carefully chosen fields for intermediate level study. *May be repeated for a maximum of 15 semester hours.* Prerequisite(s): 6 semester hours of French and consent of the school chair.

FREN 3223 - French Composition (3)

Review of grammar. Intensive practice in composition with increased attention to stylistics. Prerequisite(s): FREN 2202.

FREN 3243 - French Conversation (3)

Provides intensive drill in conversational language using culture-based materials. Prerequisite(s): FREN 2201.

FREN 3261 - French Civilization and Literature I (3)

From the origins to the eighteenth century. Prerequisite(s): FREN 2202.

FREN 3262 - French Civilization and Literature II (3)

From the eighteenth century to 1945. Prerequisite(s): FREN 2202.

FREN 4223 - Advanced French Composition (3)

Oral and written composition, review of more difficult grammatical construction and idioms. Prerequisite(s): FREN 3223.

FREN 4243 - Advanced French Grammar and Conversation (3)

Study and practice of oral advanced French conversational patterns. Review of more difficult grammatical construction and idioms. Prerequisite(s): FREN 3243.

FREN 4265 - The Contemporary French-Speaking World (3)

An overview of contemporary France and other French-speaking nations. Prerequisite(s): FREN 3261 or FREN 3262.

FREN 4287 - French Literature of the Twentieth Century (3)

Symbolism, surrealism, and existentialism in prose, poetry and theatre. Prerequisite(s): FREN 3223.

FREN 4288 - French Translation (3)

Commercial and technical translation from French into English and English into French. Prerequisite(s): FREN 3223.

FREN 4289 - Cinema of the French-Speaking World (3)

A survey of films from the French-speaking world with emphasis on the cultural contexts in which the films are produced and viewed. Prerequisite(s): FREN 3223.

FREN 4290 - Special Topics in French (1-3)

Individual or group work by selected students in carefully chosen fields for advanced study. *May be repeated for a maximum of 15 semester hours.* Prerequisite(s): 18 semester hours of French and consent of school chair.

GSS 1050 - Women's Voices GE (3)

Exploring the gendered viewpoints and voices of a variety of writers, filmmakers, and activists. Although some of the focus of the course
is women's experiences, the course also expands the category to include a range of diverse perspectives. Course topics include: gender identity, feminism, media representation, body image and beauty ideals, reproductive rights, and trans* issues.

This course is equivalent to MOTR LITR 106 Women's Literature in the Humanities & Fine Arts Knowledge Area.

GSS 2000 - Intersections: Gender, Race, Class GE (3)

Explores how interactions of multiple social categories, including race, class, sexuality, and more, shape our experiences of gender. It utilizes an interdisciplinary social science approach drawing from sociology, history, political science, and other fields to examine the institutional bases of privilege and oppression in modern American society. The course places special emphasis on connecting scholarship to our lived experiences and considering how we can create change in our lives and society.

GSS 2050 - Sexuality, Identity & Social Action GE (3)

Explores major debates over sexuality from an interdisciplinary perspective asking questions about identity, power, and cultural difference. Considers the role of social action in a plural society.

GSS 3000 - Sex & Society (3)

Examines a range of topics focusing on how sex, sexuality, and gender function in society. With variable titles and themes, the course may employ a range of different approaches, depending on instructor. Examples of course themes may include: histories of sex and gender, Masculinity Studies, porn studies, rape culture, medicine & health, reproductive justice, beauty, disability, and more. *May be repeated for a maximum of 6 semester hours.*

GSS 3100 - Gender, Literature, and Pop Culture (3)

Explores popular culture through representation of gender and sexuality within fiction, theater, cinema, radio, music, television, comics, journalism, and other mass media. *May be repeated for a maximum of 6 semester hours.*

GSS 4000 - Internship (3)

Allows a student direct experience working on behalf of gender and sexuality issues in organizations or advocacy groups. Provides a context to think critically about how feminist work is accomplished. Prerequisite(s): 2 courses from the following: GSS 1050, GSS 2000, or GSS 2050.

GSS 4810 - Special Projects in Gender & Sexuality Studies (1-6)

Individual study or one-time courses focused on specialized issues in Gender and Sexuality. *May be repeated for a maximum of 9 semester hours.* This course is co-listed with GSS 5810.

GSS 4850 - Feminist and Queer Theories (3)

This course introduces key themes in contemporary feminist and queer discourse and encourages students to cultivate critical thinking about gender and sexuality relations and inequalities. Covering foundational works as well as current developments, this course centers the relationship between theory, social justice, and activism to explore how these can and should be mutually-informing projects.
Prerequisite(s): 2 courses from the following: GSS 1050, GSS 2000, or GSS 2050.

GSS 4900 - Gender & Sexuality Studies Practicum (1-3)

A culminating experience designed to highlight the practical application of feminist theory, principles, research methods, and activist techniques. In addition to developing at least one campus-wide GSS-themed event or "action," students will meet weekly to reflect on the process and discuss readings related to ethical activism and feminist praxis. At the end of the course, students will write a reflection paper documenting the semester's theme and what they have learned. *May be repeated for a maximum of 6 semester hours.*
Prerequisite(s): GSS 1050, GSS 2000, or GSS 2050.
Spring.

GEOG 1330 - COVID-19 & Practicing Sustainability (3)

A critical examination of local/global practices of environmental, social, cultural, and economic sustainability and how they could have prevented the outbreak and spread of COVID-19 and can enhance effective responses to this and future pandemics.
This is a sustainability course.

GEOG 2101 - Introduction to Sustainability (3)

Exploring concepts and principles of environmental, social, cultural and economic sustainability; analyzing the making of sustainable places.
This is a sustainability course.

GEOG 2212 - World Geography GE (3)

A survey of the world's major regions, examining their unique peoples, cultures, economies, and physical environments.

This course is equivalent to MOTR GEOG 101 World Regional Geography in the Social & Behavioral Sciences Knowledge Area.
This is a sustainability course.

GEOG 2246 - Economic Geography (3)

Influence of geographic factors upon economic life, including such topics as natural resources and the relations of geographic factors to industrial and commercial development.
This is a sustainability course.

GEOG 2250 - Cultural Geography (3)

An introductory survey of world cultures from a geographic perspective with various concepts and themes to help students to achieve global learning, intercultural knowledge and competence. and ethical reasoning from a spatial perspective.
This is a sustainability course.

GEOG 3200 - Geography of Europe (3)

A systematic and regional approach to Europe involving the description and analysis of its major regions, political units, cultural diversity, and contemporary issues and problems.

GEOG 3225 - Geography of Latin America (3)

South and Central America, including Mexico and the Caribbean, with analysis of the various physical environments, cultures, economies, and contemporary issues.
This is a sustainability course.

GEOG 3270 - Research Methods in Geography (3)

An overview of and training in methods of geographic data selection, collection, and analysis.
Prerequisite(s): GEOG 2212 or GEOG 2250 or permission of instructor.

GEOG 3310 - Geography of Africa (3)

Historic and modern significance of Africa; description and delimitation of the major natural regions; and the dominant native cultures.
This is a sustainability course.

GEOG 3314 - Geography of North Africa/Southwest Asia (3)

Regional study of North Africa/Southwest Asia (Middle East) examining the spatial aspects of the realm's physical, cultural, and political geography. Covers countries from Morocco to Iran.

GEOG 4230 - Geography of Asia (3)

A systematic and regional approach to the several Asian landscapes. Emphasis is on physical geography and cultural regions.
This is a sustainability course.

GEOG 4235 - Geography of the Former Soviet Union (3)

A regional geography of the F.S.U. The relationship of rigorous physical environment to national problems.

GEOG 4265 - Urban Geography (3)

Location of cities as related to other geographic phenomena. Urban units are analyzed with respect to general location theory. This course is co-listed with GEOG 5265.

GEOG 4270 - World Political Geography (3)

The historical development of the political organization of area. Theoretical aspects of political geography are emphasized.

GEOG 4291 - Conservation of Natural Resources (3)

Problems of availability, production, exploitation, appraisal, distribution, and renewability of natural resources. This course is co-listed with GEOG 5291.
This is a sustainability course.

GEOS 1004 - Introduction to Geology GE (4: 3 lecture, 1 lab)

Fundamental principles of geology. Minerals, rocks, plate tectonics, volcanoes, earthquakes, fossils & evolution of life on Earth, landscape formation by streams, glaciers, and underground water. Laboratory included. An additional fee is associated with this course.

This course is equivalent to MOTR GEOL 100L Essentials in Geology with Lab in the Natural Sciences Knowledge Area.
This is a sustainability course.

GEOS 1100 - Physical Geography GE (3)

A survey that investigates global climates, soils, vegetation, and landforms and the causes, effects, and interactions among these elements to create unique physical environments. An additional fee is associated with this course.

This course is equivalent to MOTR GEOG 100 Physical Geography in the Natural Sciences Knowledge Area.

GEOS 1112 - Astronomy (3)

The fundamental principles and theories pertaining to planetary astronomy, stellar evolution, and origin of the galaxies. Observational techniques are discussed and night-time viewing sessions are held using school telescopes.

This course is equivalent to MOTR ASTR 100 Astronomy in the Natural Sciences Knowledge Area.

GEOS 1114 - Weather and Climate GE (4: 3 lecture, 1 lab)

Principles and theories of weather, climate, and other atmospheric phenomena. Included is the study of energy exchanges, winds, cloud types, precipitation forms, severe weather, generation of hurricanes, tornadoes, and mid-latitude storms, pollution, climate change and the cultural implications of weather and

climate.

This course is equivalent to MOTR PHYS 110LAS Essentials in Physical Sciences with Lab in the Natural Sciences Knowledge Area.

GEOS 1115 - Oceanography (3)

Introduction to ocean science intended for students with a limited science background. Relationship of continents and ocean basins, sea floor spreading, waves, tides, currents, circulation of the atmosphere and ocean, marine biology and geology, and global environmental implications.

GEOS 2281 - Map Interpretation (2)

A survey of the problems encountered in reading maps. Emphasis is on the kinds of information that can be presented on maps, the kinds of symbols used, and limitations of maps.

GEOS 2300 - Our Digital Earth GE (3)

You are here! This introductory course will introduce students to library/web-based resources as well as exploring geospatial technologies (GIS, GPS, Remote Sensing) to understand human and environmental interactions.

GEOS 4201 - Cartography (3)

Techniques and tools of map construction including gathering, manipulation, and representation of geographic data. Emphasis on thematic mapping and maps as communication. Traditional and electronic technologies stressed. Prerequisite(s): GEOG 2212 or GEOS 1004. An additional fee is associated with this course.

GEOS 4210 - Remote Sensing and Image Interpretation (3)

Use of electromagnetic spectrum to obtain information on our environment. Emphasis includes visible spectrum (air photography), thermography, radar, and satellite imagery. This course is co-listed with GEOG 5310. An additional fee is associated with this course.

GEOS 4220 - Geographic Information Systems I (3)

Automated procedures for storage, analysis, and display of spatial information. Databases, procurement of spatial information, data manipulation and display techniques, software systems and management issues. This course is co-listed with GEOG 5320. An additional fee is associated with this course.

GEOS 4221 - Geographic Information Systems II (3)

Advanced aspects of spatial analysis and modeling and programming. Emphasis on research and planning applications. This course is co-listed with GEOG 5321. Prerequisite(s): GEOS 4220. An additional fee is associated with this course.

GEOS 4251 - Special Projects in Geoscience (1-6)

Study, interpretation, and discussion of special topics and problems in geography or earth science. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with GEOG 5251.

GEOS 4275 - Special Topics in Geoscience (1-3)

Directed individual or group research of predetermined problems in geography or earth science for more intensive study. *May be repeated for a maximum of 3 semester hours.*

GEOS 4280 - Natural Disasters (3)

Designed to examine the geography, natural causes, and human consequences of a variety of natural disasters including a focus on how human behavior exacerbates those consequences.

GEOS 4950 - Laboratory Intern (1)

Students will assist in the preparation, supervision, and assessment of laboratory activities in the Earth Science program. *May be repeated for a maximum of 2 semester hours.* Prerequisite(s): Senior level in an Earth Science or Science Program and consent of faculty member of record for course.

GER 1301 - Elementary German I GE (3)

Fundamental principles of German pronunciation, building a basic vocabulary of German words and idiomatic expressions, oral work, and reading simple selections. Not open to native speakers or students who have had three years of high school German without the permission of the school chair.

This course is equivalent to MOTR LANG 105 Foreign Language I in the Humanities & Fine Arts Knowledge Area.

GER 1302 - Elementary German II GE (3)

A continuation of German I. Increased attention to grammar. Not open to native speakers or students who have had four years of high school German without the permission of the school chair. Prerequisite(s): GER 1301.

This course is equivalent to MOTR LANG 106 Foreign Language II in the Humanities & Fine Arts Knowledge Area.

GER 2301 - Intermediate German GE (3)

Vocabulary, conversation, intensive grammar practice. Prerequisite(s): Acceptable proficiency as demonstrated by adequate high school course work in German or by departmental approval.

GER 2302 - Intermediate German II GE (3)

Continuing development of the ability to use the language on the intermediate level, with more advanced grammar, listening work and readings. Prerequisite(s): GER 2301 or departmental approval.

GER 2303 - German Conversation I (3)

Conversation German using culturally based materials, emphasizing the four language skills (speaking, listening, writing and reading). Prerequisite(s): GER 2302 or departmental approval.

GER 2390 - Special Topics in German (1-3)

Individual or group work by selected students in carefully chosen fields for intermediate level study. *May be repeated for a maximum of 15 semester hours.* Prerequisite(s): 6 semester hours of German and consent of the school chair.

GER 3301 - Advanced German Readings (3)

Overview of contemporary literature in Germany, Austria, and Switzerland. Selected short stories, poems, plays, fairytales are read and discussed. Prerequisite(s): GER 2301 or departmental approval.

GER 3302 - German Composition and Grammar (3)

Advanced grammar including the passive voice and the subjunctive mood. Written composition will emphasize German word-order and idiomatic skills. Prerequisite(s): GER 2302 or departmental approval.

GER 3303 - German Conversation II (3)

Advanced oral practice in everyday German, discussion, idiomatic usage, listening comprehension and speaking. Prerequisite(s): GER 2303 or departmental approval.

GER 3323 - Contemporary Society in German-Speaking Countries (3)

An exploration of contemporary political, economic and societal issues affecting German-speaking cultures with emphasis on further developing language skills through discussions and written assignments. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): GER 2302 or departmental approval.

GER 3361 - German Civilization & Literature I (3)

A survey of German history, culture and literature before 1871. Prerequisite(s): GER 2302 or departmental approval.

GER 3362 - German Civilization and Literature (3)

A review of German history starting from 1871, including the Weimar Republic. Prerequisite(s): GER 2302 or departmental approval.

GER 3365 - Culture and Issues in German-Speaking Countries (3)

Focused exploration of topics in the culture and intellectual history of German-speaking countries. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): GER 2302 or departmental approval.

GER 4301 - German Cinema (3)

A survey of films from various German-speaking countries, with an emphasis on the cultural contexts in which the films are produced and viewed. Prerequisite(s): 3 hours of any 3000-level German class, or departmental approval.

GER 4302 - German Composition and Grammar II (3)

Advanced composition will emphasize German word-order, style and idioms. Prerequisite(s): GER 3302 or departmental approval.

GER 4350 - Business German (3)

Enhances linguistic and cultural knowledge of German for business, and will be conducted primarily in German. Prerequisite(s): 3 hours of any 3000-level German course.

GER 4380 - Masterpieces in German Literature (3)

Thematic survey of German literature. Prerequisite(s): 3 hours of any 3000-level German course or departmental approval.

GER 4390 - Special Topics in German (1-3)

Individual or group work by selected students in carefully chosen fields for advanced study. *May be repeated for a maximum of 15 semester hours.* Prerequisite(s): 18 semester hours of German and consent of school chair.

GRAP 2030 - Pre-Media Applications - Adobe Illustrator (3)

Applied experiences in design and production of vector graphic files using Adobe Illustrator which meet current industry standards. Prerequisite(s): FAME 1010. An additional fee is associated with this course.

GRAP 2031 - Pre-Media Applications - Adobe Photoshop (3)

Applied experiences in creation and manipulation of digital images (raster graphic files) using Adobe Photoshop which meet current industry standards. Prerequisite(s): FAME 1010. An additional fee is associated with this course.

GRAP 2032 - Pre-Media Applications - Adobe InDesign (3)

Applied experiences in design and creation of page layout files using Adobe InDesign which meet current industry standards. Prerequisite(s): GRAP 2030 and GRAP 2031. An additional fee is associated with this course.

GRAP 2670 - Web Media Animation (3)

Fundamentals of animation theories and practices specializing in digital applications. Planning and storyboarding for types of animation. Hands-on experiences will supplement lecture. Prerequisite(s): NET 1610 and NET 2620. An additional fee is associated with this course.

GRAP 4014 - Advanced Technical Problems in Graphic Arts (1-3)

Individual/group work on recent developments and advanced technical concepts. Experimentation and technical exploration of content not available through formal course offerings in the school . By arrangement for qualified students. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): written contract/proposal with objectives and written school consent. An additional fee is associated with this course.

GRAP 4500 - Special Projects in Graphics (1-3)

Investigation of contemporary problems and issues in graphics by selected individuals or groups. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): written contract/proposal with objectives and written school consent. An additional fee is associated with this course.

HLTH 1010 - Introduction to Health Studies (1)

Includes material designed to assist the student in the skillful selection and understanding of an associated, adjunctive, rehabilitative, administrative, or affiliated healthcare career. Fall, Spring only

HLTH 1100 - Personal Health GE (3)

Health issues in today's society with special reference and application to the present and future life of the student. Fall, Spring, Summer.
This is a sustainability course.

HLTH 1350 - Responding to Emergencies (3)

The first aid practice and theory for common emergencies. Students may receive first aid and CPR certification. An additional fee is associated with this course. Fall, Spring.

HLTH 2000 - Special Projects in Health Studies (1-3)

An Individual or group study or training in Health Studies content areas. A certificate may have been awarded for professional development. *May be repeated for a maximum of 3 semester hours.*

HLTH 2200 - Applied Nutrition and Health Interventions (3)

This course will provide the student with an understanding of how nutrition and health interventions apply to health programs that are theoretically grounded, evidence-informed, and/or interdisciplinary and can improve an individual's general health. Fall, Spring, Summer.

HLTH 2400 - Community Health Education (3)

Various types of health programs conducted by private, volunteer, and official agencies are explored. Fall, Spring, Summer.

HLTH 3000 - Internship (3)

Designed to provide students with a 200-hour field experience applying health science principles and theories in an approved setting. . Prerequisite(s): School approval and must have completed two-thirds of major courses in area of study

HLTH 3300 - Health Behavioral Theory (3)

Students explore the use of behavior modification strategies in the context of current health issues and news topics. Students will gain insight into the process of linking theory to practice in health promotion campaigns and programs. Fall, Spring.

HLTH 3310 - Methods in Elementary School Health (2)

Curriculum and lesson plan development, basic health concepts, and methodology of teaching elementary health education. Fall, Spring, Summer.

HLTH 3350 - Introduction to Epidemiology and Population Health (3)

This course will review the major principles of epidemiology through the use of medical literature. This course is designed for students to obtain training in epidemiologic and population health concepts and methods. Fall, Spring.

HLTH 3360 - Methods in Secondary School Health (2)

Explores the current trends in curriculum development in health education and the legal aspects of school health. Prerequisite(s): EDFL 2240. Fall, in even numbered years only

HLTH 3400 - Interprofessional Education (IPE) I: Program Planning and Evaluation (3)

Designed to provide the student with the skills necessary to assess, develop, implement, and evaluate health programs within a community. Fall, Spring.

HLTH 4000 - Special Projects in Health Studies (1-5)

Individual or group study of problems in special areas of interest. *May be repeated for a maximum of 5 semester hours.*

HLTH 4310 - Drugs: Addiction to Recovery (3)

Use and abuse of alcohol and drugs; current problems relative to drug use, abuse, and control; programs in education, law enforcement, and community agencies. This course is co-listed with HLTH 5310. Fall, Spring only.

HLTH 4320 - Teaching Sexuality Education in the School (3)

Prepares the teacher for course development, instruction and integration of sexuality education into the school curriculum. Fall, in odd numbered years only

HLTH 4330 - First Aid and CPR (1)

Skills and principles of first aid and accident prevention in the schools. Students may receive first aid and CPR certification. An additional fee is associated with this course. Fall, Spring, Summer.

HLTH 4350 - Advanced First Aid and Emergency Care (3)

Emphasizes the essential knowledge and skills needed to develop the functional first aid capabilities required by policemen, firemen, emergency squad and rescue squad members, ambulance attendants, and other special interest groups. Students taking this course may complete requirements for the American Red Cross Advanced First Aid and Emergency Care Certificate.

HLTH 4370 - Pathophysiology (3)

An overview of the agents of disease, the processes of contagion, and the effects on humans. Prerequisite(s): KIN 2850 or BIOL 3401 and BIOL 3402. BIOL 3402 may be taken concurrently.

HLTH 4410 - Interprofessional Education (IPE) II: Program Implementation (3)

This course will deliver the necessary components for the successful implementation of health promotion programs. By using evidence-based interventions, students will be able to effectively deliver and implement health education or promotion programs. Prerequisite(s): HLTH 3400. An additional fee is associated with this course. Fall, Spring.

HLTH 4420 - U.S. Health Policy, Advocacy and Ethics (3)

An examination of current U.S. health policy and news coverage. Students will engage in discussions of issues, ethics, processes, and measures. Interdisciplinary case study activities will help the student understand the opportunities and challenges that health policy presents. Prerequisite(s): Juniors and Seniors only. Fall only.

HLTH 4450 - Global Health (3)

This course uses a multidisciplinary view to introduce the student to essential globalization and global health concepts such as global health rights, determinants of health, prioritization, strategies, metrics, financing, and goals. Students will look critically at health comparisons, development, partnerships and sustainability across the income spectrum. Prerequisite(s): Juniors and Seniors only. Spring only.

HLTH 4760 - Organization and Administration of the School Health Program (2)

The organization and administration of the school health program emphasizing the areas of healthful school living, health services, and health instruction. Prerequisite(s): HLTH 3310 or HLTH 3360.

HLTH 4765 - Internship (6)

A 300-contact hour field experience applying health studies principles or theories in an approved community, corporate, and clinical setting. Prerequisite(s): HLTH 4410 or concurrently.

HIST 1350 - History of the United States to 1877 GE (3)

Survey of U.S. history from the age of exploration to 1877.

This course is equivalent to MOTR HIST 101 American History I in the Social & Behavioral Sciences Knowledge Area.

HIST 1351 - History of the United States from 1877 GE (3)

Survey of U.S. history from 1877 to present.

This course is equivalent to MOTR HIST 102 American History II in the Social & Behavioral Sciences Knowledge Area.

HIST 1400 - History of the Early World GE (3)

A survey of world civilizations from earliest times to 1648. Particular emphasis will be placed upon political, economic, social, and religious developments and achievements.

This course is equivalent to MOTR HIST 201 World History I in the Social & Behavioral Sciences Knowledge Area.

HIST 1402 - History of the Modern World GE (3)

A survey of modern world civilization since 1648. Special attention given to industrialization, democratization and constitutionalism, imperialism, global wars, and development of the non-western world.

This course is equivalent to MOTR HIST 202 World History II in the Social & Behavioral Sciences Knowledge Area.

HIST 2000 - Hidden Histories (3)

A rotating topical course that targets the acquisition and development of skills essential to historical literacy and analysis. Each offering studies topics of present-day relevance and interest, including from diverse perspectives.

HIST 2430 - Environment and History (3)

This course surveys the environmental history of the world over the long term. It explores human cultures' relationships to the non-human world through a variety of themes, paying special attention to the interaction between the global and local scales. Fall, Spring.

HIST 3316 - The American Military Experience (3)

Selected topics and themes in American military history.

HIST 3337 - US Environmental History (3)

This course examines how humans and nature have interacted in American history, from the last Ice Age until the present day. It focuses on how these relationships have shaped the economic, political, cultural, and social history of the area that is now the United States. Fall, Spring.

HIST 3351 - Special Topics in US History (3)

Study, interpretation, and discussion of special topics and problems in United States history. *May be repeated for a maximum of 9 semester hours.*

HIST 3416 - Europe in Crisis: 1900-Present (3)

Examines the political, diplomatic, and strategic trends of the major European states from World War I through the present.

HIST 3442 - The Soviet World (3)

Russia and Eastern Europe from World War I through the collapse of communism. Fall, even numbered years only.

HIST 3491 - Special Topics in World History (3)

Study, interpretation, and discussion of special topics and problems in World history. *May be repeated for a maximum of 9 semester hours.*

HIST 4300 - Missouri History (3)

Missouri history from earliest times to the present. This course is co-listed with HIST 5300.

HIST 4307 - American Colonial History 1607-1763 (3)

American political, economic, and cultural institutions in the colonial period. This course is co-listed with HIST 5307.

HIST 4309 - The African-American in American History (3)

Economic, political, and social development of the African-American in the United States. This course is co-listed with HIST 5309.

HIST 4310 - Women in America (3)

Women in America from colonial times to the present with emphasis upon the nineteenth century feminist movement and the recent twentieth century women's rights movement. This course is co-listed with HIST 5410.

HIST 4311 - Revolution and Republic (3)

American political, economic, and cultural institutions from 1763 to the War of 1812. This course is co-listed with HIST 5311.

HIST 4314 - Jacksonian America (3)

Cultural, social, political and economic development of the United States from the War of 1812 to 1848. Students who earned undergraduate credit for HIST 4314 may not take HIST 5314 for graduate credit. This course is co-listed with HIST 5314.

HIST 4315 - The Civil War and Reconstruction (3)

The causes of the war, the social, political, economic and military impact of the war; and the post-war reconstruction process. Students who earned undergraduate credit for HIST 4315 may not take HIST 5315 for graduate credit. This course is co-listed with HIST 5315.

HIST 4317 - The Jazz Age and the Great Depression (3)

The social, cultural and political trends of the Jazz Age, the social and economic impact of the Great Depression, and the advent of the New Deal. This course is co-listed with HIST 5317.

HIST 4318 - The Gilded Age and Progressive Era (3)

The course examines the political and social changes in the United States from 1877 to 1920 that contributed to the emergence of modern America. This course is co-listed with HIST 5318.

HIST 4320 - History of the American West (3)

Explores the economic, political, cultural, social, and environmental history of the trans-Mississippi West. This course is co-listed with HIST 5320. This is a sustainability course.

HIST 4322 - US History Since 1945 (3)

Examines the social, cultural, and political history of the United States from 1945 through the twentieth century. This course is co-listed with HIST 5322.

HIST 4324 - Truman and Civil Rights (3)

Analyzes the civil rights record of President Harry S. Truman. This course is co-listed with HIST 5324.

HIST 4327 - African American Women, Gender, and Girlhood (3)

Focuses on the history and development of black women and girls from their African origins to the present. This course is co-listed with HIST 5327.

HIST 4328 - History of Flight (3)

Examines manned flight from the eighteenth century to the present, with additional topics covering the basic biological and physical mechanics of flight. Students who earned undergraduate credit for HIST 4328 may not take HIST 5328 for graduate credit. This course is co-listed with HIST 5328.

HIST 4330 - The United States and World War II (3)

The rise of totalitarianism in the 1930's, America's reaction to totalitarianism, the war in Europe 1939-41 and America's reaction, America in World War II, the impact of World War II upon American society, and the post-war settlement and the Cold War. This course is co-listed with HIST 5330.

HIST 4340 - Public History (3)

Defines public history and its constituents, and it surveys the job experiences of practitioners in the fields of archives, museums, and historic sites. This course is co-listed with HIST 5340.

HIST 4351 - Special Projects in American History (1-6)

Study, interpretation, and discussion of special topics and problems in American history. *May be repeated for a maximum of 15 semester hours.* This course is co-listed with HIST 5551.

HIST 4411 - The Renaissance and Age of Exploration (3)

An analysis of the relationships between the Italian Renaissance, Iberian exploration, and the forging of the first global economy up to the mid-sixteenth century. This course is co-listed with HIST 5411.

HIST 4412 - Wars of Reformation and Religion (3)

An exploration of the religious, social, and political causes and effects of the sixteenth century crisis in Western Christendom and the warfare to 1648. This course is co-listed with HIST 5412.

HIST 4414 - The Age of the French Revolution and Napoleon (3)

The origins, development, and consequences of the French Revolution and the Napoleonic Empire in France and in the larger European world, with special reference to the broad transformation of the entire continent during the eighteenth century. This course is co-listed with HIST 5414.

HIST 4415 - Revolutionary Europe (3)

A survey of the political, social, economic, and cultural transformation of Europe in a century of revolution, from the ancient regime to World War I. This course is co-listed with HIST 5415.

HIST 4420 - World War I (3)

An historical overview of the causes, course, and consequences of World War I, especially from the European perspective. This course is co-listed with HIST 5420. Fall.

HIST 4423 - Rule Britannia!: The Making and Eclipse of a Great Power (3)

The political, economic, and cultural history of Great Britain and the Empire since the Age of Reason. This course is co-listed with HIST 5423.

HIST 4431 - Topics in German History (3)

Selected topics and themes in German history. This course is co-listed with HIST 5431.

HIST 4432 - Nazi Germany and the Holocaust (3)

Traces the rise of Nazism, World War II, the Final Solution, and their legacies. This course is co-listed with HIST 5432.

HIST 4451 - Imperial Spain 1469-1714 (3)

The rise of the Spanish Empire in the Old World and the New from the fifteenth through the seventeenth centuries. This course is co-listed with HIST 5451.

HIST 4452 - Modern Latin America (3)

Latin American history from the independence movement of the eighteenth century to the present. This course is co-listed with HIST 5452.

HIST 4453 - History of Mexico (3)

A survey of the political, social, economic and cultural history of Mexico from pre-Columbian civilizations to the present. This course is co-listed with HIST 5453.

HIST 4461 - The Rise of Chinese Civilization (3)

The origins, development, and transformation of Chinese civilization from ancient to modern times, including China's impact on peripheral nations and the modifications of traditional culture by Western

influences until 1949. This course is co-listed with HIST 5461.

HIST 4462 - The Rise of Japanese Civilization (3)

The origins, development, and transformation of Japanese civilization from ancient to modern times, emphasizing the unique qualities of Japanese history and culture and the role of Japanese leadership in modern East Asia. This course is co-listed with HIST 5462.

HIST 4463 - Modern China (3)

Communist China since World War II, including the expulsion of the Nationalist government from the mainland, the consolidation of communist power and authority, internal upheavals such as the "Hundred Flowers," the Great Leap Forward, and the Cultural Revolution and Communist China's foreign policies and role in international affairs. This course is co-listed with HIST 5463.

HIST 4464 - Modern Korea (3)

Korean history from 1800 to the present, examining politics, society, economy, and culture. Focus on Korea's interaction with East Asia and the world. This course is co-listed with HIST 5464.

HIST 4471 - The African Diaspora (3)

Examines the global dispersal of Africans with particular emphasis on the rise and abolition of the Trans-Saharan and Atlantic slave trades. This course is co-listed with HIST 5471.

HIST 4472 - African History (3)

Examines the African continent, its development and its place in world affairs since prehistory, from complex societies to independence in the twentieth century. This course is co-listed with HIST 5472.

HIST 4473 - History of South Africa (3)

A survey of South African History from the pre-1800s to the present. This course is co-listed with HIST 5473.

HIST 4491 - Special Projects in World History (1-6)

Study, interpretation, and discussion of special topics and problems in World history. *May be repeated for a maximum of 15 semester hours.* This course is co-listed with HIST 5491.

HIST 4500 - Senior Capstone in History (3)

Senior seminar and practicum in advanced historical research and writing. Prerequisite(s): History Majors Only.

HIST 4501 - Public History Internship (0-3)

Allows students to obtain experience working in public history institutions like archives, museums, and historic sites. *May be repeated up to six hours.* Prerequisite(s): HIST 4340. Fall, Spring, Summer.

HONR 1400 - Building a Scholarly Community (1)

Designed to help first-year Honors College students familiarize themselves with our program, meet other Honors College students, and identify resources that will help them succeed at UCM and beyond. More specifically, the class will challenge students to think of themselves as part of a scholarly community with the privileges and responsibilities that entails. Fall, Spring, Summer.

HONR 3000 - Honors Colloquium (3)

An interdisciplinary course taught by selected faculty. Content varies from semester to semester. Required of and open only to students in The Honors College. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): junior standing or approval of the Dean of The Honors College.

HONR 4000 - Honors Project (1-6)

An independent study course, which serves as a capstone research or creative project, as pursued under the supervision of a UCM faculty mentor. A minimum of 3 credit hours is required for all Honors College students, but students may complete these credits over multiple semesters. Students are also allowed to register for up to 6 credit hours of HONR

4000 should the project require it. Meeting times are determined by the faculty member and student. All honors projects require an approved proposal, which can be accessed on The Honors College website, and must be submitted by the first week of classes in which the student wishes to register.

HM 1800 - Introduction to Hospitality (3)

Introduces the students to the scope of the hospitality industry, its organizational structure and operations. This includes its history and development, various sectors, current ventures and career opportunities. An important goal is for students to rigorously assess their career interests and to map a detailed career plan for the first few years of their professional lives. Fall.

HM 3810 - Internship in Hotel and Restaurant Management (1-3)

The purpose of this course is to introduce students to the hospitality industry and allow for investigating different career paths. The internship advances the concepts of customer service and inter-personal skills. Three credit hours must be with same employer. Only available for Pass/Fail credit. An additional fee is associated with this course.

HM 3880 - Internship (1-3)

Provides industry experience for students in the BSBA in Hospitality Management. Appropriate internship sites can include hotels, resorts, restaurants, theme parks, Convention & Visitor's Bureau and other businesses in the Hospitality & Tourism industry. Three credit hours must be with same employer. An additional fee is associated with this course.

HM 4000 - Special Projects in Hospitality Management (1-3)

Investigation of current problems and issues in hospitality management. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): Consent of instructor. An additional fee is associated with this course.

HM 4810 - Internship (1-5)

Hospitality businesses provide undergraduate students who have demonstrated a high level of commitment to the hospitality industry through their academic performance and practical experience with the opportunity to grow their careers before graduation. These management internship experiences allow students to work in properties in a few departments to gain valuable experience with industry leaders. Students have an opportunity to experience the culture of the organization which can help them determine if it could be the right career fit for them upon graduation. Students are expected to take the initiative to be immersed in the operation of a hotel or restaurant departments, understand the day-to-day operations and managerial functions. Only available for Pass/Fail credit. Prerequisite(s): HM 3810 and junior or senior standing. Five credit hours must be with same employer. An additional fee is associated with this course.

HDFS 1010 - Individual and Family Relationships GE (3)

Focus on family relationships and personal development including topics of self-esteem, informed decision making, gender roles, love and mate selection, stress and crisis management, communication and conflict resolution, domestic violence, sexuality, parenting and human diversity. Fall, Spring, Summer. Sometimes offered online.

This course is equivalent to MOTR SOCI 204 Introduction to Family Studies in the Social & Behavioral Sciences Knowledge Area.

HDFS 1220 - Child and Adolescent Development (3)

An introduction to major theories and research on child and adolescent development. Emphasis is on dynamic forces underlying growth and change, such as physical, cognitive and psychosocial development. This is a professional education course. Fall, Spring, Summer. Sometimes offered online.

HDFS 1230 - Observation of Children (2)

Techniques of observation and actual observation of children. A criminal background check will be completed prior to observations. This is a professional education course. Fall, Spring. Sometimes offered online.

HDFS 1450 - Valuing Differences: Discovering Common Ground (1)

Explores personal, experiential, and interactive issues relating to race, gender, class, and culture including ways that culturally diverse populations enrich society through differences and similarities. Fall, Spring. Sometimes offered online.

HDFS 3230 - Family Systems and Lifespan Development (3)

Family relationships and human development with focus on change over the course of the family life cycle. Fall, Spring, Summer. Sometimes offered online.

HDFS 3240 - Parent-Child Interaction (3)

Development and understanding of adult-child interaction in the family setting. Fall, Spring, Summer. Sometimes offered online.

HDFS 3250 - Organization and Administration of Programs for Young Children (3)

Methods and procedures for setting up and administering a variety of programs for young children. Includes study of state licensing, health, nutrition, safety, and program organization. Fall, Spring, Summer. Sometimes offered online.

HDFS 3260 - Youth Culture and Development (3)

This course will examine the cultural contextual factors that affect youth from a holistic perspective within and outside the family unit. The course will provide an understanding of the cultural heritage of differing family structures and types. Students will explore the social and educational processes experienced by youth through in-depth reading, writing, discussion, critical listening, viewing of contemporary videos, and interviews with youth and families. Students will be encouraged to think critically about society and culture, gain further knowledge of how different cultural youth groups fit historically into society, and examine the results of how history has shaped the current cultural climate of the U.S. Fall, Spring, Summer. Sometimes offered online.

HDFS 3710 - Field Experience in Child and Family Development (3)

Supervised training and work experience in approved professional organizations in the field of child and family development. Prerequisite(s): HDFS 1220 and HDFS 1230. Fall, Spring. Sometimes offered online.

HDFS 4000 - Special Projects in Child and Family Development (1-3)

Investigation of contemporary problems and issues in Child and Family Development. *May be repeated for a maximum of 6 semester hours.* Offered as needed.

HDFS 4220 - Sexuality Across the Lifespan (3)

Addresses human sexuality across the life span using a life course and cultural contextual perspective. Historical, biological, psychological, environmental, and familial influences will be examined. This course is co-listed with HDFS 5221. Fall, Spring. Some Summers and somtimes offered online.

HDFS 4250 - Selected Issues in Child and Family Development (3)

In-depth study of selected issues in child and family development. *May be repeated for a maximum of 9 semester hours.* This course is co-listed with HDFS 5251. Prerequisite(s): Junior standing or consent of the instructor.

HDFS 4260 - Adulthood (3)

Structured to introduce research approaches to the study of adult development through a cultural contextual exploration of the social, emotional, behavioral and educational processes. This course is co-listed with HDFS 5260. Fall, Spring. Some Summers and sometimes offered online.

HDFS 4510 - Early Childhood Approaches (3)

The physical, motor, intellectual, social, and emotional development of the child. Development of an intelligent philosophy of adult-child relationships. This course is co-listed with HDFS 5510. Some Spring semesters only and online.

HDFS 4520 - Multicultural Study and Approaches with Families (3)

Structured to examine multi-cultural individuals and families within the context of their unique cultural heritage. Special attention is focused on the external conditions that affect the internal workings of families and methods that have been found to be sensitive in addressing the needs of diverse groups. This course is co-listed with HDFS 5520. Spring only.

HDFS 4530 - Transition to Marriage (3)

Structured to provide information in regards to partner selection, to help individuals and couples understand the contexts within which they are embedded so that they can develop systems of support for their relationship, and to present suggestions for nourishing the relationship. This course is co-listed with HDFS 5530.

HDFS 4540 - Addiction and the Family (3)

An overview of various addictions with emphasis on substance use disorders and their effect on individuals, families, and communities. The course will focus on prevention and treatment. This course is co-listed with HDFS 5540.

HDFS 4550 - Health and Human Services (3)

Introduction to the role of professionals who provide health and human services to meet the needs of individuals and families throughout their developmental stages. This course is co-listed with HDFS 5550.

HDFS 4560 - Divorce (3)

Structured to introduce research literature on divorce. The changes that occur in family structures over time in the pre-divorce, divorce, and post-divorce process will be examined. This course is co-listed with HDFS 5560.

HDFS 4570 - Death, Loss, and Grief Across the Lifespan (3)

Intended to explore theory and research related to death, dying, loss, and grief across the lifespan and the ways that support is provided or lack thereof to bereaved individuals within cultural context. We shall explore individual, familial, religious, cultural, societal, and other human developmental contributions to such understandings and experiences. This course is co-listed with HDFS 5570. Fall, some Springs. Sometimes offered online.

HDFS 4580 - Resilience in Children and Adolescents (3)

Intends to introduce selected theories and research on situations that place children and adolescents at risk for emotional, behavioral, and academic problems. In addition, research on stress/coping and resilience will be emphasized. This course is co-listed with HDFS 5580. Online in the Fall and sometimes Summer.

HDFS 4590 - Health Issues in Childhood and Adolescence (3)

Will present selected health issues and its implications for the children/adolescents, family and society from a stress and coping perspective. In addition, it is intended to serve as an introductory course to the profession of Child Life. This course is co-listed with HDFS 5590. Spring even years.

HDFS 4710 - Internship (3)

Provides experience for students in cooperating businesses, agencies and organizations. *May be repeated for a maximum of 12 semester hours.* This course is co-listed with HDFS 5711. Prerequisite(s): HDFS 3710 and school consent. Summer only and online.

HDFS 4745 - Senior Seminar (3)

Philosophy, current issues and trends in Child and Family relationships related to occupations. Focus on problem-solving styles leading to group and individual research problems. Prerequisite(s): Senior standing, approval of faculty advisor. Fall, Spring. Sometimes offered online.

HDFS 4850 - Family Policy and Advocacy (3)

Provides an overview of trends and issues in family policy and advocacy, emphasizing the impact of laws, policies, programs on individuals and family. This

course is co-listed with HDFS 5850. Fall, Spring. Sometimes offered online.

HRM 3920 - Human Resource Management (3)

Issues related to the effective management of people within organizations; pertinent to all disciplines. Emphasis placed on practical applications using experiential activities to develop student's managerial skills. Prerequisite(s): MGT 3315 or concurrently; or MGT 3320 or concurrently; or INDM 4210 or concurrently. An additional fee is associated with this course. Fall, Spring, Summer.

HRM 4340 - Needs Assessment (1)

This course is the first in a series of 3 one-credit courses providing information and insight into the managerial function of training and development. Specifically, students will: conduct appropriate needs assessment strategies to determine potential training opportunities; write learning objectives that clearly articulate training goal; articulate learning gaps in behavioral terms. The overall approach is to develop leadership skills centering on changing employee behavior or developing new employee behaviors. Students gain the terminology needed to explain why training is effective. Each course in the series addresses elements of human resources development process (Hughes & Bird, 2017): assessment of needs; development of materials; and, selection of methods, delivery, and evaluation of training. As a result of completing the series of 3 courses, students are prepared to select, plan, implement and evaluate training interventions focused on meeting adult learners' needs. Students who earned undergraduate credit for HRM 4340 may not take HRM 5340 for graduate credit. This course is co-listed with HRM 5340. Prerequisite(s): MGT 3315 and MGT 3385 or FIN 3885 or MKT 3485. Senior Standing and Admission to BSBA or permission. An additional fee is associated with this course. Fall, Spring.

HRM 4341 - Selecting Materials and Delivery Methods (1)

This course is the second in a series of 3 one-credit courses providing information and insight into the managerial function of training and development. Specifically, students will: apply learning theory to effectively design and develop training programs for adult learners in organizations; select suitable instructional strategies, technology, and learning materials for delivering training; Apply theories of learning to the training function; apply leadership theory and management concepts to effectively design and develop training programs; develop a training intervention module. The overall approach is to develop leadership skills centering on changing employee behavior or developing new employee behaviors. Students will gain the terminology needed to explain why training is effective. Each course in the series addresses elements of human resources development process (Hughes & Bird, 2017): assessment of needs; development of materials; and, selection of methods, delivery, and evaluation of training. As a result of completing the series of 3 courses, students will be prepared to select, plan, implement and evaluate training modules focused on meeting adult learners' needs. Students who earned undergraduate credit for HRM 4341 may not take HRM 5341 for graduate credit. This course is co-listed with HRM 5341. Prerequisite(s): HRM 4340 (or concurrent), Senior Standing, Admission to BSBA or permission. An additional fee is associated with this course. Fall, Spring.

HRM 4342 - Delivery and Evaluation (1)

This course is the third in a series of one-credit courses providing information and insight into the managerial function of training and development. Specifically, students will: demonstrate effective presentation skills to maximize learning; measure and evaluate training module(s); conduct a cost-benefits analysis for a training module. Students WILL be evaluated on their in-class, or client-based, delivery of training in MGT 4342. The overall approach is to develop leadership skills centering on changing employee behavior or developing new employee behaviors. Students will gain the terminology needed to explain why training is effective. Each course in the series addresses elements of human resources development process (Hughes & Bird, 2017): assessment of needs; development of materials; and, selection of methods, delivery, and evaluation of training. As a result of completing the series of 3 courses, students will be prepared to select, plan, implement and evaluate training modules focused on meeting adult learners' needs. Students who earned undergraduate credit for HRM 4342 may not take HRM 5342 for graduate credit. This course is co-listed with HRM 5342. Prerequisite(s): HRM 4340 and HRM 4341 (or concurrent), Senior Standing and Admission

to BSBA or permission. An additional fee is associated with this course. Fall, Spring.

HRM 4930 - Compensation and Benefits (3)

Concepts, models, theories, and application of processes and systems of employee compensation and benefits within organizations. This course is co-listed with HRM 5930. Prerequisite(s): HRM 3920. An additional fee is associated with this course. Fall.

HRM 4990 - Problems in Human Resource Management (3)

An integrated approach to the administration of the human resource function in various types of organization settings through the use of the case and incident methods. This course is co-listed with HRM 5990. Prerequisite(s): HRM 3920. An additional fee is associated with this course.

INDM 4010 - Current Issues in Industry (3)

Identify, discuss, and research current issues, trends, and technological changes affecting industry as related to corporate planning, decision making, and managing for the future. This course is co-listed with INDM 5110. Prerequisite(s): junior or senior standing. An additional fee is associated with this course.

INDM 4015 - Legal Aspects of Industry (3)

Coverage of legal aspects of industry. Focus on the legal system, sources of law, and types of law affecting the manufacturing and/or construction industry. An additional fee is associated with this course.

INDM 4210 - Industrial Management (3)

A survey of operations management in industry today. Industrial management principles and applications, management science, operations analysis and design, manufacturing processes, process life cycle, production inventory, and quality control are emphasized. This course is co-listed with INDM 5210. An additional fee is associated with this course.

INDM 4220 - Human Factors Engineering (3)

Integration of concepts involved in providing safe and comfortable work places (Ergonomics) with concepts directed toward increased productivity and profitability (Work Design). This course is co-listed with INDM 5120. An additional fee is associated with this course.

INDM 4230 - Lean and Quality Management (3)

Relationship between quality and competitiveness, design strategy for performance excellence, and discussion of cases in lean systems and Six Sigma. This course is co-listed with INDM 5130. Prerequisite(s): background statistics course. An additional fee is associated with this course.

INDM 4240 - Facilities Engineering (3)

Provides students and practitioners with the practical resources that describe the techniques and procedures for developing an efficient facility layout and an introduction to computer simulations. This course is co-listed with INDM 5140. An additional fee is associated with this course.

INDM 4250 - Project Management (3)

Designed to provide students with applied knowledge in project management organizational contexts, project selection, portfolio management, project leadership, scope management, team building, conflict management, risk management, scheduling, networking, resource management, project evaluation, project control, and project termination. This course is co-listed with INDM 5150. An additional fee is associated with this course.

INDM 4260 - Organizational Dynamics (3)

Various types and styles of supervisory leadership in the industrial setting. Emphasis is placed on human relations aspects of leadership in the line and staff organizational structure. This course is co-listed with INDM 5160. An additional fee is associated with this course.

INDM 4280 - Industrial Statistics (3)

Statistical methods designed for industrial and applied research. Some of the quantitative methods used for solving industrial problems, including measurement system analysis, statistical process control, probability

distribution, testing hypotheses, multiple regression analysis, design of experiment, and nonparametric statistics commonly used in industry. This course is co-listed with INDM 5180. Prerequisite(s): MATH 1111 or MATH 1111R . An additional fee is associated with this course.

IT 3100 - Human Computer Interaction (3)

Basic principles of HCI, cognitive science and human factors, human information processing model, HCI design, evaluation, ethics and IRB, HCI for development, HCI for privacy/security, and future of HCI. Prerequisite(s): CS 2400. An additional fee is associated with this course.

IT 4100 - Project Management (3)

An introduction to project management and software tools for the project management. Topics include project management process, scope management, time management and cost management. Students learn how a successful project outcome will be achieved. This course helps students confidently prepare for PMP certificate. Prerequisite(s): IT 3100. An additional fee is associated with this course.

IT 4200 - IT Infrastructure Automation (3)

An introduction to fundamental principles and technical skills for IT infrastructure automation. Topics include components of IT infrastructure and modern data centers, virtualization technologies, virtual machines, Openstack, Docker containers, Kubernetes. Prerequisite(s): CYBR 2500 and NET 2060. An additional fee is associated with this course.

INST 4005 - Special Projects in Instructional Technology (1-5)

Individual or group study of problems in special areas of interest. *May be repeated for a maximum of 5 semester hours.*

INST 4100 - Integrating Technology into Teaching (3)

Advanced preparation in how to integrate technology into teaching including the latest trends and pedagogical strategies. This course is co-listed with INST 5101. Sometimes offered online.

INST 4110 - Google Educator Preparation (3)

Preparation in how to become a Google Educator by effectively integrating Google tools into teaching. This course is co-listed with INST 5110.

INST 4120 - Google Education Trainer Preparation (2)

Preparation in how to become a Google Education Trainer. This course is co-listed with INST 5120. Prerequisite(s): INST 4110.

INST 4200 - Instructional Design and Development (3)

In this course, students will use instructional design theory and principles to develop learning experiences. Students will apply instructional design models to identify the needs of learners, design learning materials, and work with subject matter experts. Topics include foundations in instructional design, needs analysis, assessment, and contemporary issues and trends in instructional design. This course is co-listed with INST 5200. Spring.

INST 4300 - Principles of Online Instruction (3)

Introduces students to the resources, techniques, and practices of teaching and learning in the PK-12 online environment. This course is co-listed with INST 5160. Sometimes offered online.

INST 4310 - Fund Development for Educational Technology (1)

Practical understanding and skills related to the creating fundable ideas, locating funding sources, writing competitive proposals, and manage funded educational technology projects. This course is co-listed with INST 5170. Sometimes offered online.

INST 4330 - Technology Troubleshooting for Educators (2)

Provides pre-service and in-service educators with the knowledge and skill to operate, maintain and troubleshoot (service) the various hardware devices and software found in schools. This course is co-listed with INST 5140.

INST 4400 - Design and Production of Media for Instruction (3)

Design and production of print-based, computer-based, and video-based instructional materials that are related to subject areas or grade levels. Includes application of multimedia technology to the design and production of educational materials aligned with standards. This course is co-listed with INST 5150. Sometimes offered online.

INST 4401 - Computer Science for Educators (3)

Students will develop foundational knowledge and skills of computer science concepts including: the impacts of computing, computing systems, networks and the internet, data and analysis, algorithms and programming. This course will prepare educators for teaching computer science content through engagement in problem solving, computational thinking, and pedagogical practices. This course is co-listed with INST 5401.

INST 4920 - Practicum in Instructional Technology (1)

Participation in field experiences that provide practice with teaching methodology applicable specifically to the problems and procedures encountered when working with instructional technology. *May be repeated for a maximum of 4 semester hours.* Prerequisite(s): INST 4400. Sometimes offered online.

IGEN 3224 - Critical Thinking (3)

Provides insight into and application of the skills needed to think critically about interpersonal and media messages, as well as analyze information. Fall, Spring.

IGEN 3896 - Assessing Global Change for the Information Age (3)

Challenges students to assess present and future trends, evaluate what is desirable, and reflect on their responsibility for the quality of life in the information age.

IGEN 4224 - Communication, Science and Technology (3)

Students will focus on the interactions among science, technology and society by examining scientific communication and scientific and technological controversies. Prerequisite(s): completion of General Education Knowledge Area II. Offered as needed.

IGEN 4236 - Science and Religion: From Conflict to Dialogue (3)

A clarification of the historical and philosophical issues that arise in the relationship between science and religion. The course emphasizes a variety of interpretive viewpoints.

IS 1000 - Introduction to International Studies GE (3)

An interdisciplinary course highlighting the interconnectedness between the individual, communities, and the global system. Theories of international relations, economics, and law are applied to topics.

IS 3000 - International Studies in Practice (3)

This course introduces students to the nature of work in international non-governmental organizations and non-profits and trains them in the skills necessary to succeed in this sector.

IS 3900 - Special Projects in International Studies (3)

Study, interpretation, and discussion of special topics and problems in international studies.

IS 4900 - Directed Readings in International Studies (3)

Readings focused on a specific area of international studies or a current issue that is of particular interest to the student.

IS 4950 - Senior Seminar (3)

Examination of current issues in international studies integrated with students' research interests, foreign language proficiencies, and international experiences.

ISP 2000 - Study Abroad (1-18)

This course allows students to enroll at the University of Central Missouri while attending classes in a sponsored study abroad program. The variable credits are based on the number of credit hours the student plans to complete at the foreign institutions. The actual credit recorded represents those credits completed by the student and transferred back to UCM. *May be repeated.* Prerequisite(s): approval of Study Abroad Coordinator.

ISP 4000 - Study Abroad (1-18)

This course allows students to enroll at the University of Central Missouri while attending classes in a sponsored study abroad program. The variable credits are based on the number of credit hours the student plans to complete at the foreign institutions. The actual credit recorded represent those credits completed by the student and transferred back to UCM. *May be repeated.* This course is co-listed with ISP 5000. Prerequisite(s): approval of the Director of the International Center.

ISP 4050 - Study Tour (0)

Faculty-led study tour experience.

KIN 1101 - Introduction to Kinesiology (3)

Orients students to the academic discipline of Kinesiology and the professions related to Exercise Science, Corporate Fitness, and related Health Professions.

KIN 1206 - Personal Fitness and Wellness (3: 2 lecture, 1 lab)

Students will learn strategies and methods to work towards a healthy lifestyle, both physically and mentally. Through an associated lab portion of the class, students will begin to develop an exercise/movement library, explore fitness classes, recreational activities, and exercise routines that can be implemented across a lifespan. This course will examine basic anatomy and body systems impacted by physical wellness, nutritional choices, and lifestyle behaviors. Students will also explore coping mechanisms and strategies to improve mental wellness and reduce the negative impacts of stress.

This course is equivalent to MOTR IDSE 102 Wellness for the Individual in the Interdisciplinary Studies Knowledge Area.

KIN 1800 - Functional Anatomy (3)

Detailed study of the structure of the human body from a functional perspective. Emphasis on gross anatomy of the muscular and skeletal systems. Prerequisite(s): KIN 1101 with a grade of C or better.

KIN 2000 - Special Activities in Kinesiology (1-3)

This course is designed to support unique learning opportunities in Kinesiology-based areas for individual or group-learning formats. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): Special permission is required to enroll in this course.

KIN 2800 - Biomechanics (3)

Intensive investigation and analysis of human movements. The basic mechanical principles of force, motion, and aerodynamics as related to the fundamental physical skills and their application to sports movement. Prerequisite(s): MATH 1111 or MATH 1111R or MATH 1112 or MATH 1131 or MATH 1150 or MATH 1151 or MATH 1152 with a C grade or better and KIN 1800 with a grade of C or better or BIOL 3401. An additional fee is associated with this course. Fall, Spring.

KIN 2850 - Foundations of Exercise Physiology (3)

The study of foundational aspects of exercise physiology including bioenergetics, cardiovascular, muscular, nervous, skeletal, and pulmonary anatomy and physiology. Prerequisite(s): KIN 1800 with a grade of C or better. An additional fee is associated with this course. Fall, Spring.

KIN 2900 - Essentials of Personal Training (3)

Provide theoretical knowledge and practical skills in preparation for a national certification in personal

training. Prerequisite(s): KIN 2850 with a grade of C or better. Fall, Spring.

KIN 3850 - Assessment and Evaluation of Fitness/Wellness (3)

The selection, administration, and interpretation of test and protocols for fitness assessment. Prerequisite(s): KIN 2850 with a grade of C or better. An additional fee is associated with this course. Fall, Spring.

KIN 4000 - Special Projects in Kinesiology (1-3)

This course is designed to advance undergraduate Kinesiology knowledge or skills in individual or group-learning formats. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): Special permission is required to enroll in this course.

KIN 4341 - Physical Activity and Special Populations (3)

A focus on exercise prescription for individuals with arthritis, diabetes, COPD, Cancer, CAD, etc. Prerequisite(s): KIN 3850 with a grade of C or better.

KIN 4765 - Internship (6)

A 300-hour field experience applying kinesiology concepts, principles, and theories in an approved setting. Prerequisite(s): KIN 3850 with a grade of C or better and Departmental approval. Fall, Spring, Summer.

KIN 4860 - Fitness Programming and Implementation (3)

Foundational ideas essential to planning, developing and implementing a fitness/wellness program. Prerequisite(s): KIN 2900 and KIN 3850 each with a grade of C or better.

KIN 4870 - Applied Exercise Physiology (3)

Designed to advance undergraduate Kinesiology student understanding of exercise physiology concepts through hands on application. Material will build upon concepts learned in KIN 2850. Prerequisite(s): KIN 3850 with a grade of C or better. An additional fee is associated with this course.

LIS 1010 - Truth, Lies and Information Management (2)

In an information-saturated society, this class prepares students to locate, evaluate, and synthesize information for academic, professional and personal pursuits by developing a critical awareness of sources and search strategies.

LIS 1600 - University Library and Research Skills GE (2)

Freshman-level course introduces traditional and computer-based resources and services available in academic libraries and strategies for locating, evaluating and using information. Fall, Spring, Summer. Sometimes offered online.

LIS 4000 - Special Projects in Library Science (1-5)

Individual or group study of problems in special areas of interest. *May be repeated for a maximum of 5 semester hours.* This course is co-listed with LIS 5001. Fall, Spring, Summer.

LIS 4600 - Advanced Library Research (3)

Introduces students to methodologies and techniques necessary to conduct advanced or graduate-level library research. Topics covered include developing research problems and questions; critical appraisal of research literature and the peer review process; different types of sources; research ethics and integrity; and suitability of sources to the chosen topic. Modules are included that will be customized to each student's major field of study, looking at data collection, analysis and interpretation. This course is co-listed with LIS 5600. Prerequisite(s): junior standing.

MGT 1320 - Introduction to Leading & Managing (3)

Introductory course providing integration of business knowledge using conceptual, communication, interpersonal, and technical skills applied to

organizational behavior, leadership, and human resource management.

MGT 2350 - Special Projects in Management (1-3)

Basic course in management theory, practice, methods, and strategies taught on an individual or group basis to management students. *May be repeated for a maximum of 6 semester hours.*

MGT 3300 - Dale Carnegie Leadership Training for Managers (2)

The Dale Carnegie Leadership Training for Managers course. Prerequisite(s): junior standing. An additional fee is associated with this course.

MGT 3315 - Management of Organizations (3)

An examination of the theory and practices of managing organizations, including planning, organizational theory, human behavior, and control. Prerequisite(s): 60 hours. An additional fee is associated with this course. Fall, Spring, Summer.

MGT 3320 - XBOB eXperience Based Organizational Behavior (3)

Emphasis on systems, teams, interpersonal relationships between participants and the dominant influence of systems on human behavior in groups and organizations. Prerequisite(s): MGT 3325 or concurrently; or ART 2305 and CTE 2060 or concurrently. Recommend take MGT 3315 before this course for BSBA majors; or permission. An additional fee is associated with this course. Fall, Spring.

MGT 3325 - Business Communication (3)

Improves the student's ability to plan and strategically write letters, memos, proposals, and reports and improve oral and interpersonal communication skills. Both listening and speaking skills will be developed through formal presentations, class discussions, and group work. Prerequisite(s): MKT 1401 or COMM 1000 or COMM 1050; ENGL 1030 or ENGL 1080 or CTE 2060. An additional fee is associated with this course. Fall, Spring, Summer.

MGT 3335 - Internship in Management (1-9)

Opportunity for students to gain theoretical knowledge and practical application within a particular field of specialization. Prerequisite(s): Admission to the B.S.B.A. program, 60 semester hours, and overall GPA of 2.50 or above, or permission from internship director. An additional fee is associated with this course.

MGT 3345 - International Management (3)

Investigates the impact of 'free economies', cultural differences, negotiation styles, HR practices, political systems, and ethical dilemmas on international business and management. An additional fee is associated with this course. Fall, Spring.

MGT 3350 - Special Projects in Management (0-3)

Intermediate course in management theory, practice, methods, and strategies taught on an individual or group basis to management students. *May be repeated for a maximum of 6 semester hours.* An additional fee is associated with this course.

MGT 3360 - Supply Chain and Operations Management (3)

Experiential analysis of supply chain and operations problems commonly faced by managers in many disciplines. Emphasis on strategic operations decision making, planning operations systems, forecasting, project management, supply chain and operations management, sustainability and corporate social responsibility. Prerequisite(s): FIN 3801 or concurrently and MGT 3315 or concurrently; or FIN 3801 or concurrently. An additional fee is associated with this course. Fall, Spring, Summer.
This is a sustainability course.

MGT 3385 - Integrative Business Experience Practicum (3)

Students will apply concepts from the concurrent courses to their own start-up business venture and to community service. Corequisite(s): special sections of MGT 3315, MKT 3405 and CIS 3630. An additional fee is associated with this course. Fall, Spring.
This is a sustainability course.

MGT 4300 - Health Care Administration (3)

Management concepts, tools, and techniques for effective administration of all types of health care facilities. Prerequisite(s): MGT 3315. An additional fee is associated with this course.

MGT 4310 - Innovation, Quality and Sustainability (3)

Experiential investigation
of innovation, quality and sustainability in a team based, integrative learning environment. Students will learn how to create and sustain a competitive advantage using innovative
processes and continuous improvement tools. This course is co-listed with MGT 5410. Prerequisite(s): Admission to the B.S.B.A. program or declared management minor. An additional fee is associated with this course. Fall, Spring, Summer.
This is a sustainability course.

MGT 4320 - Leadership (3)

Focuses on the behaviors of exemplary leaders. Student teams develop and deliver workshops allowing fellow students to become more effective leaders by practicing the behaviors of exemplary leadership. Students find their own clients to deliver customized leadership training. Prerequisite(s): MGT 3320, and Admission to the B.S.B.A. program. An additional fee is associated with this course. Fall, Spring.

MGT 4325 - Management Communication (3)

Provide advanced communication theories and methods which are essential for effective managers in oral and written communication situations. Emphasizes individual, team, and group communication through a series of business cases. This course is co-listed with MGT 5425. Prerequisite(s): MGT 3325 and Admission to the BSBA program, or MGT 3325 and declared management minor. An additional fee is associated with this course. Fall, Spring.

MGT 4330 - Lean Six Sigma for Managers (3)

This course prepares managers to lead projects and contribute to the improvement of processes, products, and services by utilizing the Lean and the Six Sigma DMAIC (Define, Measure, Analyze, Improve, and Control) model. Prerequisite(s): MGT 3360, FIN 3801 and BSBA admission. An additional fee associated with this course.

MGT 4350 - Special Projects in Management (0-3)

Advanced course in management theory, practice, methods, and strategies taught on an individual or group basis to advanced management students. Additionally, this may be used to denote the completion of the Peace Corps Prep Certificate requirements. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): Permission. An additional fee is associated with this course.

MGT 4357 - Organizational Policy and Strategy (3)

Capstone course requiring integration of business knowledge using conceptual, communication, interpersonal, and technical skills applied to strategic management. Case study and competitive simulation methods are used in an experiential team learning environment. Prerequisite(s): Admission to the B.S.B.A. program, FIN 3850, MGT 3315, MGT 3325, MKT 3405, and senior standing. An additional fee is associated with this course. Fall, Spring, Summer.

MGT 4370 - Applications in Supply Chain Management (3)

Explains the role of supply chain managers and the impact of their decisions on the competitive success and profitability of modern organizations. Through integrative experiential team-based activities and projects, students are given an opportunity to experience the increasingly strategic nature of supply chain management. Prerequisite(s): Admission to the BSBA program or declared management minor or permission of school chair. An additional fee is associated with this course. Fall, Spring.

MGT 4800 - Organizational Development and Personal Praxis (3)

Extends and deepens students' ability to act effectively as leaders, coaches, and managers. It gives students tools to improve their own personal practice through self-reflection and self-discovery in order to effectively develop the organizations, teams,

and individuals they lead. Integral to the course is a semester-long organization development project that involves a team, class, or organization of the students' choosing. Through the process of coaching and facilitating students will learn about their own behavioral patterns and how they can become more effective. During the course students will engage in multiple cycles of Planning, Action, Inquiry, and Reflection (PAIR), with classroom discussion providing insights and collaborative learning. Prerequisite(s): MGT 3315, MGT 3320 and Admission to the B.S.B.A. program or Management Minor or MGT 3320 and permission. An additional fee is associated with this course.

MKT 1400 - Orientation to Marketing (1)

Orientation to the field of marketing. Available for those with less than 75 hours and no prior credit in MKT 3405 or equivalent. Counts as a free elective.

MKT 1401 - Professional Speaking and Presentation GE (3)

A comprehensive, application based course to prepare students to communicate effectively with an audience. Students will apply communication strategies and skills in a variety of settings relevant to students across all disciplines. Students will learn to identify the types of rhetoric and their beneficial applications, with additional emphasis on persuasive techniques.

This course is equivalent to MOTR COMM 110 Fundamentals of Public Speaking in the Oral Communications Knowledge Area.

MKT 3400 - Principles of Marketing (3)

Methods used in determining the needs and desires of consumers and translating these findings into products of a suitable nature. Methods used in getting these products into the hands of the consumer. Basic marketing class for nonbusiness majors. Not available to students with prior credit in MKT 3405 and may not be used as a marketing elective. An additional fee is associated with this course.

MKT 3405 - Principles of Marketing (3)

A comprehensive study of marketing theory and concepts and the application of these ideas in modern organizations by professionally trained managers. First course in marketing sequence for marketing majors and minors, and marketing foundation course for the business core requirement of B.S.B.A. degree students. May not be used as a marketing elective. Prerequisite(s): 60 semester hours of college credit. An additional fee is associated with this course. Fall, Spring, Summer.

MKT 3410 - Retail Management (3)

The initial considerations and decisions for establishing and managing a retail store. Prerequisite(s): MKT 3400 or MKT 3405. An additional fee is associated with this course. Fall, Spring.

MKT 3420 - Principles of Advertising (3)

Advertising purposes and procedures covering primarily the point of view of the advertising manager. Study of proper appeals, copy preparation, layout, and media. An additional fee is associated with this course. Fall, Spring, Summer.

MKT 3430 - Professional Sales (3)

This course introduces students to the basic selling process and strategies used by today's firms. Through coursework, projects, and role-plays students develop an understanding of the principles of persuasion, relationship building, problem-solving strategies, and relationship/consultative selling. An additional fee is associated with this course.

MKT 3435 - Internship in Marketing (1-6)

Opportunity for students to gain theoretical knowledge and practical application within a particular field of specialization. Prerequisite(s): Admission to the B.S.B.A. program, MKT 3405, overall GPA of 2.50 or above and consent of internship director. An additional fee is associated with this course. Fall, Spring, Summer.

MKT 3445 - Marketing Distribution (3)

Methods and strategies used in distributing products including the design of channels and the activity performed by channel members to facilitate efficient movement of goods. Prerequisite(s): MKT 3405. An additional fee is associated with this course. Spring.

MKT 3450 - Digital Marketing (3)

Introduces the concepts, analyses, and activities that comprise marketing management in digital and interactive media, as well as social media approaches to digital marketing strategy. An additional fee is associated with this course.

MKT 3475 - Marketing Research (3)

Applications of research methods to the problems of marketing. Data gathering, methodologies, and managerial utilization of research findings. This is a research and statistics intensive course. Prerequisite(s): Admission to BSBA, FIN 2801, and MKT 3405. An additional fee is associated with this course. Fall, Spring, Summer

MKT 3480 - Consumer Behavior (3)

The application of knowledge from the behavioral sciences to the study, analysis, and interpretation of consumer buying habits and motives. Individual, group, and cultural influences on consumer preferences and purchasing patterns are emphasized. Prerequisite(s): MKT 3400 or MKT 3405. An additional fee is associated with this course. Fall, Spring, Summer.

MKT 3485 - Integrative Business Experience Practicum (3)

Students will apply concepts from the concurrent courses to their own start-up business venture and to community service. Corequisite(s): special sections of MGT 3315, MKT 3405 and CIS 3630. An additional fee is associated with this course. Fall, Spring.

MKT 4410 - Advanced Professional Sales (3)

Designed to combine personal selling theory with actual practice. It will build on and further expand students' present understanding of the basic selling process. Designed for students who are planning or strongly considering a career in professional sales. This course is co-listed with MKT 5510. Prerequisite(s): MKT 3405 and MKT 3430. An additional fee is associated with this course. Fall.

MKT 4420 - Sales Management (3)

This class focuses on aspects involved in managing an organization's personal selling function. This course is co-listed with MKT 5520. Prerequisite(s): MKT 3405 and MKT 3430. An additional fee is associated with this course. Spring.

MKT 4440 - Seminar in Brand Management (3)

The goal of this course is to provide students with the fundamental skills needed to create, build, and maintain original brands. This course is co-listed with MKT 5440. Prerequisite(s): MKT 3405; Admission to the B.S.B.A. program. An additional fee is associated with this course.

MKT 4450 - Integrated Marketing Communication (3)

Determination of the correct blend of advertising, personal selling, sales promotion, and publicity. This course is co-listed with MKT 5450. Prerequisite(s): MKT 3405; Admission to the B.S.B.A. program. An additional fee is associated with this course. Fall.

MKT 4454 - Sports Marketing (3)

The course will discuss the marketing of sports at professional, collegiate, and special event levels focusing on the role marketing plays in planning and decision making in attracting fans and sponsors. Students who earned undergraduate credit for MKT 4454 may not take MKT 5454 for graduate credit. This course is co-listed with MKT 5454. An additional fee is associated with this course.

MKT 4460 - International Marketing (3)

Marketing policies and practices in foreign trade. Prerequisite(s): MKT 3405; Admission to the B.S.B.A. program. An additional fee is associated with this course. Fall, Spring, Summer.

MKT 4475 - Services Marketing (3)

Provides a study of the issues and concepts unique to the marketing of services including relationship marketing, service quality and customer satisfaction, service failure and recovery, and service delivery. Students who earned undergraduate credit for MKT 4475 may not take MKT 5475 for graduate credit. This

course is co-listed with MKT 5475. An additional fee is associated with this course.

MKT 4480 - Special Projects in Marketing (1-3)

Individualized or group study under supervision of school faculty. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): school chair approval. An additional fee is associated with this course. Offered as needed.

MKT 4490 - Marketing Management (3)

An overview of major areas of marketing from the viewpoint of the marketing executive; a capstone course integrating previous marketing study and background into a managerial context. Prerequisite(s): MKT 3405, Admission to the B.S.B.A. program, and last semester in program. An additional fee is associated with this course. Fall, Spring.

MATH 1000 - Special Projects in Mathematics (1-3)

Individual or group work on introductory level mathematical topics. *May be repeated for a maximum of 3 semester hours.* Prerequisite(s): Instructor approval.

MATH 1010 - Fundamentals of Algebra (3)

Designed to review or improve basic algebra skills. Includes integers, equations, inequalities, polynomials, factoring, quadratic equations, graphing linear equations and work with word problems. Prerequisite(s): Placement according to University policy applies. Fall, Spring, Summer.

MATH 1020 - Fundamentals of Mathematics (3)

An introduction to various branches of mathematics including basic algebra, geometry, set theory, probability and statistics. Content involves work with rational numbers and word problems. Prerequisite(s): Consent.

MATH 1040 - Introduction to the Mathematical Sciences (1)

This course is designed to help the first-year student to: actively explore critical thinking, develop a sense of belonging to UCM and the School of Computer Science and Mathematics, develop self-awareness and responsibility, and gain an increased interest in their respective program. Prerequisite(s): A major in Actuarial Science and Statistics, Mathematics, or Bioinformatics.

MATH 1070 - Algebra Essentials (4)

Designed to review or improve basic algebra skills. Includes properties of the real number system, equations, inequalities, polynomials, factoring, graphing linear equations, equations of lines, and work with applications. Prerequisite(s): Placement according to University policy applies. Fall and Spring.

MATH 1101 - Intermediate Algebra (3)

The properties of real numbers, polynomials, rational exponents, radicals, functions, and systems of equations. Prerequisite(s): Placement according to University policy applies. MATH 1010 with a grade of C or better.

MATH 1111 - College Algebra GE (3)

Continuation of algebra including such topics as linear and quadratic equations, linear and quadratic inequalities, second degree relations and functions, systems of equations and inequalities, and exponential and logarithmic functions. Prerequisite(s): Placement according to University policy applies. MATH 1101 with a grade of C or better.

This course is equivalent to MOTR MATH 130 Pre-Calculus Algebra in the Mathematical Sciences Knowledge Area.

MATH 1111R - College Algebra with Review GE (5)

A study of linear and quadratic equations, linear and quadratic inequalities, second degree relations and functions, systems of equations and inequalities, exponential and logarithmic functions with a review of fundamentals of algebra. This course is designed for students who do not meet the prerequisite requirements for MATH 1111 College Algebra. Along with the algebra content, this course also provides additional support and hands on experience for

students. Prerequisite(s): Placement according to University policy applies. MATH 1010 with a grade of A or MATH 1070 with a grade of C or better.

This course is equivalent to MOTR MATH 130 Pre-Calculus Algebra in the Mathematical Sciences Knowledge Area.

MATH 1112 - College Trigonometry (2)

Elementary trigonometric functions, identities, trigonometric equations, multiple angle formulas, and general triangle solutions. Prerequisite(s): Placement according to University policy applies. MATH 1111 with a grade of C or better or concurrently or MATH 1111R with a grade of C or better or concurrently.

MATH 1131 - Applied Calculus GE (3)

The fundamental skills and concepts of calculus with an emphasis on applications in engineering, science and technology. Prerequisite(s): Placement according to University policy applies. MATH 1111 with a grade of C or better or MATH 1111R with a grade of C or better.

MATH 1150 - Pre-Calculus Mathematics GE (5)

Pre-calculus concepts in algebra and trigonometry for the student with an above average preparation in high school mathematics. Prerequisite(s): Placement according to University policy applies. Fall, Spring.

This course is equivalent to MOTR MATH 150 Pre-Calculus in the Mathematical Sciences Knowledge Area.

MATH 1151 - Calculus I GE (5)

Elementary analytic geometry and, for functions of a single variable: limits, continuity, derivatives and their applications, and an introduction to integration. Prerequisite(s): Placement according to University policy applies. MATH 1112 with a grade of C or better or MATH 1150 with a grade of C or better. Fall, Spring.

MATH 1152 - Calculus II (5)

A continuation of MATH 1151. Topics include advanced integration techniques and applications, sequences and series of constants, power series and issues of convergence, conic sections, an introduction to parametric and polar equations, vectors and geometries of space, and vector-valued functions. Prerequisite(s): MATH 1151 with a grade of C or better. Fall, Spring.

MATH 1161 - Instructional Support for Calculus I (1)

Provides additional support and instruction on the concepts taught in MATH 1151. Corequisite(s): MATH 1151.

MATH 1162 - Instructional Support for Calculus II (1)

Provides additional support and instruction on the concepts taught in MATH 1152 - Calculus II (5). Corequisite(s): MATH 1152.

MATH 1520 - Practical Mathematics GE (3)

A comprehensive overview of practical mathematical skills including drawing conclusions, making decisions, and communicating effectively in mathematical situations. Topics include proportional reasoning, statistical reasoning, and mathematical modeling. Prerequisite(s): Placement according to University policy applies. High school algebra with a grade of C or better, MATH 1070 with a grade of C or better or MATH 1101 with a grade of C or better.

This course is equivalent to MOTR MATH 120 Mathematical Reasoning & Modeling in the Mathematical Sciences Knowledge Area.

MATH 1520R - Practical Mathematics with Review GE (5)

A comprehensive overview of practical mathematical skills including drawing conclusions, making decisions, and communicating effectively in mathematical situations. Topics include proportional reasoning, statistical reasoning, and mathematical modeling. This course is designed for student who do not meet the prerequisite requirements for MATH 1520 Practical Mathematics. Along with the mathematical content, this course also provides additional support and hands on experience for

students. Prerequisite(s): Placement according to university policy applies. Fall, Spring.

MATH 1820 - Math for Middle School Teachers (3)

A study of mathematics that introduces the real number system, algebraic manipulations, and geometric concepts necessary for the instruction of middle school mathematics Prerequisite(s): Placement according to University policy applies. MATH 1070 with a grade of C or better or higher math course.

MATH 1850 - Orientation Seminar (0.5)

Five 90-minute seminars will acquaint students majoring in secondary mathematics education with courses, portfolio assessment, interview process, standardized tests and professional organizations.

MATH 2000 - Mathematical Problem Solving (0.5)

A participation-based seminar in mathematical problem solving as preparation for participation in various regional and national mathematics competitions *May be repeated for a maximum of 3 semester hours.* Prerequisite(s): MATH 1152 with a grade of C or better.

MATH 2153 - Calculus III (3)

A continuation of MATH 1152. Topics include differential calculus of functions of more than one variable, directional derivatives, Lagrange multiplier techniques, double and triple integration, and the calculus of vector fields. Prerequisite(s): MATH 1152 with a grade of C or better. Fall, Spring.

MATH 2221 - Foundations of Geometry (3)

An emphasis on the techniques of proof and constructions in geometry, the properties of a set of postulates, a brief review of Euclidean geometry, and the study of other geometries. Prerequisite(s): One unit of high school geometry with a grade of C or better. Fall.

MATH 2410 - Discrete Mathematics (3)

Logic and argumentation; mathematical proof techniques; sets, relations and mappings; counting and the natural numbers; modular arithmetic; permutations, combinations, and discrete probabilities; etc. Prerequisite(s): MATH 1150 with a grade of C or better or MATH 1151 with a grade of C or better or concurrent enrollment in either. Fall, Spring.

MATH 2820 - Elementary Mathematics from an Advanced Perspective (3)

An investigation of the mathematics concepts taught in the elementary grades and how those concepts provide a foundation for the mathematics studied in middle and high school. Prerequisite(s): MATH 1520 with a grade of C or better. This is a professional education course.

MATH 2821 - Elements of Algebra (3)

Concepts of algebra adapted to the needs of middle school teachers. Prerequisite(s): MATH 1520 with a grade of C or better. Fall.

MATH 2822 - Elements of Geometry (3)

Concepts and relationships of geometry adapted to the needs of elementary/middle school teachers. Prerequisite(s): MATH 1520 with a grade of C or better.

MATH 2823 - Introduction to Infinite Processes (5)

Transition from the concepts of elementary analysis to the infinite processes which form the foundation for the calculus. Open only to elementary and middle school/junior high education majors in the B.S. in Ed. degree. Prerequisite(s): MATH 2822 with a grade of C or better.

MATH 2824 - Infinite Processes I (3)

An introduction to the infinite processes that form the foundation for the calculus. Topics include limits, continuity, derivatives, and applications of derivatives. Open only to elementary and middle school/junior high education majors. Prerequisite(s): MATH 2821 with a grade of C or better.

MATH 2825 - Infinite Processes II (2)

A continuation of the study of the infinite processes that form the foundation for the calculus. Topics include integrals and the application of integration. Open only to elementary and middle school/junior high education majors. Prerequisite(s): MATH 2824 with a grade of C or better.

MATH 2861 - Advanced Perspectives on High School Mathematics (3)

Investigation of the real number system as studied in high school mathematics from an advanced perspective. Prerequisite(s): MATH 1151 with a grade of C or better.

MATH 2862 - Advanced Perspective on Secondary Geometry and Trigonometry (3)

Investigation of high school geometry and trigonometry from an advanced standpoint. Prerequisite(s): MATH 1151 with a grade of C or better and MATH 2221 with a grade of C or better.

MATH 3151 - Differential Equations (3)

Techniques of solving ordinary differential equations with applications to physics and engineering. Prerequisite(s): MATH 1152 with a grade of C or better. Spring.

MATH 3221 - College Geometry (3)

Modern Euclidean geometry, geometric transformations, advanced Euclidean constructions, constructible numbers, extension fields and the three impossible problems of antiquity. Prerequisite(s): MATH 2221 with a grade of C or better. Spring.

MATH 3710 - Linear Algebra (3)

An introduction to matrices, determinants, vector spaces and linear transformations. Prerequisite(s): MATH 2410 with a grade of C or better or CS 2400 with a grade of C or better. Fall, Spring.

MATH 3800 - Teaching and Learning Numbers and Operations (3)

Provides a study of the concepts and methods used in the teaching of numbers and operations in the elementary grades. Prerequisite(s): MATH 1520 with a grade of C or better. This is a professional education course.

MATH 3801 - Teaching and Learning of Geometry and Measurement (3)

A study of the mathematical concepts and instructional methods related to measurement and geometry in the elementary grades. This is a professional education course.

MATH 3802 - Concepts and Methods in Middle School Mathematics (2)

An investigation of the concepts and methods of teaching mathematics in grades 5-9. Prerequisite(s): MATH 1520 with a grade of C or better.

MATH 3840 - Strategies in Teaching Middle School Mathematics (3)

An investigation of techniques, problems, and issues involved in the teaching of middle school mathematics. Not applicable to major requirements for secondary majors. Prerequisite(s): MATH 2821 with a grade of C or better and MATH 2822 with a grade of C or better. This is a professional education course. Fall.

MATH 3850 - Strategies in Teaching Secondary Mathematics (3)

An investigation of instructional strategies, problems and issues relevant to the teaching of secondary school mathematics. Prerequisite(s): MATH 1152 with a grade of C or better, MATH 2221 with a grade of C or better, MATH 2410 with a grade of C or better and MATH 2861 with a grade of C or better. This is a professional education course.

MATH 3890 - Concepts and Methods of Teaching for Special Education (3)

A survey of concepts and methods for teaching mathematics grades K-5 with particular attention to needs of special education inclusion students. Prerequisite(s): MATH 1520 with a grade of C or

better. This is a professional education course. Fall, Summer.

MATH 4150 - Advanced Calculus I (3)

A rigorous approach to the fundamental concepts of differential and integral calculus of functions of a single variable. This course is co-listed with MATH 5100. Prerequisite(s): MATH 1152 with a grade of C or better. Fall.

MATH 4171 - Functions of a Complex Variable (3)

General properties of analytic functions of a complex variable with applications. This course is co-listed with MATH 5172. Prerequisite(s): MATH 1152 with a grade of C or better. Spring.

MATH 4210 - Topology I (3)

Introduces the concept of point-set topology. Includes the study of metric spaces, topological spaces, continuity, compactness, countable product spaces, and separation properties. This course is co-listed with MATH 5210. Prerequisite(s): MATH 4710 with a grade of C or better.

MATH 4233 - The Scientific, Historical, and Sociological Impact of Mathematics (3)

Provides an opportunity to experience and understand the importance of mathematics in human development. Prerequisite(s): MATH 1152 with a grade of C or better and 9 credit hours of college mathematics at the 2000 level or above with a grade of C or better. This is a professional education course. Spring.

MATH 4400 - Combinatorics (3)

Principles of enumeration, integer sequences, advanced binomial coefficients, inclusion-exclusion principle, recurrence relations and generating functions, and special counting sequences. This course is co-listed with MATH 5400. Prerequisite(s): MATH 2410 with a grade of C or better.

MATH 4450 - Introduction to Graph Theory (3)

Basic graph theory concepts: connectivity, trees, matchings, graph coloring, Eulerian and Hamiltonian graphs, distance, planarity, and network flows. This course is co-listed with MATH 5450. Prerequisite(s): CS 2400 with a grade of C or better or MATH 2410 with a grade of C or better. Spring.

MATH 4710 - Algebraic Structures (3)

An introduction to groups, finite groups and subgroups, cyclic groups, permutation groups, group isomorphisms, rings, integral domains, and fields, with applications. This course is co-listed with MATH 5700. Prerequisite(s): MATH 2410 with a grade of C or better and MATH 3710 with a grade of C or better.

MATH 4711 - Modern Algebra I (3)

A rigorous study of groups and their structure. Topics include: group homomorphisms, subgroups, isomorphism theorems, Lagrange's Theorem, group actions, Sylow Theorems, solvable groups, and the Fundamental Theorem of Finitely Generated Abelian Groups. This course is co-listed with MATH 5705. Prerequisite(s): MATH 4710 with a grade of C or better.

MATH 4741 - Introduction to the Theory of Numbers (3)

Congruences, quadratic residues, the reciprocity theorem, and Diophantine equations. This course is co-listed with MATH 5741. Prerequisite(s): MATH 4710 with a grade of C or better.

MATH 4851 - Probability and Statistics for Middle/High School Mathematics (3)

A course focusing on the concepts and methods of teaching probability and statistics in the middle and high school mathematics program. This course is co-listed with MATH 5851. Prerequisite(s): MATH 2821 with a grade of C or better and MATH 2822 with a grade of C or better, or MATH 1151 with a grade of C or better.

MATH 4870 - Methods of Teaching Mathematics (2)

Prerequisite(s): Admission to Teacher Education Program; double majors must take a methods course for each major; methods should be taken concurrently with MATH 4820 during the Professional Semester. This is a professional education course. Fall, Spring.

MATH 4871 - Algebraic Concepts for Teachers (3)

The properties and language of sets, functions, groups, rings, integral domains, and fields. Recommended for middle school/junior high school teachers. Will not satisfy requirements on undergraduate programs where MATH 4710 is a requisite. Prerequisite(s): MATH 2821 with a grade of C or better or equivalent course in college algebra with a grade of C or better. Spring.

MATH 4880 - Issues and Methods of Teaching Secondary Mathematics (3)

An investigation of methods, issues, and resources relevant to the teaching of secondary school mathematics. To be taken the semester prior to student teaching. Prerequisite(s): Admission to Teacher Education Program. This is a professional education course.

MATH 4890 - Mathematics for Special Education (3)

An investigation of the teaching and learning of statistics, probability, geometry, and algebraic thinking concepts appropriate for special needs children. This course is co-listed with MATH 5890. Prerequisite(s): EDSP 2100 and MATH 3890 with a grade of C or better. This is a professional education course. Spring.

MATH 4910 - Special Problems in Mathematics (1-3)

Individual reading and research on some topic not included in the regular offerings of the school. *May be repeated for a maximum of 6 semester hours in the major and a maximum of 9 total semester hours in an undergraduate degree.* Prerequisite(s): Mathematics major.

MATH 4912 - Internship in Mathematical Sciences (1-8)

Opportunity for students to gain knowledge in areas of mathematical science, both theoretical and applied, that would not normally be included as a part of the school 's curriculum. Internship contract must be completed prior to beginning work/learning experience. *May be repeated for a maximum of 16 semester hours. A maximum of 8 semester hours may be applied to any one degree.* Prerequisite(s): Consent of Mathematics Faculty Committee.

MATH 4973 - Engaging Secondary Mathematics Learners (1)

An exploration of instructional strategies and classroom management techniques that result in enhanced engagement of secondary students in the study of mathematics. Corequisite(s): FLDX 4970, MATH 4880, and MATH 4974. This is a professional education course.

MATH 4974 - Assessment in the Mathematics Classroom (1)

An investigation of a variety of formal and informal assessment strategies used in the secondary mathematics classroom. Corequisite(s): EDFL 4970, FLDX 4970, MATH 4880, and MATH 4973. This is a professional education course.

MLED 4130 - Fundamentals of Middle Level Education (4)

A 25 hour middle school field experience course for students to gain an understanding of the unique developmental needs of early adolescents in the middle school setting. Prerequisite(s): EDFL 2100, EDFL 2240, and FLDX 2150. This is a professional education course. Fall.

MLED 4135 - Middle Level Curriculum and Assessment (4)

A 25 hour middle school field experience course to prepare students to design instructional units and classroom lessons using learning standards. Students will learn assessment strategies. Prerequisite(s): MLED 4130. Corequisite(s): EDFL 3240. This is a professional education course. Spring.

MLED 4340 - The Engaging Middle Level Classroom (4)

A middle school field experience course to prepare students to manage instruction and behavior for a positive classroom environment. Prerequisite(s): MLED 4130, MLED 4135, and Admission to Teacher Education Program. This is a professional education course. Summer and Fall.

MS 1110 - Introduction to the Army (2)

Students will examine the Army Profession and what it means to be a professional in the US Army. The overall focus is on developing basic knowledge and comprehension of the Army Leadership Requirements Model while gaining a complete understanding of the ROTC program, its purpose in the Army, and its advantages for the student. Students will have initial classes on relevant skills such as land navigation and team movement. Fall.

MS 1120 - Foundations of Leadership (2: 2 lecture, 0 lab)

Introduces students to the personal challenges and competencies that are critical for effective leadership. Students learn the personal development of life skills such as critical thinking, time management, goal setting, and communication. Students learn the importance of developing essential communication skills and the basics of squad level tactics. Laboratory is required. Prerequisite(s): MS 1110 or consent of Professor of Military Science. Spring.

MS 2210 - Leadership and Ethics (2: 2 lecture, 0 lab)

The course adds depth to the student's knowledge of the different leadership styles. Students assess their own leadership style as well as that of famous leaders. The Army Profession is stressed through understanding values, ethics, and how to apply both to different situations as a leader. Army Values and Ethics and their relationship to the Law of Land Warfare and philosophy of military service are also stressed. Laboratory is required. Prerequisite(s): MS 1120 or equivalent or consent of the Professor of Military Science. Fall.

MS 2220 - Army Doctrine and Decision Making (2: 2 lecture, 0 lab)

The course begins with analytical techniques, creative thinking skills, and the Army problem solving process as related to situations faced by leaders when making decisions. Students will identify Army Doctrine and Symbology. Squad tactics are covered in class and reinforced during out of classroom lab. Laboratory is required. Prerequisite(s): MS 2210 or equivalent or consent of the Professor of Military Science. Spring.

MS 2500 - History of the US Army (3)

Integrates the basic knowledge of military history into the education of future Army officers. Prerequisite(s): departmental consent.

MS 2510 - Cadet Basic Camp (3)

Introduces students to Army life and leadership training of the Reserve Officers' Training Corps. Course is conducted for four weeks during the summer. Transportation, room, board, military clothing, and a salary are provided. Prerequisite(s): departmental consent. Summer.

MS 3310 - Training Management and the Warfighting Functions (3: 3 lecture, 0 lab)

In this academically challenging course Cadets will study, practice, and apply the fundamentals of Training Management and how the Army operates through the Warfighting functions. At the conclusion of the course, Cadets will be capable of planning, preparing, and executing training for a squad conducting small group tactics. Laboratory is required. Prerequisite(s): MS 2220. Corequisite(s): MS 3330. Fall.

MS 3320 - Applied Leadership in Small Unit Operations (3: 3 lecture, 0 lab)

In this academically challenging course Cadets will study, practice, and apply the fundamentals of direct level leadership and small unit tactics at the platoon level. At the conclusion of the course, Cadets will be capable of planning, coordinating, navigating, motivating, and leading a platoon in the execution of a mission. Successful completion of the course will prepare Cadets for Summer Training Advanced Camp. Laboratory is required. Prerequisite(s): MS 3310 and MS 3330. Corequisite(s): MS 3340. Spring.

MS 3330 - Introduction to the Army Physical Fitness Program (2)

Basic components of fitness and an overview of the principles of exercise. Fall.

MS 3340 - Concepts in Fitness Training Development (2)

Development of the unit physical fitness program with an in-depth analysis of the principles of fitness and exercise. Prerequisite(s): MS 3330. Spring.

MS 4410 - The Army Officer (3: 3 lecture, 0 lab)

In this academically challenging course Cadets will develop knowledge, skills, and abilities to plan, resource, and assess training at the small unit level. Cadets also learn about Army programs that support counseling subordinates and evaluating performance, values and ethics, career planning, and legal responsibilities. At the conclusion of the course Cadets will be familiar with how to plan, prepare, execute, and continuously assess the conduct of training at the company level. Laboratory is required. Prerequisite(s): MS 3320 and MS 3340. Corequisite(s): MS 4430. Fall.

MS 4420 - Company Grade Leadership (3: 3 lecture, 0 lab)

In this academically challenging course Cadets will develop knowledge, skills, and abilities required of junior officers pertaining to the Army in Unified Land Operations and Company Grade Officer roles and responsibilities. This course includes classroom and practical exercises to assist in preparing Cadets for BOLC B and is a mandatory requirement for commissioning. Laboratory is required. Prerequisite(s): MS 4410 and MS 4430. Corequisite(s): MS 4440. Spring.

MS 4430 - Management of the Unit Fitness Program (2)

Alternate athletic activities and risk assessment planning. Prerequisite(s): MS 3340. Fall.

MS 4440 - The Army Master Fitness Training Program (2)

Administration of the unit fitness program with emphasis on the regulatory requirements governing the unit fitness program. Prerequisite(s): MS 4430. Spring.

MS 4500 - Current Military Trends (3)

Continues a student's transition from being a Cadet to learning how to be an Army Officer. It will build on skills that Cadets have already learned. This course will enhance knowledge and proficiency as an officer through exploration of military trends and scenarios to produce military officers who are better prepared for their first duty assignment. Prerequisite(s): MS 4420.

MS 4501 - Current Military Trends II (3)

Continues the transition from being a Cadet to learning how to be an Army Officer. It builds on the skills Cadets have learned in their previous Military Science courses. Topics may include: the Military Decision Making Process, Army Writing Style, and the Army's Training Management and METL Development processes, along with current trends and changes in the Army. Prerequisite(s): MS 4500.

MS 4510 - Cadet Advanced Camp (3)

Five weeks of advanced summer camp experience for advanced military science students. Required for completion of military science program and commissioning. Students receive financial assistance. Prerequisite(s): MS 3320 and departmental consent. Summer.

ML 1040 - Special Projects in Modern Languages GE (1-3)

Small-group instruction at the introductory level. *May be repeated for a maximum of 12 semester hours.*

ML 2000 - World Literatures in Translation (3)

The class will explore social and intellectual forces of literature in translation, while keeping a close eye on how the original is changed in translation. Additionally, students will discuss the nature of translation, and will learn basic elements of the language which are relevant to the texts studied. Prerequisite(s): ENGL 1020 and (ENGL 1030 or CTE 2060); or ENGL 1080 with a grade of C or higher.

This course is equivalent to MOTR LITR 200 World Literature in the Humanities & Fine Arts Knowledge Area.

ML 2010 - Foreign Studies in Language (1-6)

Credit granted for study in a departmentally-approved program in a foreign country. *May be repeated for a maximum of 12 semester hours.*

ML 4010 - Foreign Studies in Language (French) (German) (Spanish) (1-6)

Credit granted for study in a UCM approved program in a foreign country. Freshmen and sophomores permitted to enroll with consent of the school chair. *May be repeated for a maximum of 12 semester hours.* This course is co-listed with ML 5010.

ML 4040 - Special Projects in Foreign Language (1-3)

Individualized and group instruction in foreign and modern languages. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with ML 5040. Prerequisite(s): consent of school chair.

ML 4050 - Language in the Professions (3)

Translation theory and practice related to professional fields. To be taken the semester prior to graduation. Prerequisite(s): instructor consent.

ML 4054 - Methods of Teaching Foreign Languages (3)

Prerequisite(s): Admission to Teacher Education Program; double majors must take a methods course for each major. This is a professional education course.

ML 4244 - Cross-Cultural Cinema (3)

Uses academic literature and related films to examine topics relating to culture, social justice, migration, and globalization. Spring (even numbered years).

MUS 1000 - Recital Attendance (0)

Laboratory in music listening and musical performance. Attendance at a designated number of Music sponsored or approved concerts. May be taken for pass/fail credit only. *May be repeated.* An additional fee is associated with this course.

MUS 1005 - Marching Band GE (0-1)

Appears at all home games, one away game, and frequently at professional football games. Membership selected by audition. *May be repeated.* An additional fee is associated with this course.

This course is equivalent to MOTR PERF 102B Music Performance-Band in the Humanities & Fine Arts Knowledge Area.

MUS 1008 - Campus Band (0-1)

A concert band open to any university student who wishes to continue band performance which explores a wide range of original and transcribed works. Music majors may gain experience on a secondary instrument. Membership selected by audition. *May be repeated.* An additional fee is associated with this course.

This course is equivalent to MOTR PERF 102B Music Performance-Band in the Humanities & Fine Arts Knowledge Area.

MUS 1010 - Symphonic Band GE (0-1)

Open without audition to any University student interested in band. Instrumental music majors may gain experience on a secondary instrument in the Symphonic Band. *May be repeated.* An additional fee is associated with this course.

This course is equivalent to MOTR PERF 102B Music Performance-Band in the Humanities & Fine Arts Knowledge Area.

MUS 1055 - Collegiate Choir GE (0-1)

A large mixed chorus which sings music representative of the finest in sacred and secular choral literature. Membership selected by audition. *May be repeated.* An additional fee is associated with this course.

This course is equivalent to MOTR PERF 102C Music

Performance-Choir in the Humanities & Fine Arts Knowledge Area.

MUS 1081 - Jazz Ensemble 2 GE (0-1)

Study and performance of traditional and progressive jazz ensemble music. Membership selected by audition. *May be repeated.* An additional fee is associated with this course.

This course is equivalent to MOTR PERF 102B Music Performance-Band in the Humanities & Fine Arts Knowledge Area.

MUS 1085 - Jazz-Rock Combo (0-1)

Study and performance of traditional and progressive jazz-rock music in a small group format. Membership selected by audition. May be repeated. Participation in small ensembles is strongly recommended. These are ensembles with flexible instrumentation designed to promote musical independence and discriminating listening through performance of a wide variety of chamber music. Open to any University student by music faculty permission. *May be repeated.* An additional fee is associated with this course.

MUS 1095 - Keyboard Ensemble (0-1)

Participation in small ensembles is strongly recommended. These are ensembles with flexible instrumentation designed to promote musical independence and discriminating listening through performance of a wide variety of chamber music. Open to any University student by music faculty permission. *May be repeated.* Prerequisite(s): Music faculty permission An additional fee is associated with this course.

MUS 1097 - String Ensemble (0-1)

Participation in small ensembles is strongly recommended. These are ensembles with flexible instrumentation designed to promote musical independence and discriminating listening through performance of a wide variety of chamber music. Open to any University student by music faculty permission. *May be repeated.* Prerequisite(s): Music faculty permission An additional fee is associated with this course.

MUS 1098 - Chamber Winds and Percussion (0-1)

Participation in small ensembles is strongly recommended. These are ensembles with flexible instrumentation designed to promote musical independence and discriminating listening through performance of a wide variety of chamber music. Open to any University student by music faculty permission. *May be repeated.* Prerequisite(s): Music faculty permission An additional fee is associated with this course.

MUS 1100 - Fundamentals of Music (3)

Introduction to Western music notation including note names, clefs, the piano keyboard, rhythm and meter, major and minor scales and key signatures, intervals, triads. Designed for students with no or limited experience reading music notation. An additional fee is associated with this course.

This course is equivalent to MOTR MUSC 101 Music Fundamentals in the Humanities & Fine Arts Knowledge Area.

MUS 1111 - Theory I (3)

Intervals, minor keys, triads, seventh chords; diatonic harmony including Roman numerals, part writing, and analysis. Prerequisite(s): Admission by examination or completion of MUS 1100 with grade of C or better. Corequisite(s): MUS 1121 for music majors and minors. An additional fee is associated with this course.

MUS 1112 - Theory II (3)

Pre-dominant seventh chords, secondary dominant and leading-tone chords; analysis of small forms including sentence, period, hybrids, ternary form, simple and rounded binary forms. Prerequisite(s): MUS 1111. Corequisite(s): MUS 1122. An additional fee is associated with this course.

MUS 1121 - Aural Training I (1)

Basic listening and aural awareness skills: rhythm and pitch patterning, scales, intervals, triads, V7, primary triads, harmonic dictation, melodic memory, melodic dictation, and sight singing. Prerequisite(s): Admission by examination or completion of MUS

1100 with grade of C or better. Corequisite(s): MUS 1111 An additional fee is associated with this course.

MUS 1122 - Aural Training II (1)

Continuation of development of aural skills introduced in MUS 1121 plus two-part dictation, nonharmonic tones, secondary triads, secondary dominants, and modulation. Prerequisite(s): MUS 1121. Corequisite(s): MUS 1112. An additional fee is associated with this course.

MUS 1210 - Experiencing Music GE (3)

An introduction to important musical masterpieces with emphasis on the knowledge and skills involved in perceptive listening. Prerequisite(s): no previous musical experience is necessary. An additional fee is associated with this course.

This course is equivalent to MOTR MUSC 100 Music Appreciation in the Humanities & Fine Arts Knowledge Area.

MUS 1220 - The Evolution of a Popular Art: An Introduction to Rock Music GE (3)

An introduction to the development of rock music and its precursors in the United States during the period 1900-present. An additional fee is associated with this course.

This course is equivalent to MOTR MUSC 100RP Music Appreciation-Rock/Pop in the Humanities & Fine Arts Knowledge Area.

MUS 1225 - Music of the World's Cultures GE (3)

Gives the student a basic knowledge and understanding of global cultures, particularly those outside the European or Euro-American cultural sphere, and examines how diverse people have been influenced by music. An additional fee is associated with this course.

This course is equivalent to MOTR MUSC 102 World Music in the Humanities & Fine Arts Knowledge Area.

MUS 1281 - History and Development of Jazz GE (3)

A survey of the evolution in jazz music in the United States. Includes discussion of the styles and characteristics of each period of jazz history and the contributions of influential groups and individuals. An additional fee is associated with this course. Spring, in even numbered years only

This course is equivalent to MOTR MUSC 100J Music Appreciation-Jazz in the Humanities & Fine Arts Knowledge Area.

MUS 1390 - Introduction to Music Education (2)

Introduction to the field of music education including examination of the purposes and basic methodologies for music teaching and careers in music education. Prerequisite(s): admission to the undergraduate program in music education or with departmental approval. An additional fee is associated with this course.

MUS 1400 - Computer Music Notation (0.5)

Introduction to notating music with computer software. An additional fee is associated with this course.

MUS 1410 - Fundamentals of Music Technology I : Hardware (0.5)

Overview of music technology and audio hardware, including basic operating principles, terminology, and real-world applications.

MUS 1420 - Fundamentals of Music Technology I : Software (0.5)

Overview of music technology and audio software, including basic operating principles, terminology, and real-world applications.

MUS 1450 - Audio and Acoustics (3)

Practical approach to the principles of audio and acoustics. Physical properties of sound, propagation and interaction of sound with various environments and obstacles, and an introduction to techniques for controlling and manipulating sound in structures. Operating principles of digital and analog audio, including transduction, time- and frequency-domain

analysis, and sampling theory. An additional fee is associated with this course.

MUS 1460 - Music Technology Performance I (2)

Class study of performing live music with technology. Performance skills; basic instrument customization and optimization; improvisation; songwriting/composition; basic interpretation and aesthetics of performance. Technical skills as needed to interface individuals' instruments with various performance systems. *May be repeated.* Prerequisite(s): successful completion of entrance exam required for initial enrollment. An additional fee is associated with this course.

MUS 1470 - Fundamentals of Music Technology II (1)

Fundamentals of Music Technology and Audio Production. Signal Processing, system operation, and other core topics. Prerequisite(s): MUS 1410 and MUS 1420.

MUS 1480 - Fundamentals of Music Technology (2)

Overview of music technology hardware and software, including basic operating principles, terminology, and real-world applications. Fundamentals of music technology and audio production. Signal processing, system operation, and other core topics.

MUS 1501 - Piano Class I (1)

Study of the piano, especially for adult students who have had no previous training. Prerequisite(s): Admission by examination or completion of MUS 1100 with a grade of C or better. An additional fee is associated with this course.

MUS 1502 - Piano Class II (1)

A continuation of MUS 1501. Prerequisite(s): MUS 1501. An additional fee is associated with this course.

MUS 1507 - Secondary Keyboard Lessons (1)

Private lesson study in any keyboard instrument listed in this catalog. Does not count for any music major or minor as the principal performing area. *May be repeated.* Prerequisite(s): initial enrollment by permission of applied area faculty. An additional fee is associated with this course.

MUS 1510 - Piano I (1-2)

Technical study and easier compositions selected from the various eras of keyboard literature. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1520 - Organ I (1-2)

Manual and pedal study, elementary registration and specification; Bach short preludes and fugues, chorale preludes, etc. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1601 - Voice Class I (1)

Breathing exercises, diction, stage deportment, acquaintance with familiar vocal literature, and experience in solo and duet singing. Designed for beginning voice students. Prerequisite(s): demonstrated ability to read music. An additional fee is associated with this course.

MUS 1602 - Voice Class II (2)

Instruction in breathing, resonance, diction, musicality, performance skills, and the nature of the vocal instrument, using solo song and duet literature in English and Italian. Prerequisite(s): one semester of MUS 1610, or MUS 1601. An additional fee is associated with this course.

MUS 1607 - Secondary Voice Lessons (1)

Private lesson study in voice. Does not count as credit for any music major or minor as the principal performing area. *May be repeated.* Prerequisite(s): initial enrollment by permission of applied area

faculty. An additional fee is associated with this course.

MUS 1610 - Voice I (1-2)

Breath control; technical exercises represented by Sieber, Vaccai, and other specified methods. Early Italian songs. English songs of medium difficulty, and other repertoire suggested by the instructor. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1620 - Musical Theatre Practicum (1)

Rehearsal and performance of Musical Theatre repertoire. *May be repeated for a maximum of 4 semester hours.* Prerequisite(s): Entrance by audition. An additional fee is associated with this course.

MUS 1701 - String Class (1)

A laboratory course in the fundamentals of playing and teaching string instruments. *May be repeated for a maximum of 2 semester hours. Two different string instruments will be studied in each semester.* An additional fee is associated with this course.

MUS 1703 - Beginning Guitar Class (2)

Prepares students in the basic fundamentals of guitar playing. Concepts of applied music theory will also be introduced. An additional fee is associated with this course.

MUS 1707 - Secondary String Lessons (1)

Private lesson study in any string instrument listed in this catalog. Does not count for any music major or minor as the principal performing area. *May be repeated.* Prerequisite(s): initial enrollment by permission of applied area faculty. An additional fee is associated with this course.

MUS 1710 - Violin I (1-2)

Easy technical studies, easy standard sonatas, concertos, and short solos. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1715 - Viola I (1-2)

Easy technical studies, easy standard sonatas, concertos, and short solos. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1720 - Cello I (1-2)

Easy technical studies, easy standard sonatas, concertos, and short solos. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1725 - String Bass I (1-2)

Easy technical studies, easy standard sonatas, concertos, and short solos. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1760 - Guitar I (1-2)

Technical studies, standard solo literature from all style periods. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1770 - Harp I (1-2)

Easy technical studies, easy standard sonatas, concertos, and short solos. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required

for initial enrollment. An additional fee is associated with this course.

MUS 1807 - Secondary Woodwind Lessons (1)

Private lesson study in any woodwind instrument listed in this catalog. Does not count for any music major or minor as the principal performing area. *May be repeated.* Prerequisite(s): initial enrollment by permission of applied area faculty. An additional fee is associated with this course.

MUS 1810 - Flute I (1-2)

Breath control; fundamentals of mechanism, embouchure; proper tonal color; technical exercises; easy solos; supervised chamber ensemble rehearsals. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1815 - Clarinet I (1-2)

Breath control; fundamentals of mechanism, embouchure; proper tonal color; technical exercises; easy solos; supervised chamber ensemble rehearsals. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1820 - Oboe I (1-2)

Breath control; fundamentals of mechanism, embouchure; proper tonal color; technical exercises; easy solos; supervised chamber ensemble rehearsals. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1825 - Saxophone I (1-2)

Breath control; fundamentals of mechanism, embouchure; proper tonal color; technical exercises; easy solos; supervised chamber ensemble rehearsals. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1830 - Bassoon I (1-2)

Breath control; fundamentals of mechanism, embouchure; proper tonal color; technical exercises; easy solos; supervised chamber ensemble rehearsals. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1907 - Secondary Brass and Percussion Lessons (1)

Private lesson study in any brass instrument listed in this catalog or in percussion. Does not count for any major or minor as the principal performing area. *May be repeated.* Prerequisite(s): initial enrollment by permission of applied area faculty. An additional fee is associated with this course.

MUS 1910 - Trumpet I (1-2)

Breath control; fundamentals of mechanism, embouchure; proper tonal color; technical exercises; easy solos; supervised chamber ensemble rehearsals. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1915 - French Horn I (1-2)

Breath control; fundamentals of mechanism, embouchure; proper tonal color; technical exercises; easy solos; supervised chamber ensemble rehearsals. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1920 - Trombone I (1-2)

Breath control; fundamentals of mechanism, embouchure; proper tonal color; technical exercises;

easy solos; supervised chamber ensemble rehearsals. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1925 - Euphonium I (1-2)

Breath control; fundamentals of mechanism, embouchure; proper tonal color; technical exercises; easy solos; supervised chamber ensemble rehearsals. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1930 - Tuba I (1-2)

Breath control; fundamentals of mechanism, embouchure; proper tonal color; technical exercises; easy solos; supervised chamber ensemble rehearsals. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 1960 - Percussion I (1-2)

Fundamental skills in rudimental and concert snare drum techniques. Study of the keyboard percussion instruments and an introduction to the timpani. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of admission audition required for initial enrollment. An additional fee is associated with this course.

MUS 2111 - Theory III (3)

Chromatic harmony including the Neapolitan and augmented sixth chords, forms and procedures of the Common Practice era. Prerequisite(s): MUS 1112. Corequisite(s): MUS 2121. An additional fee is associated with this course.

MUS 2112 - Theory IV (3)

Continuation of MUS 2111. Analytical and compositional methods of twentieth and twenty-first century music. Prerequisite(s): MUS 2111. Corequisite(s): MUS 2122. An additional fee is associated with this course.

MUS 2121 - Aural Training III (1)

Continuation of the development of aural skills in MUS 1122 applied to sight singing and aural perception of rhythm, melody, and chromatic harmony. Prerequisite(s): MUS 1122. Corequisite(s): MUS 2111. An additional fee is associated with this course.

MUS 2122 - Aural Training IV (1)

Continuation of the development of aural skills in MUS 2121 including rhythmic, melodic, and harmonic techniques from the twentieth century. Prerequisite(s): MUS 2121. Corequisite(s): MUS 2112. An additional fee is associated with this course.

MUS 2141 - Composition I (3)

Techniques of twentieth century composition through projects in smaller forms. Electronic music studio techniques. Aural and visual analysis of twentieth century music. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): MUS 1112 and MUS 1122. An additional fee is associated with this course.

MUS 2180 - Jazz Improvisation I (2)

The techniques and materials of jazz improvisation at the introductory level. Scales, chords, phrasing, articulation, and guided listening. Performance mandatory. Prerequisite(s): MUS 1112 and MUS 1122. An additional fee is associated with this course.

MUS 2181 - Jazz Improvisation II (2)

A continuation of MUS 2180. Advanced concepts in style and form. Transcription of recorded solos using altered scales and chords and the development of style. Performance mandatory. Prerequisite(s): MUS 2180. An additional fee is associated with this course.

MUS 2221 - Introduction to Music Literature I (2)

An introduction to the principal genres of instrumental music with emphasis on representative works from

the standard repertoire. A basic knowledge of instrumental music is assumed. Prerequisite(s): MUS 1100 or consent. An additional fee is associated with this course.

MUS 2222 - Introduction to Music Literature II (2)

An introduction to the principal genres of vocal music including oratorio, church music, opera, and art songs. A basic knowledge of vocal music is assumed. Prerequisite(s): MUS 1100 or consent. An additional fee is associated with this course.

This course is equivalent to MOTR MUSC 104 Music History II in the Humanities & Fine Arts Knowledge Area.

MUS 2300 - Fundamentals of Conducting (3)

An introductory course in conducting including baton technique and basic score preparation. Prerequisite(s): MUS 1112 and MUS 1122 or concurrently. An additional fee is associated with this course.

MUS 2400 - Sound Reinforcement and Music Production (3)

Introductory theory and usage of audio equipment to produce recordings and provide sound reinforcement for live events. Application of informed musical judgment to the music production process. Prerequisite(s): MUS 1470 or MUS 1480 or COMM 2411. Corequisite(s): MUS 2420. An additional fee is associated with this course.

MUS 2410 - Digital Audio Production (3)

Theory and usage of digital audio hardware and software to produce music and other audio. Application of informed musical judgment to the audio production process. Prerequisite(s): MUS 1480 or COMM 2411. Corequisite(s): MUS 2420. An additional fee is associated with this course.

MUS 2420 - Technology Practicum (0)

Practical experience in audio recording, live sound reinforcement, and audio engineering facility management. *May be repeated.* Prerequisite(s): MUS 2400 or MUS 2410, or concurrently.

MUS 2501 - Piano Class III (1)

A continuation of MUS 1502 with additional emphasis on functional keyboard skills. *May be repeated.* Prerequisite(s): MUS 1502. An additional fee is associated with this course.

MUS 2502 - Piano Class IV (1)

Emphasis on specific piano proficiency skills for vocal and instrumental students preparing for a teaching career. *May be repeated.* Prerequisite(s): MUS 2501 or MUS 1510 or permission of instructor. An additional fee is associated with this course.

MUS 2515 - Piano Accompanying (2)

A study of and practical experience in piano accompanying in various musical mediums, using music from several styles and historical eras. Prerequisite(s): One year of college level private piano or consent of instructor. An additional fee is associated with this course. Fall, in even numbered years only

MUS 2631 - Diction for Singers I (1)

Systematic instruction in singing Italian and Ecclesiastical Latin repertoire emphasizing clear, correct, and expressive diction and a thorough understanding of the International Phonetic Alphabet (IPA), its rules and applications. Prerequisite(s): MUS 1610 or consent of instructor. An additional fee is associated with this course.

MUS 2632 - Diction for Singers II (1-2)

Systematic instruction in singing French and German art songs emphasizing clear, correct, and expressive diction. Prerequisite(s): MUS 1610 and MUS 2631. An additional fee is associated with this course.

MUS 2801 - Woodwind Class I (1)

A laboratory course in the fundamentals of playing and teaching the clarinet and the saxophone. An additional fee is associated with this course.

MUS 2802 - Woodwind Class II (1)

A laboratory course in the fundamentals of playing and teaching the oboe, the bassoon, and the flute. An additional fee is associated with this course.

MUS 2901 - Brass Class I (1)

A laboratory course in the fundamentals of playing and teaching the trumpet and French horn. An additional fee is associated with this course.

MUS 2902 - Brass Class II (1)

A laboratory class in the fundamentals of playing and teaching the baritone horn, the trombone, and the tuba. An additional fee is associated with this course.

MUS 2950 - Percussion Class (1)

A laboratory course in the basic techniques of playing and teaching the instruments of percussion. An additional fee is associated with this course.

MUS 3060 - Junior Recital (1)

One-half of a public recital. Prerequisite(s): Consent of instructor. An additional fee is associated with this course.

MUS 3061 - Junior Jazz Recital (1)

Half length public jazz recital. *May be repeated for a maximum of 3 semester hours.* Prerequisite(s): Instructor consent.

MUS 3070 - Women's Choir (0-1)

A choir of female voices that performs treble vocal music from all historical periods. *May be repeated.* An additional fee is associated with this course.

MUS 3075 - Madrigal Singers (0-1)

A select performing group specializing in Renaissance and twentieth century madrigal singing. Membership selected by audition. *May be repeated.* An additional fee is associated with this course.

MUS 3077 - Vocal Jazz Ensemble (0-1)

A select ensemble specializing in vocal jazz arrangements of music from all styles. Membership is by audition. *May be repeated.* An additional fee is associated with this course.

MUS 3095 - Piano Accompanying Practicum (1)

Instruction and supervised practical experience in piano accompanying on an individual basis. *May be repeated.* Prerequisite(s): MUS 2515. An additional fee is associated with this course.

MUS 3141 - Composition II (3)

Continuation of MUS 2141 through projects of small and medium dimensions adapted to needs and interests of the student. *May be repeated for a maximum of 12 semester hours.* Prerequisite(s): MUS 2141. An additional fee is associated with this course.

MUS 3211 - Early Music (3)

Early history of western music, including the Medieval and Renaissance eras. Prerequisite(s): MUS 1111. An additional fee is associated with this course.

MUS 3212 - Music of the Common Practice Era (3)

History of music in the Baroque, Classical, and Romantic eras. Prerequisite(s): MUS 1111 or permission of instructor. An additional fee is associated with this course.

MUS 3213 - Music Since 1900 (3)

History of art and popular music in the twentieth and twenty-first centuries. Prerequisite(s): MUS 3212.

MUS 3301 - Music for Elementary Schools (2)

The study of music fundamentals, methods and materials appropriate for teaching music to children K-6. Developing skills in listening, singing, playing percussion and tonal instruments. Planning and evaluating learning experiences. An additional fee is associated with this course. This is a professional education course.

MUS 3305 - Methods of Teaching Elementary School Music (3)

Acquisition of materials and methodology for music majors who are preparing to teach music in the elementary schools. Includes examination of note and rhythm reading comprehension, fluency, strategies, practice skills, concept development, and critical thinking and analysis, especially within the context of music education for typical and atypical learners. Prerequisite(s): MUS 1112. An additional fee is associated with this course. This is a professional education course.

MUS 3306 - Methods of Teaching Instrumental Music (2-3)

Methods, materials, and organization of the intermediate and secondary instrumental program, including development of administrative content and curricular design and development in both differentiated linear and vertical instructional structures. Intended for music majors who are preparing to teach instrumental music. Prerequisite(s): MUS 1112 and admission to the Teacher Education Program. An additional fee is associated with this course. This is a professional education course.

MUS 3308 - Marching Band Techniques (1)

The various techniques of pageantry, precision drill, arranging, charting and planning, as well as problems of organization, administration and public relations. An additional fee is associated with this course.

MUS 3310 - Choral Conducting (3)

Techniques of choral conducting, rehearsal procedures, and basic choral repertoire. Prerequisite(s): MUS 2300. An additional fee is associated with this course.

MUS 3315 - Choral Techniques (3)

Aspects of choral singing and pedagogy, including the human voice and choral tone, choral diction, organization, rehearsal procedures, basic choral repertoire, and assessment. Prerequisite(s): MUS 3310 or concurrently, successful demonstration of keyboard competency and admission to the Teacher Education Program. An additional fee is associated with this course. This is a professional education course.

MUS 3320 - Instrumental Conducting and Rehearsal Techniques (3)

Advanced techniques of conducting instrumental ensembles, development of visual/aural discrimination skills for diagnosing and correcting problems in performance; and selection of appropriate methods and literature. Prerequisite(s): MUS 2300, successful demonstration of keyboard competency and admission to the Teacher Education Program. An additional fee is associated with this course.

MUS 3460 - Music Technology Performance II (3)

Advanced class study of performing live music with technology. Advanced performance skills; instrument design, realization, customization, and optimization; improvisation; songwriting/composition; advanced interpretation and aesthetics of performance. Technical skills as needed to interface individuals' instruments with various performance systems. *May be repeated.* Prerequisite(s): successful completion of departmental exam required for initial enrollment. An additional fee is associated with this course.

MUS 3510 - Piano II (1.5-3)

Technical study and moderately difficult compositions selected from the various eras of keyboard literature. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3520 - Organ II (1.5-3)

Continued manual and pedal study; Bach preludes and fugues; selections from advanced classic and modern organ works; church playing and accompaniments. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3610 - Voice II (1.5-3)

Advanced technical exercises, modern art songs; the great Lieder composers; French art songs; and representative repertoire from opera and oratorio. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3710 - Violin II (1.5-3)

Advanced technical studies, advanced standard sonatas, concertos, and short solos. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3715 - Viola II (1.5-3)

Advanced technical studies, advanced standard sonatas, concertos, and short solos. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3720 - Cello II (1.5-3)

Advanced technical studies, advanced standard sonatas, concertos, and short solos. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3725 - String Bass II (1.5-3)

Advanced technical studies, advanced standard sonatas, concertos, and short solos. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3760 - Guitar II (1.5-3)

Advanced technical studies, advanced standard sonatas, concertos, and short solos. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3770 - Harp II (1.5-3)

Advanced technical studies, advanced standard sonatas, concertos, and short solos. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of lower credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3810 - Flute II (1.5-3)

Advanced technical studies; standard solos; chamber ensemble playing. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3815 - Clarinet II (1.5-3)

Advanced technical studies; standard solos; chamber ensemble playing. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3820 - Oboe II (1.5-3)

Advanced technical studies; standard solos; chamber ensemble playing. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3825 - Saxophone II (1.5-3)

Advanced technical studies; standard solos; chamber ensemble playing. In addition to weekly lessons,

attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3830 - Bassoon II (1.5-3)

Advanced technical studies; standard solos; chamber ensemble playing. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3910 - Trumpet II (1.5-3)

Advanced technical studies; standard solos; chamber ensemble playing. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3915 - French Horn II (1.5-3)

Advanced technical studies; standard solos; chamber ensemble playing. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3920 - Trombone II (1.5-3)

Advanced technical studies; standard solos; chamber ensemble playing. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3925 - Euphonium II (1.5-3)

Advanced technical studies; standard solos; chamber ensemble playing. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3930 - Tuba II (1.5-3)

Advanced technical studies; standard solos; chamber ensemble playing. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): Successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 3960 - Percussion II (1.5-3)

Advanced study of snare drum, keyboard, percussion, and timpani, as well as an emphasis in performance literature. In addition to weekly lessons, attendance at biweekly studio classes is required. *May be repeated.* Prerequisite(s): successful completion of lower level credit as determined by departmental examination. An additional fee is associated with this course.

MUS 4000 - Special Projects in Music (0-3)

May be repeated for a maximum of 6 semester hours. An additional fee is associated with this course.

MUS 4010 - Symphonic Wind Ensemble GE (0-1)

A select band which performs original band literature and transcriptions of many famous works at frequent appearances. Membership selected by audition. *May be repeated.* This course is co-listed with MUS 5010. An additional fee is associated with this course.

This course is equivalent to MOTR PERF 102B Music Performance-Band in the Humanities & Fine Arts Knowledge Area.

MUS 4015 - Opera Theatre (0-1)

Production of scenes from operatic repertoire. *May be repeated for a maximum of 4 semester hours.* This course is co-listed with MUS 5015.

MUS 4025 - University Symphony Orchestra GE (0-1)

Performs concerts of standard and contemporary literature. Members selected by audition. *May be repeated.* This course is co-listed with MUS 5025. An additional fee is associated with this course.

This course is equivalent to MOTR PERF 102O Music Performance-Orchestra in the Humanities & Fine Arts Knowledge Area.

MUS 4040 - Music Business Practices (3)

Covers copyright, performance rights, client management and interaction. This course is co-listed with MUS 5040. An additional fee is associated with this course. Fall, in odd numbered years only

MUS 4050 - University Concert Choir GE (0-1)

A select choir which performs the best of choral literature in concert. Membership selected by audition. *May be repeated.* This course is co-listed with MUS 5049. An additional fee is associated with this course.

This course is equivalent to MOTR PERF 102C Music Performance-Choir in the Humanities & Fine Arts Knowledge Area.

MUS 4060 - Senior Recital (1-2)

Full length public recital. Prerequisite(s): Consent of instructor. An additional fee is associated with this course.

MUS 4061 - Senior Jazz Recital (1-2)

Full length public jazz recital. *May be repeated for a maximum of 4 semester hours.* Prerequisite(s): Instructor consent.

MUS 4081 - Jazz Ensemble 1 GE (0-1)

A select ensemble which performs original jazz ensemble literature representing traditional as well as the most current forms of jazz. Membership selected by audition. *May be repeated.* This course is co-listed with MUS 5081. An additional fee is associated with this course.

This course is equivalent to MOTR PERF 102B Music Performance-Band in the Humanities & Fine Arts Knowledge Area.

MUS 4088 - Guitar Ensemble (0-1)

An ensemble that studies and performs a wide range of music written for multiple guitars. Membership selected by audition. *May be repeated.* An additional fee is associated with this course.

MUS 4101 - Counterpoint I (3)

Eighteenth-century style in two parts: melodic structure, resolution of melodic and harmonic contrapuntal dissonances, canon, and the writing of original two-part inventions. This course is co-listed with MUS 5101. Prerequisite(s): MUS 2112 and MUS 2122. An additional fee is associated with this course. Fall, in even numbered years only

MUS 4115 - Instrumentation (3)

Characteristics of instruments normally found in band and orchestra. Short writing projects for instrumental choirs, full band and orchestra. Score study. This course is co-listed with MUS 5115. Prerequisite(s): MUS 1400, MUS 2112 and MUS 2122. An additional fee is associated with this course.

MUS 4125 - Form and Analysis (3)

Small song forms, rondos, variations and sonata forms, with emphasis on aural analysis and score readings. This course is co-listed with MUS 5106. Prerequisite(s): MUS 2112 and MUS 2122 or concurrently. An additional fee is associated with this course. Fall, in odd numbered years only

MUS 4130 - Choral Arranging (2)

Practical arrangements for various choral ensembles for school organizations and church choirs. This course is co-listed with MUS 5130. Prerequisite(s): MUS 1400; MUS 2112 and MUS 2122 or concurrently. An additional fee is associated with this course. Fall, in even numbered years only

MUS 4181 - Advanced Jazz Improvisation (2-3)

Advanced study of jazz improvisation techniques in applied, private lessons. *May be repeated.* This course is co-listed with MUS 5181. Prerequisite(s):

MUS 2181 or consent of instructor. An additional fee is associated with this course.

MUS 4185 - Jazz-Commercial Arranging (3)

Characteristics of instruments normally found in jazz ensemble and commercial performing groups. Emphasis on style and voicing problems in these idioms. Writing projects for combo and jazz ensemble. Score study. This course is co-listed with MUS 5185. Prerequisite(s): MUS 2112 and MUS 2122. An additional fee is associated with this course. Spring, in odd numbered years only

MUS 4186 - Advanced Jazz-Commercial Arranging (2-3)

Private lessons in composition, arranging, score study, and analysis for various jazz or commercial ensembles based on individual student needs and interests. *May be repeated.* This course is co-listed with MUS 5186. Prerequisite(s): MUS 4185. An additional fee is associated with this course.

MUS 4190 - Electronic Music Composition (3)

Composition of electronic music in popular and artistic styles. Technical principles, history of the genre, and aesthetic considerations of electronic music. This course is co-listed with MUS 5190. An additional fee is associated with this course.

MUS 4195 - Creative Software Design (3)

MIDI/Audio programming, application development, and music composition in the Max/MSP environment and other environments. This course is co-listed with MUS 5195.

MUS 4201 - Piano Literature Through Beethoven (2)

Survey and analysis of music written for clavichord, harpsichord, and piano through the music of Beethoven. This course is co-listed with MUS 5201. Prerequisite(s): four semesters of MUS 1510 or equivalent. An additional fee is associated with this course. Fall, in even numbered years only

MUS 4202 - Piano Literature From the Romantic Era to the Present (2)

Survey and analysis of music written for piano from the Romantic era through the present. This course is co-listed with MUS 5202. Prerequisite(s): four semesters of MUS 1510 or equivalent. An additional fee is associated with this course. Spring, in odd numbered years only

MUS 4230 - Choral Literature (3)

Music literature for all choral groups with emphasis on the performance style and interpretative problems of the choral conductor. This course is co-listed with MUS 5230. Prerequisite(s): MUS 3310. An additional fee is associated with this course. Spring, in odd numbered years only

MUS 4235 - Vocal Literature (3)

A survey of solo literature for all voice classifications with emphasis on the development of art song in the Italian, British, German, French, and American repertories. This course is co-listed with MUS 5235. Prerequisite(s): Two semesters of MUS 1610 or consent of instructor. An additional fee is associated with this course. Fall, in odd numbered years only

MUS 4240 - String Instrument Literature and Pedagogy (2)

A survey of literature, instructional materials, and pedagogy of the various string instruments. This course is co-listed with MUS 5251. Prerequisite(s): 12 semester hours credit on major instrument. An additional fee is associated with this course.

MUS 4245 - Woodwind Instrument Literature and Pedagogy (2)

A survey of literature, instructional materials, and pedagogy of woodwind instruments. This course is co-listed with MUS 5252. Prerequisite(s): 12 semester hours credit on major instrument. An additional fee is associated with this course. Spring, in even numbered years only

MUS 4250 - Brass Instrument Literature and Pedagogy (2)

A survey of literature, instructional materials, and pedagogy of brass instruments. This course is co-listed with MUS 5253. Prerequisite(s): 12 semester

hours credit on major instrument. An additional fee is associated with this course. Spring, in even numbered years only

MUS 4255 - Percussion Literature and Pedagogy (2)

A survey of literature, instructional materials, and pedagogy of percussion instruments. This course is co-listed with MUS 5255. Prerequisite(s): 12 semester hours credit on major instrument. An additional fee is associated with this course. Spring, in odd numbered years only

MUS 4310 - Methods of Teaching Music (2)

Prerequisite(s): admission to Teacher Education Program; double majors must take a methods curse for each major; methods should be taken concurrently with MUS 4350 during the Professional Semester. This is a professional education course.

MUS 4320 - Methods of Teaching Middle School Music (2)

Objectives, materials, subject matter and problems in the teaching of vocal and general music in the junior high school. This course is co-listed with MUS 5320. Prerequisite(s): MUS 3305 or MUS 3306 or consent of instructor. An additional fee is associated with this course. Fall, in odd numbered years only

MUS 4350 - Secondary Field Experience II (1)

Experiences in the secondary school classroom that provide the teacher candidate more advanced involvement in the teaching-learning process. Prerequisite(s): admission to Teacher Education Program; should be taken concurrently with MUS 4310 during the Professional Semester. This is a professional education course.

MUS 4370 - Band Instrument Repair (2)

A study and practice of band instrument maintenance and repair techniques. Prerequisite(s): one semester each of woodwind and brass study, or one year of teaching music in public schools. An additional fee is associated with this course. Fall, in even numbered years only

MUS 4381 - Jazz Pedagogy (2)

Techniques, systems and materials for teaching of jazz ensembles and jazz improvisation. Supervised conducting experience with a University jazz ensemble. This course is co-listed with MUS 5391. Prerequisite(s): MUS 2300 and successful completion of the piano proficiency requirement. An additional fee is associated with this course.

MUS 4400 - Audio for X (3)

Tools, techniques, and creative approaches to creating audio and designing sound for various environments, including films, games, interactive media, and others. This course is co-listed with MUS 5500. Corequisite(s): MUS 4420. An additional fee is associated with this course.

MUS 4410 - Electronic Music Production Techniques (3)

Tools and techniques used in electronic music production, including MIDI, OpenSoundControl, synthesis, sampling, loops, and others. This course is co-listed with MUS 5410. Prerequisite(s): MUS 2410. Corequisite(s): MUS 4420. An additional fee is associated with this course.

MUS 4420 - Advanced Music Technology Practicum (0)

Advanced practical experience in audio recording and production, live sound reinforcement, and audio engineering facility management and maintenance. *May be repeated.* Prerequisite(s): MUS 4400, MUS 4410, MUS 4470, or concurrently.

MUS 4430 - Seminar in Music Technology (2-3)

Advanced individual and/or group work in music technology and audio production. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with MUS 5430. Prerequisite(s): MUS 4400 and MUS 4410.

MUS 4450 - Internship in Music (1-6)

Field application of music industry theories and practices in professional music production or

recording arts fields. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): consent of the music technology coordinator.

MUS 4470 - Advanced Audio Production (3)

Advanced concepts and techniques in audio production and music technology. Stereo and surround recording techniques, signal processing chains, mixing techniques, mastering, and other advanced topics. This course is co-listed with MUS 5470. Prerequisite(s): MUS 2400 and MUS 2410. Corequisite(s): MUS 4420. Spring.

MUS 4480 - New Technologies Ensemble (0-1)

The New Technologies Ensemble is a select group which performs compositions, improvisations, and original music and arrangements collaboratively created by the members. Membership selected by audition. *May be repeated.* This course is co-listed with MUS 5480.

MUS 4511 - Piano Pedagogy I - The Beginner (3)

Goals, methods, and materials for individual and class instruction of beginning piano students. Includes practice teaching and observation. This course is co-listed with MUS 5511. Prerequisite(s): Two semesters of MUS 1510 or equivalent. An additional fee is associated with this course. Fall, in odd numbered years only

MUS 4512 - Piano Pedagogy II - The Intermediate Student (3)

Goals, methods, and materials for teaching intermediate piano students. Includes practice teaching and observation. This course is co-listed with MUS 5512. Prerequisite(s): Two semesters of MUS 1510 or equivalent. An additional fee is associated with this course. Spring, in even numbered years only

MUS 4513 - Piano Pedagogy III - The Advanced Student (3)

Goals, methods, and materials of advanced piano teaching. Includes practice teaching and observation. This course is co-listed with MUS 5513. Prerequisite(s): Two semesters of MUS 1510 or equivalent. An additional fee is associated with this course. Fall, in even numbered years only

MUS 4514 - Piano Pedagogy IV - Seminar (3)

Intensive individual study in piano pedagogy designed to improve the student's understanding of a selected area of interest. This course is co-listed with MUS 5514. Prerequisite(s): MUS 4511 or MUS 4512 or MUS 4513. An additional fee is associated with this course. Spring, in odd numbered years only

MUS 4515 - Practice Teaching in Piano (3)

Supervised teaching of piano students. Course must be repeated. This course is co-listed with MUS 5515. Prerequisite(s): MUS 4511 and MUS 4512. An additional fee is associated with this course. Spring.

MUS 4600 - Vocal Pedagogy (2)

For prospective singing teachers. Includes study of the physiology of the vocal instrument, the techniques of singing production, goals and materials, teaching techniques, and analysis of vocal problems. Observation of master teachers, and supervised teaching will be required. This course is co-listed with MUS 5600. Prerequisite(s): three years of vocal training. An additional fee is associated with this course. Spring, in odd numbered years only

NET 1000 - Seminar in Networking Technology (1)

This is a forum to provide students an opportunity to learn current events in networking technologies through the use of guest speakers, open discussions and informative field trips. *May be repeated for a maximum of 2 semester hours.* An additional fee is associated with this course.

NET 1058 - A+ IT Essentials: PC Hardware and Software (3)

This course covers the fundamentals of computer hardware, software, and advanced concepts such as security, networking, and the responsibilities of an IT professional. An additional fee is associated with this course.

NET 1060 - Introduction to Networks (3: 2 lecture, 1 lab)

Introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. By the end of the course, students will be able to build simple Local Area Networks (LANs), perform basic configurations for routers and switches, and implement IP addressing schemes. An additional fee is associated with this course.

NET 1061 - Switching, Routing, and Wireless Essentials (3: 2 lecture, 1 lab)

This course focuses on switching technologies and router operations that support small-to-medium business networks and includes wireless local area networks (WLAN) and security concepts. In addition to learning key switching and routing concepts, learners will be able to perform basic network configuration and troubleshooting, identify and mitigate LAN security threats, and configure and secure a basic WLAN. Prerequisite(s): NET 1060. An additional fee is associated with this course.

NET 1610 - Principles of Web Media (3)

Introduction to HTML5 and CSS3. Design and implement code for web pages that are backwards-compatible yet meet current web standards. An additional fee is associated with this course.

NET 2060 - Enterprise Networking, Security, and Automation (3: 2 lecture, 1 lab)

This course in the CCNA curriculum describes the architectures and considerations related to designing, securing, operating, and troubleshooting enterprise networks. This course covers wide area network (WAN) technologies and quality of service (QoS) mechanisms used for secure remote access along with the introduction of software-defined networking, virtualization, and automation concepts that support the digitalization of networks. Students gain skills to configure and troubleshoot enterprise networks, and learn to identify and protect against cybersecurity threats. They are introduced to network management tools and learn key concepts of software-defined networking, including controller-based architectures and how application-programming interfaces (APIs) enable network automation. Prerequisite(s): NET 1061. An additional fee is associated with this course.

NET 2061 - Cisco CyberOps Associate (3: 2 lecture, 1 lab)

Introduces the core security concepts and skills needed to monitor, detect, analyze, and respond to cybercrime, cyberespionage, insider threats, advanced persistent threats, regulatory requirements, and other cybersecurity issues facing organizations. Prerequisite(s): NET 2060. An additional fee is associated with this course.

NET 2620 - Web Media Applications (3)

Design, implementation, and management of websites using a content management system. Fundamentals of HTML email, Javascript, and PHP. Prerequisite(s): NET 1610. An additional fee is associated with this course.

NET 2630 - Web Authoring (3)

Basics of web page creation with XHTML, and CSS. Students learn to hand-code web pages with CSS for presentation and page layout and learn to create lists and links (internal, external, links to images, and more) with XHTML. Creating tables is introduced. Web site design is discussed with an emphasis on recommended practices, ethical considerations, and accessibility. Prerequisite(s): NET 1610, NET 2620. An additional fee is associated with this course.

NET 3000 - Fundamentals of Wireless Networks (3)

A comprehensive overview of wireless technologies, devices, security, design, and best practices with a particular emphasis on real world applications and skills is covered utilizing Cisco Systems hardware. Prerequisite(s): NET 2060 or concurrent. An additional fee is associated with this course.

NET 3022 - Networking Internship in Information Technology (3)

Provides practical application and experience in cooperating industry and business. Students submit

written reports. Evaluation by on-job supervisor and internship coordinator. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): 24 semester hours of program offerings, minimum undergraduate GPA of 2.00 and permission of the program coordinator. An additional fee is associated with this course.

NET 3062 - Network Design (3)

Cisco Systems' design principles, methodology, and structure models for Local Area Networks and Wide Area Networks, including Virtual Private Network and backup design considerations. Prerequisite(s): NET 2061. An additional fee is associated with this course.

NET 3065 - Converged Voice and Data Networks (3)

An introduction to Cisco Systems converged voice and data networks as well as the challenges faced by its various technologies and implementing appropriate solutions to those challenges. Prerequisite(s): NET 2061. An additional fee is associated with this course.

NET 3068 - Network Security I (3: 2 lecture, 1 lab)

This course will take an in depth look at Cisco router IOS security processes with emphasis on hands-on skills in the following areas: security policy design and management; security technologies, products and solutions; firewall and secure router design, installation, configuration and maintenance; AAA implementation using routers and firewalls; VPN implementation using routers and firewalls. This course provides students with practical laboratory exercises to enhance their understanding of the material. Prerequisite(s): NET 1061. An additional fee is associated with this course.

NET 3088 - Linux Operating Systems (3: 2 lecture, 1 lab)

Linux and Open Source Software, as an operating system technology. Installing, configuring, maintaining, and regularly using a Linux operating system. Prerequisite(s): NET 1058. An additional fee is associated with this course.

NET 4000 - Special Projects in Networking (1-3)

Investigation of contemporary problems and issues in networking. *May be repeated for a maximum of 6 semester hours.* An additional fee is associated with this course.

NET 4014 - Advanced Technical Problems in Networking (1-4)

Individual/Group work on recent developments and advanced technical concepts in networking. Experimentation and technical exploration of content not available through formal course offerings. Written contract /proposal with objectives and written school consent. *May be repeated for a maximum of 6 semester hours.* An additional fee is associated with this course.

NET 4040 - Fundamentals of Network Operating Systems (3)

Installing, configuring, and administering Network Operating Systems. Prerequisite(s): NET 1058. An additional fee is associated with this course.

NET 4042 - Network Servers and Services (3)

Implementing and Administering of Network Infrastructure and Directory Services Infrastructure. Prerequisite(s): NET 4040. An additional fee is associated with this course.

NET 4043 - Network Services and Infrastructure (3)

Advanced Implementing and Administering of Network Infrastructure and Directory Services Infrastructure. Prerequisite(s): NET 4042. An additional fee is associated with this course.

NET 4060 - Advanced Routing (3)

This course covers the implementation and troubleshooting of advanced routing technologies and services including Layer 3 VPN services, infrastructure security, infrastructure services. Prerequisite(s): NET 2060, Instructor consent or CCNA certification. An additional fee is associated with this course.

NET 4061 - Remote Access (3)

Remote access topics in WAN technologies such as analog dialup, ISDN BRI and PRI, Frame Relay, and broadband utilizing Cisco Systems hardware. Prerequisite(s): NET 3058. An additional fee is associated with this course.

NET 4062 - CCNP Enterprise: CORE (3)

This course is designed to provide students with comprehensive coverage of professional-level networking technologies. This course focuses on implementing core enterprise network technologies including dual stack (IPv4 and IPv6) architecture, virtualization, infrastructure, network assurance, security and automation. Prerequisite(s): NET 2060, instructor consent or CCNA Certification. An additional fee is associated with this course.

NET 4063 - Network Support (3)

Topics in Local and Wide Area Network documenting, baselining, and troubleshooting methodologies and tools are used to troubleshoot OSI Layers 1 to 7 utilizing Cisco Systems hardware. Prerequisite(s): NET 4062. An additional fee is associated with this course.

NET 4064 - Advanced Network Design (3)

Cisco Systems design considerations for IPv6, popular routing protocols, the Security Ecosystem, and both Traditional and Integrated Voice architectures. Prerequisite(s): NET 3062 or NET 4100. An additional fee is associated with this course.

NET 4100 - Network Device Configuration (3: 2 lecture, 1 lab)

A comprehensive overview of Cisco Systems device configuration. This course is co-listed with NET 5100. Prerequisite(s): Required for non-NET specialist. Not open to NET specialist. An additional fee is associated with this course.

NET 4500 - Managerial Design for Secure Networks (3)

Utilizing Cisco Systems Architecture for Voice, Video and Integrated Data networks to apply modular design practices to ensure the enterprise solution is highly available and optimized for the business and technical needs. This course is co-listed with NET 5500. Prerequisite(s): NET 4064 or NET 4100. An additional fee is associated with this course.

NET 4501 - Network Security Management I (3)

Utilizing Cisco Systems routers for network and overall security processes focusing on designing and implementing solutions that will reduce the risk of revenue loss and vulnerability. This course is co-listed with NET 5501. Prerequisite(s): NET 4100. An additional fee is associated with this course.

NET 4502 - Network Security Management II (3)

An emphasis on security policy design and management, security technologies, firewall and secure router design, installation, configuration and maintenance, AAA and VPN implementation using Cisco Systems' routers and firewalls. This course is co-listed with NET 5502. Prerequisite(s): NET 4501. An additional fee is associated with this course.

NUR 1700 - Introduction to Professional Nursing (1)

Introduces the learner to healthcare language and program outcomes utilized by Nursing. An additional fee is associated with this course.

NUR 2000 - e-Health and Cyber Wellness (2)

Provides an opportunity for students to apply e-health and cyber wellness skills to a self-selected wellness project. Open to nursing and non-nursing majors. An additional fee is associated with this course.

NUR 2020 - Health: The Women's Perspective (2)

An introduction to the physiological, psychosocial, and economic factors that historically have impacted upon the health of women from selected cultural backgrounds with emphasis upon major health care issues currently affecting women. Open to nursing and non-nursing majors. An additional fee is associated with this course.

NUR 2200 - Culture and Sustainability in Health (3)

Overview of health promotion and disease prevention from a multicultural and sustainability perspective (economic, social, cultural, and environmental) applied to individual, community, and global health. An additional fee is associated with this course.

NUR 2710 - Introduction to Nursing Applications Across the Lifespan (1)

Introduces the learner to the professional nursing applications of lifespan development. Provides foundations for interaction with people of various age groups. Prerequisite(s): NUR 1700 or may take concurrently with consent of school chair. An additional fee is associated with this course.

NUR 3010 - Nursing Leadership in Service Learning (2)

Basic information about nursing leadership roles in health care settings. Active participation in a service learning experience. Prerequisite(s): sophomore standing An additional fee is associated with this course.

NUR 3200 - Pathophysiology (4)

An examination of common pathophysiological alterations in human structure and function across the lifespan. Successful completion required prior to admission to the Nursing Program. Prerequisite(s): BIOL 3401 and BIOL 3402.

NUR 3210 - Pharmacological Therapies (3)

Effects of chemicals used in the prevention, diagnosis and treatment of disease. Incorporation of patient teaching about pharmacological therapeutics. Prerequisite(s): CHEM 1104; Admission to nursing program for nursing majors. An additional fee is associated with this course.

NUR 3306 - Assessment Across the Lifespan (2)

Professional nursing observation and physical assessment of the individual in health care delivery systems. Basic for systematic assessment skills used within the nursing process framework. Prerequisite(s): BIOL 3401 and BIOL 3402 and Admission to nursing program. Corequisite(s): NUR 3307. An additional fee is associated with this course.

NUR 3307 - Assessment and Fundamentals Lab (2)

Application of nursing theory for health history taking, physical assessment, and basic nursing skills utilizing technology. Prerequisite(s): BIOL 3401 and BIOL 3402. Corequisite(s): NUR 3306. An additional fee is associated with this course.

NUR 3410 - Concepts of Nursing in Health Promotion & Wellness (2)

An introduction to functional health patterns and lifespan implications for health promotion and disease prevention from a nursing perspective. Prerequisite(s): Admission to the nursing program. An additional fee is associated with this course.

NUR 3515 - Fundamentals of Nursing (2)

An introduction to basic nursing care as a foundation to nursing practice. Prerequisite(s): Admission to the nursing program. Corequisite(s): NUR 3516. An additional fee is associated with this course.

NUR 3516 - Fundamentals of Nursing Practicum (3)

Application of basic nursing care as a foundation to nursing practice. Prerequisite(s): Admission to the nursing program. Corequisite(s): NUR 3515. An additional fee is associated with this course.

NUR 3610 - Concepts of Adult and Older Adult Nursing I (3)

Continuation of nursing process with emphasis on nursing science applicable to individuals experiencing chronic alterations in health. Prerequisite(s): NUR 3410. Corequisite(s): NUR 3611 and NUR 3612. An additional fee is associated with this course.

NUR 3611 - Concepts of Adult and Older Adult Nursing I Practicum (3)

Continued application of nursing process with emphasis on nursing science applicable to individuals experiencing chronic alterations in health. Must be

taken for pass/fail credit only. Prerequisite(s): NUR 3410. Corequisite(s): NUR 3610 and NUR 3612. An additional fee is associated with this course.

NUR 3612 - Technical Nursing Skills Lab (2)

A performance based course focusing upon current clinical technology applications in nursing and theoretical rationales associated with these applications. Corequisite(s): NUR 3610 and NUR 3611. An additional fee is associated with this course.

NUR 3710 - Mental Health Nursing (2)

An overview of nursing science specific to human behavior and alterations in human behavior. Using a holistic nursing approach, emphasis is placed on recognition of mental health and alterations in mental health. A focus will be placed on communication skills and therapeutic use of self in meeting the physiological, emotional, and spiritual needs of clients of all ages. Prerequisite(s): NUR 3515 and NUR 3516. An additional fee is associated with this course.

NUR 4000 - Special Projects in Nursing (1-3)

Investigation of contemporary problems and issues in nursing by selected individuals or groups. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with NUR 5500. An additional fee is associated with this course.

NUR 4010 - RN-BS Health and Physical Assessment (3)

Builds on systematic assessment, documentation, and effective communication as practiced by RNs. Focuses on techniques of history taking and physical examination in a cross-cultural context throughout the life span. Prerequisite(s): Admission to the RN-BS option. An additional fee is associated with this course.

NUR 4012 - Evidence-based Practice/Research (2)

An overview of research designed to introduce the student to the intellectual skills needed to identify, conduct, report and critique nursing research studies. Prerequisite(s): NUR 3516. An additional fee is associated with this course.

NUR 4013 - Health Policy and Nursing Ethics (2)

An overview of professional issues and ethics in nursing. Exploration of health policies impacting nursing practice. Prerequisite(s): NUR 3516. An additional fee is associated with this course.

NUR 4015 - RN-BS Evidence Based Practice/Research (2)

An introduction to various types of research, the process of appraising research studies, and the application of research findings to improving the quality of nursing care. Prerequisite(s): Admission to the RN-BS option and NUR 4050. An additional fee is associated with this course.

NUR 4020 - Grief and Loss (2)

A seminar designed to assist various pre-professionals to understand and deal with loss and death either in a professional capacity or on a personal basis. Open to nursing and non-nursing majors. This course is co-listed with NUR 5520. An additional fee is associated with this course.

NUR 4030 - Human Sexuality (2)

Current theory regarding the biological, cultural, and behavioral parameters of human sexuality. Open to nursing and non-nursing majors. This course is co-listed with NUR 5530. An additional fee is associated with this course.

NUR 4040 - Nursing Informatics (2)

Introduces the student to the synergistic use of nursing, information and computer sciences unique to nursing informatics. Explores impact on nursing practice roles and quality of patient care. This course is co-listed with NUR 5540. Prerequisite(s): meeting general education requirement for technology. An additional fee is associated with this course.

NUR 4050 - RN-BS Professional Nursing Dimensions and Perspectives (4)

Nursing concepts and theories for role transition and outcomes-based learning for the registered nurse. An additional fee is associated with this course.

NUR 4052 - RN-BS Concepts of Wellness (3)

Concept of health patterns occurring throughout the life span and implications of health promotion, disease prevention and health maintenance are viewed from a nursing perspective. Prerequisite(s): Admission to the RN-BS option, NUR 4050 or concurrently. An additional fee is associated with this course.

NUR 4060 - Physical and Health Needs of the Medically Fragile Child (1)

Designed to assist teachers and nurses in understanding and planning instruction/interventions for students with severe chronic medical and/or physical conditions. Prerequisite(s): EDSP 2100 or EDSP 5200. An additional fee is associated with this course. This is a professional education course.

NUR 4111 - Socio-Economic Factors Impacting Health (3)

Examines selected socio-economic issues and their impact on health. An additional fee is associated with this course.

NUR 4200 - RN-BS Pathophysiology (3)

Explores etiology of disease and physiological adaptations that occur in humans with chronic and acute illnesses. Prerequisite(s): Admission to the RN-BS option. An additional fee is associated with this course.

NUR 4210 - Wellness for U.S. Veterans and Military Families (2)

Emphasis on unique issues that impact the health of U.S. veterans and military families. Open to nursing and non-nursing majors. An additional fee is associated with this course.

NUR 4405 - Aging of Self and Others (2)

Seminar concerning an individual's aging in our society. Focus is on how one perceives and adapts to the aging of self and others. Open to nursing and non-nursing majors. This course is co-listed with NUR 5405. An additional fee is associated with this course.

NUR 4406 - RN-BS Concepts of Community Health Nursing (3)

Integrates theories, concepts, and skills of community health nursing in the assessment and care of families, groups, and communities. Prerequisite(s): NUR 4050 and departmental consent. Corequisite(s): NUR 4407. An additional fee is associated with this course.

NUR 4407 - RN-BS Concepts of Community Health Nursing Practicum (2)

Application of theories and skills of community health nursing to individuals, families, groups, and communities experiencing physical and psychosocial alterations or potential alterations in health. Must be taken for pass/fail credit only. Prerequisite(s): departmental consent. Corequisite(s): NUR 4406. An additional fee is associated with this course.

NUR 4410 - Concepts of Maternal-Child Nursing (3)

A continuation of the nursing process with emphasis on nursing science applicable to the childbearing and childrearing family. Prerequisite(s): NUR 3610 and NUR 3611. Corequisite(s): NUR 4411. An additional fee is associated with this course.

NUR 4411 - Concepts of Maternal-Child Nursing Practicum (2)

Continuation of nursing process with emphasis on nursing science applicable to the childbearing and childrearing family. Must be taken for pass/fail credit only. Prerequisite(s): NUR 3611. Corequisite(s): NUR 4410. An additional fee is associated with this course.

NUR 4510 - Concepts of Adult and Older Adult Nursing II (3)

Overview of nursing science applicable to the acutely and critically ill adult. Prerequisite(s): NUR 3610, NUR 3611, NUR 3612. Corequisite(s): NUR 4511. An additional fee is associated with this course.

NUR 4511 - Concepts of Adult and Older Adult Nursing II Practicum (3)

Designed to provide the student the opportunity to apply skills and concepts of nursing practice in the

delivery of nursing care to acutely and critically ill adults. Must be taken for pass/fail credit only. Prerequisite(s): NUR 3610 and NUR 3611. Corequisite(s): NUR 4510. An additional fee is associated with this course.

NUR 4512 - Advanced Pharmacology & Technical Nursing Skills Lab (2)

Designed to increase knowledge of and ability to apply advanced pharmacology and technology to nursing practice. Corequisite(s): NUR 4410, NUR 4411, NUR 4510 and NUR 4511. An additional fee is associated with this course.

NUR 4602 - Synthesis of Nursing Concepts (2)

Synthesis of program outcomes for transition into nursing practice as a graduate nurse. Prerequisite(s): NUR 4511, NUR 4512, NUR 4411. An additional fee is associated with this course.

NUR 4608 - RN-BS Concepts of Nursing Leadership in Management (4)

Integrates theories, concepts, and skills of dynamic, creative nursing leadership within health care settings. Prerequisite(s): NUR 4010, NUR 4052, NUR 4200 and NUR 4407 and departmental consent. Corequisite(s): NUR 4609. An additional fee is associated with this course.

NUR 4609 - RN-BS Concepts of Nursing Leadership in Management Practicum (1)

Application of leadership and management theories and skills in diverse settings. Must be taken for pass/fail credit only. Prerequisite(s): NUR 4010, NUR 4052, NUR 4200 and NUR 4407 and departmental consent. Corequisite(s): NUR 4608. An additional fee is associated with this course.

NUR 4610 - Population Health (3)

Concepts and theories of population-based nursing care for groups, communities, and populations. Corequisite(s): NUR 4611. An additional fee is associated with this course.

NUR 4611 - Population Health Practicum (3)

Concepts and theories from population-based nursing are applied in delivery of care for groups, communities, and populations. Corequisite(s): NUR 4610. An additional fee is associated with this course.

NUR 4710 - Leadership/Care Management (2)

Application of leadership and management within health care settings. Corequisite(s): NUR 4711. An additional fee is associated with this course.

NUR 4711 - Capstone (3)

Application of leadership, care management, and nursing concepts within health care settings. Corequisite(s): NUR 4710. An additional fee is associated with this course.

NUTR 4010 - Advanced Nutrition and Human Metabolism (3)

An in-depth study of human nutrition which includes the study of various food and nutrients in human metabolism, nutritional genomics, pharmacokinetics, analysis of physiology and biochemistry as they relate to nutrition care in health and various disease processes including psychiatric disorders. This course is co-listed with NUTR 5010. Prerequisite(s): BIOL 3401, BIOL 3402, D&N 3340 and CHEM 1604 with grades of C or better.

NUTR 4018 - Nutrition Education and Counseling (3)

Designed to assist in the development of skills related to nutrition counseling and communication, as well as enhance group nutrition education experience and skills. This course is co-listed with NUTR 5018. Prerequisite(s): D&N 4342 with a grade of C or better.

NUTR 4020 - Dietary Supplements (3)

This course will explore various aspects of herbs and dietary supplements (DS) as part of Complementary and Alternative Medicine (CAM) therapies. This course provides the health professional with the use, evidence, and adverse effects of the most commonly used dietary supplements as well as how to manage a clinical encounter with a patient taking supplements. The information provided in this course will assist the practitioner in making sound decisions when assessing or prescribing dietary supplements. This

course is co-listed with NUTR 5020. Prerequisite(s): NUTR 4300.

NUTR 4300 - Nutrition and Human Performance (3)

Nutrition as it applies to athletics, physical exercise, and health. This course is co-listed with NUTR 5300. Prerequisite(s): KIN 1800 and KIN 2850. Fall, Spring.

PHIL 1000 - Introduction to Philosophy GE (3)

An introductory survey of core philosophical questions and positions in metaphysics, ethics, epistemology, and the theories of the mind.

This course is equivalent to MOTR PHIL 100 Introduction to Philosophy in the Humanities & Fine Arts Knowledge Area.

PHIL 1400 - Deductive Logic (3)

An introduction to the elements of formal logic, emphasizing the principles, forms, and methods of valid reasoning.

PHIL 1410 - Critical Thinking GE (3)

An introduction to the basic principles and patterns of good reasoning, emphasizing informal argument analysis and practical critique.

This course is equivalent to MOTR PHIL 101 Introduction to Logic in the Humanities & Fine Arts Knowledge Area.

PHIL 2300 - Ethics GE (3)

A systematic overview of various moral theories and their applications in a variety of specific contexts and cases.

This course is equivalent to MOTR PHIL 102 Introduction to Ethics in the Humanities & Fine Arts Knowledge Area.
This is a sustainability course.

PHIL 3120 - History of Philosophy I: Ancient Thought (3)

Focuses on problems, positions, and arguments in ancient philosophy from the pre-Socratics to the Middle Ages, with special emphasis on Plato and Aristotle.

PHIL 3130 - History of Philosophy II: Enlightenment Thought (3)

Focuses on problems, positions, and arguments in epistemology, metaphysics, and social and political philosophy in the Age of Enlightenment.

PHIL 3300 - Applied and Professional Ethics (3)

This seminar explores the use of ethics to make decisions about a range of professional and social problems.

PHIL 4250 - Special Projects in Philosophy (3)

Senior seminar devoted to a core problem, theory, or figure(s) in philosophy. Prerequisite(s): senior standing or permission of the instructor.

PHIL 4600 - Special Topics in Philosophy (1-3)

Devoted to a particular topic of philosophical study. *May be repeated with different topics for a maximum of 6 semester hours.*

PHIL 4710 - Philosophy of Religion (3)

This seminar analyzes the concept of religion, arguments for the existence of god, the problem of evil, and the nature of religious language and communities.

PE 1100 - Orientation and History of Physical Education (2)

Orients PETE students to the history and profession of physical education, and the physical education program at UCM. Fall, Spring.

PE 1200 - Fitness Through Activity and Sport (1)

Develops concepts of personal physical fitness as they relate to optimal healthful living.

PE 1203 - Aerobic Conditioning (1)

Preventive and corrective cardiovascular activities and programs.

PE 1204 - Stress Management (1)

Causes, effects and coping techniques vital to living successfully with personal stress and tension.

PE 1220 - Beginning Bowling (1)

Fundamentals and participation in bowling. (Recommended for the handicapped.) An additional fee is associated with this course.

PE 1241 - Beginning Tennis (1)

PE 1271 - Volleyball (1)

PE 1280 - Basketball (1)

PE 1450 - Growth and Development in Elementary Physical Education (3)

The sequential and developmental phases of children and the relationship of movement to growth and development. Fall, Spring.

PE 2000 - Special Activities in Physical Education (1-3)

Group study of lifetime physical activities in special areas of interest. *May be repeated for a maximum of 5 semester hours.* An additional fee is associated with this course.

PE 2010 - Healthy Active Living (0-3)

This course covers a variety of life skills through adapted physical education, recreation, nutrition and social skills. Designed to provide students a differentiated approach over four semesters to create independence and knowledge in personal life skills. *May be repeated for up to 9 semester hours.* Fall, Spring.

PE 2100 - Foundation, History & Philosophy of Teaching Physical Education (3)

Introduces students to the history and philosophies behind the instructional strategies utilized in Physical Education. The course is a pre-cursor to Physical Education K-12 teaching program requirements. Fall, Spring.

PE 2200 - Weight Training (1)

Students will gain practical instruction in weightlifting techniques while assessing the movements required to complete a lift correctly. In addition, students will learn coaching tips and cues to safely execute lifting movements.

PE 2230 - Beginning Fencing (1)

PE 2410 - Movement Skills and Activities for Primary Grades (2)

Knowledge, understanding, and applications in teaching motor skills.

PE 2455 - Growth and Motor Development (3)

The sequential and developmental phase of children and the acquisition and control of movement skills in relationship to motor development. Fall, Spring.

PE 2472 - Communicating Ideas on Sport (3)

Provides avenues to develop communication skills while exploring issues in sport.

PE 3200 - Intermediate Bowling (1)

More advanced fundamentals and participation in bowling. An additional fee is associated with this course.

PE 3210 - Outdoor Skills I (3)

Introduction to experiential education through outdoor skills. Fall.

PE 3220 - Advanced Beginning/Intermediate Swimming (1)

PE 3270 - Intermediate Golf (1)

Advanced skills instruction in putting, approach shots, wood shots and playing experience. An additional fee is associated with this course.

PE 3310 - Analysis and Teaching of Physical Training (3)

Basic skills to participate in and instruct in the area of aerobic conditioning and weight training. Fall, Spring.

PE 3320 - Analysis and Teaching of Elementary Skills (3)

Pre-service teacher training in elementary skill development, critical elements, cues, skill analysis and instructional design. Prerequisite(s): PE 2100 and PE 2455. Fall, Spring.

PE 3330 - Analysis and Teaching of Secondary Skills (3)

Knowledge, skill development, teaching cues, skills analysis and teaching skills in the secondary setting. Prerequisite(s): PE 2100 and PE 2455. Fall, Spring.

PE 3340 - Analysis and Teaching of Lifetime Activities (3)

Knowledge, skill development, teaching cues, skill analysis and teaching skills involved with physical education. Prerequisite(s): PE 2100. Fall, Spring.

PE 3350 - Assessment of Elementary and Secondary Skills (2)

Prerequisite(s): PE 3310, PE 3320, PE 3330 and PE 3340 or concurrently.

PE 3420 - Elementary School Physical Education Activities (2)

Theory and practice in stunts and tumbling, self-testing activities, rhythms, skills, and games.

PE 4000 - Special Projects in Coeducational Physical Education (1-5)

Individual or group study of problems in special areas of interest. *May be repeated for a maximum of 5 semester hours.*

PE 4010 - Advanced Healthy Active Living (0-3)

This course covers expands on the variety of life skills developed after the first 2 years of the Thrive program. The course is designed to provide students with continued support while developing their ability to work independently. *May be repeated for up to 12 semester hours.* Prerequisite(s): PE 2010. Fall, Spring.

PE 4210 - Outdoor Skills II (3)

Application of skills and knowledge to successfully participate and teach outdoor environmental experiential learning techniques and skills. Prerequisite(s): PE 3210.

PE 4340 - Adapted Physical Education (3)

A study whereby the full educational services of physical education may be made available to atypical students on all school levels. Fall, Spring.

PE 4350 - Physical Education for Special Education (2)

Activities and program development as an integral tool in the physical education of the mentally retarded, learning disabled, and emotionally disturbed.

PE 4390 - Evaluation Procedures in Physical Education (3)

The theory of measurement in health and physical education, including the selection, administration, and evaluation of appropriate tests and the interpretation of the results.

PE 4450 - Techniques of Teaching Physical Education Activities in the Elementary Schools (3)

Effective teaching knowledge, skill, and techniques for physical education programs at the elementary level. Prerequisite(s): PE 3310, PE 3320, PE 3330, PE 3340 and admission to Teacher Education Program.

This course should be taken no earlier than one semester prior to student teaching. Corequisite(s): PE 4460. Fall.

PE 4460 - Techniques of Teaching Physical Education Activities in Middle Schools and High Schools (3)

Effective teaching knowledge, skill and techniques for physical education programs at the middle and high school levels. Prerequisite(s): PE 3310, PE 3320, PE 3330, PE 3340 and admission to Teacher Education Program. This course should be taken no earlier than one semester prior to student teaching. Corequisite(s): PE 4450. Fall.

PE 4500 - Football Officiating (1)

Lectures, readings, class discussions, and field experience in the officiating of intramural, school, and college football games.

PE 4510 - Basketball Officiating (1)

Lectures, readings, class discussions, and field experience in the officiating of intramural, school, and college basketball games.

PE 4550 - Introduction to Coaching (3)

Students are introduced to coaching as a profession. This general overview of coaching addresses standards, responsibilities, philosophy, and issues in coaching.

PE 4551 - Fundamental Techniques in Coaching (3)

Students are introduced to coaching as a profession. This general overview of coaching addresses standards, responsibilities, philosophy, and issues in coaching.

PE 4560 - Coaching and Sport Analysis (2)

Students perform an in-depth study of the theory and coaching of a particular sport. Prerequisite(s): PE 4550 and PE 4551.

PE 4561 - Coaching Practicum (1)

The student completes a 100-hour (minimum) practical experience observing and coaching. Prerequisite(s): PE 4550 and PE 4551.

PE 4590 - Administration of Interscholastic Athletics (2)

Organization and management of a program of competitive athletics for schools and colleges.

PE 4740 - Legal Liability in Fitness/Wellness, Physical Education, Recreation and Sport Settings (2)

Acquaints the student with legal research and basic concepts of negligence in governing the school sport and fitness industries. Fall, Spring.

PE 4770 - Curriculum and Instructional Planning (2)

PETE students will focus on the instructional strategies needed to implement the curriculum into unit and lesson plans to meet the needs of the individual student. Prerequisite(s): Admission to Teacher Education Program. Corequisite(s): PE 4970, PE 4974 and PE 4975.

PE 4830 - Psychological Aspects of Physical Education (2)

An application of psychological principles to physical education. Fall, Spring.

PE 4845 - Psychological and Social Aspects of Physical Education (3)

The PETE student will develop an understanding for the application of psychological principles and social concepts in physical education and sport in American society.

PE 4885 - Secondary Field Experience II (1)

Experiences in the secondary school classroom that provide the teacher candidate more advanced involvement in the teaching-learning process. Prerequisite(s): Admission to Teacher Education Program; should be taken concurrently with PE 4890 during the Professional Semester. Fall, Spring.

PE 4890 - Methods of Teaching and Assessment in K-12 Physical Education (1)

PETE students will develop instructional practices to align best teaching practices with the use of assessment data to facilitate learning in all students including those with special needs. Prerequisite(s): Admission to Teacher Education Program; double majors must take a methods course for each major; should be taken during the professional semester concurrent with the student teaching experience. This is a professional education course. Fall, Spring.

PE 4970 - Teaching and Management in PreK-12 Physical Education (3)

An analysis of the teaching and learning process emphasizing behavior, time, space, equipment and people management in dynamic environments. Prerequisite(s): Admission to Teacher Education Program. This course should be taken no earlier than one semester prior to student teaching. Corequisite(s): PE 4975. This is a professional education course. Fall.

PE 4971 - Methods of Teaching Reading and Writing in Physical Education (1)

PETE students will learn the techniques used to integrate reading and writing literacy into the dynamic environment of physical education to facilitate the learning of all students. Prerequisite(s): Admission to Teacher Education Program; EDFL 4210 or concurrently. This is a professional education course.

PE 4974 - Assessment and Data Based Decision Making in Physical Education (2)

PETE students will develop instructional practices to align assessment data to best teaching practices to facilitate learning in all students. Prerequisite(s): Admission to Teacher Education Program. This course is part of a pre-professional block. It should be taken no earlier than the Fall semester prior to student teaching. Corequisite(s): PE 4770, PE 4970, and PE 4975. This is a professional education course.

PE 4975 - Practicum in PreK-12 Physical Education (1)

PETE students will perform Fifty hours total co-teaching with a public school physical education teacher. Prerequisite(s): Admission to Teacher Education Program. This course should be taken no earlier than one semester prior to student teaching. Corequisite(s): PE 4970. This is a professional education course.

PHYS 1003 - Essentials in Physical Sciences with Lab (4: 3 lecture, 1 lab)

Through guided-inquiry approach (integrated lab and lecture), students engage in many of the practices of science while developing a deep understanding of core ideas of physical sciences.

PHYS 1005 - Survival Skills for College Physics (2)

Preparatory course to enhance success in College Physics by exploring concepts of physics and further developing algebraic and logic skills for solving applied physics problems. Sometimes offered online.

PHYS 1101 - College Physics I GE (4: 4 lecture, 0 lab)

Properties of matter, mechanics, energy, heat, and waves. Laboratory required. Prerequisite(s): MATH 1111 or MATH 1111R or consent of the instructor.

This course is equivalent to MOTR PHYS 150L Physics I with Lab in the Natural Sciences Knowledge Area.

PHYS 1102 - College Physics II (4: 4 lecture, 0 lab)

Electricity, magnetism, light, and atomic and nuclear physics. Laboratory required. Prerequisite(s): PHYS 1101.

PHYS 1103 - Introduction to the Sciences: Physics GE (3)

An introduction to physics. Topics include mechanics, energy, heat, sound, electricity, magnetism, light, atomic and nuclear physics, relativity, and astrophysics. Laboratory not included. Not available to those with credit in PHYS 1104.

This course is equivalent to MOTR PHYS 100 Essentials in Physics in the Natural Sciences Knowledge Area.

PHYS 1104 - Introduction to the Sciences: Physics GE (4: 4 lecture, 0 lab)

An introduction to physics. Topics include mechanics, energy, heat, sound, electricity, magnetism, light, atomic and nuclear physics, relativity, and astrophysics. Laboratory included. Not available to those with credit in PHYS 1103. An additional fee is associated with this course.

This course is equivalent to MOTR PHYS 100L Essentials in Physics with Lab in the Natural Sciences Knowledge Area.

PHYS 1123 - Elementary Physics Laboratory I (1)

Laboratory experiments in mechanics, heat, and waves. Does not fulfill requirements for any physics degree. Prerequisite(s): PHYS 2123 or concurrently.

PHYS 1124 - Elementary Physics Laboratory II (1)

Laboratory experiments in electricity, magnetism, optics, and radioactivity. Does not fulfill requirements for any physics degree. Prerequisite(s): PHYS 2124 or concurrently.

PHYS 2020 - Analytic Methods for Physics and Engineering (3)

Technique development in and application of topics necessary to describe physical problems in the physics and pre-engineering curricula including coordinate systems, vectors and vector operators, series expansions, complex numbers, partial derivatives, special functions, and ordinary differential equations. Prerequisite(s): PHYS 2121.

PHYS 2121 - University Physics I (5: 5 lecture, 0 lab)

Kinematics, dynamics, statics, rotational motion, elasticity, periodic motion, fluids, and heat. Laboratory required. Prerequisite(s): MATH 1151 with a grade of C or better or consent of instructor.

This course is equivalent to MOTR PHYS 200L Advanced Physics I with Lab in the Natural Sciences Knowledge Area.

PHYS 2122 - University Physics II (5: 5 lecture, 0 lab)

Wave motion, sound, electricity and magnetism, electromagnetic waves, and optics. Laboratory required. Prerequisite(s): PHYS 2121 and MATH 1152.

PHYS 2123 - University Physics I (4)

Kinematics, dynamics, statics, rotational motion, elasticity, periodic motion, fluids, and heat. Laboratory not included. Does not fulfill requirements for any physics degree. Prerequisite(s): MATH 1151 with a grade of C or better or consent of instructor.

This course is equivalent to MOTR PHYS 200L Advanced Physics I with Lab in the Natural Sciences Knowledge Area.

PHYS 2124 - University Physics II (4)

Wave motion, sound, electricity and magnetism, electromagnetic waves, and optics. Laboratory not included. Does not fulfill requirements for any physics degree. Prerequisite(s): PHYS 2121 or PHYS 2123; MATH 1152.

PHYS 3012 - Electrical Measurements Laboratory (2)

Basic electrical and magnetic measurements from DC to radio frequencies, including electric transients and calibration procedures. Introductory experiments using analog and digital circuits. Corequisite(s): PHYS 3311.

PHYS 3020 - Special Topics in Physics (1-4)

Study, interpretation, and discussion of special topics and problems in physics. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): consent of instructor.

PHYS 3040 - Practicum in Physics Laboratory Management (1.5)

The student will assist with all aspects of an undergraduate physics laboratory at the appropriate level, including answering student questions, preparing equipment, and grading. The student will also be expected to prepare and present two or three introductory lectures for the laboratory, critique materials and methods presently in use, and suggest, design, and produce written materials for a new experiment. *May be repeated for a maximum of 3 semester hours.* Prerequisite(s): consent of school.

PHYS 3080 - Advanced Physics Laboratory (1-3)

Experimental activities in optics, solid state, atomic, and nuclear physics. Modern instrumentation and analysis methods. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): PHYS 2122.

PHYS 3211 - Analytical Mechanics I (3)

Cartesian and curvilinear coordinate systems, vector operations, conditions of equilibrium, equivalent force systems, moments, couples, centroids, trusses, shear force and bending moment, friction. Prerequisite(s): PHYS 2121 and MATH 1152.

PHYS 3212 - Analytical Mechanics II (3)

Using a vector analysis, a study is made of kinematics; motion of a particle; kinetics of rigid bodies; work and energy, impulse and momentum; impact. Prerequisite(s): PHYS 3211.

PHYS 3311 - Electric Circuit Theory (3)

The basic principles of circuit analysis including Kirchhoff's laws, network theorems, equivalent circuits, transients, and AC circuits. Prerequisite(s): PHYS 2122.

PHYS 3511 - Modern Physics I (3)

Special and general relativity; quantized nature of energy and matter; structure and properties of the atom; matter waves; uncertainty principle; Schroedinger equation and its applications. Prerequisite(s): PHYS 2122 or concurrently. Corequisite(s): PHYS 3080.

PHYS 3512 - Modern Physics II (3)

Applications of basic and intermediate level quantum physics to atoms, molecules, nuclei, solids, and elementary particles. Includes quantum statistical physics. Prerequisite(s): PHYS 3511 and MATH 2153. Corequisite(s): PHYS 3080.

PHYS 3611 - Optics (3)

Wave optics, including the principles of superposition, interference, diffraction, polarization, and dispersion. Introduction to quantum optics. Prerequisite(s): PHYS 2122 and MATH 2153. Corequisite(s): PHYS 3080.

PHYS 4312 - Electricity and Magnetism (3)

Electric and magnetic fields; scalar and vector potentials; conductors and dielectrics; Coulomb's law, Ampere's law, and Gauss's laws; Laplace's equation; Maxwell's equations. This course is co-listed with PHYS 5312. Prerequisite(s): PHYS 2122 and MATH 2153.

PHYS 4411 - Thermodynamics (3)

Properties of gases, kinetic theory of gases; laws of thermodynamics; entropy and introduction to statistical thermodynamics. This course is co-listed with PHYS 5411. Prerequisite(s): PHYS 2122 or concurrently.

PHYS 4512 - Introduction to Quantum Mechanics (3)

Experimental basis; fundamental postulates; Schrodinger wave equation; superposition of states; calculation of energy, position, momentum; hydrogen atom; identical particles; perturbation theory. This course is co-listed with PHYS 5512. Prerequisite(s): PHYS 3511 and MATH 2153.

PHYS 4513 - Solid State Physics (3)

Crystal structure and diffraction; thermal, electrical, and magnetic properties; band theory of solids; Brillouin zones. This course is co-listed with PHYS 5513. Prerequisite(s): PHYS 3512. Corequisite(s): PHYS 3080.

PHYS 4711 - Atomic and Nuclear Physics (3)

Designed to use introductory quantum concepts and techniques as applied to the analysis of atoms and nuclei. This course is co-listed with PHYS 5711. Prerequisite(s): PHYS 3512.

PHYS 4911 - Special Problems in Physics (1-3)

Individual work under supervision of a staff member. Problems may be undertaken in any phase of physics. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with PHYS 5911.

POLS 1244 - Workshop in Politic Science (1-3)

Provides students with experiential learning opportunities using simulations.

POLS 1500 - Introduction to Politics (3)

A survey of the determinants defining the relationship of the individual to the political environment and the political system. The primary focus is on the three fundamental levels of politics: the individual, the state, and the international community.

POLS 1510 - American Government GE (3)

The nature, philosophical bases, development, functions, structure, and processes of the government and politics of the United States and of Missouri. Emphasis on and analysis of the nature and development of the provisions and principles of the Constitution of the United States and of Missouri.

This course is equivalent to MOTR POSC 101 American Government in the Social & Behavioral Sciences Knowledge Area.

POLS 2511 - State Government GE (3)

Administrative, legislative, and judicial activities of state governments and their relationships to national and local governments with special emphasis on state and local governments in Missouri.

POLS 2520 - Political Cultures of the World GE (3)

Introduction to different political cultures and existing forms of government in different countries of the world.

This course is equivalent to MOTR POSC 202 Introduction to Comparative Politics in the Social & Behavioral Sciences Knowledge Area.

POLS 2530 - World Politics GE (3)

Introduction to international relations with specific focus on the nature and causes of war, conflict resolution, political, social, economic, and military issues in international politics.

This course is equivalent to MOTR POSC 201 International Relations in the Social & Behavioral Sciences Knowledge Area.

POLS 2535 - Model United Nations (3)

Students will gain hands-on experience of the organizational structure, policies and procedures of the United Nations through course work and conference attendance.

POLS 2540 - Survey of Political Theory (3)

This course examines core political concepts such as justice and liberty, important political thinkers, and classical and new political ideologies (e.g., liberalism, conservatism, populism, etc.) that shape the modern world.

POLS 2570 - Public Administration (3)

A broad and basic study of public administration in the United States.

POLS 2580 - Public Law and the Judicial Process (3)

the nature of law, the organization and staffing of courts, judicial policymaking, the Supreme Court's decision-making process, statutory and constitutional interpretation, and the impact of judicial decisions.

POLS 3521 - Political Economy of Developing Nations (3)

A comparative analysis of economic policies and the impact on national politics in developing countries of the world. The course will include case studies from Africa, Asia and Latin America.

POLS 3522 - Global Asia: Politics, Trade and Security (3)

This course examines the challenges and opportunities resulting from the rise of Asia in the world today. The increased presence of Asian investment, governing practices, and social values in different world regions, including Africa, Latin America, and Europe are considered. The "Asian values" debate, trans-regional economic integration in the Asia-Pacific, and the rivalry between China and the United States are several of the topics covered. The relationships and roles of India, Japan, and South Korea are also analyzed and compared.

POLS 3524 - Middle East Politics (3)

The influence of culture on the politics, political systems and issues of the Middle East.

POLS 3525 - Politics in Europe (3)

An examination of the theory, history, and institutional structure of several European countries and the European Union.

POLS 3526 - Oil, Water, and Security (3)

Explores global resource politics, focusing specifically on the security threats surrounding oil, as well as water and food scarcity.

POLS 3527 - Security in the 21st Century (3)

Explores the most urgent security challenges of the 21st century, including civil wars, ethnic violence, cyberwarfare, and asymmetric warfare, among others.

POLS 3530 - International Organizations (3)

The role of international organizations in international relations and collective security with specific emphasis on the United Nations, the European Union and other regional organizations.

POLS 3531 - Five Wars of Globalization (3)

Focuses on factors of globalization that have created opportunities for individuals, corporations, and governments to utilize technology, communication, and transportation to engage in illegal activities for financial gain.

POLS 3541 - Contemporary Political Theory (3)

Examines recent debates about the meaning of democracy, citizenship, civil society, and community in the contemporary era of increasingly diverse and interconnected nation-states.

POLS 3550 - Public Opinion and Mass Media (3)

Examines the forces that shape, and techniques used to measure, public opinion, also focusing on the media as a link between public opinion and government.

POLS 3551 - Race and Ethnic Politics in the United States (3)

Survey of the political mobilization, participation, and issues facing Latinos, African Americans, Asian Americans, Native Americans, and European ethnic groups in U.S. politics.

POLS 3552 - Political Parties and Interest Groups (3)

The theory, principles, structures, and functions of interest groups and political parties in the American political system.

POLS 3553 - Women and Politics (3)

The course examines a variety of social, political, and economic issues that affect women in the United States and around the world.

POLS 3560 - Research Methods in Political Science (3)

Will acquaint students with a wide variety of research methods used to analyze political phenomena, concentrating on those approaches that are both quantitative and non-quantitative, including case studies, interviewing, field research, and a lab

component utilizing packaged computer programs for statistical analysis.

POLS 3581 - Trial Advocacy (3)

Provides training in trial advocacy techniques and instruction on the practical workings of the court system.

POLS 3598 - International Human Rights (3)

An exploration of the politics and history of international human rights, as well as of the role that international institutions and global civil society organizations play in promoting human rights around the world.
This is a sustainability course.

POLS 4511 - Public Policy (3)

The course examines the public policymaking process as well as the forces that shape US policy in the context of globalization. This course is co-listed with POLS 5511.

POLS 4520 - Principles of International Development (3)

Problems of development in the developing nations of the world and the concepts and theories for their comparative analysis. This course is co-listed with POLS 5520.

POLS 4530 - International Law (3)

An examination of its nature, history, philosophies, and basic rules as found in treaties, court decisions, customs, and other sources. This course is co-listed with POLS 5530.

POLS 4531 - American Foreign Policy (3)

The foreign policy of the United States with specific focus on the policy authority of the American President, the Congress, the Courts. United States' foreign policies toward Russia, Europe, and the Middle East are also considered. This course is co-listed with POLS 5531.

POLS 4533 - The Israeli-Palestinian Conflict (3)

Explores the politics of the Israeli-Palestinian Conflict. Topics covered include the role of domestic politics, political violence, international actors, and the peace process.

POLS 4552 - Legislative Politics (3)

The major functions, roles, powers, processes and development of the national and state legislatures. Special attention is given to legislative elections, leadership and decision-making. This course is co-listed with POLS 5552.

POLS 4555 - The American Presidency (3)

The constitutional origins of the presidency, its powers, selection process, and the presidents' relations with the public, the media, political parties, and the other major institutions of government. Particular emphasis is on the presidency as an institution of leadership. This course is co-listed with POLS 5555.

POLS 4571 - Municipal Administration (3)

Principles of municipal administration as they operate in the United States under the various forms of municipal governments. This course is co-listed with POLS 5571.

POLS 4572 - Federalism and Intergovernmental Relations (3)

This course examines federalism and the coordination and collaboration between federal, state, and local governments. Special attention is given to the challenges of policy management and intergovernmental relations as well as various actors in state and local government such as quasi-public entities, non-profits, and private organizations. This course is co-listed with POLS 5572.

POLS 4573 - Administrative Law (3)

This course will examine the development of modern administrative law, its sources of authority, and the methods in which federal and state agencies exercise their authority in our system of government. This course is co-listed with POLS 5573. Fall.

POLS 4580 - American Constitutional Law (3)

An interpretation of our constitutional heritage, including the growth of federal judicial power and the role of the Supreme Court. This course is co-listed with POLS 5580.

POLS 4581 - Civil Rights and Liberties (3)

Except for the First Amendment, this course examines individual rights and liberties found within and outside of the Constitution. This course is co-listed with POLS 5581.

POLS 4583 - First Amendment (3)

Examines First Amendment controversies, including flag burning, obscenity, libel, hate speech, free press vs. fair trial, and freedom of and from religion. This course is co-listed with POLS 5583.

POLS 4590 - Special Projects in Political Science (1-6)

Study, interpretation, and discussion of special topics and problems in political science. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with POLS 5990. Prerequisite(s): consent of the instructor.

POLS 4591 - Internship in Political Science (1-6)

Practical experience with a governmental or political unit. Supervision by professional of unit and by member of University faculty. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with POLS 5591. Prerequisite(s): consent of school.

POLS 4592 - Problems in National, State or Local Government (1-3)

Special problems in government, selected by student and instructor. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with POLS 5592. Prerequisite(s): consent of the instructor.

POLS 4601 - Senior Seminar in Political Science (3)

This capstone course allows students to assimilate and present their knowledge of the field of political science in a final research project/paper. Prerequisite(s): POLS 3560.

PSY 1000 - Orientation to Psychology (1)

Introduction to the discipline of Psychology, focusing on strategies to promote success in the major. Students learn about expectations for the major and career options. Prerequisite(s): Psychology major. Fall, Spring, Summer. Sometimes offered online.

PSY 1100 - General Psychology GE (3)

A general introduction to the science of behavior, surveying the broad field of psychology and the methods of investigation. Fall, Spring, Summer. Sometimes offered online.

This course is equivalent to MOTR PSYC 100 General Psychology in the Social & Behavioral Sciences Knowledge Area.

PSY 1320 - Psychology of Personal Adjustment (3)

A general overview of major theories, concepts, and principles in psychology that can be applied to issues of personal and social adjustment. Fall, Spring, Summer. Sometimes offered online.

PSY 2110 - Research Design and Analysis I (4: 4 lecture, 0 lab)

Rationale and methods for designing, conducting, and analyzing research. PSY 2120 must be taken the following semester. Includes scheduled lab. Prerequisite(s): PSY 1100; PSY 1000 with a grade of C or better or concurrently. Fall.

PSY 2120 - Research Design and Analysis II (4: 4 lecture, 0 lab)

Rationale and methods for designing, conducting, and analyzing research. Continuation of PSY 2110. Includes scheduled lab. Prerequisite(s): PSY 2110. Spring.

PSY 2130 - Learning (3)

A basic course for students planning to major in psychology. Emphasis on fundamental concepts and

theoretical approaches to learning. Prerequisite(s): PSY 1100. Fall, Spring. Sometimes offered online.

PSY 2220 - Child and Adolescent Psychological Development (3)

Interaction of biological and environmental factors in the development of the child from conception through adolescence. Prerequisite(s): PSY 1100 or EDFL 2240. This is a professional education course. Fall, Spring, Summer. Taught only as an online course.

PSY 3030 - Introduction to Statistics for Psychology (3)

An introduction to statistical analysis of data in the social sciences. Students will learn how to identify data types, represent data graphically, and apply basic descriptive and inferential statistics.

PSY 3100 - Research Methods (3)

Introduces the basic skills of literature search, experimental design, research methodology, and research reporting. Prerequisite(s): PSY 1000 with a grade of C or better or concurrently; PSY 1100; PSY 3030 . Sometimes offered online.

PSY 3120 - Brain and Behavior (3)

Introduces the student to the fundamental structures, systems, theories, methods, and practical principles involving the relationship between the nervous system and human behavior. At completion of the course, the student should understand the basic structure and function of the major components of the nervous system, sensory system structures and functions; and those specific nervous system components associated with a variety of behaviors and processes. Prerequisite(s): PSY 1100; junior standing and either admission to the BA Psychology Program or school consent. Spring. Sometimes offered online.

PSY 3130 - Physiological Psychology (4: 4 lecture, 0 lab)

A survey of the relationship between physiological mechanisms and behavior. Course includes scheduled laboratory. Prerequisite(s): PSY 1100, PSY 3100 or PSY 2120 and junior standing and either admission to the (BA or BS) Psychology program or school consent. An additional fee is associated with this course. Fall, Spring.

PSY 3220 - Life-Span Development GE (3)

Theories of development, universal features of human development and its individual variations throughout the life-span of the individual. Prerequisite(s): PSY 1100 or EDFL 2240. This is a professional education course. Fall, Spring, Summer. Sometimes offered online.

This course is equivalent to MOTR PSYC 200 Life Span Human Development in the Social & Behavioral Sciences Knowledge Area.

PSY 3340 - Social Psychology (3)

Analysis of individual and group behavior in sociocultural settings. Written and hands-on observation assignments facilitate connections between theories of social behavior. Professional development activities. Prerequisite(s): PSY 1100 and junior standing. Fall, Spring, Summer. Sometimes offered online.
This is a sustainability course.

PSY 4000 - Special Projects in Psychology (1-3)

Individual or group study of problems in special areas of interest. *May be repeated for a maximum of 5 semester hours.* Prerequisite(s): PSY 1100 and junior standing. Fall, Spring, Summer.

PSY 4050 - Positive Psychology (3)

The rigorous study of what is right and positive about people and institutions. Presents an introduction to the core assumptions and research findings associated with human strengths and positive emotions. Explores interventions and applications informed by this perspective. This course is co-listed with PSY 5750. Prerequisite(s): PSY 1100. Spring. Sometimes offered online.

PSY 4110 - History of Psychology (3)

Capstone course for the major where multiple assessments are completed including an exit exam. Includes historical analysis of the field and connections with students' professional development.

Prerequisite(s): PSY 2120 or (PSY 3030 and PSY 3100); PSY 2130; PSY 3120 or PSY 3130; PSY 3220; PSY 3340; PSY 4440; PSY 4310 or concurrently and either admission to the (BA or BS) Psychology program or school consent. Fall, Spring.

PSY 4130 - Sensation and Perception (3)

Relationship between sensory occurrences and the experiences of the person. Prerequisite(s): PSY 1100 and junior standing. Fall, Summer. Sometimes offered online.

PSY 4140 - Psychology of Human Sexuality (3)

An overview of theories, research and contemporary issues in the scientific study of human sexual behavior and experience. Topics may include: research methods, physiology, arousal and response, gender identity, gender differences, orientation, sexual variations, and attraction and love. Summer. Sometimes offered online.

PSY 4150 - Cognitive Psychology (3)

An overview of current theories of processes involved in human thinking with emphasis on models of memory, information processing, language and mental representations. Prerequisite(s): PSY 1100 and junior standing. Fall.

PSY 4180 - Seminar in Psychology (1-3)

Selected issues not covered in theory-practicum courses. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with PSY 5180. Prerequisite(s): PSY 1100 and junior standing. Fall, Spring, Summer. Sometimes offered online.

PSY 4230 - Psychology of Adolescence (3)

Developmental factors and problems common to the period from puberty to adulthood with emphasis upon conditions leading to optimal development. Prerequisite(s): PSY 1100 or EDFL 2240; and junior standing. Fall, Spring, Summer. Sometimes offered online.

PSY 4240 - Psychology of Aging (3)

Introduces psychological problems of aged population including: physical functioning, age changes in perception, memory, learning, problem solving, personality, environmental influences, death and dying. This course is co-listed with PSY 5240. Prerequisite(s): PSY 1100 and junior standing. Fall. Taught only as an online course.

PSY 4310 - Theories of Personality (3)

Major theories of personality, past and present. This course is co-listed with PSY 5710. Prerequisite(s): PSY 1100 and senior standing. Fall, Spring, Summer. Sometimes offered online.

PSY 4320 - Psychology of Women (3)

An overview of the theories of personality as applied to women, biological determinants of feminine behavior, the dynamics of sex-role development, and the psychological implications of traditional versus modern roles for women. This course is co-listed with PSY 5720. Prerequisite(s): PSY 1100 and junior standing. Fall. Sometimes offered online.

PSY 4330 - Multicultural Psychology (3)

This knowledge-based course is an introduction to cultural and minority status issues in psychology and the role of multicultural issues in mainstream research. This course is co-listed with PSY 5330. Fall, Spring, Summer. Taught only as an online course.

PSY 4440 - Abnormal Psychology (3)

A descriptive course dealing with the etiology, diagnosis, and treatment of mental disorders of functional and organic origin. Prerequisite(s): PSY 1100 and junior standing. Fall, Spring, Summer. Sometimes offered online.

PSY 4500 - Introduction to Psychological Measurement (3)

An introduction to the basic psychometric theory, concepts, and procedures; familiarization with the major instruments in the field. Course includes scheduled laboratory. This course is co-listed with PSY 5700. Prerequisite(s): PSY 2110 and junior standing. Fall.

PSY 4540 - Introduction to Counseling Psychology (3)

Introduces theories and practice concepts of counseling psychology while exploring professional development issues relative to students pursuing this field. This course is co-listed with PSY 5540. Prerequisite(s): PSY 1100. Summer. Sometimes offered as Hybrid.

PSY 4600 - Industrial/Organizational Psychology (3)

Psychological principles and methods applied to industrial and organizational settings, with emphasis on research design, workplace procedures, and statistical techniques. Professional development activities. This course is co-listed with PSY 5600. Prerequisite(s): PSY 1100 and junior standing. Fall.

PSY 4730 - Cognitive and Behavioral Intervention (4)

Description of contemporary cognitive and behavioral treatment procedures for children and adults. Spring.

PSY 4740 - Forensic Psychology (3)

This course introduces students to the interface of psychology and law, with a specific focus on forensic psychology. Topics include the roles of psychologists working within the legal system, ethical and legal standards in regard to mental illness and expert testimony, and criminogenic risk factors and their application to the treatment of offenders. Prerequisite(s): PSY 1100 or CJ 1000 and junior standing. Spring.

PR 1600 - Orientation to PR (3)

Orients students new to the field of public relations with relevant industry terms and potential careers paths. Establishes its relationships as complementary to other business disciplines. Establishes a firm foundation for student and post-graduation success. Facilitates academic and career exploration.

PR 1601 - Experiencing Strategic Communication (1)

The exciting, easy-to-access Strategic Communication Experience is designed to let students explore their own professional aptitude, meet industry professionals face-to-face, explore the growing field of strategic communication, and have fun learning through friendly team competition.

PR 2620 - Principles of Public Relations (3)

Addresses public relations history, principles, strategies and tactics as an entry into its study. Provides a survey of public relations contexts for employment and influence. Fall, Spring, Summer.

PR 3605 - Survey of Public Relations Research and Theory (3)

Survey of research methods and trends informing the public relations industry. Survey of select public relations theories as they impact research predictions and results.

PR 3610 - Writing and Editing (3)

Introduces students to correct Associated Press style writing from a public relations perspective. Equips students to represent and facilitate public relations interests through knowledge of journalism, advocacy, technology and clear presentation of the written word. Prerequisite(s): PR 1600 and PR 2620 each with a grade of C or better. Fall, Spring, Summer.

PR 3620 - Strategic Planning and Research for PR (3)

Students apply theoretical knowledge from entry-level course work to real world public relations applications. Helps students develop preliminary strategic planning skills and ability to apply strategic thought through real world application. Prerequisite(s): PR 1600 and PR 2620 with a grade of C or better. Fall, Spring.

PR 3625 - Design and Layout (3)

Designed to equip students with the preliminary theory, design, software and layout knowledge and skills needed to produce print, digital, and social media mediums for public relations purposes. Fall, Spring, Summer.

PR 3640 - Integrated Strategic Communication (3)

Explores the value of integrating, for maximized strategic communication and promotional purposes, traditionally divided areas such as direct and Internet marketing, advertising, sales promotion, public relations and personal selling. A unique emphasis is placed on public relations. Fall, Spring.

PR 4600 - Special Topics in Public Relations (1-3)

Topics of contemporary interest in public relations, variable content. Students who earned undergraduate credit for PR 4600 may not take PR 5601 for graduate credit. *May be repeated for a maximum of 9 semester hours.* This course is co-listed with PR 5601. Fall, Spring.

PR 4605 - Public Relations Internship (1-3)

A practical experience for the public relations student in securing employment and applying course-derived knowledge and skill. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): PR 3610 and PR 3620 each with a grade of C or better and consent of instructor. Fall, Spring, Summer.

PR 4610 - Public Relations Management and Industry Practices (3)

Acquaints students, through discussion and application, with the basic concepts of "doing public relations in business" as a means of readying them to enter the world of organizational operation in the marketplace of ideas and competition. Students who earned undergraduate credit for PR 4610 may not take PR 5610 for graduate credit. This course is co-listed with PR 5610. Prerequisite(s): PR 2620. Fall, Spring.

PR 4625 - Innovative Public Relations (1-9)

Students gain real-world public relations agency experience in planning, executing, managing and evaluating campaigns; writing and designing under deadline, strategic planning, and working effectively with clients in a fast-paced environment. *May be repeated for a maximum of 9 semester hours.* Prerequisite(s): PR 3610 and PR 3620, competitive selection and consent of instructor. Fall, Spring, Summer.

PR 4627 - Special Projects in Public Relations (1-3)

A student studies an area of public relations, under the direct supervision of a public relations faculty member, which is not covered in a regularly offered course. *May be repeated for a maximum of 9 semester hours.* This course is co-listed with PR 5627. Prerequisite(s): PR 2620 and consent of instructor. Fall, Spring, Summer.

PR 4630 - Electronic & Social Media for Public Relations (3)

Students explore social media technologies and their strategic use in current and future public relations practice. Social media phenomena are changing the practice of public relations daily from theoretical and practical viewpoints. Students are exposed to methods for keeping up with the change. Students who earned undergraduate credit for PR 4630 may not take PR 5630 for graduate credit. This course is co-listed with PR 5630. Fall, Spring.

PR 4640 - Advanced Public Relations Design (3)

Design theory and expression at an advanced level for the purposes of representing and giving voice to strategic messaging. Prerequisite(s): PR 3610 and PR 3625.

PR 4650 - Public Relations & Promotional Law (3)

Introduces students to legal and ethical issues in public relations and related promotional areas. Promotes an understanding of and appreciation for the U.S. legal system and ethics as they relate to public expression for the purpose of professional communication services. Students who earned undergraduate credit for PR 4650 may not take PR 5650 for graduate credit. This course is co-listed with PR 5650. Spring.

PR 4655 - Global Sports Public Relations (3)

Students learn the value of public relations in sports. Introduction to sport entertainment value and business operations. Exposure to public relations initiatives, events, effective media relations, and strategic communication plans relevant to sports. Students who earned undergraduate credit for PR 4655 may not take PR 5655 for graduate credit. This course is co-listed with PR 5655. Summer.

PR 4670 - Strategic Crisis Communication (3)

Students are introduced to the process and experiences of thinking and planning strategically for public relations purposes when under crisis pressure. They study past and current crisis, CCPs, and public relations outcomes. Students who earned credit for PR 4670 may not also take PR 5670 for graduate credit. This course is co-listed with PR 5670. Spring, Summer.

PR 4675 - Media Training (3)

Includes introduction to on-camera experience as spokesperson following a crisis, managing an interview and interaction with the media, developing key messages and anticipating reporters' questions with a view to public relations objectives. Students who earned undergraduate credit for PR 4675 may not take PR 5675 for graduate credit. This course is co-listed with PR 5675. Prerequisite(s): PR 2620. Fall.

PR 4680 - Advanced PR Writing (3)

Overview of the public relations messaging process including written, spoken and digital strategy using all available media forms as public relations tools. Prerequisite(s): PR 3610 and PR 3620. Fall, Spring.

PR 4685 - Strategic Public Relations Case Analysis (3)

Public relations problems of individual business and civic organizations; analysis of actual and proposed solutions. The class includes expanded discussions of public relations theories and their applications. This course is co-listed with PR 5685. Prerequisite(s): PR 3610 and PR 3620; ENGL 1020 and ENGL 1030 or CTE 2060 or ENGL 1080 with a grade of C or better; and Admission to the PR program. Fall, Spring.

PR 4690 - Public Relations Campaigns (3)

Capstone course and overview of the public relations campaign process with actual "hands on" application. Students plan, organize, write and pitch an actual public relations campaign. When the context allows, implementation follows. The PR Program capstone assessment project also takes place in this course. Students who earned undergraduate credit for PR 4690 may not take PR 5690 for graduate credit. This course is co-listed with PR 5690. Prerequisite(s): PR 3605, PR 4680, PR 4685 and Admission to the PR program. Fall, Spring.

RMI 3803 - Principles of Insurance (3)

Study of importance of risk in personal matters and various methods of treating risk. Includes property/liability insurance, life/health insurance, and insurance regulation. Prerequisite(s): FIN 3850 or a declared major in Actuarial Science and Mathematics with completion of ACST 4510. An additional fee is associated with this course.

RMI 3835 - Internship in Insurance (1-6)

Opportunity for students to gain theoretical knowledge and practical experience within a particular field of specialization. *May be repeated with consent of school chair and internship director.* Prerequisite(s): Admission to the BSBA program, 60 semester hours and overall GPA of 2.50 or above, or consent of internship director. An additional fee is associated with this course. Fall, Spring, Summer.

RMI 4802 - Life and Health Insurance (3)

The Nature and importance of life and health insurance risks. Topics include the concept of human life value, types and uses of life and health insurance, and different contracts in treating these risks. This course is co-listed with RMI 5802. Prerequisite(s): RMI 3803. An additional fee is associated with this course.

RMI 4803 - Property and Casualty Insurance (3)

Insurance principles and practices of risk management applied to property and casualty liability insurance. This course is co-listed with RMI 5803. Prerequisite(s): RMI 3803. An additional fee is associated with this course.

RMI 4804 - Employee Benefits and Retirement Planning (3)

A planning perspective is developed for major employee benefit arrangements, retirement plan provisions, pension design, tax implications and suitability for different businesses. This course is co-listed with RMI 5804. Prerequisite(s): RMI 3803. An additional fee is associated with this course.

RMI 4850 - Corporate Risk Management (3)

Focuses on risk management from a corporate finance perspective. It introduces strategies that firms employ to enhance corporate value through their risk management functions. The tools and concepts are relevant for both financial and non-financial institutions. This course is co-listed with RMI 5850. Prerequisite(s): RMI 4802, RMI 4803, and RMI 4804. An additional fee is associated with this course.

SAFE 1000 - Exploring the Safety Sciences (1)

An overview of safety as an academic endeavor including consideration of the sub disciplines of safety, requirements of students, and professional opportunities. An additional fee is associated with this course.

SAFE 1800 - Principles of Emergency Services (3)

Provides an overview to fire protection and emergency services; career opportunities in fire protection and related fields; culture and history of emergency services; fire loss analysis; organization and function of public and private fire protection services; fire departments as part of local government; laws and regulations affecting the f re service; fire service nomenclature; specific fire protection functions; basic fire chemistry and physics; introduction to fire protection systems; introduction to fire strategy and tactics; life safety initiatives. An additional fee is associated with this course.

SAFE 2010 - Practical Safety and Security (3)

A critical examination of the role of safety in today's world. Enhances the student's critical thinking processes so the learner can analyze variables influencing risks associated with life's activities. An additional fee is associated with this course.

SAFE 2800 - Fire Prevention (3)

Provides fundamental knowledge relating to the field of fire prevention. Topics include the history and philosophy of fire prevention, organization and operation of a fire prevention bureau, use and application of codes and standards, plans review, fire inspections, fire and life safety education, and fire investigation. Prerequisite(s): SAFE 1800. An additional fee is associated with this course.

SAFE 2900 - Applied Sciences for Professional Studies (3)

Utilizes lectures and interactive case studies to develop the learner's understanding and mastery of physical science and math and their practical application as problem-solving tools to address unique challenges associated with a variety of occupational fields such as construction, engineering, safety and health, criminal justice, and aviation. An additional fee is associated with this course.

SAFE 3000 - Principles of Accident Causation and Prevention (3)

Traces the development of the safety movement, provides a background useful in handling problems and procedures of typical school, industrial, transportation, civil defense, and emergency safety programs. An additional fee is associated with this course.

SAFE 3005 - Introduction to Environmental, Health, and Safety (3)

Introduction to the fundamentals of environmental, health, and safety management in the occupational environment. Prerequisite(s): Not available to those with credit in SAFE 3000. An additional fee is associated with this course.

SAFE 3015 - Emergency Preparedness (3)

Legal responsibilities of environmental and human protection. An examination of staff functions and responsibilities during major emergencies, resulting from human errors and natural disasters, as they

influence human and environmental loss potentials. An additional fee is associated with this course.

SAFE 3070 - Safety Leadership (3)

Problems of behavior, causes of accidents, and the application of principles of psychology, philosophy, and ethics in the development and management of safe behavior on and off the job. An additional fee is associated with this course.

SAFE 3120 - Industrial Hygiene (3)

The recognition, evaluation and control of workplace health hazards. Prerequisite(s): (SAFE 3000 or SAFE 3005) and General Education Mathematics Course and General Education Natural Sciences with Laboratory Course, each with a grade of C or better. An additional fee is associated with this course.

SAFE 3430 - Industrial Hazard Control (3)

The techniques for the control of mechanical, electrical and chemical hazards. The Occupational Safety and Health Standards which interface with these areas will also be included. Prerequisite(s): (SAFE 1000 with a grade of C or better; and SAFE 2900; and SAFE 3000 with a grade of C or better) or SAFE 3005 with a grade of C or better. An additional fee is associated with this course.

SAFE 3800 - Building Construction for Fire Protection (3)

Provides the components of building construction related to firefighter and life safety. The elements of construction and design of structures are shown to be key factors when inspecting buildings, preplanning fire operations, and operating at emergencies. An additional fee is associated with this course.

SAFE 4000 - Ergonomics in Safety and Health (3)

An introduction into the role and application of ergonomics in a comprehensive safety program. This course is co-listed with SAFE 5001. An additional fee is associated with this course.

SAFE 4005 - Environmental, Health, and Safety Risk Assessment (3)

This course provides the fundamentals of risk assessment, with practical applications, for students and employed safety, health, and environmental professionals who recognize that they are expected to have risk assessment capabilities. This course is co-listed with SAFE 5055.

SAFE 4010 - Accident Investigation (3)

Fundamentals and techniques of investigating accidents. Prerequisite(s): SAFE 3120 and SAFE 3430, each with a grade of C or better; and SAFE 4025. An additional fee is associated with this course.

SAFE 4015 - School Safety, Security and Crisis Management (3)

Provides school personnel with current information addressing school safety and security needs, including an analysis of threat identification, violence prevention, safety plans, and crisis response. An additional fee is associated with this course.

SAFE 4025 - Workers' Compensation and Legal Aspects of Safety (3)

An investigation of the legal problems confronting the safety and health profession and an overview of the principles and statutes that govern workers' compensation as they apply to the industrial setting. Prerequisite(s): SAFE 3000 with a grade of C or better. An additional fee is associated with this course.

SAFE 4035 - Occupational Risk Management (3)

Examination of theory and practices of safety, health and risk management. Includes planning programs, contemporary safety and health risk management practices, sustainability, and loss control. Prerequisite(s): SAFE 4940. An additional fee is associated with this course.

SAFE 4055 - Safety Capstone Experience (3)

Integration of safety information using conceptual and technical data to resolve safety and health issues. The case study approach will be emphasized. Prerequisite(s): SAFE 4010 or consent of program

coordinator. An additional fee is associated with this course.

SAFE 4140 - Safety and Health Laboratory (3)

A lab course using instrumentation commonly used in the evaluation of the workroom environment and equipment for safety. This course is co-listed with SAFE 5140. Prerequisite(s): SAFE 3120 and CTE 2060, each with a grade of C or better. An additional fee is associated with this course.
This is a sustainability course.

SAFE 4150 - Noise Measurements (2)

Physics of sound, measurement and control of noise. Laboratory required. Laboratory required. This course is co-listed with SAFE 5150. Prerequisite(s): SAFE 4140 with a grade of C or better; PHYS 1101 or PHYS 1103 or PHYS 1104 or PHYS 2121 with a grade of C or better. An additional fee is associated with this course.

SAFE 4160 - Industrial Ventilation for Environmental Safety and Health (3)

Industrial ventilation systems designed to control health and safety hazards in the work environment with emphasis given to the design of local exhaust systems. This course is co-listed with SAFE 5160. Prerequisite(s): SAFE 4140 with a grade of C or better. An additional fee is associated with this course.

SAFE 4215 - Transportation and Storage of Hazardous Materials (3)

A study of the state-of-the-art of safe methods for the transportation and storage of hazardous materials. Prerequisite(s): General Education Natural Science course (with or without lab) with a grade of C or better. An additional fee is associated with this course.

SAFE 4300 - Agricultural Safety (3)

The history of and need for agricultural safety, operating guidelines for machines and chemical handling and application. A review of occupational health laws and how they relate to the agricultural workforce. This course is co-listed with SAFE 5300. An additional fee is associated with this course. Fall.

SAFE 4425 - Safety and Health Legislation and Standards (3)

A comprehensive study of legislation and standards designed to protect the worker. This course is co-listed with SAFE 5425. An additional fee is associated with this course.

SAFE 4435 - Environmental Compliance (3)

Comprehensive study of federal and state environmental legislation and standards to protect the health and safety of citizens. This course is co-listed with SAFE 5435. An additional fee is associated with this course.
This is a sustainability course.

SAFE 4440 - Environmental Air Quality and Pollution Prevention (3)

Comprehensive study of environmental air quality and pollution prevention techniques. This course is co-listed with SAFE 5440. An additional fee is associated with this course.
This is a sustainability course.

SAFE 4445 - Water Quality and Waste Water Management (3)

Comprehensive study of water quality, waste water management and pollution prevention techniques. This course is co-listed with SAFE 5445. An additional fee is associated with this course.
This is a sustainability course.

SAFE 4450 - Environmental Remediation (3)

Comprehensive study of environmental remediation, remedial techniques and best management practices. This course is co-listed with SAFE 5455. An additional fee is associated with this course.

SAFE 4510 - Loss Control (3)

Provides a background in loss control by investigating professional safety management. Emphasis is placed on incident recall, management's role in loss control, total job observation, total job analysis, and supervisory training. Techniques of implementing a total loss control program are explored. This course is co-listed with SAFE 5510. Prerequisite(s): SAFE

3430 with a grade of C or better. An additional fee is associated with this course.

SAFE 4515 - High Hazard Industries (3)

Evaluation of industries that have higher rates of injuries and/or fatalities on the job. Typical high hazard industries include construction, mining, and oil and gas. Identification of methods to identify, reduce or eliminate hazards in these industries. This course is co-listed with SAFE 5515. An additional fee is associated with this course.

SAFE 4520 - Safety and Risk Analysis (3)

Identification of safety risks and analytical treatment of those risks in various work settings. An additional fee is associated with this course.

SAFE 4560 - Systems Safety (3)

Techniques and concepts of hazard control within the constraints of operational effectiveness, time, and cost attained through the specific application of management and scientific principles throughout all phases of a system life cycle. Prerequisite(s): SAFE 4940. An additional fee is associated with this course.

SAFE 4800 - Water and Sprinkler Systems Analysis (3)

Water supply, how to determine quantity, and basic fire service water requirements. An in-depth study of the design, installation, operations and maintenance of sprinkler systems that use water. Prerequisite(s): MATH 1111 or MATH 1111R . An additional fee is associated with this course. Fall.

SAFE 4810 - Fire Extinguishing and Alarm Systems (3)

Basic types of extinguishing systems, other than sprinkler systems, and their use. Fire alarm systems, their use, installation and components. An additional fee is associated with this course.

SAFE 4820 - Fire Protection Systems (3)

Provides information relating to the features of design and operation of fire alarm systems, water-based fire suppression systems, special hazard fire suppression systems, water supply for f re protection, and portable fire extinguishers. An additional fee is associated with this course.

SAFE 4830 - Fire Investigation (3)

Fire investigation techniques with emphasis on fire causation, equipment, evidence, and reporting. Prerequisite(s): SAFE 1800. An additional fee is associated with this course.

SAFE 4850 - Industrial Fire Protection (3)

The recognition, control or elimination of fire hazards in industrial settings. Prerequisite(s): SAFE 3120 with a grade of C or better. An additional fee is associated with this course.

SAFE 4900 - Directed Studies (1-6)

Individual or group study of problems in special areas of interest. *May be repeated for a maximum of 6 semester hours.* An additional fee is associated with this course.

SAFE 4910 - Special Projects in Safety Sciences (1-3)

Individual or group study of problems in special areas of interest. *May be repeated for a maximum of 6 semester hours.* An additional fee is associated with this course.

SAFE 4915 - Industrial Safety Training (1-18)

Approved credit for comprehensive prior learning experiences that may include apprenticeships, OSHA training, formal academy training (fire, peace officer, EMS), and any other relevant safety, health and environmental training. *May be repeated for a maximum of 30 semester hours.* An additional fee is associated with this course.

SAFE 4940 - Statistical Analysis for Risk Management (3)

Mathematical and statistical methods designed for the efficient collection and rational interpretation of data by individuals responsible for analysis in a variety of settings. This course is co-listed with SAFE 5930.

Prerequisite(s): SAFE 2900 or SAFE 3005. An additional fee is associated with this course.

SAFE 4950 - Food Safety (3)

Comprehensive study of food safety, ion of food hazards, risk analysis and systems for food safety and risk prevention. This course is co-listed with SAFE 5050. An additional fee is associated with this course.

SAFE 4980 - Practicum in Safety Sciences (1-6)

Individual practical work projects in the field of Environmental, Safety and Health. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): SAFE 4140 with a grade of C or better. An additional fee is associated with this course.

SAFE 4990 - Internship in Safety Sciences (1-6)

Internships are based upon student preparation and interest. Actual work experiences in education, institutions, government, industry, or business are provided. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): departmental approval and must have completed one-half of major/minor courses in area of study. An additional fee is associated with this course.

SOT 3022 - Internship in Technology (1-6)

Provides practical application and experience in cooperating industry and business. Students submit written reports. Evaluation by on-job supervisor and internship coordinator. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): 20 semester hours of program offerings, minimum undergraduate GPA of 2.00 and permission of school chair. An additional fee is associated with this course.

SOT 4000 - Special Projects in Technology (1-3)

Investigation of contemporary problems and issues in technology by selected individuals or groups. *May be repeated for a maximum of 6 semester hours.* An additional fee is associated with this course.

STCH 3020 - Science and Engineering Practices (3)

A practical introduction to science and engineering practices as well as how scientists do science. Students perform and present their own science investigations and study the relationship between science, technology, engineering, and society.

STCH 4010 - Exploring Firsthand Science Lessons (1-2)

This seminar course aims to provide a learning environment in which students learn science and science teaching from firsthand science lessons. Students learn from invited speakers as well science articles written by science teachers. Expanding this learning opportunity, in the two credit hour version of the course, students will be working with in-service teachers in K-12 public school setting for 30 hours. Students who are aiming for secondary science certification must register for two hours. This course is co-listed with STCH 5010. This is a professional education course.

STCH 4020 - Internship in Science Teaching and Learning (1)

50-hour field experiences that provide opportunities for students to develop assessment plan, design inquiry-oriented science lessons, and co-teach the prepared science lessons with in-service teachers. This course is co-listed with STCH 5020. Prerequisite(s): Students must have a background check on file and Admission to Teacher Education. Corequisite(s): STCH 4050.

STCH 4050 - Science Teaching Methods (3)

Provides the teacher education candidate with skills and resources for the teaching of science. Students will learn a variety of strategies for both laboratory and classroom instruction. This course is co-listed with STCH 5050. Prerequisite(s): 16 hours of science content courses including at least one lab course This is a professional education course.

STCH 4080 - Science Learning and Literacy (4)

Assists teacher candidates during professional semester by emphasizing DESE Standards of teaching proficiency related to student learning and literacy. Helps teacher candidates collect and analyze data related to student science learning and literacy. Corequisite(s): FLDX 4595. This is a professional education course.

GERO 4814 - Issues in Social Gerontology (1-3)

Study, interpretation, and discussion of special topics and problems in social gerontology. *May be repeated for a maximum of 6 semester hours.* Fall, Spring, Summer.

GERO 4854 - Death in the Midst of Life (3)

Perspectives on death and dying in cultural, social and psychosocial contexts. Topics include orientations toward death, how we die, hospice, death work, and death rites. Students who have earned credit in GERO 4854 may not also take GERO 5854 for graduate credit. Summer.

SOSC 1050 - The Social Studies (1)

Introduction to social studies as an academic field and practice. The students will be prepared for unit planning through the C3 inquiry as published by the National Council for the Social Studies using all areas of the social studies. Prerequisite(s): Declared Secondary Education, BSE - Social Studies option major. This is a professional education course. Fall.

SOSC 4074 - Methods of Teaching Social Studies (3)

Prepares students in instructional strategies, assessments, and classroom activities to plan and implement in the social studies classroom, especially during observation and student teaching. Methods is a required course and to be taken the semester prior to the professional semester (student teaching). Double majors must take a methods course for each major. Prerequisite(s):

1. Admission to the Teacher Education program;
2. Successful completion of SOSC 4972, SOSC 4973, SOSC 4974 and FLDX 3000 with grades of C or better;
3. Successful completion of the Social Sciences 9-12 MoCA exam (score of 220 or above);
4. Declared undergraduate degree major Secondary Education, BSE - Social Studies Option.

Corequisite(s): FLDX 4970 and EDFL 4970. This is a professional education course.

SOSC 4972 - Literacy in Social Studies (4)

Prepares the social studies pre-service teacher with the skills and knowledge necessary to understand reading and writing in the social studies content area. Emphasis on proper implementation of content and disciplinary literacy including the NCSS C3 Inquiry. Prerequisite(s): SOSC 4973, SOSC 4974, and Declared undergraduate degree major Secondary Education, BSE - Social Studies Option. Corequisite(s): FLDX 3000. This is a professional education course.

SOSC 4973 - Secondary Classroom Management in Social Studies (2)

Prepares the social studies pre-service teacher with the skills and knowledge necessary to understand, create and implement a classroom management plan in a social studies classroom that includes instruction, expectations, procedures and communication skills. Prerequisite(s): Declared undergraduate degree major Secondary Education, BSE - Social Studies Option. Corequisite(s): SOSC 4974. This is a professional education course.

SOSC 4974 - Social Studies Assessment (1)

Prepares the social studies pre-service teacher with the skills and knowledge necessary to understand, prepare, and execute assessments in the social studies classroom. Corequisite(s): SOSC 4973. This is a professional education course.

SOWK 2600 - Introduction to Social Welfare and Social Work (3)

Overview of individual and societal values and perspectives which impact social policy, programs and services that promote well-being for individuals, families, groups and communities.

SOWK 3601 - Social Work Practice and the Agency Experience (3)

Presents a generalist framework for practice with individuals, families, groups, organizations and communities. Students observe application of this practice framework in social work practice setting. Prerequisite(s): SOWK 2600 with a grade of C or better.

SOWK 3605 - Methods of Inquiry and Evaluation for Social Workers (3)

Advanced research methods course for undergraduate social work majors, including quantitative and qualitative methods and data analysis and case/program-level evaluation. Open to social work majors only. Prerequisite(s): SOC 2805 with a grade of C or better.

SOWK 3610 - Social Work Practice: Basic Skills (3)

Development of interpersonal skills and interviewing techniques for micro, mezzo, and macro levels of generalist practice. Open to social work majors only. Prerequisite(s): SOWK 3601 with a grade of C or better.

SOWK 3612 - Human Behavior Across the Lifespan (3)

Examines human development and behavior across the life span, studying essential biophysical, psychological and social dimensions, emphasizing the fundamental reciprocity between persons and society/culture. Prerequisite(s): SOWK 3601 with a grade of C or better or concurrently; BIOL 2010 or concurrently.

SOWK 4610 - Special Topics in Social Work (1-3)

Selected Topics of contemporary interest in social work or specialized fields of practice; variable content. *May be repeated for a maximum of 9 semester hours.*

SOWK 4612 - Human Behavior Social Systems (3)

Utilizes a social systems approach to examine the processes of human behavior within groups, organizations, communities and societies/cultures. Prerequisite(s): SOWK 3601 with a grade of C or better or concurrently.

SOWK 4620 - Social Services and Policy with Older Adults (3)

Development of public policy and social service programming. Present and potential utility of individual, group and community intervention modalities as they relate to both the private troubles and public issues of aging. Students who earned undergraduate credit for SOWK 4620 may not take SOWK 5620 for graduate credit. This course is co-listed with SOWK 5620. Fall.

SOWK 4630 - Social Work Practice: Intervention with Families and Groups (3)

Integrates knowledge, theory, values and interviewing skills for assessment and intervention planning with individuals, families and groups. Prerequisite(s): Admission to the B.S.W. program; SOWK 3610 with a grade of C or better.

SOWK 4640 - Social Work Practice: Intervention with Communities and Organizations (3)

In-depth application of the generalist model of social work practice with an emphasis on macro-level skills. Open to social work majors only. Prerequisite(s): SOWK 3601 with a grade of C or better; SOWK 4612 with a grade of C or better.

SOWK 4650 - Social Policy and Economic Justice (3)

Develops an operational and critical understanding of the relationships among social welfare policy, social and economic justice issues, and social work practice. Prerequisite(s): Admission to the B.S.W. program; SOWK 2600 with a grade of C or better; consent of instructor.

SOWK 4660 - Field Practicum (9)

Educationally directed 480-hour field experience in a social service agency under qualified agency

supervision. Prerequisite(s): Full admission to the B.S.W. program; all other required major courses must be completed; consent of Coordinator of Field Education. Corequisite(s): SOWK 4661.

SOWK 4661 - Field Practicum Seminar (3)

This capstone course integrates knowledge for beginning level professional development including ethical decision making, with group processing of varied practicum experiences. Prerequisite(s): Full admission to the B.S.W. program; all other required major courses must be completed; consent of the Coordinator of Field Education. Corequisite(s): SOWK 4660.

SOC 1800 - Introduction to Sociology GE (3)

Explores the relationships of individuals, groups, and society in the context of changing social institutions. Addresses basic concepts and subfields in sociology. Fall, Spring, Summer. Sometimes offered online.

This course is equivalent to MOTR SOCI 101 General Sociology in the Social & Behavioral Sciences Knowledge Area.

SOC 1820 - Popular Culture (3)

Exploration of the role of popular culture in society. We will look at issues such as inequality in popular culture, production, consumption, and resistance. Fall, in even number years only.

SOC 1830 - Social Problems (3)

The sociology of social problems; background and analysis of selected social problems such as race, crime, population, civil rights, poverty; social changes in light of social controls and democratic values.

This course is equivalent to MOTR SOCI 201 Social Problems in the Social & Behavioral Sciences Knowledge Area.

SOC 1840 - Introduction to the Sociology of Sport (3)

This course introduces students to the sociological study of sport. Focus will be on how sports influences, and is influenced by, society at large, including social values, deviance, demographics, and socialization. Fall, in odd numbered years only.

SOC 1885 - Spirituality in a Diverse World (3)

This course introduces the concept of spirituality and how it has been practiced in various religious contexts, both in and out of the institutional church including rituals, meditation, prayer, music, silence, nature, and other moments of transcendence. Spring, in even numbered years only.

SOC 2805 - Introduction to Social Research (3)

An overview of the concepts and practice of research including measurement, sampling, design, basic descriptive statistics and ethics. Attention to both qualitative and quantitative approaches. Fall, Spring.

SOC 2810 - Culture and Society (3)

Examines culture including art, popular culture, folk/ethnic culture, consumer culture, and post-modern culture. Emphasis on meaning and power.

SOC 2845 - Social Inequality and Social Justice (3)

A theoretical and methodological examination of the relationships between social class, inequality, and mobility.

SOC 2850 - Community, Work & Public Life (3)

This course is a sociological inquiry into the varieties of human experiences in the occupational worlds of "modern society". What are the social relationships and institutional frameworks in which work is lived in the various sectors of the modern economy? How does work affect individuals and families across classes and genders? For whom is work their life and for whom is it only a living?

SOC 2851 - Dangerous Eating (3)

This course examines food in a social context. What we eat, the way we eat, and whether we prepare or provide food for others is every bit as much symbolic as it is rooted in biological survival. We create identity,

claim ethnic and national affiliation, demonstrate our social class, and affirm our femaleness and maleness with the foods we purchase, prepare, select, or order from a menu. This course will help students to investigate the way the foods people eat (or don't eat) hold meaning for people within multiple cultural contexts. Fall, in odd numbered years only.

SOC 2854 - Changing Families (3)

This course examines changes in family behaviors and household relationships from a sociological perspective. A major focus is the relationships among economic and social institutions, culture, family structure, and the content of family life. The course also emphasizes issues of race/ethnicity, sexuality, and gender. Spring, in odd numbered years only.

SOC 3055 - Field Experience in Community Organizations (3)

Academically directed field experience. Students will participate in 45 hours of community-based volunteering while using qualitative research techniques to document and process their experiences as they explore how community institutions operate. Prerequisite(s): SOC 2810, SOC 2845, or SOC 2850 or instructor consent.

SOC 3825 - Race and Ethnic Relations (3)

The study of principles, processes and consequences of interracial and ethnic group relations. Emphasis on the social construction of ethnicity, ethnic stratification, and ethnic movements. Fall, Spring.

SOC 3830 - Protests, Movements & Social Change (3)

A critical understanding of the complex process of collective action, social movements and how they can lead to change. The course will examine the development of sociological thought about the origins and modern accounts of collective action and the extent that organizations play in such action. The course will focus on why some protests and social movements lead to change while others fail.

SOC 3845 - Social Deviance (3)

Exploration of the major theories of social norms and social deviance across a variety of social contexts including legal and non-legal, underprivileged and privileged.

SOC 3870 - Society & Self (3)

Emphasizes theories of micro-sociological principles. Focuses on interpersonal relationships and how issues such as socialization and identity impact human behavior and views of the self.

SOC 3885 - Globalization (3)

Explores the economic, political, and socio-cultural aspects of globalization.
This is a sustainability course.

SOC 4805 - Environment and Society (3)

Examination of the social debates around the environment including wilderness, natural resource use, agriculture, recreation, environmentalism, and green production and consumption.
This is a sustainability course.

SOC 4815 - Special Projects in Sociology (1-6)

Study, interpretation, and discussion of special topics and problems in sociology. *May be repeated for a maximum of 6 semester hours.* This course is co-listed with SOC 5915.

SOC 4860 - Sociological Thought (3)

Assessment of current sociological thought as it is reflected by outstanding scholars in the field. Prerequisite(s): Must have completed one of the following: SOC 3830, SOC 3845, SOC 2854, or SOC 3870 AND one of the following: SOC 2810, SOC 2845, or SOC 2850. Fall.

SOC 4866 - Outsiders and Outcasts (3)

An exploration of the ideas of marginality and the cultural processes of inclusion/exclusion including exiles, immigrants, refugees, ethnic minorities, and the homeless.

SOC 4870 - Gender, Sexuality, & Inequality (3)

This course examines gender, sexuality, and inequality and the intersections between them from both historical and contemporary perspectives. The social construction of gender, sexuality and inequality will be a framing mechanism for the course.

SOC 4875 - Medical Sociology (3)

Social factors and institutional settings for physical and mental health care; public needs and medical services; research in medical sociology.

SOC 4890 - Applied Social Research (3)

This course teaches students to conduct social research applied in the context of local community issues and agencies. Students learn to write, implement, and analyze data that speak to organizational and community issues. Prerequisite(s): SOC 2805 and one of the following: SOC 3830, SOC 3845, SOC 2854 or SOC 3870 or consent of the instructor. Fall.

SOC 4895 - Senior Seminar in Public Sociology (3)

For senior Sociology majors to explore the use and application of Sociology in public life and as a career. Cumulative senior project required. Prerequisite(s): SOC 4890 and SOC 4860 or Program Coordinator consent. Spring.

SE 3900 - Software Requirements Engineering (3)

Aims at equipping students with requirements engineering techniques for software-intensive systems. Students will learn a systematic approach to discover, analyze, model, write, and validate requirements from both theoretical and practical perspectives. Prerequisite(s): CS 2300 with a grade of C or better. An additional fee is associated with this course.

SE 3910 - Software Engineering (3)

An introduction to software development process (Agile, Lean, Scrum and Kanban), with emphasis on software design, team management, and application development. Students will gain experience in developing and managing software projects. Ethical issues regarding software development will be discussed. Prerequisite(s): CS 2300 with a grade of C or better. An additional fee is associated with this course.

SE 3920 - Modern Software Lifecycle and Tools (3)

In depth study of modern software development tools, methods, and frameworks. Topics include build/package management systems, functional programming concepts, programming frameworks such as Spring and React, and Continuous Integration. Prerequisite(s): CS 2300. An additional fee is associated with this course.

SE 4920 - Senior Project (3)

Semester- long senior capstone project in which teams design, plan, implement, test, and deploy a software development project. Selected topics in software development, group dynamics, project management, and ethics and professional responsibility. Includes a formal presentation to the Computer Science faculty. Prerequisite(s): CS 4600 with a grade of C or better and SE 3910 with a grade of C or better. An additional fee is associated with this course.

SE 4930 - Software Testing and Quality Assurance (3)

Concepts and techniques for testing software and assuring its quality. Students learn the testing fundamentals, the theory behind criteria-based test design and to apply that theory in practice. Topics include coverage criteria for testing (graph coverage, logic coverage, input space partitioning, syntax-based testing); software development process (SCRUM); test team organization; maturity models; software quality factors; and testing tools. This course is co-listed with SE 5930. Prerequisite(s): CS 2300 with a grade of C or better. An additional fee is associated with this course.

SE 4940 - Software Design and Architecture (3)

In depth study of concepts and principles of software design and software architecture, as well as practical approaches for employing design patterns and architectures in real systems. Students will gain experiences with examples in design pattern

application and case studies in software architecture. This course is co-listed with SE 5940. Prerequisite(s): SE 3910 with a grade of C or better. An additional fee is associated with this course.

SE 4950 - Secure Software Engineering (3)

In depth study of secure development lifecycle. The course reevaluates each phase of the development lifecycle from a security perspective and uses best practices from different secure SDL methodologies. Students will learn how to practice risk analysis, static/dynamic analysis, penetration testing, and secure code review in a dialectic process. This course is co-listed with SE 5950. Prerequisite(s): SE 3910 with a grade of C or better. An additional fee is associated with this course.

SE 4960 - Project Management (3)

An introduction to project management and software tools for project management. Topics include project management process, scope management, time management and cost management. Students learn how a successful project outcome will be achieved. This course helps students confidently prepare for PMP certificate. Prerequisite(s): SE 3910 with a grade of C or better. An additional fee is associated with this course.

SPAN 1601 - Elementary Spanish I GE (3)

Fundamentals of Spanish pronunciation, the building of basic vocabulary and patterns, oral work, studies in structure, and reading selections. Not open to native speakers or students who have had three years of high school Spanish without the permission of the school chair.

This course is equivalent to MOTR LANG 103 Spanish I in the Humanities & Fine Arts Knowledge Area.

SPAN 1602 - Elementary Spanish II GE (3)

A continuation of Spanish I, with increased attention to grammar. Not open to native speakers or students who have had four years of high school Spanish without the permission of the school chair. Prerequisite(s): SPAN 1601.

This course is equivalent to MOTR LANG 104 Spanish II in the Humanities & Fine Arts Knowledge Area.

SPAN 1610 - Accelerated Elementary Spanish (3)

This course includes the material from both Elementary Spanish I and Elementary Spanish II. The regular two-semester content for Elementary Spanish is reduced to one semester and moves at an accelerated pace. Prerequisite(s): 1-3 years of high school spanish or heritage speaker. Fall, Spring.

SPAN 1611 - Elementary Spanish I for Healthcare Professionals (3)

Fundamental principles of Spanish pronunciation, and oral practice; the building of basic vocabulary of words and expressions appropriate to health care; studies in structure, and reading selections. Not open to native speakers or students who have had three years of high school Spanish without permission of the school chair. Taught only as an online course.

This course is equivalent to MOTR LANG 103 Spanish I in the Humanities & Fine Arts Knowledge Area.

SPAN 1612 - Elementary Spanish II for Healthcare Professionals (3)

A continuation of SPAN 1611. Includes oral practice; the building of basic vocabulary words and expressions appropriate for health care; studies in structure, and reading selections. Not open to native speakers or students who have had four years of high school Spanish without permission of the school chair. Prerequisite(s): SPAN 1611. Taught only as an online course.

This course is equivalent to MOTR LANG 104 Spanish II in the Humanities & Fine Arts Knowledge Area.

SPAN 2601 - Intermediate Spanish I GE (3)

Development of the ability to use the language by oral-aural laboratory drills and readings. Prerequisite(s): SPAN 1602 or SPAN 1610.

SPAN 2602 - Intermediate Spanish II GE (3)

Continuing development of the ability to use the language on the intermediate level, with more advanced grammar, laboratory work and readings. Prerequisite(s): SPAN 2601.

SPAN 2603 - Spanish Conversation I (3)

Conversational Spanish using culture-based materials emphasizing the four skills: speaking, listening, reading, and writing. Prerequisite(s): SPAN 2602.

SPAN 2611 - Intermediate Spanish I for Healthcare Professionals (3)

A continuation of SPAN 1612. Development of oral and writing skills in the target language. Includes oral practice with native speakers; the building of vocabulary appropriate for health care; studies in structure, and reading selections. Prerequisite(s): SPAN 1612. Taught only as an online course.

SPAN 2612 - Intermediate Spanish II for Healthcare Professionals (3)

A continuation of SPAN 2611. Development of oral and writing skills in the target language. Includes oral practice with native speakers; the building of vocabulary appropriate for health care; studies in structure, and reading selections. Prerequisite(s): SPAN 2611. Taught only as an online course.

SPAN 2690 - Special Topics in Spanish (1-3)

Individual or group work by selected students in carefully chosen fields for intermediate level study. *May be repeated for a maximum of 15 semester hours.* Prerequisite(s): 6 semester hours of Spanish and consent of the school chair.

SPAN 3603 - Spanish Conversation II (3)

Oral practice in everyday Spanish, discussion, idiomatic usage, listening comprehension, speaking. Prerequisite(s): SPAN 2603.

SPAN 3623 - Spanish Composition (3)

Review of grammar, oral-aural training, and special study of the subjunctive mood. Prerequisite(s): SPAN 2602.

SPAN 3661 - Spanish Civilization and Literature (3)

The social, cultural, literary, and political history of Spain. Prerequisite(s): SPAN 2602.

SPAN 3662 - Spanish American Civilization and Literature (3)

The social, cultural, literary, and political history of Spanish America. Prerequisite(s): SPAN 2602.

SPAN 4603 - Advanced Readings and Oral Expression (3)

Emphasis on advanced readings and oral-aural practice in Spanish. Prerequisite(s): SPAN 3603.

SPAN 4623 - Advanced Spanish Composition (3)

Oral and written composition; review of more difficult grammatical constructions and idioms. Prerequisite(s): SPAN 3623.

SPAN 4650 - Introduction to Spanish for Business (3)

Enhances linguistic and cultural knowledge of Spanish for business and will be conducted primarily in Spanish. Prerequisite(s): SPAN 3623.

SPAN 4665 - Culture and Issues in the Contemporary Spanish-Speaking World (3)

An exploration of contemporary political, economic and societal issues affecting Spanish-speaking cultures with emphasis on further developing language skills through discussions and written assignments. Prerequisite(s): SPAN 3661 or SPAN 3662.

SPAN 4671 - Cinema of the Spanish-Speaking World (3)

A survey of Latin American, Spanish and Latino films with emphasis on the cultural contexts in which the films are produced and viewed. Prerequisite(s): SPAN 3623.

SPAN 4680 - Contemporary Literature of the Spanish-Speaking World (3)

Literary texts of the 20th and 21st centuries from Spain and Spanish America with emphasis on developing language skills through discussions and written assignments. Prerequisite(s): SPAN 3623.

SPAN 4690 - Special Topics in Spanish (1-3)

Individual or group work by selected students in carefully chosen fields for advanced study. *May be repeated for a maximum of 15 semester hours.* Prerequisite(s): 18 semester hours of Spanish and consent of school chair.

EDSP 2100 - Education of the Exceptional Child (3)

Identification of exceptional children, methods and techniques for teaching them, as well as possible sources of referral which may be of assistance to teachers and parents of these children. Requires a directed field experience. This is a professional education course. Fall, Spring, Summer. Sometimes offered online.

EDSP 3150 - Community and Family Resources (2)

Early clinical observations and experiences using community and family resources concerned with various kinds of exceptionality. Prerequisite(s): EDSP 2100 or EDSP 5200. Corequisite(s): EDSP 3151. This is a professional education course. Fall, Spring, Summer. Taught only as an online course.

EDSP 3151 - Community and Family Resources Practicum (1)

Provides opportunities for pre-service teachers to evaluate how community and family resources impact directly/indirectly on the lives of children. Requires a directed field experience. Prerequisite(s): EDSP 2100 or EDSP 5200. Corequisite(s): EDSP 3150. This is a professional education course. Fall, Spring, Summer. Taught only as an online course.

EDSP 3210 - Methods of Reading Instruction for Special Education (3)

The course prepares the preservice teacher in Special Education with an understanding of the fundamental concepts, skills, attitudes, and methods of developing, promoting, and managing beginning reading instruction. Prerequisite(s): EDSP 2100. This is a professional education course. Spring.

EDSP 4000 - Special Projects in Special Education (1-5)

Individual or group study of problems in special areas of interest. *May be repeated for a maximum of 5 semester hours.*

EDSP 4140 - Collaborating With Professionals and Families of Students with Exceptionalities (3)

This course provides students with skills necessary to work effectively in partnership with parents, community professionals, colleagues in education including educators, other school professionals, paraprofessionals as well as administrators. Communication, conflict resolution, and collaboration skills are practiced using a variety of strategies and approaches. This course is co-listed with EDSP 5140. Prerequisite(s): EDSP 2100 This is a professional education course. Fall, Spring, Summer.

EDSP 4150 - Career Development for Students with Disabilities (2)

Supportive services to students with disabilities within a career development context. This course is co-listed with EDSP 5150. Prerequisite(s): EDSP 2100 This is a professional education course. Fall, Spring.

EDSP 4161 - Physical and Health Care Needs of Students with Autism and Severe Developmental Disabilities (2)

Designed to assist teachers in understanding and planning for the physical and health care needs of students with autism and severe developmental disabilities. This course is co-listed with EDSP 5161. Prerequisite(s): EDSP 2100 .

EDSP 4210 - Teaching Emergent and At-Risk Readers (3)

Instruction in the identification and remediation of significant reading disorders in children and youth with moderate to severe disabilities, including those with severe learning disabilities, cognitive impairments, and Autism Spectrum Disorders. A directed clinical experience in the diagnostic/prescriptive assessment process is required. This course is co-listed with EDSP 5210. Prerequisite(s): ECEL 3225 or EDFL 3230; EDSP 2100 or EDSP 5200. Fall, Spring.

EDSP 4310 - Introduction to Students with Autism and Severe Developmental Disabilities (2)

Basic information pertaining to the characteristics, education, and care of individuals with severe forms of Autism Spectrum Disorders and individuals with severe Developmental Disabilities. Requires a directed field experience. This course is co-listed with EDSP 5310. Prerequisite(s): EDSP 2100 This is a professional education course. Spring, in odd numbered years only

EDSP 4320 - Introduction to Early Childhood Special Education (3)

Basic information pertaining to the characteristics, care, treatment, and education of young children with special needs. This course is co-listed with EDSP 5320. Prerequisite(s): EDSP 2100 This is a professional education course.

EDSP 4330 - Curriculum and Methods for Teaching Students with Autism and Severe Developmental Disabilities I (3)

Teaching methodologies and curricula used in learning programs for individuals with severe forms of Autism Spectrum Disorders and for individuals with Severe Developmental Disabilities. Prerequisite(s): EDSP 2100 or EDSP 5200. This is a professional education course. Fall, in odd numbered years only

EDSP 4350 - Augmentative and Alternative Communication (3)

Study and application of communication options, including manual sign language and communication devices. This course is co-listed with EDSP 5450. Prerequisite(s): EDSP 2100 This is a professional education course. Spring.

EDSP 4359 - Behavior Management for Classroom Teachers (3)

This course focuses on strategies for addressing common problem behaviors that can be integrated within a comprehensive, evidence-based behavior intervention program. These strategies and practices involve multiple levels of interventions, including schoolwide, classwide, small group, and individual behavioral supports. Prerequisite(s): EDSP 2100. This is a professional education course. Fall.

EDSP 4360 - Advanced Behavior Management (3)

This course will build the knowledge and capacity of educators on the application of the principles of applied behavior analysis and its use in facilitating positive behavioral change in the classroom. Strategies for conducting functional behavior assessment of problem behavior and developing multidimensional intervention plans are discussed. This course is co-listed with EDSP 5360. Prerequisite(s): EDSP 2100 This is a professional education course. Fall, Spring, Summer.

EDSP 4361 - Practicum in Behavioral Management Techniques (1)

Practical experience in designing behavioral management programs and environments under supervision. Requires a directed field experience. This course is co-listed with EDSP 5361. Prerequisite(s): EDSP 4360 or concurrently. This is a professional education course. Fall, Spring, Summer.

EDSP 4370 - Screening, Diagnosing and Prescribing Instruction (3)

Case finding, screening, diagnostic and assessment procedures to be utilized in prescriptive educational planning for infants and preschool-aged children. Requires a directed field experience. This course is co-listed with EDSP 5370. Prerequisite(s): EDSP 2100 An additional fee is associated with this course. This is a professional education course. Fall, Spring, Summer.

EDSP 4385 - Introduction to Cross-Categorical Special Education (3)

Information about the characteristics and education of children with mild/moderate disabilities. This course is co-listed with EDSP 5385. Prerequisite(s): EDSP 2100 This is a professional education course. Spring. Taught only as an online course.

EDSP 4420 - Methods of Cross-Categorical Special Education (3)

Teaching methods, materials and curricula for educating students with mild/moderate disabilities. This course is co-listed with EDSP 5420. Prerequisite(s): EDSP 4385. This is a professional education course. Fall, Spring. Taught only as an online course.

EDSP 4421 - Methods of Cross-Categorical Special Education I: Intellectual Disabilities/Other Health Impairments (3)

Strategies for addressing general problems in teaching students with Intellectual Disabilities and Other Health Impairments in Cross-Categorical and other settings, including planning, materials and methods used. Requires a directed field experience. Prerequisite(s): Admission to Teacher Education Program and EDSP 4385. This is a professional education course.

EDSP 4422 - Methods of Cross Categorical Disabilities II: Learning Disabilities (3)

Characteristics, etiologies, definitions, legislation and issues related to the identification of and educational planning for individuals with learning disabilities. Requires a directed field experience. Prerequisite(s): Admission to Teacher Education Program and EDSP 4385. This is a professional education course. Fall.

EDSP 4423 - Methods of Cross-Categorical Special Education III: Emotional/Behavioral Disorders (3)

Strategies for addressing general problems in teaching students with emotional and/or behavioral disorders in cross-categorical and other settings including planning, materials and methods used. Requires a directed field experience. Prerequisite(s): Admission to Teacher Education Program and EDSP 4385. This is a professional education course. Fall.

EDSP 4440 - Curriculum and Methods for Teaching Early Childhood Special Education (3)

The teaching methods and curricula used for educating young children with special needs. Requires a directed field experience. This course is co-listed with EDSP 5440. Prerequisite(s): Admission to Teacher Education Program and EDSP 4320 and EDSP 4370. This is a professional education course.

EDSP 4450 - Curriculum and Methods for Teaching Students with Autism and Severe Developmental Disabilities II (3)

Advanced teaching methodologies and curricula used in learning programs for individuals with severe forms of Autism Spectrum Disorders and individuals with Severe Developmental Disabilities. Prerequisite(s): EDSP 4330 and Admission to Teacher Education Program. This is a professional education course. Fall, in odd numbered years only

EDSP 4620 - Evaluation of Abilities and Achievement (3)

Instruction in interpretation of individualized intelligence tests, formal and informal diagnostic procedures, and in prescriptive instruction. A directed clinical experience in the diagnostic assessment process for Individual Education Programs is required. Requires a directed field experience. This course is co-listed with EDSP 5620. Prerequisite(s): EDSP 2100. This is a professional education course. Fall, Spring.

EDSP 4700 - IEP and the Law (3)

Administrative procedures and policies needed in establishing a program of special education. Special emphasis is given to compliance with state and federal law. A directed clinical experience in the theory, process, and practice of IEP writing is included. This course is co-listed with EDSP 5690. Prerequisite(s): EDSP 4620 and Admission to Teacher Education Program or Speech Pathology major. This is a professional education course. Fall, Spring.

EDSP 4890 - Mathematics for Special Education (3)

This course integrates foundational knowledge of numeracy acquisition, mathematical concepts, mathematical thinking, mathematics vocabulary, calculation, and problem-solving to plan well sequenced and explicit math instruction for students with disabilities. Examines objectives that align with the general education curriculum and Standards of Learning in mathematics at the elementary, middle, and secondary levels while still providing individualization. Prerequisite(s): EDSP 2100. This is a professional education course. Spring.

SM 1100 - Introduction to Sport Management (3)

An introduction to the field of sport management, introducing the concepts, scope, organization and common practices in the sport management industry.

SM 2300 - Leisure and Sport (3)

Examination of the role of leisure services in the 21st century including an in-depth analysis of relevant concepts, industry dynamics, and trends. Prerequisite(s): SM 1100.

SM 3210 - Sport and Media (3)

Introduce students to the importance of sport to the mass media, the work of sport journalists and sport broadcasting. Students will gain factual knowledge about the sport industry and specifically the symbiotic relationship between sport and the media. Prerequisite(s): SM 1100.

SM 3500 - Sport Leadership (3)

A study of leadership theories, concepts, and applications as they apply to athletic and sport organizations. This course will explore traits and behaviors of leaders, power and influence dynamics between leaders and led, leading groups, and effective sport organization processes. Prerequisite(s): SM 1100.

SM 3600 - Sport Finance (3)

Introduce the financial and managerial accounting concepts that apply to the sport business industry. Topics include: revenues and expenses, budgeting methods, fund-raising, ownership and funding issues in sport, and other contemporary finance issues in sport. Prerequisite(s): SM 1100.

SM 3700 - Sport Facility Management (3)

An introduction to sport facility management, facility development, facility systems and operation, and facility administration. Prerequisite(s): SM 1100.

SM 3720 - Managing Sport Events (3)

An introduction to sport event management through a practical application of foundational concepts. Prerequisite(s): SM 1100.

SM 4000 - Seminar in Sport Management (3)

Study and discussion of professional issues, trends, and basic risk management principles in a seminar format. Prerequisite(s): junior or senior standing and approval of the instructor.

SM 4200 - Applied Sport Marketing (3)

Examination of the elements of strategic sport marketing process and its applications to developing sport marketing plans. Topics include analysis of market contingencies, segmenting, targeting, and positioning, and various promotion and marketing mix strategies as they relate to organizations in the sport industry. Prerequisite(s): SM 1100 and MKT 3405.

SM 4220 - Sport Sponsorship and Retention (3)

Provide students with theoretical and empirical knowledge of sport sponsorship. Students will master topics including marketing, brand equity, marketing communication theories, sport sponsorship evaluations, and sport sponsorship proposals. Prerequisite(s): SM 1100 and SM 4200.

SM 4300 - Recreational Sport Management (3)

A study of theoretically based provisions of opportunities in recreational sport. Emphasis is on understanding all aspects of recreational sport programming. Prerequisite(s): SM 1100 and SM 2300.

SM 4400 - Sport Communication (3)

Provide an introduction to the area of sport communication. Topics include: historical and theoretical features of the field, sport information, public relations, media production, personal and organizational processes, sport media, services and support systems, and sociological and legal aspects. Prerequisite(s): SM 1100.

SM 4980 - Internship (6)

A 400-hour field experience applying sport management principles and theories in an approved sport management setting. *May be repeated for a maximum of 12 semester hours.* Prerequisite(s): SM 4000 and consent of instructor.

TECH 2040 - Calculus for Technology (3)

Application of the fundamental concepts of differential and integral calculus to technology. Prerequisite(s): MATH 1111 or MATH 1111R; and MATH 1112. An additional fee is associated with this course.

TECH 3050 - Technical Career Subjects (1-3)

In-depth competency, skill development, and advanced concepts taught in formal course offerings through explorations of innovative techniques and procedures used in business and industry. *May be repeated for a maximum of 12 semester hours.* Prerequisite(s): consent of a review committee of three faculty members in the school. An additional fee is associated with this course.

TECH 4020 - Industrial Energy Management (3)

Energy efficient techniques in a variety of industrial settings. An additional fee is associated with this course.

TECH 4050 - Equipment Installation and Maintenance (2)

Technical problems in the installation of power equipment; care and maintenance of tools and machines; servicing school equipment; safety. An additional fee is associated with this course.

THEA 1000 - Production Practicum (0)

Students in this course are required to support UCM Theatre & Dance productions by working a total of 10 hours over the course of the semester in either the scene shop, costume shop, or Theatre & Dance Box Office. The scene shop and costume shop hours are M-F from 1-5pm and the Box Office is open 12-3pm the two weeks leading up to a production. Completion of your hours is mandatory, as is adherence to the rules of the Scene Shop, Costume Shop and Theatre & Dance Box Office. *May be repeated for a maximum of 7 semesters.*

THEA 1010 - Introduction to Theatre & Dance (1)

A student development course designed to help the first-year student and those in transition to actively develop a sense of belonging at UCM Theatre & Dance while introducing first year students to general and best professional practices related to being a theatre artist and designer. During this class, we will also be hosting an ongoing lecture series of visiting guest artists and lecturers and preparing material for the Freshman/Transfer Showcase in September. Fall.

THEA 1100 - Oral Interpretation GE (3)

Skills used to convey the intellectual, emotional, and aesthetic values of literature to an audience.

THEA 1400 - Script Analysis (3)

Structural and performance dimensions of the playscript. It will focus on the role of the various theatrical artists in developing an effective methodology and application for translating the playwright's script into a public performance.

THEA 1500 - Acting (3)

An extensive study in the theories and techniques of acting.

THEA 1510 - Stage Movement (3)

An extensive study of the body's use in theatrical performance; this class will work with expanding the imagination of bodily expression.

THEA 1520 - Stage Voice (3)

Course is designed to improve and enhance the skills necessary for excellent stage vocal production. Exercises will focus on breath, resonance, articulation and speech dynamics.

THEA 1600 - Stagecraft (3: 3 lecture, 0 lab)

Lectures and laboratory experiences in the construction, painting, rigging and shifting of stage scenery. Scene shop work arranged as a portion of the course. An additional fee is associated with this course.

THEA 1610 - Stage Make-up (3)

Materials and methods of application of make-up artistry for cosmetic and character effects on stage. An additional fee is associated with this course.

THEA 1700 - Stagecraft II (3: 3 lecture, 0 lab)

Stagecraft II is designed as an introduction to the technical sides of producing theatre in the costume shop and lighting/sound lab. This course will cover basic costume techniques and skills required to work as a stitcher in a costume shop, both educational and professional. It was also cover basic techniques and skills that technicians use in utilizing lighting/sound equipment in a live theatrical environment. A weekly lab of shop hours is required. Fall, Spring.

THEA 1900 - Theatre Practicum (1)

Supervised work on selected problems in play direction, acting, scene design, scene construction, stage lighting, and business management. *May be repeated for a maximum of 3 semester hours.* Prerequisite(s): consent.

THEA 2400 - Discovering Theatre GE (3)

An introductory examination of theatre and theatrical production, the work of the individual theatre artists involved in the process, and a survey of the drama and developments of major theatrical periods in theatre history.

This course is equivalent to MOTR THEA 100A Theatre Appreciation in the Humanities & Fine Arts Knowledge Area.

THEA 2610 - Design Fundamentals (3)

Survey of the concepts, applications, and techniques of theatrical design through study of the design areas in lighting, costume, scenic, make-up, hair, sound and properties.

THEA 2620 - Costume Construction (3: 3 lecture, 0 lab)

This specialized course examines the logistical and creative process of costume technology and crafts through lectures, demonstrations, hands-on projects, and full-immersion training in the costume shop. Projects include costume crafts used in theatrical and cosplay designs.

THEA 2630 - Drafting for the Theatre (3)

Provides students with modern drafting tools and standardized drafting techniques commonly used in theatrical drafting and visual communication for both design and technical purposes.

THEA 2700 - Directing (3)

Problems, principles, and employment of various directing styles, and the adaptation of directing techniques to various physical facilities. Prerequisite(s): THEA 1500 and THEA 1600. Fall, Spring.

THEA 3220 - Children's Theatre (3)

The study and practice of producing plays for a children's audience. Spring.

THEA 3500 - Advanced Scene Study (3)

The course is designed to enhance the actor's proficiency with character development within the genre of realism. Prerequisite(s): THEA 1500.

THEA 3600 - Scene Design (3)

Theory and practice of design as applied to scenery for modern theatrical production. Prerequisite(s):

THEA 1400, THEA 1600, and THEA 2610; or by permission of the instructor.

THEA 3610 - Costume Design (3)

Theory and practice of costume design and history as applied to dance, theatrical, and musical productions of live theatre. Prerequisite(s): THEA 1400 and THEA 2610; or by permission of the instructor.

THEA 3620 - Lighting Design (3)

Theory and practice of lighting design as it applies to the modern theatrical performance. Prerequisite(s): THEA 1400 and THEA 2610; or by permission of the instructor.

THEA 3630 - Studio Theatre I (1)

Technical direction of a play in the Studio Theatre series at approximately the junior class level. Prerequisite(s): THEA 1500, THEA 1600, THEA 2700 and departmental consent.

THEA 3900 - Special Topics in Theatre (1-3)

Individual study and research on topics that are of special interest to the student. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): consent.

THEA 4300 - Professional Practices (1-6)

Extended, supervised experiences in any phase of theatre production. Credit allowed will depend upon the nature and scope of the assignment. *May be repeated for a maximum of 10 semester hours.* Prerequisite(s): Departmental consent.

THEA 4310 - Principles of Theatre Management (3)

An in-depth examination of the business theories and practices in modern educational, community, and professional theatre. Box office and publicity work are required.

THEA 4400 - Literature and History of the Theatre I (3)

Works and writers for the stage from the beginning to 1700. The development of theatrical modes and presentation and their influences upon the drama of each period. Fall.

THEA 4420 - Literature and History of the Theatre II (3)

Works and writers for the stage from 1700 to 1915. The development of theatrical modes and presentation and their influences upon the drama of each period. Spring.

THEA 4430 - American Musical Theatre History (3)

History, literature and production of the American Musical.

THEA 4500 - Advanced Acting (3)

An intensified study of characterization centering around the study of difficult roles, and the adaptation of acting techniques to various styles of acting. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): THEA 1500.

THEA 4510 - Period Acting Styles (3)

Examines the craft, methodology, resources and practice of acting in non-realistic (classical and contemporary) dramatic literature. Emphasis on analysis of stylistic determinants in dramatic literature. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): THEA 1500.

THEA 4600 - Advanced Technical Theatre (3: 3 lecture, 0 lab)

Advanced techniques in scenery construction and painting, plastics, and selection of stage equipment. Laboratory exercises will be required. Prerequisite(s): THEA 1600.

THEA 4610 - Advanced Stage Lighting and Sound (3)

Extensive investigation of stage lighting history and practices in the modern theatre and the study and use of live and recorded sound as a theatrical art. Prerequisite(s): THEA 1600 and THEA 3620.

THEA 4620 - Period Research (3)

Will examine the art, architecture, fashion, decorative arts, and music of Western Civilization from ancient Greece to modernity, and the intellectual, spiritual, social, and economic ideas that they reflect.

THEA 4710 - Advanced Directing (3)

Extensive examination of special directing problems with comedy, tragedy, period drama, and the musical show in arena and proscenium theatres. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): THEA 2700.

THEA 4730 - Studio Theatre II (1)

Direction of a play in the Studio Theatre series at approximately the senior class level. Prerequisite(s): THEA 3630 and departmental consent.

THEA 4800 - Playwriting (1-3)

Dramatic writing, dramatic theory, style dialogue exercises, characterization, with opportunity for the production of student plays. *May be repeated for a maximum of 3 semester hours.*

THEA 4810 - Musical Theatre Laboratory (3)

Students refine their acting, singing and dancing techniques while developing the necessary skills to prepare audition materials and prepare for the professional world.

THEA 4900 - Repertory Theatre (3)

Practical experience in theatre through participation in a summer repertory season of plays as an actor, a technician, or management personnel. *May be repeated for a maximum of 6 semester hours.* Prerequisite(s): enrollment by school approval only.

THEA 4910 - Senior Showcase (1)

Senior Theatre Majors will present a public showcase performance or portfolio presentation. Course is part of the formative assessment process within Theatre.

THEA 4920 - Secondary Field Experience II (1)

Experiences in the secondary school classroom that provide the teacher candidate more advanced involvement in the teaching-learning process. Prerequisite(s): Admission to Teacher Education Program; should be taken concurrently with THEA 4984 during the Professional Semester. This is a professional education course.

THEA 4930 - Co-Curricular Practicum (2)

Occurs during the first four weeks of the student teaching semester and is designed to ensure that teacher education candidates have mastered specific techniques for the coaching and administrating of Speech and Debate teams and for engaging in play production at the high school level. The one credit hour field experience course (THEA 4920) is taken concurrently with this course. THEA 4920 provides student teaching candidates opportunities to observe and interact with high school students in the classroom setting. In both courses, an increased emphasis is placed on teaching performance strategies as well as organizational and classroom and rehearsal management skills specific to the speech communication and theatre classroom in order to prepare students for their student teaching experience and subsequent teaching career. This is a professional education course.

THEA 4984 - Methods of Teaching Speech and Theatre (2)

Prerequisite(s): Admission to Teacher Education Program; double majors must take a methods course for each major; methods should be taken concurrently with THEA 4920 during the Professional Semester. This is a professional education course.

UNIV 1240 - LSAT Test Preparation (1)

Provides students with information about and practice with the types of questions asked on the LSAT. Strategies for successfully taking this test are also presented. Audit or P/F credit only. Spring.

UNIV 1250 - GRE Test Preparation (1)

Designed to help students prepare to take the GRE by becoming more familiar with the test format used by GRE, the scoring system, and how to register for the test. Students will be provided with tips and strategies for answering questions in the verbal

reasoning and quantitative reasoning sections, as well as practice for the two writing samples. Audit or P/F credit only. Fall, Spring.

UNIV 1400 - University Foundations (1)

Designed to help the first-year student and those in transition to: actively explore critical thinking, develop a sense of belonging to UCM, develop self-awareness of social and civic responsibility, and gain a desire for lifelong learning. Fall, Spring.

UNIV 1410 - Exploring Majors and Careers (1)

A career development course designed to introduce students to a wide range of academic programs and career options. Special emphasis is given to an exploration of self through the use of career assessments and individual career counseling sessions, as well as individual and group activities, discussions, and interviews specifically designed to facilitate a methodical approach to assist students with identifying "right fit" career options, and the academic paths that lead to those options. An additional fee is associated with this course. Fall, Spring.

UNIV 1420 - Design Your UCM (1)

Design Your UCM is designed to engage freshman and sophomore students in gaining a sense of belonging through interacting with campus and community resources; developing self-awareness of social and civic responsibility; encouraging habits of life-long learning and critical thinking, and uses the design thinking framework to build confidence in students.

UNIV 1620 - Reset for College Success (1)

This course is designed to empower students who have been reinstated to the University after being either Academically Suspended or Dismissed, or are in a probationary status. The mission of the course is to help students learn the skills and attitudes required to attain success in their academic, personal, and professional lives. This course, through established approaches of self-assessment, assignments, networking, and reflective writing will provide necessary tools for improvement in success strategies. It is mandatory for reinstated students and those accepted into the Suspension Waiver Program.

UNIV 1800 - Special Projects (0.5-3)

Individual or group study of material in special areas of interest. *May be repeated for a maximum of 6 semester hours.* Fall, Spring, Summer.

UNIV 1820 - Learning Strategies (2)

Learning Strategies helps students develop college-level study skills. The course work emphasizes strategies for taking lecture notes, reading textbooks, managing time, setting goals, processing information, and taking tests. Course restricted to freshmen and sophomores or by instructor consent. Fall, Spring, Summer.

UNIV 1826 - Supplemental Instruction Lab (0)

Supplemental Instruction is a structured learning lab for the designated course(s) in which the student is concurrently enrolled. *May be repeated for a maximum of 6 semester hours.* Fall, Spring.

UNIV 2000 - Design Your UCM - Transfer (1)

Design Your UCM -Transfer is designed to engage transfer students in gaining a sense of belonging through interacting with campus and community resources; developing self-awareness of social and civic responsibility; encouraging habits of life-long learning and critical thinking, and uses the design thinking framework to build confidence in students.

UNIV 3000 - Career Readiness (1-2)

This course will provide assistance for students in building and preparing their personal career readiness plan. The course will provide resources, activities and information on the eight National Association of College and Employers (NACE) career competencies: critical thinking/problem solving, oral/written communications, teamwork/collaboration, digital technology, leadership, professionalism/work ethic, career management, and global/intercultural fluency.

UNIV 3100 - Life Design (1)

This course uses the design thinking framework to build confidence in students, from any major, to think like a designer about their college experience and life after UCM. Students will gain a process to solve

problems (the complex, unstructured and unknown); how to get unstuck, adjust when things change, learn how to think of new ideas, and how to make intentional decisions to achieve goals.

UNIV 4001 - Research Writing & GRE Prep (1)

Instruction in academic research and writing; preparation for taking the Graduate Record Exam. Required of and open only to students in UCM's McNair Scholars Program Summer Research Internship.

Flight Operations Manual

University of Central Missouri
Version 13.1

3/10/2021

TABLE OF CONTENTS

Section 1 – REVISIONS

Revision Instructions

1) Revisions will be consecutively numbered.
2) The revision notice will instruct you as to which pages are updated.
3) To ensure that the manual is always current, the person responsible for this manual must complete the revision on the effective date or immediately upon receiving the revision.

Revision Record

Revision Number	Revision Date	Section	Page
Original	10/20/04	All	All
2	08/22/07	All	All
3	05/22/08	9	All
4	08/13/08	4,5,6,7,8	All
5	07/01/09	All	All
6	08/01/10	All	All
7	08/01/12	All	All
8	02/14/2013	All	All
9	03/25/2013	4,5,6,7	23, 59, 114-115,119, 137, 142, 162, 195, 227, 255, 263, 271
10	4/17/2013	1, 3, 8	1, 12, 17, 18
10.1	5/10/2013	4,6,7	33, 68, 153, 154, 177, 188, 189, 212, 223, 224, 246, 256, 257
10.2	8/11/2013	3, 4, 5, 6, 7, 8	7, 9, 10, 13, 16, 17, 23, 24, 110, 112, 114, 133, 135, 137, 153, 212, 223, 246, 256, 285, 286, 288, 290, 293
10.3	8/19/2013	8, 9	294-297, 299, 300, 302-305, 307-310
10.4	01/13/2014	1, 3, 5	1, 3-4, 18-19 ,41-44
10.5	3/11/2014	1, 2, 3, 4, 6, 7, 8	0, 1, 6-7, 12, 23-24, 59, 151, 187, 223, 302-303, 307, 309-310, 313-316
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			314, 329, 355, 370, 376, 396, 405

Section 2 – COURSES

This standardization manual is designed as a reference source for all flight training courses. Flight course information, UCM policies and procedures, and flight maneuvers are explained.

It is understood that there are acceptable variations to different maneuvers, some more so than others. UCM has developed the most effective and efficient training methods for our program. Remember this text was created for the students' benefit and should be the primary reference for all maneuvers done at UCM.

Each maneuver will include a list of references indicating where further information about the maneuver may be obtained. UCM strongly suggests the references be used to help develop a complete understanding of each maneuver prior to attempting them in flight.

Jeppesen Flight Syllabi

All of the courses listed below follow the Jeppesen Flight Syllabus. (If you are in the UCM Commercial Syllabus please see the Chief Flight Instructor or the SOF.) These are available for purchase at the airport terminal building. If further assistance is needed, please feel free to speak with the Chief Flight Instructor, Assistant Chief Flight Instructor; Supervisor of Flight, or one of the Check Instructors.

FLYA 1320 Private Flight A 1.0 SH Credit

The student will progress from Unit 1 through Unit 13. PVT 1 Oral/Flight (Unit 10 which comes after Unit 8) is the Stage 1 Check administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will complete the Private A written test in Blackboard prior to signing up for the Stage 1 Exam. The student will complete the FAA Aeronautical Knowledge Exam for Private Pilot Airplane prior to signing up for Private Flight A. In order to enroll in Private Flight A the student must meet the requirements of the Pre-Aviation semester, see training information in Section 3 for more information.

FLYA 1321 Private Flight B 1.0 SH Credit

_The student will progress from Unit 14 through Unit 26. PVT 2 Oral/Flight (Unit 20) is the Stage 2 Check. PVT Final Oral/Final (Unit 26) is the End of Course Check. All Checks are administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will complete the Private Flight B written test in Blackboard prior to signing up for the End of Course Check. At the completion of this course the student will have met the requirements for the Private Pilot Practical Test.

FLYA 3310 Commercial Flight A 1.0 SH Credit

_The student will progress from Unit 30 through Unit 36. For Jepp COM 141v3 COM 1 Oral/Flight is Unit 36 and is the Eval 1 Check. For Jepp COM 141v4.1 COM 1 Oral/Flight takes place in between Units 36 and 37 and is the Eval 1 Check. The COM 1 Oral/Flight will be administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will also complete the Commercial Flight A written test in Blackboard prior to signing up for the Eval 1 Check.

FLYA 3311 Commercial Flight B 1.0 SH Credit

The student will progress from Unit 37 through Unit 40. For Jepp COM 141v3 COM 2 Oral/Flight is Unit 40 and is the Eval 2 Check. For Jepp COM 141v4.1 COM 2 Oral/Flight is in between Units 40 and 41 and is the Eval 2 Check. The COM 2 Oral/Flight will be administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will also complete the Commercial Flight B written test in Blackboard prior to signing up for the Eval 2 Check.

FLYA 2313 Instrument Flight A 1.0 SH Credit

The student will progress from Unit 1 through Unit 13. INST 1 Oral/Flight (Unit 13) is the Stage 1 Check administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will also complete the Instrument Flight A written test in Blackboard prior to signing up for the Stage 1 Check.

FLYA 2314 Instrument Flight B 1.0 SH Credit

The student will progress from Unit 14 through Unit 29. INST 2 Oral/Flight (Unit 23) is the Stage 2 Check. INST Final Oral/Flight (Unit 29) is the End of Course Check. All Checks are administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will complete the Instrument B written test in Blackboard prior to signing up for the Stage 2 Check. The student will complete the FAA Aeronautical Knowledge Exam for Instrument Airplane prior to signing up for Instrument Flight B. At the completion of this course the student will have met the requirements for the Instrument Rating Practical Test.

FLYA 3312 Commercial Flight C 1.0 SH Credit

The student will progress from Unit 41 through Unit 51. COM C Oral/Flight (Unit 44) is the Stage 4 Check administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will also complete the Commercial Flight C written test in Blackboard prior to signing up for the Stage 4 Check.

FLYA 3315 Commercial Flight D 1.0 SH Credit

The student will progress from Unit 52 through Unit 67. COM D Oral/Flight (Unit 67) is the Stage 5 Check administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will also complete the Commercial Flight D written test in Blackboard prior to signing up for the Stage 5 Check. The student will complete the FAA Aeronautical Knowledge Exam for Commercial Pilot Airplane prior to signing up for Commercial Flight D.

FLYA 3316 Commercial Flight E 1.0 SH Credit

The student will progress from Unit 68 through Unit 76. COM E Oral/Flight (Unit 76) is the Eval 3 Check administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will also complete the Commercial Flight E written test in Blackboard prior to signing up for the Eval 3 Check.

FLYA 3317 Commercial Flight F 1.0 SH Credit

The student will progress from Unit 77 through Unit 87. COM Final Oral/Flight (Unit 87) is the End of Course Check administered by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor. The student will complete the Commercial F written exam in Blackboard prior to signing up for the End of Course Check. At the completion of this course the student will have met the requirements for the Commercial Pilot Practical Test.

Section 3 – GENERAL INFORMATION

Administrative

General

1) All operations will be conducted in accordance with current Federal Aviation Regulations and UCM policies.
2) All phases of training will be conducted in a professional manner. Individuals not adhering to professional standards of conduct and dress will not be allowed to conduct training and will be charged a NO SHOW.
3) Identification of airport personnel and flight students will be worn at all times.
    a. Students will display their university I.D. or have their photograph uploaded to their ETA profile.
    b. University employees will display their assigned I.D.

TSA Requirements

1) US Citizens are required to prove citizenship when receiving flight training toward a recreational pilot, sport pilot, private pilot, instrument rating or multiengine rating. Proof of citizenship includes:
    a. Valid, unexpired U.S. passport.
    b. Original birth certificate and government-issued picture ID.
    c. Original certification of birth abroad with raised seal and government-issued picture ID.
    d. Original certificate of U.S. citizenship with raised seal, or a Certificate of Repatriation, and government-issued picture ID.
    e. Original U.S. Naturalization Certificate with raised seal and government-issued picture ID.
2) A logbook endorsement will be given to the student upon proof of citizenship by their flight instructor.
3) Any non US citizen is required to receive TSA approval for flight training and must see the Chief Flight Instructor to begin the approval process.
4) Upon receiving the endorsement, the instructor will enter a currency into ETA.

Medical Certificates

Student pilots planning to pursue a Professional Pilot degree are recommended to obtain a first (1st) class medical prior to receiving flight training. All other aviation students are required to obtain a minimum of a second (2nd) class medical prior to receiving flight training.
Student pilots utilizing VA benefits for any flight training for a certificate or rating must obtain AND maintain a second class medical.

1) One introductory flight may be received while waiting for the medical.
2) A list of current Aviation Medical Examiners may be obtained from a flight instructor or the dispatcher.

Training

1) Each degree seeking student shall be enrolled in a flight course in order to conduct flight training at UCM.
    a. Class enrollment on campus meets this requirement.
    b. If a student has a “U” grade from previous semesters, that must be removed before a student will be allowed to enroll or train in any other flight course.
    c. Students training under Part 141 must complete an enrollment form and turn it into the Chief Flight Instructor, Assistant Chief Flight Instructor or a Check Instructor.
2) Incoming Professional Pilot students will be considered as “Pre-Aviation” students for the first semester and certain academic performance benchmarks must be met to be eligible to begin flight training:
    a. During the first semester, two courses will be required; AVIA 1310-FAA Private Pilot Requirements and AVIA 1903-Aviation History. These two courses will need to be completed with a final grade of “B” or better and the FAA Private Pilot Knowledge Test will need to be passed at the end of that semester. Students meeting this benchmark will be placed on the flight schedule and begin flight training the following semester.
    b. There is the possibility of beginning flight training during the first semester based on exemplary academic performance in AVIA 1310-FAA Private Pilot Requirements and AVIA 1903-Aviation History. At mid-term, the top academic performing students in these classes will be identified and the opportunity to begin flight training at that time may be offered to them, based upon resource availability.
3) Prior to scheduling a Practical Test the student must meet with the SOF and the following must be accomplished:
    a. Evidence of course completion
        i. Graduation Certificate. (Part 141 only)
        ii. Applicable aeronautical experience requirements met (Part 61 only)

iii. Proper logbook endorsements from their flight instructor.
iv. Original copy of written test results (if applicable).
v. Application for Airman Certificate/Rating (either on IACRA or FAA form 8710-1) **completed and signed** by the students' flight instructor.

Request for Advanced Placement in Flight Courses

Each student requesting advanced placement in flight courses or requesting credit for previous flight experience will

1) Present the request to the chief flight instructor.
2) Complete an oral and flight evaluation to determine the entry point in the UCM training course for the desired rating sought.
3) 14 CFR Part 141.77 requires that a student may be given credit towards the curriculum requirements of a course for previous pilot experience and knowledge, provided the following conditions are met:
   a. If the credit is based upon a part 141-approved training course, the credit given that student for the previous pilot experience and knowledge may be 50 percent of the curriculum requirements and must be based upon a proficiency test or knowledge test, or both, conducted by the receiving pilot school;
   b. Credit for training specified in paragraph (c) (1) or paragraph (c) (2) of 141.77 may be given only if the previous provider of the training has certified in writing, or other form acceptable to the Administrator as to the kind and amount of training provided, and the result of each stage check and end-of-course test, if applicable, given to the student.
   c. If the credit is not based upon a part 141-approved training course, the credit given that student for the previous pilot experience and knowledge shall not exceed more than 25 percent of the curriculum requirements and must be based upon a proficiency test or knowledge test, or both, conducted by the receiving pilot school;
   d. The receiving school determines the amount of course credit to be transferred.

Request for Credit for Certificates or Ratings Held

1) Each student that is requesting university credit based upon the possession of an FAA certificate or rating.
   a. Must complete an Application for Evaluation of Official Certifications, Licenses, Diplomas and Work Experience for College Credit form.
   b. Complete an end of course oral and flight evaluation for the certificate or rating.
2) Exceptions for those students seeking a degree in:
   a. Professional Pilot degree programs
      i. May not enter with any certificate higher than Private pilot with Instrument Rating.
      ii. Students entering with an Instrument Rating will not be eligible for the restricted ATP.
      iii. Commercial rated pilots must select another degree option.
   b. Flight Operations Management must complete one certificate or rating at UCM.

Flight Training Syllabus

1) All flight training will follow the approved Syllabus.
2) All students must have a printed syllabus appropriate to the training being received.
3) The student will have the syllabus at the airport for each flight lesson in order to prepare for the training activities of that day.
4) Each lesson in the syllabus will be completed unless approval for advanced placement has been granted.
5) All written tests, evaluation rides, and stage checks will be completed for each course regardless of whether the student is training under part 141 or part 61. No stage checks will be combined.

Training Records

1) The activity of each assigned flight activity will be recorded in ETA. There should be an entry for every day that the student is scheduled to attend.
2) After the student completes the End of Course stage check, if they want to review ground or procedures in an airplane or simulator, use the Refresher request.

Flight Scheduling

Flight training schedules will consist of weekly flight training periods.

1) Monday, Wednesday & Friday.
2) Tuesday & Thursday

The exact times will be determined based upon student and flight instructor availability. The scheduling of students to their flight slot will be conducted during the fall and spring semester finals weeks. The scheduling process is:

1) The student arrives and fills out their availability time sheet.

a. The student must have their class schedule and work schedule (if practical).
b. The student must be enrolled in the flight class they wish to complete the semester they are signing up for.
2) The student will present the availability sheet, class schedule and work schedule to the Scheduler.
3) Based on the availability sheet, instructor request, flight course the student is enrolled in, and resource availability, the Scheduler will determine which flight slot the student will be in and what instructor they will be with.
4) The scheduler will then assign the student a flight block.

If a student is unable to arrive in person during the scheduling time, the student must make arrangements by phone to ensure a scheduled flight block. The Scheduler will fill out the students' availability sheet for the student during the phone scheduling session. If no prior arrangements are made, the student will not be able to sign up for a flight slot until after all scheduling has occurred.

Ground Instruction

1) All ground instruction will be recorded in ETA and charged the ground instruction rate.
2) All ground instruction must take place at the airport or via zoom.
3) Each flight will have a minimum 12 minute preflight and 18 minute post flight briefing.
   a. The preflight should detail the lesson objectives, review procedures and maneuvers already introduced, and introduce new material.
   b. The post flight briefing should review the maneuvers performed during the flight, review the performance of these maneuvers, record the training in the appropriate records and logbooks and assign study materials for the next lesson.
   c. Additional time may be necessary.
4) When administering a pre-solo written exam, total time for test completion and corrections will be billed to student.

Flight Training Attendance

1) Upon arrival at the airport to receive any type of instruction, the student must check in with the dispatcher. If not checked in, the student's attendance may not be recorded and a no show may be incurred.
2) Students will attend all flight classes regularly until the course requirements are completed. Absence does not relieve the student of the responsibility for meeting all course requirements.
3) Approved absences are listed in the university student handbook and include;
   a. Illness which prevents flying or ground training.
   b. Death of an immediate family member.
   c. Weather prohibited flight training. (The student will be notified by their instructor. Otherwise plan to do ground instruction.)
   d. FAA Tests
      i. Practical tests
      ii. Written tests
   e. Approved University activities (Written excuse must be submitted.)
      i. Field trips
      ii. Campus Activities
      iii. Aviation Fraternity Activities.
   f. Instructor illness. (The student will be contacted ASAP)
   g. Examples of unexcused absences include, but are not limited to:
      i. Sports training times
      ii. Music/choir practice
      iii. Work
      iv. Homework
      v. Paper due or a class assignment.
4) Notification of an approved absence must be submitted to the Chief Flight Instructor, Assistant Chief Flight Instructor or the Supervisor of Flying (SOF) at least two hours in advance.
5) If time does not allow for the two hour minimum, the student will phone the airport and discuss the situation with the Chief Flight Instructor, Assistant Chief Flight Instructor, or the Supervisor of Flying (SOF).
6) Notify the assigned flight instructor as well, but they are not authorized to excuse any absence.
7) An unexcused absence or failure to adhere to this policy will result in a NO SHOW. (Refer to NO SHOW section of this manual to see ramifications).
8) The dispatcher will record NO SHOWS and any other absences in the student's training record.

No Shows

1) All un-excused NO SHOWS will deduct 2 hours' worth of ground instruction from the student's flight account.
2) Listed below are all the applicable reasons a student will receive a NO SHOW or UNPREPARED:
   a. If the student is 15 minutes late, the dispatcher will automatically NO SHOW the student.
      i. The student may do ground or flight if time is available.
   b. If the student is unprepared, the instructor has the discretion to mark the lesson as "UNPREPARED". .
   c. Use of alcohol or drugs which prevents a student from flying during their assigned flight slot will not excuse the student from class attendance and result in an UNPREPARED
   d. If the student is not adhering to professional standards of conduct and dress will not be allowed to conduct training and will be charged an UNPREPARED.
3) If the student believes the NO SHOW should be excused, the student must contest the NO SHOW, with proof, within five (5) business days.
4) After two (2) un-excused NO SHOWS, the student must meet with the Chief Flight Instructor, after three (3) un-excused NO SHOWS the student must meet with the Chair of the School of Aviation and will be removed from the schedule for at least 60 days. Six (6) NO SHOWS will result in failure of the course.

Students of Concern

1) Any student displaying inappropriate behavior, unprofessionalism or unsafe practices and processes will be considered a student of concern. These specifically include:
   a. Any student that receives two (2) NO SHOWS in the same course.
   b. Any student that displays unprofessionalism.
   c. Any student that demonstrates unsafe flying.
2) All students of concern will be referred to the Review Board for evaluation of possible termination from the program.

Student Training Evaluation Program (STEP)

1) Any student struggling with aspects of pilot training throughout their flight course, yet displays a consistent attitude of professionalism and hard-work ethics, will meet with the UCM Standardization and Training Officers for a detailed Training Plan to assist in their flight goals. This also includes:
   a. Any student that unsatisfactorily completes a lesson three times.
   b. Any student that does not progress to the next lesson in a timely manner.
   c. Any student that fails a stage check twice.
   d. Any student identified by a CFI as needing further assistance.
2) The student will receive a mentor to which they will report.
3) Any student not progressing within the training plan in a timely fashion will meet with a Review Board. This includes, but it is not limited to:
   a. Any student that fails the same stage or evaluation checks (either oral or flight) three (3) times will be removed from the flight schedule and considered for termination by a review board.
      i. The third attempt at a stage or evaluation check will be completed with the Chief Flight Instructor, Assistant Chief, or a designated check instructor.
      ii. The Review Board may allow exceptions on an individual basis.
   b. Time specified in training plan.
4) A student may at any time consult with the Chief Flight Instructor if they believe that flight training is not progressing as desired.

Flight Fees

1) Flight fees will be deposited by the Student Services Coordinator with enrollment in flight courses. Funds will be removed from the balance as expenses at the airport are incurred.
   a. Course fees are based on the average amount of hours required to complete a course. Additional funds may be required to complete the course.
   b. If a course is completed in less hours the remaining funds can be credited to the student.
2) A student is expected to fly a minimum of 20 flight hours for each one-semester hour in which they are enrolled and should plan for these expenses.
3) The costs per flight hour will vary based on which aircraft is flown. The cost of ground training is the same as flight training
   a. In addition to the basic aircraft rental cost, the student will pay for flight and ground instruction.
   b. The instructor giving the ground instruction will ensure a reservation is made in scheduling system, and the student is checked out and checked in by the dispatcher and the appropriate amount of ground time is recorded.

4) If the student fails to attend a scheduled session, they will be charged a NO SHOW fee of 2 hours of ground instruction.
5) The **student** is responsible for monitoring the flight account to ensure there is a positive balance to continue flight training on a daily basis. There must be plan for sufficient funds to fly for the entire semester.
6) Dispatchers will not allow a student to fly if there is a negative balance unless:
   a. The student has made prior arrangements with the airport accounting office and the student has been given permission for a negative bypass on the system.
   b. Renter pilots may pay by the flight as long as prior arrangements have been made with the office professional.
7) The rates for instruction and aircraft rental are posted next to the dispatch desk. This list is updated as necessary to cover any increased costs associated with operation of the aircraft. A request for a copy may be made at any time from the dispatcher.
8) All students will be responsible for paying the difference of fuel costs when leaving Skyhaven, if the fuel cost exceeds above $1.00 a gallon from Skyhaven's published fuel prices.

Rolling Enrollment

1) Any student that enrolls in a flight course after the last day to add a class, as published by the university, will be considered a rolling enrollment. Rolling enrollments will be issued a "U" grade at the end of the semester and will have 16 academic weeks (from the date of enrollment) to complete the requirements of the course.
2) Any student not meeting the FAA knowledge test requirement for the next course to be enrolled in will have 1 week to complete the FAA knowledge test for that course before being removed from the flight schedule.

Incomplete Grades

1) Receiving an incomplete grade is not a student option except for rolling enrollments. Incomplete grades are assigned at the discretion of the Chief Flight Instructor. DO NOT assume you will receive a "U"grade for incomplete work. If a student receives a "U" grade they have the next semester to complete the course requirements. If the requirements are not completed, the university will change the "U" to an "F" and you will be required to re-enroll in the course and complete the requirements.

Pre-Training Briefings

1) Pre training briefings will consist of flight training information pertinent to the course in which the student is enrolled and will include the course description, grading system, U grades, airport costs, flight fees and required written exams.
2) Pre-training briefings will be conducted anytime a new flight class is started
3) The student will meet with the Supervisor of Flight to cover the areas outlined on the Pre-Training Briefing checklist.

UCM Flight Information Files (FIF)

1) The FIF page of ETA contains important and timely information pertinent to flight operations at UCM.
2) Each person requesting to use a UCM aircraft or flight training device shall read all published FIFs prior to being dispatched and confirm on their ETA account they have read them.

Dress Code

1) Students will dress appropriately when receiving **any ground or flight** training.
2) Clothing should be appropriate to the day's weather conditions, i.e. coats, hats, and gloves during cold weather.
3) The following items are prohibited at all times:
   a. Shorts that are shorter than fingertip length.
   b. Offensive graphics on T-shirts or other clothing.
   c. Sleeveless shirts.
   d. Low cut shirts.
   e. Skirts or dresses.
   f. Tube tops.
   g. Ragged, poorly cut off or excessively worn shorts.
   h. Open toe shoes, sandals, heels, or flip flops.
   i. Clothing or jewelry that presents a safety issue.

Training vs. Rental

1) All training flights must be:
   a. Approved by a UCM flight instructor.
   b. Released through the UCM dispatcher.
   c. In compliance with the FARs and UCM policies.
2) Pilots desiring to carry passengers will do so as a rental operation:
   a. Rental policy rules will apply.
   b. Rental time will not be counted as training time towards any syllabus.
3) UCM flight students may be allowed as an observer when the student and instructor agree and they do not create a distraction to training.
   a. The observer must be observing training that is similar to their own, i.e. student pilots may observe other student pilots.

Food/Beverages

1) No food or beverages of any type, other than bottled water, are to be carried in any UCM aircraft or simulators.
2) The use of tobacco is prohibited in all UCM aircraft and simulators.

Aircraft Rental

1) Aircraft rental is any personal use of an aircraft in which the flight is not part of any UCM training syllabus.
   a. Any flight with passengers is considered a rental flight.
2) To rent an aircraft from UCM, the renter must:
   a. Hold a pilot certificate other than Student Pilot.
   b. Hold a current and appropriate medical certificate.
   c. Meet any currency requirements per the FARs.
   d. Receive a rental checkout from an authorized UCM flight instructor in each type of aircraft they intend to rent.
      i. The checkout content and length will depend upon the certificates, flight experience, and the type of aircraft in which a checkout is being received. Refer to Rental Checkout Qualifications Chart below.
      ii. All checkouts must be arranged through the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor.
3) IFR rental privileges also require the following:
   a. Instrument currency per FARs.
   b. Instrument stand ride from the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor.
   c. Weather limitations based on actual IFR experience as outlined in the IFR Privileges Chart.
4) Renter pilots are not authorized to use the aircraft to give or receive flight instruction.
5) No intentional single engine operations or repetitive takeoffs and landings are permitted in multi-engine aircraft during rental flights.
6) Aircraft that are rented for overnight trips require approval of Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor and may be charged a minimum of 3 hours aircraft rental time for each night out, unless prior arrangements have been made with the Chief Flight Instructor.
7) All rental flights not flown in the vicinity of Skyhaven must file a FAA flight plan and leave a copy with the dispatcher with a contact phone number.
8) Landings are to be made on paved runways **ONLY** unless prior authorization is given.

9)

Rental Checkout Qualifications

Aircraft Type	Total Time	Time in Type/Class	And/or	Hours Dual Checkout
Single engine, fixed gear	35	5	And/or	1-3
Baron	300	25 (Multi)	And	3-5

IFR Privileges Chart

Actual IFR Experience	Ceilings	Visibility
0-15	1,000' AGL	3 SM
16-25	600' AGL	2 SM
26 or more	Minimums	Minimums
Night IFR	1,000' AGL	3 SM

Aircraft Retrieval

If a stranded aircraft that a student or renter has been dispatched must be retrieved, the student or rental will be charged as follows:

1) Aircraft stranded for mechanical reasons will be retrieved at no cost.
2) Aircraft stranded for weather or any non-mechanical reason will be charged for flight time and pilot time as appropriate to retrieve it.

Dispatch Operations

Aircraft Priority List

Aircraft are dispatched to flight students and renters on a priority basis. Anytime there is an aircraft shortage due to maintenance on the aircraft, the following priorities are:

1) Check Rides
2) Stage/Evaluation Checks
3) Assigned Flight Slots
4) Arranged Flight Training
5) Reserved Rental Flights

Administrative flights are determined by the SOF as far as priority.

Preflight Action Sheets

1) Preflight action requirements per FAR 91.103 will be completed prior to any dispatch of UCM aircraft.
2) Conditions to be computed include but are not limited to the following:
   a. Weather conditions.
   b. Density altitude.
   c. Aircraft performance and limitations.
   d. Weight and Balance.
   e. NOTAMS & TFRs
   f. The only official briefing source authorized by UCM is (800)WXBRIEF OR WWW.1800WXBRIEF.COM
3) Completion of the UCM Preflight Action sheet will meet the above requirements.

Dispatch Procedures

Receiving an aircraft from the dispatcher requires the following:

1) A current and complete preflight sheet presented to the dispatcher and cross-country flight plan, if applicable.
2) PIC Authorization of the activity.
3) Adequate funds available in the student's flight account.
4) An inspection of logbooks and certificates for proper endorsements, checkouts, and ratings is required for student pilots or certain rental flights.

Inoperative Equipment and Discrepancies

1) Each pilot will review the aircraft discrepancy card and review inspection statuses in RMS at http://www.talon-systems.com/ucm/rms (username: student, password: student) to ensure airworthiness prior to each flight.
2) If inoperative equipment is discovered during preflight inspection refer to FAR 91.213 and the aircraft POH to determine whether regulations require the equipment and what action to take prior to flight.
3) If assistance is needed, speak to a flight instructor or check instructor for help in determining the status of the aircraft.
4) Any question of airworthiness, inoperative equipment, or reliability of equipment should be recorded in the aircraft discrepancy log.
5) Record all discrepancies on the discrepancy form on the aircraft record book.
   a. Fill information out as completely as possible.
   b. Only one discrepancy per line. If there multiple discrepancies use multiple lines.
      i. Use more than one line for a discrepancy if needed.
      ii. Notify the dispatcher of the discrepancy upon return.
      iii. Return to service authorization is indicated on the discrepancy card and will be signed off by an A&P or the person doing an operational status check (ops check).
6) If inoperative equipment or a discrepancy is encountered away from Skyhaven Airport and repair is needed, the Director of Maintenance, Chief Flight Instructor, or Assistant Chief Flight Instructor must give authorization for repair.

Ramp Operations

Preflight and Starting

1) Preflight and starting will be accomplished with the checklist provided for each airplane.
2) If the checklist is missing, notify dispatch and use the checklist in the aircraft POH.
3) **Hand Propping of aircraft is not allowed!**
   a. Contact maintenance for assistance.
   b. If maintenance is not available, aircraft will be grounded.

Taxiing and Run-Ups

1) Crosswind taxi techniques are expected during **all** taxi operations.
2) Use of mixture leaning techniques to prevent plug fowling is preferred.
3) Taxi at a speed and manner consistent with the surface, winds, and proximity of other aircraft or objects.
4) Turn on the taxi light as recommended in AC 91-73b.
5) Smooth application of power and brakes is expected, using only the minimum of either to move and control the aircraft.
6) Run-ups will be in areas well clear of the active runway, facing into the wind, with the propeller over a suitable surface.
7) Solo students are prohibited from pushing the aircraft back in the hangars. Park on the lower ramp.

Parking

1) All planes must be parked on the ramp.
2) The furthest South parking spot that does not have rope is not to be used as a parking spot.
3) Ideally, park at the furthest spot to the South and next to an airplane to make it easier for the next person to park their plane.
4) If Dispatch asks you to hangar the plane, park in front of the hangar and push the plane back (Note: this should include at least one employee).
5) All solo flights will be scheduled to return before line service leaves for the day.
   a. Due to seasonal changes in sunset if a solo flight must return after line service leaves it can be left on the ramp if good weather is expected the next day and low temperature is expected to be above 40F

Securing Of Aircraft

1) Aircraft will be parked in the designated areas and not in transient parking unless otherwise requested.
2) Aircraft will be tied down in the following manner:
   a. The rope will be run through the ring and pulled tight against the ring.
   b. A half-hitch will be tied tightly against the tie down ring.
   c. Any remaining rope will be tied off.
   d. Tie the wings first and then the tail.
   e. Aircraft control locks will be installed.
   f. Students at en route stops on cross-country flights are responsible for security of the aircraft.

Hangar Door Operations

Student Pilots may operate Hangar Doors if checked out by their instructor and successfully soloed. If a student damages a hangar door because of improper operation, they will be marked as 'Unprepared' and charged two (2) hours of ground;

1) WHEN OPERATING A HANGAR DOOR:
   a. Unlock the three hangar door locks, ensuring the locks are out of the door movement area.
   b. Ensure the locks are unlocked by visually confirming;
   c. Call out, "Clear door."
   d. Press 'Open' to open the door. Remain close to the operational controls to stop door movement during an emergency.
   e. Never walk under a door in motion.
2) When closing a hangar door:
   a. Visually confirm that there is nothing in the way of the door movement area;
   b. Call out, "Clear door";
   c. Press 'Close' to close the door. Remain close to the operational controls to stop door movement during an emergency;
   d. After door has closed, lock the three hangar door locks.
   e. Never walk under a door in motion.

Servicing Operations

1) Notify line service when fuel is needed.
2) Fuel sampling:
   a. If clean, fuel should be returned to the fuel tank.
   b. If contaminated and using GATS jar, filter fuel back into tank, otherwise fuel should be placed into red fuel cans positioned along the flight line.
   c. Under **NO** circumstances will fuel be dumped onto the ground.
3) Notify line service when oil is needed.
   a. Do not mix makes or grades of oil.
   b. The grade of oil currently in use can be found on the right side window of single engine aircraft and both sides on multi engine aircraft, or in the engine logbooks.
4) Students at en route stops on cross-country flights are responsible for supervision of aircraft servicing.

Starting Precautions

1) Follow any cold weather starting procedures as described in the POH.
2) Frosted spark plugs occur when the engine fires and then dies in below freezing conditions. Water has condensed and frozen on the tip of the spark plug. If this occurs, wait five minutes and try starting again.
3) Excessive cranking causes the starter to overheat and drains the battery. Avoid cranking for more than 10 seconds each start attempt. If after three 10 second periods there should be a two minute cooling period to avoid damage to the starter.
4) After engine start during cold weather operations, allow engine to idle between 800 - 1,000 RPM for 2 to 5 minutes to warm up.

Batteries

1) Report any low or dead batteries to dispatch or maintenance so that they may be charged or removed from the aircraft.
2) Frozen batteries may crack and allow corrosive chemicals to contact the aircraft structure.

Cold Weather Ramp Operations:

NOTE: All temperatures referred to below are reported “ground” temperatures.

1) Preheating:
   a. Use sump heater is recommended when air temperatures are below 40°F.
   b. Use of the sump heater or preheat is **required** when air temperatures are below 20°F, for the first flight of the day and thereafter if it’s been two hours since the last flight.
   c. Notify line service when preheat or electrical power source is needed.
2) Disconnecting Engine Sump Heater:
   a. Unplug the extension cord from the wall electrical outlet.
   b. Disconnect the aircraft engine sump heater plug from the extension cord.
   c. Coil the electrical extension cord neatly on the floor by the electrical outlet for subsequent use.
3) Connecting Engine Sump Heater:
   a. Confirm the extension cord is unplugged from the electrical outlet.
   b. Connect the aircraft engine sump heater plug to the extension cord first
   c. Connect the plug the extension cord into the wall electrical outlet.
4) Deicing:
   a. Absolutely no ice scrapers will be used on UCM aircraft.
   b. Use the soft bristle broom on metal surfaces only to remove snow.
   c. Rub windshield with soft rags only in a vertical motion.
5) Winter Kits - Install and remove winter kits according to the following:
   a. Above 20°F/-7°C – winter kits OFF
   b. At or below 20°F/-7°C – winter kits ON

Flight Operations

Stage and Evaluation Checks

1) To schedule a check, the flight instructor will submit the lesson request with no instructor named and no date. When the Scheduler posts the flight schedule, they will send a confirmation to the instructor and student.
2) Prior to scheduling a stage or evaluation check:
   a. The instructor must complete the Evaluation, Stage, or End of Course Checklist as appropriate.
   3) The Scheduler will schedule the stage and evaluation checks for the students during the students assigned flight time if possible.

Training Areas

1) All UCM training flights other than cross country flights will operate within one of the UCM training areas.
2) A training area will be selected and recorded by the dispatcher on the daily flight board.
3) Solo student pilots have priority to training areas 4 LOW and 5 LOW.
4) Each training area is limited to 4 aircraft. You may be contacted via radio by dispatch and asked to move out of areas 4 LOW or 5 LOW if needed for a solo student pilot.
5) Upon reaching 3,000' or beyond 3 n.m. from the airport, Whiteman Approach (127.45) will be used to provide flight following for the local areas as well as for cross countries.
6) Caution areas:
   a. The Victor airways north and southwest.
   b. The overlying Military Operations Area (MOA).
   c. The approach corridors for:
      i. GPS 19
      ii. GPS 01
      iii. VOR-A
7) Normal training areas are classified as low or high. A low training area is from 1,300 ft MSL to 4,000 ft MSL. A high training area is from 4,000 ft MSL to 8,000 ft MSL. Training areas are labeled 1 through 6. All aircraft training in high training areas will be in contact with Whiteman Approach for VFR flight following. The boundaries are described as follows and charted on a wall map near dispatch and in each training aircraft for reference purposes.
   a. Area 1 includes the East Kansas City Airport for landing practice. This area is **not** available for solo student pilots. The boundaries are:
      i. Northern – Missouri River and Highway 24.
      ii. Southern – I-70
      iii. Eastern – Highway 131
      iv. Western – Highway 7
   b. Area 2 includes the Higginsville and Lexington Airports for landing practice. This area is **not** available for solo student pilots. The boundaries are:
      i. Northern – Missouri River
      ii. Southern – I-70
      iii. Eastern – Highway 23
      iv. Western – Highway 131
   c. Area 3 includes the Marshall Airport for landing practice. This area is **not** available for student pilots. The boundaries are:
      i. Northern – Missouri River
      ii. Southern – I-70
      iii. Eastern – Highway 65 and 41
      iv. Western – Highway 23
   d. Area 4 includes Skyhaven Airport for landing practice. This area is available for student pilots. Area 4 is divided into two areas; a HIGH (above 4,000 MSL) and a LOW (Below 4,000 MSL).
      i. Northern – I-70
      ii. Southern – Highway 50
      iii. Eastern – Highway 13
      iv. Western – Highway 131
   e. Area 5 includes Skyhaven Airport for landing practice. This area is available for student pilots. Area 5 is divided into two areas; a HIGH (above 4,000 MSL) and a LOW (Below 4,000 MSL)
      i. Northern – Highway 50
      ii. Southern – Abandoned railroad

iii. Eastern – Highway 13
iv. Western – Highway 131

f. Area 6 includes Clinton Airport for landing practice. This area is **not** available for student pilots.
i. Northern – Abandoned railroad
ii. Southern – Highway 7
iii. Eastern – Highway 13
iv. Western – Highway 131 and a line from Holden to Urich

Minimum Training Altitudes

1) Altitudes selected will depend upon type of training and aircraft utilized.
2) Practice area altitudes are normally 2,500 ft to 4,000 ft MSL for single engine.
3) Multi engine practice area altitudes are 4,000 ft to 8,000 ft MSL
4) Ground reference maneuvers will be performed at approximately 1,000 ft AGL or 1800 ft MSL.
5) No flight over Warrensburg at less than 3,000 AGL is allowed.
6) Minimum altitudes of 500 ft AGL will be observed at all times, except during takeoff and landing at approved airports.

Non-Paved Airports/Runways

1) UCM aircraft operations on other than hard surface runways are allowed only on public use airports identified on FAA publications and approved by the Chief Flight Instructor. Operations on other than hard surface runways that are not for public use must receive prior permission from the Chief or Assistant Chief Flight Instructor. The following procedures will be used in order to land on a non-paved runway:
   a. Call the field operator to determine the status of the runway.
   b. Check applicable NOTAMs.
   c. Perform a low approach prior to landing on the field to inspect it for water/high grass/debris/etc.
   d. The instructor must have landed on that runway prior to using it for student instruction or been given authorization by the Chief Flight Instructor or Assistant Chief Flight Instructor.
      i. The following airports have been authorized by the Chief Flight Instructor to land at without having landed there:
         1) Marshal Missouri, KMHL
         2) Gastons, 3M0
         3) Miami County, K81 – If the instructor has never landed on the grass runway, first land on the pavement to inspect the grass runway from the ground.
         4) Lincoln Missouri (0R2)
         5) Kingsley Field, Miller. MO MO9

2) All other than hard surface landings will be made with an instructor on board. All rental flights are **PROHIBITED** from landing on any runway that is not paved. Unless prior authorization is given.

NOTE: UCM aircraft are not allowed to operate on gravel runways. Public use grass/turf runways are the only approved, other than hard surface runway for UCM aircraft to conduct operations.

Landings

1) Touch and Go Landings:
   a. Touch and go landings are not allowed on runways with a length of less than 3,500 ft (runway 14/32).
   b. Touch and go landings are not authorized unless the aircraft has touched down within the first 1/3rd of the runway used and on centerline.
   c. Once a student has at least their private pilot certificate and has been trained by a CFI on touch and go procedures, they may perform them during a solo flight in fixed gear airplanes only.
   d. Touch and go landings are approved in a complex plane as long it is a dual flight.

2) Stop and Go Landings:
   a. Stop and go landings are approved as long as it does not conflict with traffic in the pattern.
   b. Stop and go landings are not allowed on runways with a length of less than 3,500 ft (runway 14/32).
   c. Stop and go landings are not authorized unless the aircraft has touched down and stopped with at least 2000' of runway distance remaining and on centerline.
   d. Once a student has at least their private pilot certificate and has been trained by a CFI on stop and go procedures, they may perform them during a solo flight.

Student pilot landing restrictions:

1) Dual:
   a. Touch and go and stop and go landings are authorized **only** when flying dual.
      i. Prior to students practicing touch and go and stop and go landings with an instructor, the flight instructor must demonstrate the procedure.
   b. Touch and go landings are **NOT** authorized at night.
   c. Non-paved airport/runway landings are authorized only when flying dual and must be to a full-stop.

2) Solo:
   a. Student pilots must complete full stop landings.
   b. Touch and go and stop and go landings are **NOT** authorized.
   c. Landings must be made on paved surfaces.

Private - Commercial pilot landing restrictions:

1) Touch and go and stop and go landings are authorized during daylight only for pilots holding private or commercial certificates as long as they have been given instruction on touch and go landings from a UCM instructor.
2) Non-paved airport/runway landings are allowed by private and commercial rated pilots in C-172Rs, C-172Ss, the C-172P, C-152 and PA-18 as long as the student has completed the required training to conduct other than hard surface landing operations.

Complex aircraft landing restrictions:

1) All landings in complex aircraft will be to a full stop during a solo flight.
2) Touch and go and stop and go landings are authorized during dual flights only.

Off Airport Landings

1) No off airport landings are authorized in any powered, fixed wing aircraft that is **not in distress**.
2) If an off airport landing occurs:
   a. Immediate notification of the Chief Flight Instructor, Assistant Chief Flight Instructor, Chief of Maintenance, or a Check Instructor is required.
   b. Aircraft will be cleared for flight by maintenance.

Collision Avoidance

1) All UCM aircraft with follow FAR 91.113 in regards to right of way rules.
2) No intentional maneuvering of a UCM aircraft to any other aircraft within 2,000’ horizontally and 500’ vertically.
3) No formation flying of UCM aircraft is allowed, planned or otherwise.
4) Clearing turns are **required** prior to performing each maneuver.
5) Aircraft conducting training outside of the traffic pattern will contact Whiteman Approach on 127.45 MHz for traffic advisories and VFR flight following.
6) All departing aircraft will climb at V_Y until reaching 3,000 ft MSL or 3 NM from Skyhaven, whichever occurs first.
7) All arriving aircraft will descend to traffic pattern altitude, slow down and complete Before Landing Checklist at least 3 NM from Skyhaven Airport.
8) Aircraft landing lights will be on while in the vicinity of an airport and anytime when operating in marginal VFR (3-5 SM visibility).

Maneuver Limitations

1) Repetitious practice of any one maneuver can lead to complacency.
2) No maneuver may be practiced more than 5 times in a row.
3) If additional practice for a maneuver is required, move on to another maneuver and return to original one later.
4) Any maneuver not previously practiced with and approved by a flight instructor will not be practiced during solo flight.

Fuel and Oil Requirements

1) All flight planning concerning fuel requirements will be in accordance with the POH of the training aircraft being used.
2) Local flights within the designated flight training areas will depart with no less than 2 hours of fuel.
3) Cross-country flights will refuel as necessary:
   a. VFR Day flights will depart with enough fuel to reach destination plus 1 hour fuel at cruise power.
   b. VFR night flight will depart with enough fuel to reach destination plus 1 ½ hours fuel at cruise power.
   c. All IFR flights will depart with enough fuel to reach destination, fly to alternate and have minimum reserve of 1 ½ hours minimum fuel after reaching the planned alternate airport at cruise power.
4) Student Pilots will refer to the Private pilot section 4 for fuel requirements.
5) Oil requirements allow for operation to terminate with no less than two quarts below full capacity.

Cold Weather Flight Operations

All temperatures listed below are surface temperatures for aircraft other than the Baron.

1) Operating at low power settings during cold temperatures is limited as follows:
   a. Taxi Operations:
      i. If the aircraft has been plugged in or preheated, taxi operations are conducted as normal.
      ii. If the aircraft has NOT been preheated, the oil temperature indicator may not be in the green band prior to takeoff if outside air temperatures are very cold. Allow for a suitable warm-up period after starting (2 to 5 minutes at 800 - 1,000 RPM). During taxi, do not exceed 1,300 RPM for a period of 10 minutes after engine start. After a suitable warm-up period, accelerate the engine several times to higher engine RPMs. The airplane is ready for takeoff if the engine accelerates smoothly and the oil pressure remains normal and steady.
   b. From 20°F/-6°C to 16°F/-8°C
      i. Monitor cylinder head temperatures (if equipped), exhaust gas temperatures, and oil temperatures for proper operational limits.
      ii. Maintain in-flight power settings at or above 1,500 RPM or 15" MAP.
   c. From 15°F/-9°C to 11°F/-11°C
      i. Cruise maneuvers only.
      ii. Solo flights are authorized for students that demonstrate satisfactory knowledge and skill regarding cold weather operations.
      iii. Monitor cylinder head temperatures (if equipped), exhaust gas temperatures, and oil temperatures for proper operational limits.
   d. From 10°F/-12°C to 1°F/-17°C
      i. Dual flights only.
      ii. Cruise maneuvers only.
      iii. Monitor cylinder head temperatures (if equipped), exhaust gas temperatures, and oil temperatures for proper operational limits.
   e. 0°F/-18°C or below
      i. Flight operations **cease**.
2) Due to the possibility of thermal shock
   a. All power changes at cold temperatures should be made smoothly.
   b. Abrupt power changes will not be made.
   c. Keep fuel air mixture leaned out during descent.
   d. Monitor and maintain the greatest possible engine heat for the power setting selected below 20°F/-7°C.
   e. Power off conditions can be simulated at full flaps and 1,500 – 1700 RPM during cold temperatures.
3) Operating the engines at low power settings in the Baron.
   a. No simulated or actual engine failures when the inflight air temperature is less than 20°F/-7°C
   b. No simulated emergency descents when the inflight air temperature is less than 20°F/-7°C
   c. During cool weather operations perform a maneuver at low power setting (ie slow flight) to allow the engines to cool down before performing a low power setting maneuver.

Cross Country Training

1) Flight plans will be filed with FSS and a copy will be left with the UCM Dispatcher.
2) Any overnight flights must be approved by the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor and must leave contact phone number at destination.

3) Any flights requiring fuel en route should request the appropriate fuel card from the dispatcher. Student ID will be required to receive a fuel card. All receipts and fuel cards will be placed in the aircraft dispatch book (where tach & Hobbs times are recorded).
4) Failure to return card after the flight will result in the suspension of flight privileges until the card is returned.

Weather

Weather Briefings

All flights will receive an official FAA weather briefing from 1 (800) WXBRIEF or WWW.1800WXBRIEF.COM

Rain and Snow

All flight operations will cease when:
1) Snow depth is ¾ of an inch or greater on runway or ramp surfaces.
2) Braking action is reported as:
    a. Student pilots - Good
    b. Solo flights - Medium.
    c. Dual flights - Poor.
3) Standing water is ½ inch or greater on runway or ramp surfaces.
4) No flight operations in UCM aircraft may conducted:
    a. Within 20 NM of a thunderstorm.
    b. With known icing or icing forecast within 1 hour of departure or arrival time at Skyhaven or along route.
5) Simulator operations will cease and simulators will be shut down when thunderstorms are within 20NM.

Excessive Heat

When the heat index reaches 100°F, flight training is optional and may be rescheduled, suspended, or terminated.

VFR-On-Top

VFR-On-Top is not authorized unless:
1) The pilot is rated and current for IFR by FARs and UCM policies.
2) The aircraft is equipped and legal for IFR.
3) The weather does not exceed the IFR requirements for the pilot.

Traffic Pattern Ceiling

Due to the Class E airspace Transition Area a ceiling of not less than 1,500 AGL is required for VFR operation of UCM aircraft within the traffic pattern.

Wind

1) All operations will be suspended when
    a. 30 kts surface winds reported as either; sustained wind or peak gust.
    b. Gust factors reaching 15 kts regardless of sustained winds.
2) 25 kts sustained wind or peak gust - Dual flights ONLY.
3) Maximum tailwind component permitted for takeoff or landing is 5 kts.
4) Any time operations are suspended due to winds it will not resume for 30 minutes after excessive wind. This is a rolling time frame. If there is a gust that suspends training and another gust 10 minutes later, the 30 minute time starts over.
5) Crosswind taxi techniques will be used during taxi.
6) Tailwheel wind limitations are as follows:
    a. 25 kts total wind
    b. 10 kts crosswind
    c. 10 kts gust factor

IFR Privileges

1) Flight training in IMC will only be conducted with students who have completed Stage 1 of the Instrument Syllabus or are instrument rated and the instructor is current.
2) For students to qualify for IMC privileges in UCM aircraft
   a. If six calendar months has elapsed since completion of Instrument Practical Test
      i. You must complete an instrument proficiency check
      ii. To retain IFR privileges, an instrument proficiency check must be accomplished every six calendar months with an instructor designated by the Chief Flight Instructor, Assistant Chief Flight Instructor or a Check Instructor.
3) For instructors to qualify for IMC privileges in UCM aircraft you must have
   a. Instrument currency requirements of the FARs.
   b. Obtain an initial instrument standardization ride with the Chief Flight Instructor, Assistant Chief Flight Instructor or a Check Instructor.
   c. To retain IFR privileges, an instrument standardization ride is required every twelve calendar months with the Chief Flight Instructor, Assistant Chief Flight Instructor or a Check Instructor.
4) For flight in IMC the following weather criteria will be followed:

IFR Privileges Chart

Actual IFR Experience	Ceilings	Visibility
0-15	600' AGL	2 SM
16 or more	Minimums	Minimums
Night IFR	1,000' AGL	3 SM

5) These additional general weather conditions also apply:
   a. No known icing or forecast icing within 1 hour of proposed flight.
   b. No flight within 20 NM of thunderstorms.
   c. Weather en route and at the destination must be holding steady or improving.
   d. The weather at the time of departure must allow for the flight to return to Skyhaven in the event of an emergency.

Safety

Accident/Incident Procedures

Any pilot involved in any accident, incident, or abnormal flight activities shall:

1) Contact the Chief Flight Instructor, Assistant Chief Flight Instructor, or Chief of Maintenance.
2) Contact emergency services if necessary.
3) Never make a statement to the press.
4) If pressed for a statement by an official:
   a. As required by FARs, give a statement to the FAA, NTSB, and the UCM investigation team.
   b. This can be done at a convenient time and place.
5) Keep any passengers together and removed from other activities and do not let them move anything from the wreckage, except for medical reasons.
6) Never relinquish certificates to any investigator. A formal set of protocols must be followed before relinquishing a certificate, unless surrendered voluntarily.
7) The pilot is obligated to assist the FAA and the NTSB in the investigation; however,
   a. Do not give any information that could cause certificate action without legal assistance or representation.
   b. Let the Chief Flight Instructor determine if any one aboard the aircraft is capable to give an interview.
   c. If an interview is given, ask for and receive a written agreement from the FAA or NTSB investigator stating that anything said will not be used in certificate action or civil/criminal proceedings.
8) Fill out a NASA Report Form within 10 days. Make a copy for yourself and the UCM Investigation Team, and your legal representative.
9) Preserve all records:
   a. Aircraft logbook and inspection records.
   b. Airmen certificates including pilot certificate, flight instructor certificate, and medical certificate.
   c. Preflight planning including any weather notes, navigation logs, preflight action, flight plan forms, etc.
10) Fill out the Aviation Safety Incident/Hazard Report

Investigation Team

In the event of an accident or incident there will be an activation of the Investigation Team. The makeup of the team can be modified to suit the occasion; however, it should consist at a minimum of one person from of each of the following areas:

1) Accident investigation.
2) UCM Flight Operations.
3) Human Factors.
4) Aviation legal expertise.
5) Aircraft maintenance.

Alcohol and Drug Use

1) No person shall operate a UCM aircraft:
   a. Within 12 hours of alcohol consumption.
   b. While under the influence of alcohol.
   c. Having a blood alcohol content of 0.04% or greater.
   d. While using any drug that affects the person's faculties in anyway contrary to safety.
2) Use of alcohol or drugs which prevents a student from flying during his assigned flight slot will not excuse the student from class attendance and will result in a "NO SHOW".
3) Students that are taking prescribed medications must be cleared to fly by an Aviation Medical Examiner or receive an excused absence from flight training.
4) Drug and Alcohol testing can be required during an accident investigation or suspicion of use.

Fire Precautions and Procedures

1) Know and understand the systems of your aircraft. Following procedures as outlined by the aircraft manual is essential to safety!
2) Emergency Procedures can be found in Section 3 of your Pilot's Operating Handbook (POH) or Approved Flight Manual (AFM).
3) A charged five pound CO_2 extinguisher is available at all times at the following locations:
   a. Maintenance facility.
   b. Terminal building.
   c. Fuel trucks.
   d. Individual aircraft.
4) Electrical Fire (C-172):
   a. Master Switch – OFF
   b. Vents, cabin air, heat – CLOSED
   c. Fire Extinguisher – ACTIVATE
   d. Avionics Master – OFF
   e. All other switches – OFF
5) Engine Fire in Flight (C-172):
   a. Mixture – IDLE CUT OFF
   b. Fuel Shut Off – OFF
   c. Auxiliary Fuel Pump - OFF
   d. Master Switch - OFF
   e. Cabin Heat/Air - OFF
   f. Airspeed – 100 KTS or greater
   g. Forced Landing – EXECUTE
6) Induction fire during starting (C-172):
   a. Cranking – CONTINUE to get a start which would suck the flames and accumulated fuel into the engine.
      i. If engine starts:
   b. Power – 1700 RPM for a few minutes.
   c. Engine – SHUTDOWN and inspect for damage.
      i. If engine fails to start:
   d. Throttle – FULL OPEN
   e. Mixture – IDLE CUT OFF
   f. Cranking – CONTINUE
   g. Fuel Shutoff Valve- OFF
   h. Auxiliary Fuel Pump – OFF
   i. Fire Extinguisher – OBTAIN
   j. Engine – SECURE
      i. Master Switch – OFF
      ii. Ignition Switch – OFF
   k. Parking Brake – RELEASE
   l. Airplane – EVACUATE
   m. Fire – EXTINGUISH
   n. Fire Damage – INSPECT
7) The aircraft will not be flown after a known induction fire until maintenance personnel have inspected and released the aircraft to service.

Practice Instrument Approaches

1) Aircraft are not allowed to fly practice instrument approaches to runways at Skyhaven that are opposite direction to VFR traffic.

Section 4 – PRIVATE PILOT

The Private Pilot rating is divided into two flight courses and a ground school. All degree seeking students will conduct training under CFR 14 Part 141 unless approved by the Chief Flight Instructor.

This section contains references to both the C-172R and C-172S.

Student Pilots

Student pilots have restrictions to solo flight training.

1) All student pilot solo flights must be approved by the flight instructor and proper endorsements received prior to dispatch.
   a. Local flights will be released when dispatcher confirms:
      i. Weather limitations on endorsements are not exceeded.
      ii. Solo endorsement from instructor has been given for the type of flight and aircraft and has not expired.
      iii. Aircraft has at least 2 hours of fuel.
   b. Cross country flights will be released when dispatcher confirms:
      i. Weather limitations on endorsements are not exceeded.
      ii. Solo endorsement from instructor has been given for the type of flight and aircraft and has not expired.
      iii. Initial cross country endorsement from instructor has been issued for type of aircraft.
      iv. Cross country planning endorsed for current day and weather conditions.
      v. Aircraft has full fuel tanks upon departure and meets UCM fuel reserve requirements.
2) Student pilots may not operate aircraft solo if the following wind limitations are exceeded.
   a. Steady wind of 15 kts.
   b. Crosswind of 10 kts.
   c. Gust factor of 5 kts.
   d. Any condition that exceeds the students' solo endorsement limitations given by assigned flight instructor which may be more restrictive.
3) Solo student pilots are not authorized to fly above any cloud layers.
4) Solo student pilot visibility and cloud layer requirements:

Destination	Cloud Layer	Visibility
Traffic Pattern	2,000' AGL	3 SM
Local Training	2,500' AGL	5 SM
Cross Country	3,000' AGL	6 SM

5) Student pilot solo local training is restricted to areas 4 LOW and 5 LOW.
6) All solo local flights must be on the ground by sunset.
7) Supervised solos require the instructor to be present at the airfield for the entire duration of the flight and the student will be billed for that time.
8) Approval to deviate from the above listed cross countries must be obtained prior to departure from the Chief Flight Instructor, Assistant Chief Flight Instructor, or Check Instructor.
9) All solo cross country flights must be planned to return to Sky Haven at least one hour prior to official sunset.
10) All solo cross country flights WILL make a landing to a full stop at each destination.
11) Solo cross country students will be charged ground instruction for the time required for a CFI to check planning, give endorsements, and supervise student takeoff.

Re-Dispatch Procedures

1) **All student pilot solo flights must be** re-dispatched by the SOF after landing (scheduled or unscheduled) at any location other than Skyhaven if the aircraft is delayed by more than 30 minutes of ETA at Skyhaven.
2) Student Pilot cross country training flights must
   a. Close the flight plan.
   b. Call (660) 543-4334 for a re-dispatch of the aircraft (if delayed as mentioned above).
   c. Receive an updated weather briefing.
   d. Open next leg of flight plan.
   e. Depart with fuel levels in accordance with UCM policies.
3) Any delay in returning to Skyhaven requires notification to the UCM Dispatcher (if able) and Flight Service Station.

Restricted Maneuvers

1) Solo flights are restricted from performing:
   a. Simulated forced landings and emergency practice.
   b. Secondary stalls.
   c. Touch and goes and stop and goes
   d. The maneuvers listed above and maneuvers your flight instructor tells you not to practice.

C-172R

Passenger Briefing (C-172R)

Objective:

To provide a standard pre-flight briefing to passengers.

Description:

The pilot in command is required by the Federal Aviation Regulations to provide a passenger briefing.

Setup Procedure:

1) Before starting the engine the Pilot-in-Command will provide the passenger safety briefing to include, but not limited to:
    a. Designation of Pilot-in-Command.
    b. Procedures for positively exchanging flight controls.

S

i. Seat belts and shoulder harnesses (location and operation).
ii. Seat belts & shoulder harnesses fastened for taxi, takeoff and landing.
iii. Seat position adjusted and locked in place (controls and operation).

A

iv. Air vents (location and operation).
v. All environmental controls (discussed).
vi. Action in case of any passenger discomfort.

F

vii. Fire extinguisher (location and operation).
viii. Smoking is prohibited.

E

ix. Exit doors (how to secure; how to open).
x. Emergency evacuation plan.
xi. Emergency/survival kit (location and contents).
xii. Equipment (location & operation, i.e., ELT, flight controls).

T

xiii. Traffic (scanning, spotting, notifying pilot).
xiv. Talking ("sterile cockpit" expectations).

Y

xv. Your questions?

Flight Proficiency Standards:

- Briefs occupants on the use of safety belts, shoulder harnesses, doors, and emergency procedures.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance and regulatory requirement for providing a passenger briefing.

Common Errors:

- Failure to perform a passenger briefing.
- Incomplete passenger briefing.

References:

Airman Airman Certification Standards, Federal Aviation Regulations, AC 121-24, AOPA Passenger Safety Briefing Video

Taxiing (C-172R)

Objective:

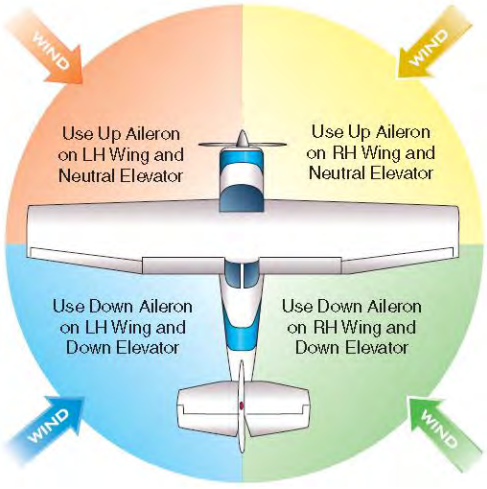
To safely maneuver the airplane on the surface of the airport.

Description:

Taxiing is the controlled movement of the airplane under its own power while on the ground.

Setup Procedure:

1) Complete before taxi checklist.
2) Set heading bug to the wind direction.
3) After engine start, check for traffic in both directions, increase power and allow the airplane to roll slight forward and apply brakes.
4) To turn right, use right rudder. To turn left, use left rudder. Differential braking can be used to make a sharper turn.
5) Taxi at a speed consistent with safety, but no faster than a brisk walk. Use power to control taxi speed before using brakes.
6) Apply proper crosswind taxi control deflections.
7) To come to a stop, reduce power to idle and smoothly apply brakes.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to safe taxi procedures.
- Performs a brake check immediately after the airplane begins moving.
- Positions the flight controls properly for the existing wind conditions.
- Controls direction and speed without excessive use of brakes.
- Complies with airport/taxiway markings, signals, ATC clearances, and instructions.
- Taxies so as to avoid other aircraft and hazards.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance of crosswind taxi techniques.
- Explain the importance of using minimal power and braking.

Safety Considerations:

- Maintain taxiway centerline.
- Use taxi lights.
- Use proper crosswind taxi techniques.
- Taxi at a speed consistent with safety.

Common Errors:

- Not performing a brake check.
- Improper crosswind taxi control deflections.
- Improper use of power and brakes.
- Taxiing at a speed not consistent with safety.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Normal & Crosswind Takeoff & Climb (C-172R)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude.

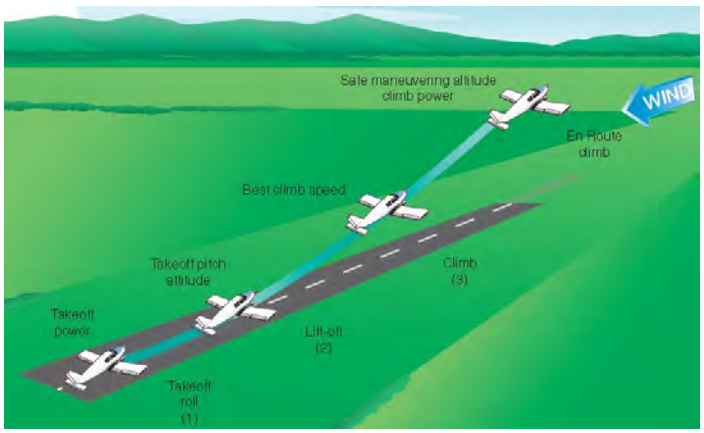
Description:

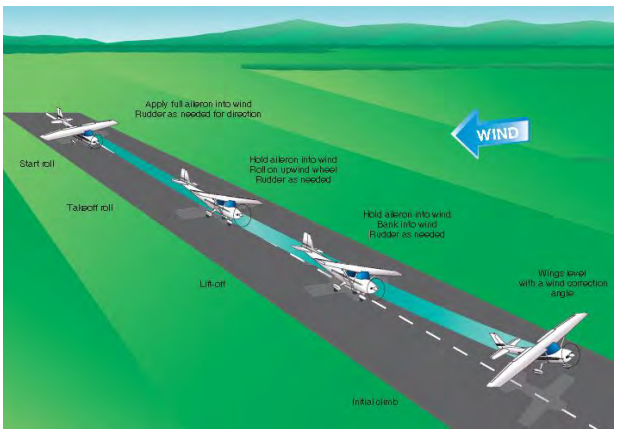
The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane is accelerated to an airspeed that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and establishes a pitch attitude to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete takeoff checklist and takeoff briefing.
3) Use aircraft lighting as recommended by the current version of AC 91-73.
4) Ensure runway is clear, align aircraft with runway centerline, confirm DG is aligned with runway, and ensure nose wheel is straight.
5) Position flight controls for wind for existing conditions.
6) Advance throttle smoothly to takeoff power ensuring toes are resting on rudder pedals, not on brakes.
7) Check engine instruments during takeoff roll for normal indications.
8) Maintain directional control with rudder pedals and crosswind control with appropriate aileron deflection
9) Maintain a slightly tail low attitude.
10) Upon reaching rotation speed, 55 kts (V_R), increase back elevator pressure to establish the lift-off attitude that is approximately that for V_Y and allow the aircraft to fly off the ground.
11) Apply adequate drift correction to maintain runway centerline.
12) Accelerate to 79 kts (V_Y).
13) At 500 ft., or as workload permits, complete climb checklist.





Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a normal and crosswind takeoff, climb operations, and rejected takeoff procedures.
- Positions the flight controls for the existing wind conditions.
- Clears the area; taxies into the takeoff position and aligns the airplane on the runway centerline.
- Lifts off at the recommended airspeed and accelerates to V_Y.
- Establishes a pitch attitude that will maintain V_Y +10/-5 kts.
- Retracts flaps at 200' or a safe altitude.
- Maintains takeoff power and V_Y +10/-5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Complies with noise abatement procedures.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria.
- Discuss how to maintain directional control during the ground roll.
- Discuss proper lift-off technique.
- Explain how to use ailerons during crosswind situations.
- Describe how to correct for wind-drift.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force aircraft off runway too early, causing it to settle back on the runway.
- Do not allow upwind wing to rise during takeoff.
- Do not exceed maximum demonstrated crosswind.
- Consider the effect of density altitude on performance.

Common Errors:

- Improper runway incursion avoidance procedures.
- Improper use of controls during a normal/crosswind takeoff.
- Inappropriate lift-off procedures.
- Improper climb attitude, power setting, and airspeed.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Short-Field Takeoff & Climb (C-172R)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude when the takeoff area is short or restricted by obstructions.

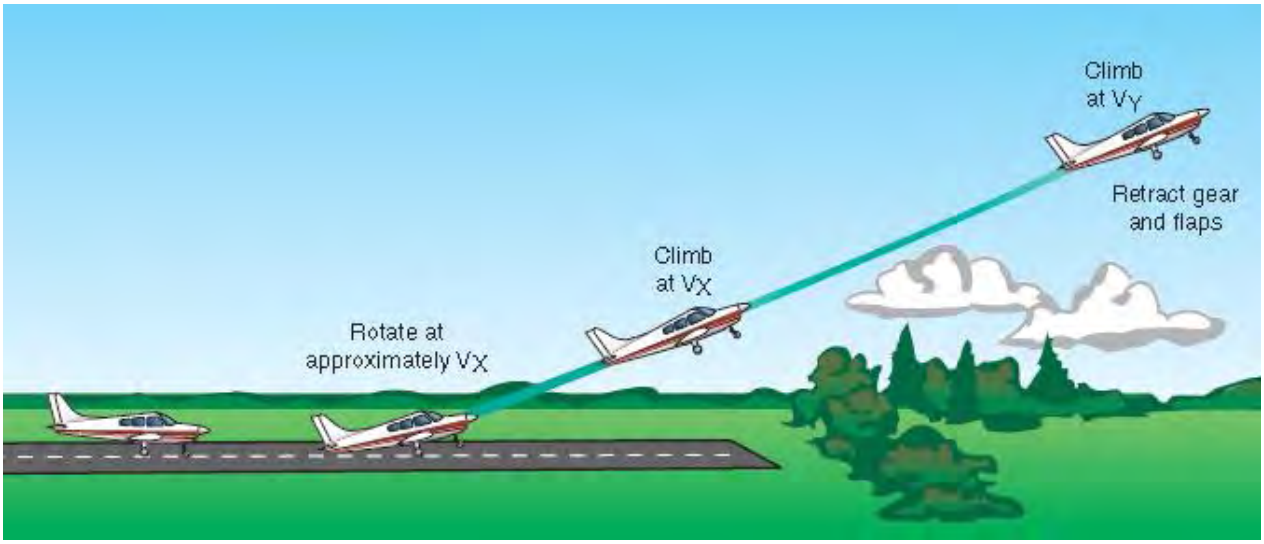
Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane is accelerated to an airspeed that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and a pitch attitude is established to climb away from the runway and clear a 50 foot obstacle.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) Set flaps to 10°.
4) Use aircraft lighting as recommended by the current version of AC 91-73.
5) Back taxi and align aircraft with runway centerline, confirm DG is aligned with runway, and ensure nose wheel is straight.
6) Ensure runway is clear, advance throttle smoothly to takeoff power while holding brakes; check engine instruments.
7) Release brakes and ensure toes are resting on rudder pedals, not brakes.
8) Maintain directional control with rudder pedals and appropriate aileron deflection.
9) Upon reaching rotation speed, 55 kts (V_R), increase back elevator pressure to establish lift-off attitude and allow aircraft to fly off ground.
10) Accelerate the aircraft to 57 kts (V_X) until obstacle is cleared or 50 feet above takeoff surface is attained and then accelerate to 79 kts (V_Y).
11) Retract flaps after a safe altitude of at least 200 ft. and an airspeed of 79 kts are attained.
12) At 500 ft., or as workload permits, complete climb checklist.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a short-field takeoff and maximum performance climb.
- Positions the flight controls for the existing wind conditions; set the flaps as recommended.
- Clears the area; taxies into takeoff position utilizing maximum available takeoff area and aligns the airplane on the runway center/takeoff path.
- Applies brakes (if appropriate), while advancing throttle smoothly to takeoff power.
- Lifts off at the recommended airspeed, and accelerates to the recommended obstacle clearance airspeed or V_X.
- Establishes a pitch attitude that will maintain the recommended obstacle clearance airspeed, or V_X, +10/-5 kts, until the obstacle is cleared, or until the airplane is 50 feet above the surface.
- After clearing the obstacle, establishes the pitch attitude for V_Y, accelerates to V_Y, and maintains V_Y, +10/-5 kts, during the climb.
- Retracts the landing gear, if appropriate, and flaps after a positive rate of climb is established.
- Retracts flaps at 200' or a safe altitude.
- Maintains takeoff power and V_Y +10/-5 to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria.
- Discuss how to maintain directional control during ground roll.
- Discuss proper lift-off technique.
- Explain the difference between V_X and V_Y.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force aircraft off runway too early, causing it to settle back onto runway.
- Use of entire runway length.
- Retraction of flaps as recommended.
- Consider effect of density altitude on performance.

Common Errors:

- Improper runway incursion avoidance procedures.
- Improper use of controls during a short-field takeoff.
- Inappropriate lift-off procedures.
- Improper initial climb attitude, power setting and airspeed to clear obstacle.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Soft-Field Takeoff & Climb (C-172R)

Objective:

To align the airplane with the takeoff path, become airborne as quickly as possible, and establish a positive climb to a safe maneuvering altitude.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane enters the runways with full up elevator deflection and accelerates to an airspeed at which the airplane will lift off.
2) The acceleration to lift off speed while remaining in ground effect.
3) The initial climb when the airplane establishes a pitch attitude to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) Set flaps to 10°.
4) Use aircraft lighting as recommended by the current version of AC 91-73.
5) Ensure runway is clear, taxi onto runway with back elevator pressure and align nose with runway centerline without stopping or the use of brakes.
6) Smoothly advance throttle to takeoff power.
7) Ensure toes are resting on rudder pedals, not on brakes.
8) Check engine instruments during ground roll for normal indications.
9) Maintain directional control with rudder pedals and appropriate aileron deflection.
10) Use back elevator pressure to establish a positive pitch attitude and allow the aircraft to fly itself off the ground.
11) When the aircraft becomes airborne, reduce pitch to remain in ground effect while accelerating to 60 kts (V_X) then simultaneously climb and accelerate to 79 kts (V_Y).
12) Retract flaps after a safe altitude of at least 200 ft. and an airspeed of 79 kts are attained.
13) At 500 ft., or as workload permits, complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a soft-field takeoff and climb.
- Positions the flight controls for existing wind conditions and to maximize lift as quickly as possible.
- Clears the area; taxies on to the takeoff surface at a speed consistent with safety without stopping while advancing the throttle smoothly to takeoff power.
- Establishes and maintains a pitch attitude that will transfer the weight of the airplane from the wheels to the wings as rapidly as possible.
- Lifts off at the lowest possible airspeed and remains in ground effect while accelerating to V_X, while simultaneously accelerating to V_Y and climbing.
- Establishes a pitch attitude for V_Y, and maintains selected airspeed +10/-5 kts to a safest maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss proper soft-field takeoff technique.
- Explain runway selection criteria.
- Predict the height of ground effect and discuss its relevance.
- Discuss how to maintain directional control during ground roll.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not allow the airplane to climb above ground effect too soon, causing it to settle back onto the runway.

Common Errors:

- Improper runway incursion avoidance procedures.
- Improper use of controls during a soft-field takeoff.
- Improper lift-off procedures.
- Improper climb attitude, power setting and airspeed.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Traffic Pattern (C-172R)

Objective:

To assure that air traffic flows into and out of an airport in an orderly manner.

Description:

The airplane is flown on a rectangular course around a runway at an altitude specified in the current Airport/Facility Directory or as outlined in the FAR/AIM.

Setup Procedure:

Departures

1) All departures:
    a. Fly the departure leg straight out until reaching traffic pattern altitude.
    b. Once reaching traffic pattern altitude, continue climbing and turn on course.

Arrivals

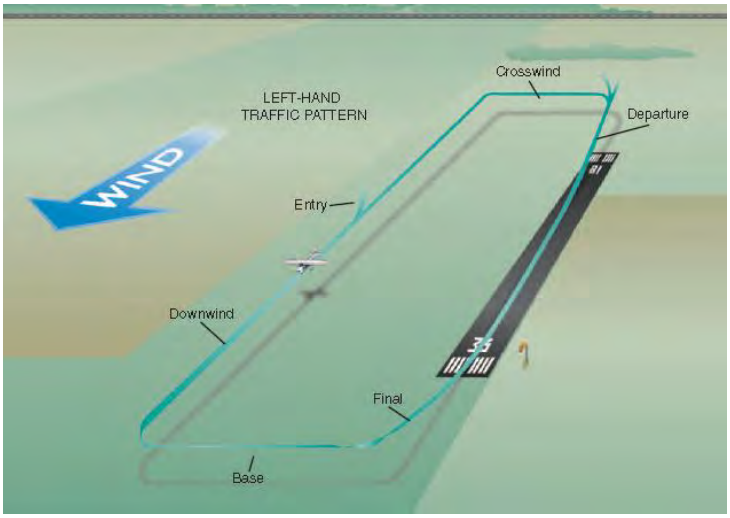
1) Prior to reaching 5 NM from the airfield, complete the following:
    a. Monitor local AWOS/ASOS/ATIS
    b. Ask “Is there any traffic between me and the airport?” and cancel flight following (if applicable)
    c. Complete the Before Landing checklist
2) Slow down below the approach flap airspeed prior to pattern entry.

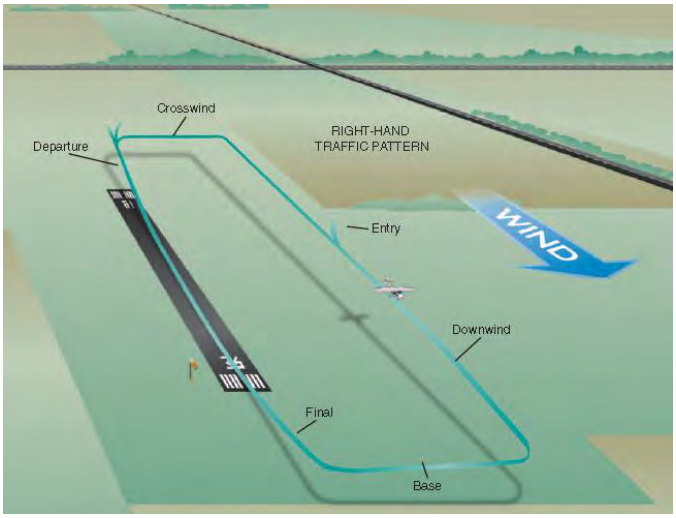
    If already established on the downwind side, skip to step 4.*

3) For a midfield entry:
    a. Cross midfield 500’ above traffic pattern altitude, observing traffic flow and wind direction.
    b. Fly 2-3 miles beyond the downwind leg, then descend to pattern altitude.
    c. Complete a tear-drop shaped turn to the right or left as necessary to position the aircraft at a 45 degree angle to the downwind leg.

    If less than two aircraft are currently in the pattern, the alternate method (cross midfield at traffic pattern altitude, enter directly into downwind leg) may be used.

4) Enter the traffic pattern at the designated traffic pattern altitude (normally 1,000’ AGL) at a 45 degree angle to the downwind leg at midfield.
5) Apply appropriate crosswind correction to allow for a parallel flight path approximately ½ mile from the runway
6) Allow for proper spacing from other aircraft in the pattern as to prevent runway incursions upon landing.
7) Maintain airspeed below the flap speed required for each configuration change.





Flight Proficiency Standards:

- Exhibits knowledge of the elements related to traffic patterns. This shall include procedures at airports with and without operating control towers, prevention of runway incursions, collision avoidance, wake turbulence avoidance, and wind shear.
- Complies with proper traffic pattern procedures.
- Maintains proper spacing from other aircraft.
- Corrects for wind drift to maintain the proper ground track.
- Maintains orientation with the runway/landing area in use.
- Maintains traffic pattern altitude, ±100 feet and the appropriate airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss traffic patterns at controlled and uncontrolled airports.
- Explain traffic pattern procedures.
- Explain how to maintain the proper ground track.

Safety Considerations:

- Maintain proper traffic pattern altitude.
- Maintain a distance from the runway that is within power-off gliding distance.
- Preferred bank of 30 degrees while in pattern.
- Climb within 300 feet of traffic pattern altitude before turning crosswind.
- Maintain proper aircraft separation.
- Comply with standards traffic pattern procedures or ATC instructions.

Common Errors:

- Failure to comply with traffic pattern instructions, procedures, and rules.
- Improper correction for wind drift.
- Inadequate spacing from other traffic.
- Poor altitude or airspeed control.
- Flying too wide of a pattern.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Normal Approach & Landing (C-172R)

Objective:

To safely transition from flight to ground operations during normal conditions.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. At key position, assess approach position.
    b. With wings level, set flaps to 20° as required.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Set flaps to 30° as required.
    b. Adjust pitch and power as required to maintain a stabilized approach, at 65 kts, toward the selected aiming point until flare to land.
    c. Complete the GUMPS check.
8) During the flare to land simultaneously reduce power to idle and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline.
9) Maintain positive pitch attitude for aerodynamic braking.
10) Exit runway and complete after landing checklist.

***The above condition is based on a no wind condition.*
*Adjust configuration and airspeed to compensate for wind and gust factor.***

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a normal and crosswind approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point
- Establishes the recommended approach and landing configuration and airspeed, and adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{S0}, +10/-5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the flare and touchdown.
- Touches down smoothly at approximate stalling speed.
- Touches down at or within 400 feet beyond a specified point, with no drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Completes the appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain proper use of crosswind control inputs.

Safety Considerations:

- Observe flap extension speeds.
- Maintain proper airspeed at all times.
- Use proper crosswind correction to avoid drifting from runway centerline.

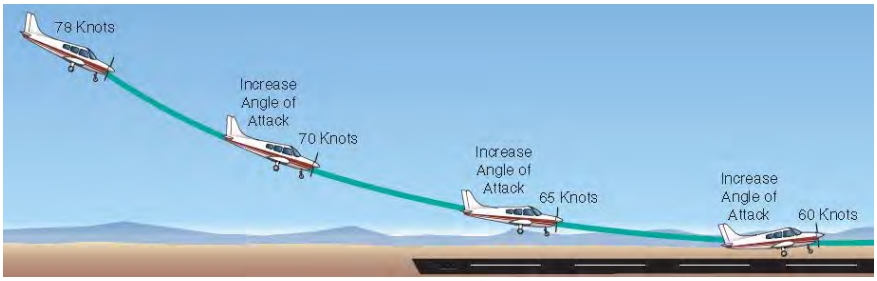
Common Errors:

- Improper use of landing performance data and limitations.
- Failure to establish proper crosswind correction.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Improper procedure during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.

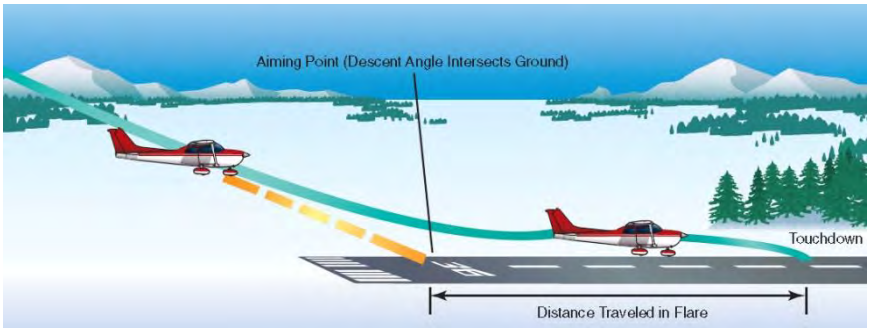
References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Changing angle of attack during round out



Aiming point of a stabilized approach



Example of a well-executed round out and proper landing attitude

Crosswind Approach & Landing (C-172R)

Objective:

To safely transition from flight to ground operations during crosswind conditions.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 65 kts, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    e. Complete the GUMPS check.
8) During the flare to land simultaneously reduce power to idle and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline.
9) Maintain positive pitch attitude for aerodynamic braking.
10) Exit runway and complete after landing checklist.

*** Adjust configuration and airspeed to compensate for strong crosswind and/or gust factor.***

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a normal and crosswind approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point
- Establishes the recommended approach and landing configuration and airspeed, and adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the flare and touchdown.
- Touches down smoothly at approximate stalling speed.
- Touches down at or within 400 feet beyond a specified point, with no drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Completes the appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain proper use of crosswind control inputs.

Safety Considerations:

- Observe flap extension speeds.
- Maintain proper airspeed at all times.
- Use proper crosswind correction to avoid drifting from runway centerline.

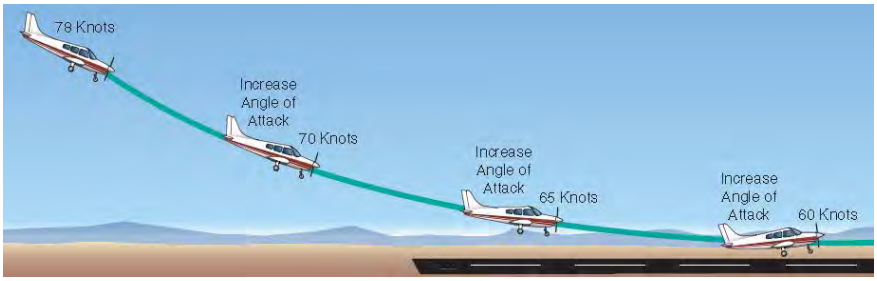
Common Errors:

- Improper use of landing performance data and limitations.
- Failure to establish proper crosswind correction.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Improper procedure during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.

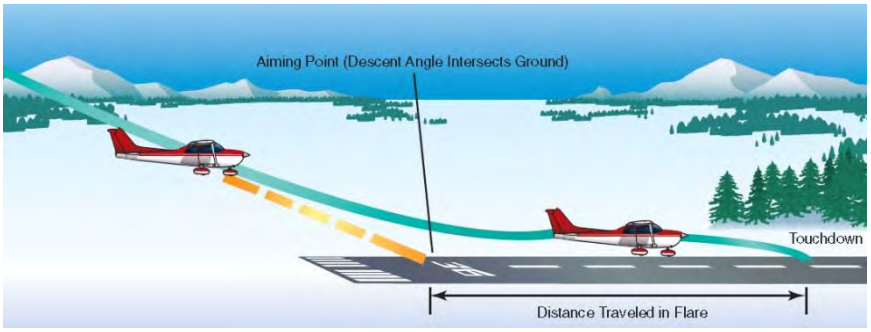
References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Changing angle of attack during round out

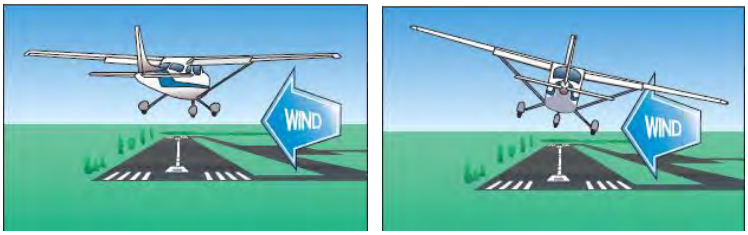


Aiming point of a stabilized approach

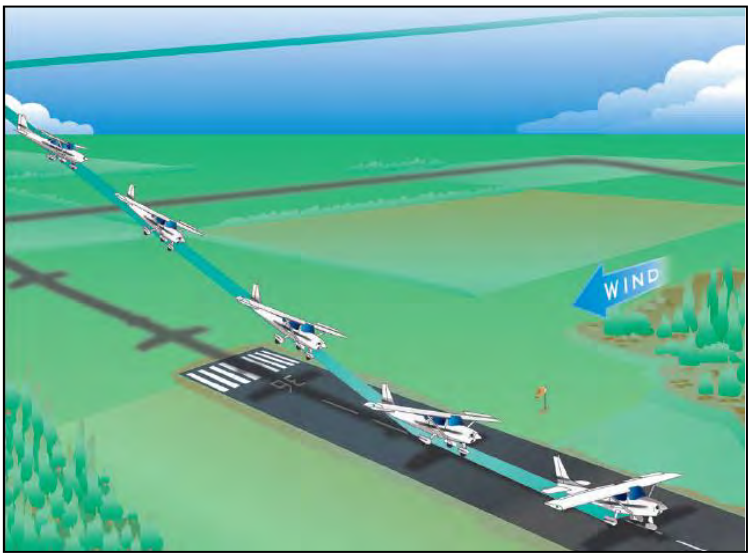


Example of a well-executed round out and proper landing attitude

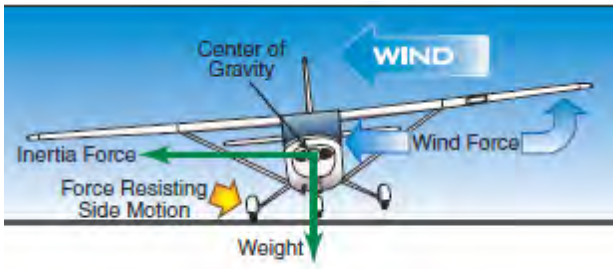
Crabbed Method (Left) / Wing-Low Method (Right)
(Recommended)



Crosswind Approach and Landing using wing low method



Drifting during touchdown (inappropriate crosswind correction)



Short-Field Approach & Landing (C-172R)

Objective:

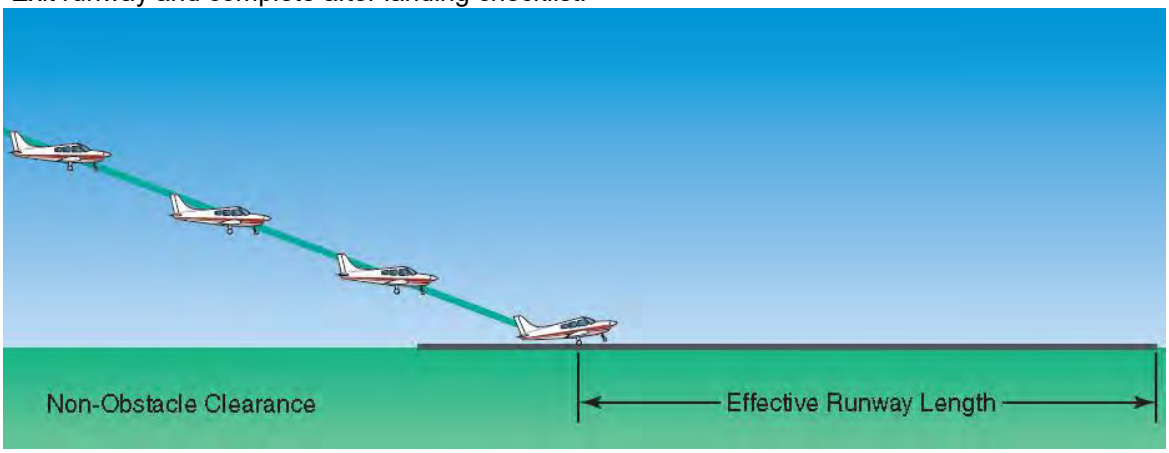
To safely transition from flight to ground operations at an airport with a relatively short runway or where an approach is made over obstacles.

Description:

The airplane is configured for a stabilized approach with or without a 50 foot obstacle. There will be little or no float during the round out, allowing the airplane to touch down at a specified point, and be stopped in a shorter than normal distance.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn final on the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    a. Adjust pitch and power as required to maintain a stabilized approach, at 62 kts, toward the selected aiming point until flare to land.
    c. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    d. Maintain a stabilized descent above the 50 ft obstacle and land at the specified point.
    e. Complete the GUMPS check.
8) During the flare to land simultaneously reduce power to idle and maintain aircraft approximately one foot above runway until it slows to stall speed.
9) Touch down at approximate stall speed on the runway centerline.
10) Maintain positive pitch attitude for aerodynamic braking.
11) Apply maximum braking to a complete stop without skidding the tires.
12) Exit runway and complete after landing checklist.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a short-field approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects the most suitable touchdown point.
- Establishes the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended approach airspeed, or in its absence not more than 1.3 V_{SO}, +10/-5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the round out and touchdown.
- Touches down smoothly at minimum control airspeed.
- Touches down at or within 200 feet beyond a specified point, with no side drift, minimum float and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Applies brakes, as necessary, to stop in the shortest distance consistent with safety.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on an approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain how to compensate for obstacles and shortened runway lengths.

Safety Considerations:

- Maintain proper airspeed at all times.
- Compensate for crosswind.
- Do not skid tires.
- Use of aerodynamic braking as available.

Common Errors:

- Excessive airspeed on final approach.
- Slow airspeed prior to touchdown.
- Failure to establish proper crosswind correction.
- Improper use of landing performance data and limitations.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Improper procedure during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Soft-Field Approach & Landing (C-172R)

Objective:

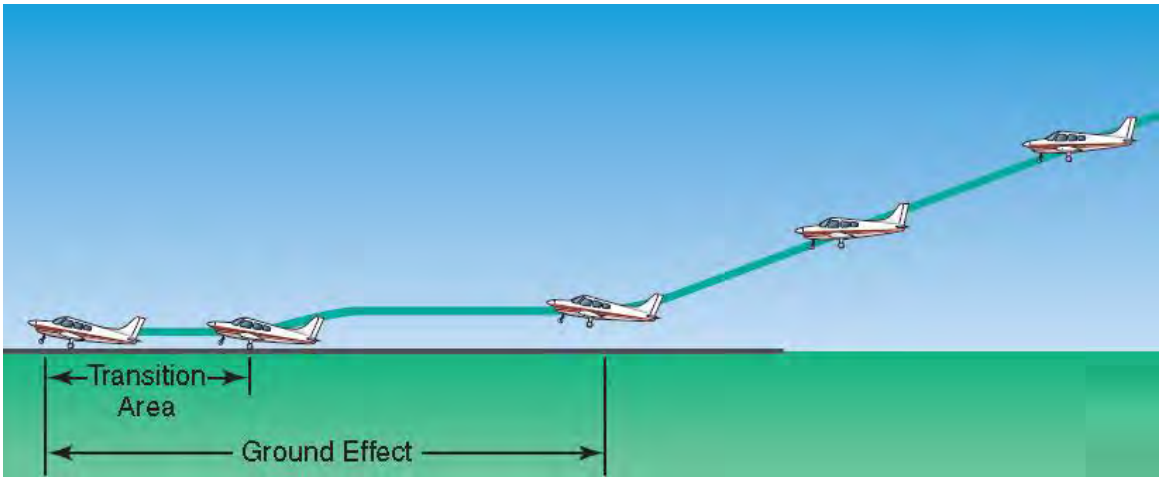
To safely transition the airplane from flight to ground operations on a rough or soft surface.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown on a field that is unimproved.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn final on the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 65 kts, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    e. Adjust stabilized approach to clear obstacles and land at the specified point.
    f. Complete the GUMPS check.
8) During the flare to land, reduce power as required to maintain aircraft approximately one foot above runway until it slows to stall speed.
9) Touch down at approximate stall speed on the runway centerline as smoothly as possible.
10) Maintain back elevator pressure to keep nose wheel off the ground as long as possible.
11) Maintain directional control with rudder and aileron deflection.
12) Adjust power as necessary to maintain aircraft movement on soft surfaces.
13) Exit the runway with minimal braking and complete after landing checklist.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a soft-field approach and landing.
- Considers the wind conditions, landing surface and obstructions, and selects the most suitable touchdown area.
- Establishes the recommended approach and landing configurations, and airspeed; adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence not more than 1.3 V_{SO}, +10/-5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the round out and touchdown.
- Touches down softly with no drift, and with the airplane's longitudinal axis aligned with the runway/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Maintains proper position of the flight controls and sufficient speed to taxi on the soft surface.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss effect of flaps on an approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain how to touchdown and maneuver the aircraft on soft of unimproved surfaces.

Safety Considerations:

- Do not land on fields that exceed the capabilities of the aircraft or pilot.
- Fly over and visually check the field prior to landing.
- Check field length and density altitude.
- Only land on public, published, unimproved runways with UCM aircraft.
- Use caution when landing on wet grass.

Common Errors:

- Failure to maintain elevator back-pressure after touchdown.
- Improper use of brakes.
- Failure to consider effect of wind and landing surface.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Touch and Go (C-172R)

Objective:

To transition from a landing rollout to a takeoff roll while remaining on the runway.

Description:

A touch and go is a landing which transitions into a takeoff while the aircraft remains rolling on the runway.

Setup Procedure:

1) Perform a normal landing.
2) Upon touchdown:
    a. Allow the aircraft to continue rolling.
    b. Maintain runway centerline.
    c. Apply proper crosswind correction.
3) Reconfigure the aircraft for takeoff.
    a. Retract flaps to desired value (10^o or less).
    b. Set trim to the takeoff position.
4) Smoothly apply full-power.
5) Upon reaching rotation speed, 55 kts (V_R), increase back elevator pressure to establish the lift-off attitude that is approximately V_Y or V_X and allow the aircraft to fly off the ground.
6) Apply adequate drift correction to maintain runway centerline.
7) At 500 ft., or as workload permits, complete the climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to touch and go procedures.
- Maintains runway centerline upon touchdown.
- Applies proper crosswind controls upon touchdown, reconfiguration and climb out.
- Demonstrates proper aircraft reconfiguration.
- Lifts off at the recommended airspeed and accelerates to V_X or V_Y, as appropriate.
- Retracts flaps at 200' or a safe altitude, if appropriate.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Complies with noise abatement procedures.
- Completes the appropriate checklist.

Note: These are the UCM standards. The aforementioned standards are not found in the Airman Certification Standards.

Learning Outcomes:

- Explain the purpose(s) of touch and go's.
- Discuss how crosswind correction will change throughout the maneuver.
- Discuss the importance of maintaining runway centerline during aircraft reconfiguration.

Safety Considerations:

- Maintain runway centerline.
- Proper crosswind correction.
- Maintain situational awareness.
- Proper reconfiguration.

Common Errors:

- Failure to maintain runway centerline.
- Touchdown beyond the first 1/3rd of the runway and attempting a touch and go.
- Improper aircraft reconfiguration.
- Failure to maintain adequate crosswind correction.
- Attempting to lift-off prior to rotation speed.

Emergency Descent (C-172R)

Objective:

To descend the airplane as soon and as rapidly as possible, within the structural limitations of the airplane.

Description:

The emergency descent is a maneuver for descending as rapidly as possible to a lower altitude or to the ground for an emergency landing.

Setup Procedure:

1) Perform clearing turns.
2) If utilizing flight following, contact ATC for traffic advisories below.
3) Reduce power to idle.
4) Confirm flaps 0^{o}
5) Set mixture to rich.
6) Roll into a 30^{o} - 45^{o} bank to the left and pitch down to achieve 120 kts (If in turbulent air, maintain an airspeed below V_A).
7) Initiate recovery to level flight at least 300' prior to assigned altitude by:
    a. Rolling out the bank.
    b. Pitching up.
8) Return to cruise flight and complete the cruise checklist to include leaning procedures

Flight Proficiency Standards:

- Exhibit knowledge of the elements related to emergency descent.
- Recognizes situations, such as depressurization, cockpit smoke, and/or fire that require an emergency descent.
- Establish the appropriate airspeed and configuration for the emergency descent.
- Exhibit orientation, division of attention, and proper planning.
- Maintains positive load factors during the descent.
- Follow the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the purpose(s) of an emergency descent.
- Discuss engine cooling characteristics during an emergency descent.
- Discuss the importance of proper planning as it pertains to emergencies.

Safety Considerations:

- Maintain positive aircraft control.
- Clear the engine periodically
- Clear below then GO.
- Steep spiral over airport.
- Continue on to emergency approach and landing.

Common Errors:

- Failure to recognize the urgency of the emergency descent.
- Failure to use emergency checklist for situation.
- Failure to maintain appropriate configuration and airspeed.
- Poor orientation, planning, and division of attention.

Emergency Approach & Landing (C-172R)

Objective:

To develop accuracy, judgment, planning, procedures, and confidence when little or no power is available.

Description:

An engine failure is simulated by the instructor after which the airplane is safely maneuvered to a landing.

Setup Procedure:

1) The instructor will reduce engine power to idle and announce “simulated emergency landing.”
2) Establish an airspeed of 65 kts ($V_{L/D}$) and trim to maintain airspeed.
3) Select a suitable landing location and spiral over it.
4) Complete an engine restart flow.
5) Complete the engine failure checklists as time permits.
6) Establish communication to report emergency situation.
7) Configure and maneuver the aircraft to fly a normal traffic pattern as applicable.
8) Initiate a go-around no lower than 500 feet AGL.

Flight Proficiency Standards:

- Exhibit knowledge of the elements related to emergency approach and landing procedures.
- Establish and maintain the recommended best-glide airspeed, ±10 kts.
- Select a suitable landing area.
- Plan and follow a flight pattern to the selected landing area considering altitude, wind, terrain, and obstructions.
- Prepare for landing or go-around as specified by the instructor.
- Follow the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the criteria for a good emergency landing field.
- Explain the steps to follow after an engine failure.
- Explain how to trouble shoot for problems after an engine failure.

Safety Considerations:

- Maintain positive aircraft control.
- Clear the engine periodically.
- Maintain awareness for towers and other obstacles.
- Maintain situational awareness.
- This is a **dual only** maneuver.

Common Errors:

- Improper airspeed control.
- Poor judgment in the selection of an emergency landing area.
- Failure to estimate the approximate wind speed and direction.
- Failure to fly the most suitable pattern for existing situation.
- Failure to accomplish the emergency checklists.
- Undershooting or overshooting selected landing area.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Forward Slip to a Landing (C-172R)

Objective:

To dissipate altitude without increasing airspeed.

Description:

The upwind wing is lowered and opposite rudder is used to maintain the ground track bringing the aircrafts longitudinal axis at an angle to its flight path. The pitch is adjusted to maintain the desired airspeed.

Setup Procedure:

1) Determine the wind direction.
2) Reduce power to idle.
3) Simultaneously bank into the wind and apply full opposite rudder.
4) Adjust pitch to maintain desired airspeed.
5) Adjust aileron input to maintain the ground track of the aircraft with the extended runway centerline.

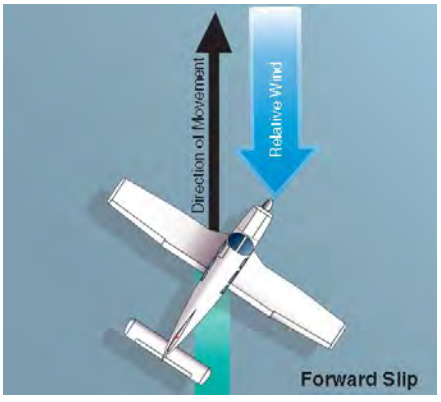
Flight Proficiency Standards:

- Exhibits knowledge of the elements related to forward slip to a landing.
- Considers the wind conditions, landing surface and obstructions, and selects the most suitable touchdown point.
- Establishes the slipping attitude at the point from which a landing can be made using the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power as required.
- Maintains a ground track aligned with the runway center/landing path and an airspeed, which results in minimum float during the flare.
- Makes smooth, timely, and correct control application during the recovery from the slip, the flare, and the touchdown.
- Touchdown smoothly at the approximate stalling speed, at or within 400 feet beyond a specified point with no side drift and with the airplane's longitudinal axis aligned with and over the runway centerline.
- Maintain crosswind correction and directional control throughout the approach and landing sequence.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance of maintaining the proper attitude to avoid a stall.
- Predict the amount of control input required to maintain the desired ground track.
- Discuss the applications in which a forward slip might be used.
- Explain the proper control inputs to perform a forward slip.
- Explain flap configuration considerations applicable to forward slips.
- Explain aircraft limitations applicable to forward slips.



Safety Considerations:

- Maintain sufficient airspeed as to avoid a stall.
- Observe maximum forward slip duration limitations.
- Terminate the maneuver with sufficient altitude to complete a landing.

Common Errors:

- Improper aileron and/or rudder control inputs.
- Failure to maintain airspeed and a stabilized slip.
- Inappropriate removal of hand from throttle.
- Improper technique during transition from the slip to the touchdown.
- Failure to maintain runway centerline.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Go-Around (C-172R)

Objective:

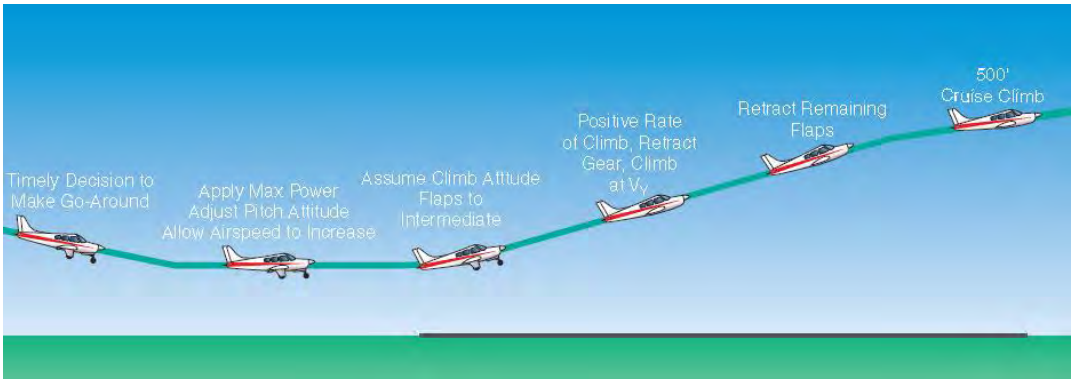
To safely discontinue the landing approach if unstable or other unsatisfactory conditions exist.

Description:

As full power is applied, the aircraft attitude is adjusted to accelerate to V_Y and climb. As a safe airspeed is attained, flaps are retracted 10° at a time allowing stabilization between each retraction.

Setup Procedure:

1) Simultaneously apply maximum power and establish a go-around pitch attitude.
2) Set flaps to 20°.
3) Establish a pitch attitude to accelerate to 55 kts.
4) Allow the airplane to accelerate to V_X or V_Y and climb.
5) If there is an aircraft on the runway, sidestep to clear the departure path of the airplane and allow the pilot to view the landing or departing traffic.
6) Set flaps to 10° and stabilize in between configuration changes then flaps to 0°.
7) Verify Go Around checklist is complete.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a go-around/rejected landing.
- Makes a timely decision to discontinue the approach to landing.
- Applies takeoff power immediately and transitions to climb pitch attitude for V_X, and maintains V_Y+10/-5 kts.
- Retracts the flaps as appropriate.
- Retracts the landing gear, if appropriate, after a positive rate of climb is established.
- Maneuvers to the side of the runway/landing area to clear and avoid conflicting traffic.
- Maintains takeoff power V_Y+10/-5 to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the climb.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss events that may require a go-around.
- Explain the importance of maintaining airspeed and coordination during the go-around procedure.
- Discuss the necessity for maneuvering to the side of the runway after making the decision to go-around.

Safety Considerations:

- Maneuver the airplane to the side of the runway.
- Do not establish a pitch up attitude too quickly.
- Maintain coordination.
- Timely decision making.
- Be watchful for situation which may require a go-around.

Common Errors:

- Delayed decision to make a go-around.
- Improper application of power.
- Failure to control pitch attitude.
- Improper trim technique.
- Failure to compensate for torque effect.
- Failure to maintain 79 kts (V_Y).
- Improper wing flap retraction.
- Failure to maintain well clear of obstructions and other traffic.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Maneuvering During Slow Flight (C-172R)

Objective:

To demonstrate the flight characteristics and controllability of an airplane at speeds lower than normal cruise and develop proficiency in performing maneuvers that require slow airspeeds.

Description:

Slow flight consists of slowing the aircraft to a minimum controllable airspeed in the landing configuration and maneuvering the aircraft while maintaining altitude and airspeed.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1,500 RPM or less.
5) Below 110 kts, set flaps to 10°.
6) Adjust pitch and power as necessary to maintain altitude.
7) Below 85 kts, set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
8) Establish and maintain an airspeed at which any further increase in pitch or reduction of power would result in an immediate stall or a higher speed as specified by your instructor.
    a. Slow flight should be practiced at varying speeds and configurations above the 1G stall speed of the aircraft as specified by the instructor.
9) Maneuver as instructed.
10) Recover when instructed by:
    a. Adding full power
    b. Set flaps to 20° and allow the aircraft to stabilize.
    c. Then set flaps to 10° and 0° allowing the aircraft to stabilize between each setting.
11) Return to cruise flight and perform the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to maneuvering during slow flight.
- Selects an entry altitude that will allow the task to be completed no lower than 1,500'AGL.
- Establish and maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in a stall warning (e.g., airplane buffet, stall horn, etc.).
- Accomplishes coordinated straight and level flight, turns, climbs, and descents with landing gear and flap configurations specified by the instructor.
- Divides attention between airplane control and orientation.

- Maintains the specified altitude, ±100 feet; specified heading, ±10°; airspeed, +10/-0 kts; and specified angle of bank, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the relationship between pitch and power in maintaining airspeed and altitude during slow flight.
- Discuss how flight at minimum airspeeds develops the ability to estimate the margin of safety above the stalling speed.
- Compare the practice of slow flight to various phases of flight such as; takeoffs, climbs, descents, go-arounds, and approaches to landing.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified gear and flap configuration.
- Improper entry technique.
- Failure to establish and maintain the specified airspeed.
- Excessive variations of altitude and heading.
- Rough or uncoordinated control technique.
- Improper correction for left turning tendency.
- Improper trim technique.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Power – Off Stall (C-172R)

Objective:

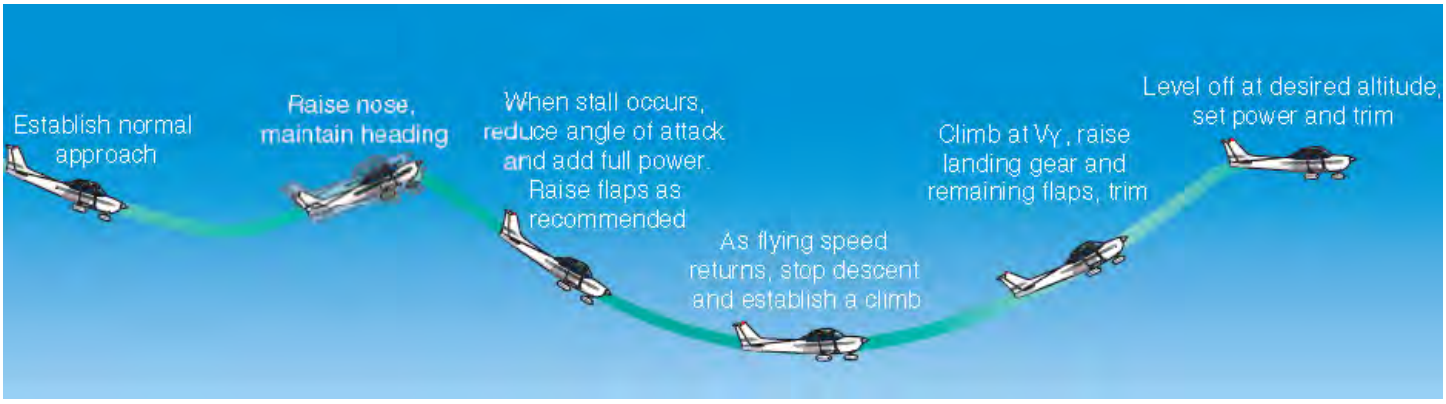
To familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop the skills to prevent and recover from stalls in the landing configuration.

Description:

The aircraft is slowed down and placed in the landing configuration after which a stall is induced and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1,500 RPM or less allowing the aircraft to slow to approach speed while maintaining altitude.
5) Below 110 kts, set flaps to 10°.
6) Below 85 kts, set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
7) Establish a stabilized descent at 65 kts.
8) Reduce power to idle.
9) Maintain coordinated flight and altitude until recognition of the stall. As the stall occurs, recover from the stall by simultaneously reducing the angle of attack, adding full power, and leveling the wings.
10) Set flaps to 20°.
11) Accelerate the aircraft to V_X (recommended) or V_Y and climb while retracting the remaining flaps in 10° increments.
12) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-off stalls.
- Selects an entry altitude that allows the task to be completed no lower than 1,500'AGL.
- Establishes a stabilized descent in the approach or landing configuration, as specified by the instructor.
- Transitions smoothly from the approach or landing attitude to a pitch attitude that will induce a stall.
- Maintains a specified heading, ±10°, in straight flight; maintains a specified angle of bank not to exceed 20°, ±10°; in turning flight, while inducing the stall.
- Recognizes and recovers promptly after the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable and leveling the wings to return to a straight and level flight attitude with minimum loss of altitude appropriate for the airplane.
- Retract the flaps to the recommended setting; retracts the landing gear, if retractable, after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flap retraction; returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Power – On Stall (C-172R)

Objective:

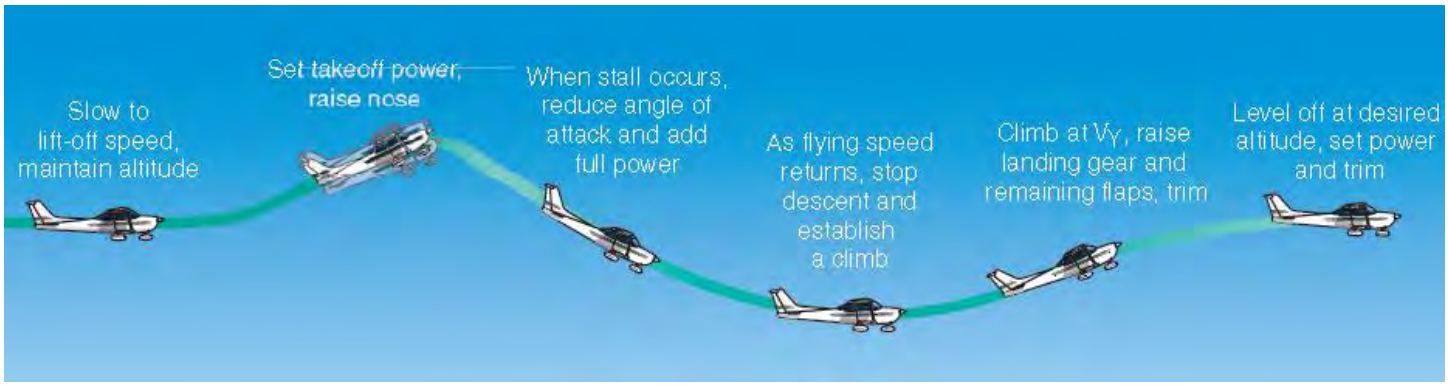
To familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in the takeoff configuration.

Description:

The aircraft is slowed down and placed in the takeoff configuration after which a stall is induced and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1200 RPM or less, allowing the aircraft to slow to takeoff speed while maintaining altitude.
5) Add full power at 55 kts (V_R).
6) Transition smoothly to the pitch attitude that will induce a stall.
7) Recognize and recover promptly after a fully developed stall occurs by simultaneously reducing the angle of attack, confirming full power, and leveling the wings.
8) Accelerate the aircraft to 79 kts (V_Y) and climb.
9) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-on stalls.
- Selects an entry altitude that allows the task to be completed no lower than 1,500' AGL.
- Establishes the takeoff or departure configuration. Sets power to no less than 65 percent available power.
- Transitions smoothly from the takeoff or departure attitude to the pitch attitude that will induce a stall.
- Maintains a specified heading, ±10°, in straight flight; maintains a specified angle of bank not to exceed 20°, ±10°, in turning flight, while inducing the stall.
- Recognizes and recovers promptly after the stall occurs by simultaneously reducing the angle of attack, increasing power as appropriate, and leveling the wings to return to a straight and level flight attitude with a minimum loss of altitude appropriate for the airplane.
- Retracts the flaps to the recommended setting; retracts the landing gear if retractable, after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flap retraction; returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Recovery from Unusual Flight Attitudes (C-172R)

Objective:

To safely re-establish control of the airplane after recognition of an unusual attitude.

Description:

The aircraft is maneuvered with the proper use of pitch, power, and bank to safely recover from a nose-high or nose-low unusual attitude.

Setup Procedure:

1) The instructor will position the aircraft into a level or banked nose-high or nose-low unusual attitude while the student has his or her eyes closed.
2) The instructor will instruct the student to recover from the unusual attitude visually or by using a view limiting device.
3) For a nose-high attitude:
    a. Simultaneously add full power and lower the pitch.
    b. Level the wings.
4) For a nose-low attitude:
    a. Reduce power.
    b. Level the wings.
    c. Increase pitch.
5) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to attitude instrument flying during unusual attitudes.
- Recognizes unusual flight attitudes solely by reference to instruments; recovers promptly to a stabilized level flight attitude using proper instrument cross-check and interpretation and smooth, coordinated control application in the correct sequence.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the importance of quickly and accurately determining an unusual attitude.
- Explain proper control inputs to recover from an unusual attitude.

Safety Considerations:

- Maintain positive aircraft control.
- Observe aircraft limitations with respect to airspeed and load factors.

Common Errors:

- Incorrect interpretation of the flight instruments.
- Inappropriate application of controls.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Steep Turns (C-172R)

Objective:

To develop coordination, orientation, division of attention and smooth control techniques while executing high performance turns.

Description:

The maneuver consists of a 360° turn using a bank angle of approximately 45° while maintaining a constant airspeed and altitude.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Adjust the mixture in accordance with the POH.
4) Reduce power to establish an airspeed of 95 kts.
5) Enter a coordinated 45° banking turn to the left or right.
6) Increase power and adjust trim and pitch as required to maintain altitude and airspeed.
7) Begin rollout at ½ the bank angle prior to rollout heading.
8) Reduce power and pitch on rollout as needed to remain at 95 kts.
9) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to steep turns.
- Establishes the manufacturer's recommended airspeed (95 kts) or if one is not stated, a safe airspeed not to exceed V_A.
- Rolls into a coordinated 360° turn; maintains a 45° bank.
- Perform the task in the opposite direction, as specified by the instructor.
- Divide attention between airplane control and orientation.
- Maintain the entry altitude, ±100 feet, airspeed, ±10 kts, bank, ±5°; and roll out on the entry heading, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain why load factor increases as bank angle increases.
- Discuss the relationship between load factor and stall speed.
- Discuss the principle of over-banking tendency.
- Explain how to maintain altitude and airspeed.
- Explain limit load factor and what happens if it's exceeded.

Safety Considerations:

- Do not exceed manufacturer's recommended airspeed or V_A.
- Always clear the area before initiating the maneuver.
- The maneuver is to be completed no lower than 1,500' AGL.
- Division of attention between maneuver and scanning for traffic.

Common Errors:

- Improper pitch, bank, and power coordination during entry and rollout.
- Uncoordinated use of flight controls.
- Improper procedure in correcting altitude deviations.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Tracking A Straight Line (C-172R)

Objective:

To maintain a uniform ground track along a selected straight line or road with a constant airspeed and altitude while controlling the effect of wind drift on the airplane and the proper correction using varying crosswind correction.

Description:

Tracking a straight line is a training maneuver, in which the ground track of the airplane is flown following a straight line on the ground correcting for wind drift.

Setup Procedure:

1) Select a straight line at least 1 mile in length with a crosswind in an area free of obstructions.
2) Perform clearing turns and establish 1,000' AGL.
3) Adjust the mixture in accordance with the POH.
4) Position the airplane to follow a path over or parallel to a straight line.
5) Maintain an equal distance from the straight line as you fly along it crabbing as necessary.
6) Return to cruise flight and perform the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to tracking a straight line.
- Selects a suitable reference area.
- Plans the maneuver so as to track the straight line, 1,000' AGL at an appropriate distance from the selected reference area.
- Applies adequate wind-drift correction during straight and turning flight to maintain a constant ground track along the straight line reference area.
- Divides attention between airplane control and the ground track while maintaining coordinated flight.
- Maintains altitude, ±100 feet; maintains airspeed, ±10 kts.

Learning Outcomes:

- Describe proper division of attention.
- Explain the correlation between the maneuver and a traffic pattern at an airport.
- Predict amount of wind correction based on conditions.

Safety Considerations:

- Avoid tall obstacles and populated areas.
- Locate a landing area to use in the event of an emergency.
- Maintain separation from other aircraft.

Common Errors:

- Improper crab angle.
- Fixation on one aspect of the maneuver.
- Uncoordinated flight.

References:

Airplane Flying Handbook; POH/AFM;

Rectangular Course (C-172R)

Objective:

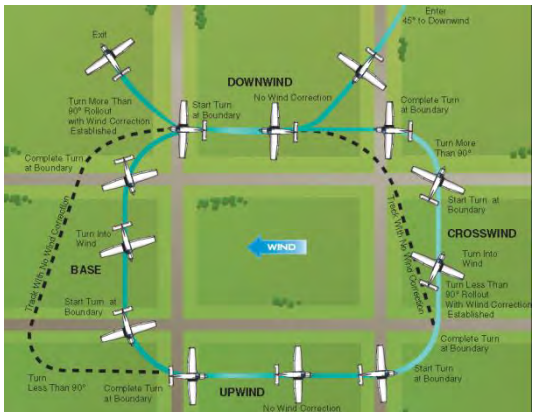
To maintain a uniform ground track around a selected rectangular ground reference with a constant airspeed and altitude while controlling the effect of wind drift on the airplane and the proper correction using varying crosswind correction.

Description:

The rectangular course is a training maneuver, in which the ground track of the airplane is equidistant from all sides of the selected rectangular area on the ground.

Setup Procedure:

1) Select a rectangular area approximately 1 mile in length in an area free of obstructions.
2) Perform clearing turns and establish 1,000' AGL.
3) Adjust the mixture in accordance with the POH.
4) Maintain a safe airspeed (recommended 95 kts).
5) Enter the pattern at a 45° angle to midfield of the downwind approximately ½ mile from the field.
6) Maintain an equal distance from the field as you fly around it crabbing as necessary.
7) Exit the maneuver at a 45° angle to midfield of the downwind.
8) Return to cruise flight and perform the cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a rectangular course.
- Selects a suitable reference area.
- Plans the maneuver so as to enter a left or right pattern, 1,000' AGL at an appropriate distance from the selected reference area, 45° to the downwind leg.
- Applies adequate wind-drift correction during straight and turning flight to maintain a constant ground track around the rectangular reference area.
- Divides attention between airplane control and the ground track while maintaining coordinated flight.
- Maintains altitude, ±100 feet; maintains airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Describe proper division of attention.
- Explain the correlation between the maneuver and a traffic pattern at an airport.
- Predict amount of wind correction based on conditions.

Safety Considerations:

- Avoid tall obstacles and populated areas.
- Locate a landing area to use in the event of an emergency.
- Maintain separation from other aircraft.

Common Errors:

- Improper crab angle.
- Fixation on one aspect of the maneuver.
- Uncoordinated flight.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Turns Around a Point (C-172R)

Objective:

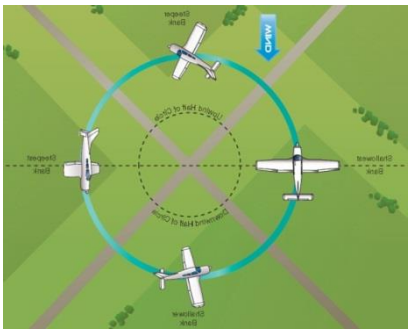
To maintain a uniform ground track around a reference point with a constant airspeed and altitude while demonstrating the effect of wind drift on the airplane and the proper correction using varying bank angle.

Description:

The airplane's ground track makes two complete circles, with a constant radius, around a selected point on the ground.

Setup Procedure:

1) Select a prominent reference point on the ground.
2) Perform clearing turns and establish 1,000' AGL.
3) Adjust the mixture in accordance with the POH.
4) Maintain a safe airspeed (recommended 95 kts).
5) Enter the maneuver on the downwind.
6) Initiate the turn when abeam the point.
7) Apply wind correction, as necessary, to maintain a constant radius around the selected reference point.
8) Exit on the downwind.
9) Return to cruise flight and perform the cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to turns around a point.
- Selects a suitable ground reference point.
- Plans the maneuver so as to enter left or right at 1,000' AGL, at an appropriate distance from the reference point.
- Applies adequate wind-drift correction to track a constant radius turn around the selected reference point.
- Divides attention between airplane control and the ground track while maintaining coordinated flight.
- Maintains altitude, ±100 feet; maintains airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Student should demonstrate wind drift correction with varying bank angle and proper aircraft control to maintain the desired ground track.
- Plan maneuver radius by assessing wind speed and direction.

Safety Considerations:

- Always clear area before beginning a maneuver.
- Select area with an emergency landing field close.
- Avoid areas with towers or tall buildings/towns.

Common Errors:

- Faulty entry procedure.
- Poor planning or division of attention.
- Uncoordinated flight control application.
- Improper wind-drift correction.
- Failure to maintain selected altitude or airspeed.
- Failure to establish approximately 45° bank at the steepest point.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

S-Turns (C-172R)

Objective:

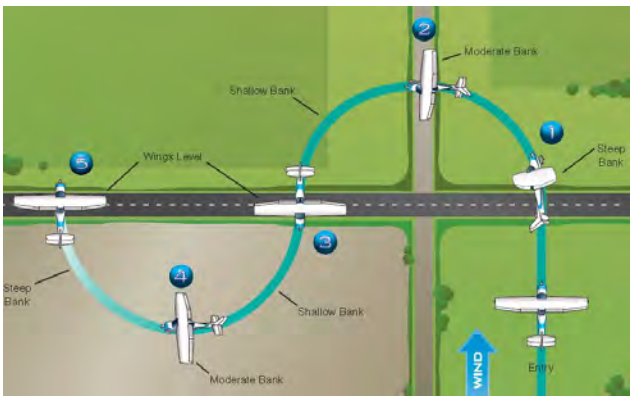
To maintain a uniform ground track of semicircles along a selected reference line with a constant airspeed and altitude while demonstrating the effect of wind drift on the airplane and the proper correction using varying bank angle.

Description:

The airplane's ground track describes semicircles of equal radii on each side of a selected straight line on the ground.

Setup Procedure:

1) Select a prominent line on the ground perpendicular to the wind.
2) Perform clearing turns and establish 1,000' AGL.
3) Adjust the mixture in accordance with the POH.
4) Maintain a safe airspeed (recommended 95 kts).
5) Enter the maneuver on the downwind.
6) Initiate the first turn upon reaching the reference line.
7) Apply wind correction, as necessary, to maintain a constant radius around a point on the reference line.
8) After a 180° turn, reverse the turn.
9) After two 180° turns are completed, exit on the downwind.
10) Return to cruise flight and perform the cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to S-turns.
- Selects a suitable ground reference line.
- Plans the maneuver so as to enter at 1,000' feet AGL, perpendicular to the selected reference line.
- Applies adequate wind-drift correction to track a constant radius turn on each side of the selected reference line.
- Reverses the direction of turn directly over the selected reference line.
- Divides attention between airplane control and the ground track while maintaining coordinated flight.
- Maintains altitude, ±100 feet; maintains airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Demonstrate wind drift correction with varying bank angle and proper aircraft control to maintain the desired ground track.
- Plan maneuver radius by assessing wind speed and direction.

Safety Considerations:

- Always clear area before beginning a maneuver.
- Select an area with an emergency landing field nearby.
- Avoid areas with towers or tall buildings/towns.

Common Errors:

- Faulty entry procedure.
- Poor planning or division of attention.
- Uncoordinated flight control application.
- Improper wind-drift correction.
- Failure to maintain selected altitude or airspeed.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

C-172S

Passenger Briefing (C-172S)

Objective:

To provide a standard pre-flight briefing to passengers.

Description:

The pilot in command is required by the Federal Aviation Regulations to provide a passenger briefing.

Setup Procedure:

2) Before starting the engine the Pilot-in-Command will provide the passenger safety briefing to include, but not limited to:
    a. Designation of Pilot-in-Command.
    b. Procedures for positively exchanging flight controls.

S

i. Seat belts and shoulder harnesses (location and operation).
ii. Seat belts & shoulder harnesses fastened for taxi, takeoff and landing.
iii. Seat position adjusted and locked in place (controls and operation).

A

iv. Air vents (location and operation).
v. All environmental controls (discussed).
vi. Action in case of any passenger discomfort.

F

vii. Fire extinguisher (location and operation).
viii. Smoking is prohibited.

E

ix. Exit doors (how to secure; how to open).
x. Emergency evacuation plan.
xi. Emergency/survival kit (location and contents).
xii. Equipment (location & operation, i.e., ELT, flight controls).

T

xiii. Traffic (scanning, spotting, notifying pilot).
xiv. Talking ("sterile cockpit" expectations).

Y

xv. Your questions?

Flight Proficiency Standards:

- Briefs occupants on the use of safety belts, shoulder harnesses, doors, and emergency procedures.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance and regulatory requirement for providing a passenger briefing.

Common Errors:

- Failure to perform a passenger briefing.
- Incomplete passenger briefing.

References:

Airman Airman Certification Standards, Federal Aviation Regulations, AC 121-24, AOPA Passenger Safety Briefing Video

Taxiing (C-172S)

Objective:

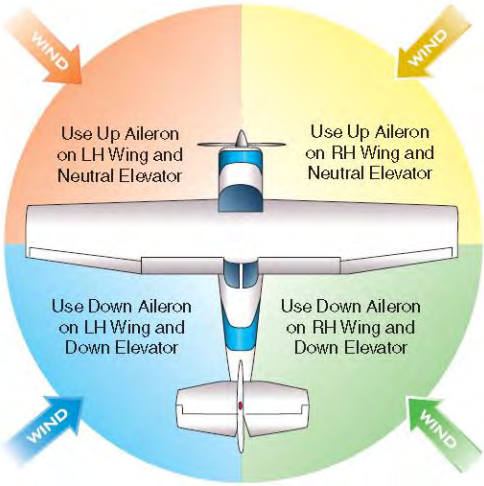
To safely maneuver the airplane on the surface of the airport.

Description:

Taxiing is the controlled movement of the airplane under its own power while on the ground.

Setup Procedure:

1) Complete before taxi checklist.
2) Set heading bug to the wind direction.
3) After engine start, check for traffic in both directions, increase power and allow the airplane to roll slight forward and apply brakes.
4) To turn right, use right rudder. To turn left, use left rudder. Differential braking can be used to make a sharper turn.
5) Taxi at a speed consistent with safety, but no faster than a brisk walk. Use power to control taxi speed before using brakes.
6) Apply proper crosswind taxi control deflections.
7) To come to a stop, reduce power to idle and smoothly apply brakes.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to safe taxi procedures.
- Performs a brake check immediately after the airplane begins moving.
- Positions the flight controls properly for the existing wind conditions.
- Controls direction and speed without excessive use of brakes.
- Complies with airport/taxiway markings, signals, ATC clearances, and instructions.
- Taxies so as to avoid other aircraft and hazards.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance of crosswind taxi techniques.
- Explain the importance of using minimal power and braking.

Safety Considerations:

- Maintain taxiway centerline.
- Use taxi lights.
- Use proper crosswind taxi techniques.
- Taxi at a speed consistent with safety.

Common Errors:

- Not performing a brake check.
- Improper crosswind taxi control deflections.
- Improper use of power and brakes.
- Taxiing at a speed not consistent with safety.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Normal & Crosswind Takeoff & Climb (C-172S)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude.

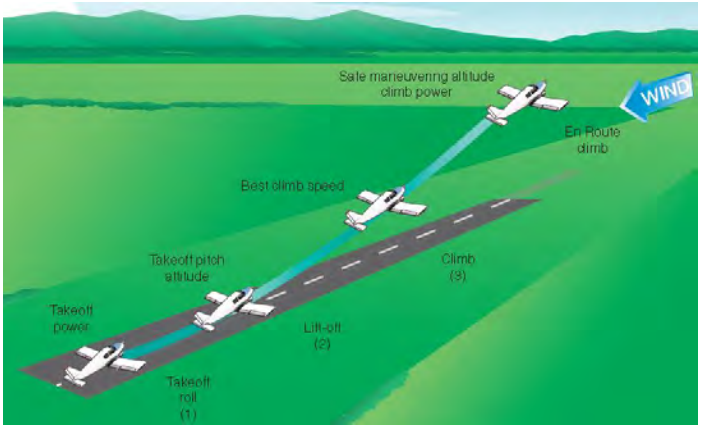
Description:

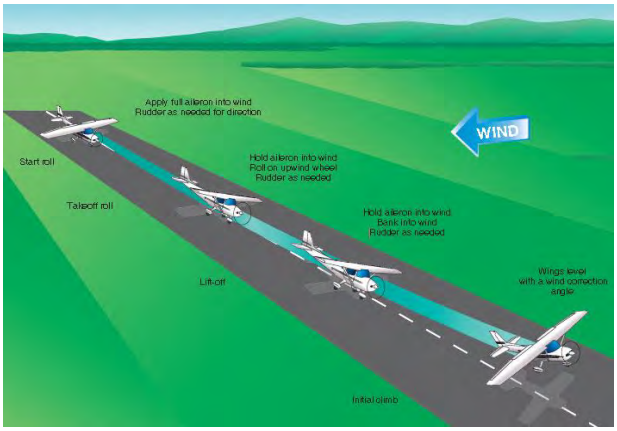
The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane is accelerated to an airspeed that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and establishes a pitch attitude to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete takeoff checklist and takeoff briefing.
3) Use aircraft lighting as recommended by the current version of AC 91-73.
4) Ensure runway is clear, align aircraft with runway centerline, confirm DG is aligned with runway, and ensure nose wheel is straight.
5) Position flight controls for wind for existing conditions.
6) Advance throttle smoothly to takeoff power ensuring toes are resting on rudder pedals, not on brakes.
7) Check engine instruments during takeoff roll for normal indications.
8) Maintain directional control with rudder pedals and crosswind control with appropriate aileron deflection
9) Maintain a slightly tail low attitude.
10) Upon reaching rotation speed, 55 kts (V_R), increase back elevator pressure to establish the lift-off attitude that is approximately that for V_Y and allow the aircraft to fly off the ground.
11) Apply adequate drift correction to maintain runway centerline.
12) Accelerate to 74 kts (V_Y).
13) At 500 ft., or as workload permits, complete climb checklist.





Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a normal and crosswind takeoff, climb operations, and rejected takeoff procedures.
- Positions the flight controls for the existing wind conditions.
- Clears the area; taxies into the takeoff position and aligns the airplane on the runway centerline.
- Lifts off at the recommended airspeed and accelerates to V_Y.
- Establishes a pitch attitude that will maintain V_Y +10/-5 kts.
- Retracts the landing gear, if appropriate, and flaps after a positive rate of climb is established.
- Retracts flaps at 200' or a safe altitude.
- Maintains takeoff power and V_Y +10/-5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Complies with noise abatement procedures.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria.
- Discuss how to maintain directional control during the ground roll.
- Discuss proper lift-off technique.
- Explain how to use ailerons during crosswind situations.
- Describe how to correct for wind-drift.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force aircraft off runway too early, causing it to settle back on the runway.
- Do not allow upwind wing to rise during takeoff.
- Do not exceed maximum demonstrated crosswind.
- Consider the effect of density altitude on performance.

Common Errors:

- Improper runway incursion avoidance procedures.
- Improper use of controls during a normal/crosswind takeoff.
- Inappropriate lift-off procedures.
- Improper climb attitude, power setting, and airspeed.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Short-Field Takeoff & Climb (C-172S)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude when the takeoff area is short or restricted by obstructions.

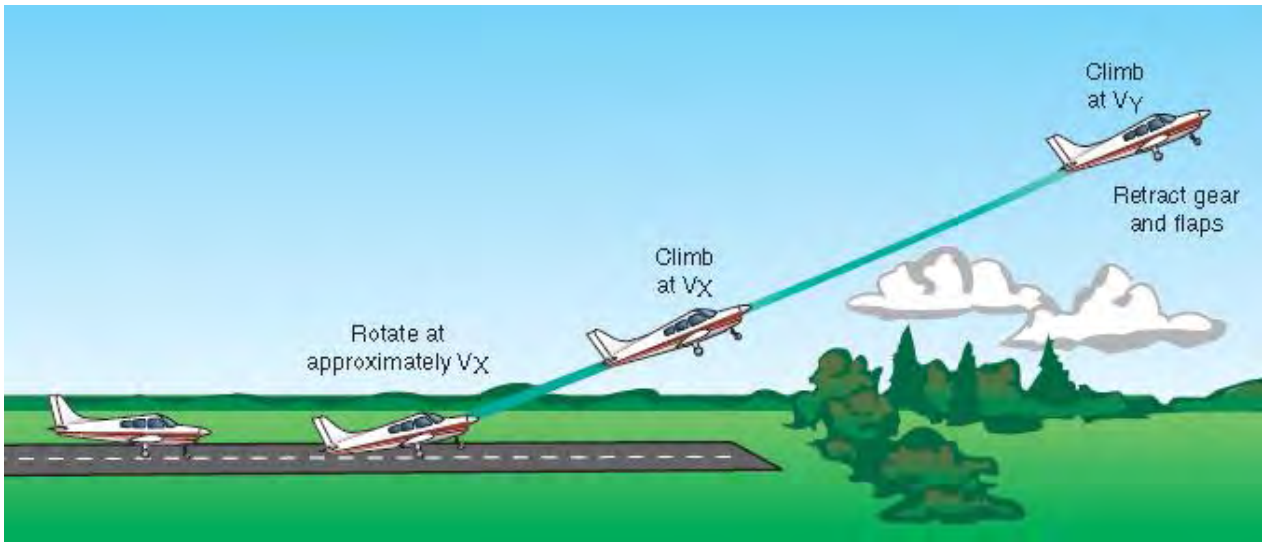
Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane is accelerated to an airspeed that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and a pitch attitude is established to climb away from the runway and clear a 50 foot obstacle.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) Set flaps to 10°.
4) Use aircraft lighting as recommended by the current version of AC 91-73.
5) Back taxi and align aircraft with runway centerline, confirm DG is aligned with runway, and ensure nose wheel is straight.
6) Ensure runway is clear, advance throttle smoothly to takeoff power while holding brakes; check engine instruments.
7) Release brakes and ensure toes are resting on rudder pedals, not brakes.
8) Maintain directional control with rudder pedals and appropriate aileron deflection.
9) Upon reaching rotation speed, 55 kts (V_R), increase back elevator pressure to establish lift-off attitude and allow aircraft to fly off ground.
10) Accelerate the aircraft to 56 kts until obstacle is cleared or 50 feet above takeoff surface is attained and then accelerate to 74 kts (V_Y).
11) Retract flaps after a safe altitude of at least 200 ft. and an airspeed of 74 kts are attained.
12) At 500 ft., or as workload permits, complete climb checklist.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a short-field takeoff and maximum performance climb.
- Positions the flight controls for the existing wind conditions; set the flaps as recommended.
- Clears the area; taxies into takeoff position utilizing maximum available takeoff area and aligns the airplane on the runway center/takeoff path.
- Applies brakes (if appropriate), while advancing throttle smoothly to takeoff power.
- Lifts off at the recommended airspeed, and accelerates to the recommended obstacle clearance airspeed or V_X.
- Establishes a pitch attitude that will maintain the recommended obstacle clearance airspeed, or V_X, +10/-5 kts, until the obstacle is cleared, or until the airplane is 50 feet above the surface.
- After clearing the obstacle, establishes the pitch attitude for V_Y, accelerates to V_Y, and maintains V_Y, +10/-5 kts, during the climb.
- Retracts the landing gear, if appropriate, and flaps after a positive rate of climb is established.
- Retracts flaps at 200' or a safe altitude.
- Maintains takeoff power and V_Y +10/-5 to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria.
- Discuss how to maintain directional control during ground roll.
- Discuss proper lift-off technique.
- Explain the difference between V_X and V_Y.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force aircraft off runway too early, causing it to settle back onto runway.
- Use of entire runway length.
- Retraction of flaps as recommended.
- Consider effect of density altitude on performance.

Common Errors:

- Improper runway incursion avoidance procedures.
- Improper use of controls during a short-field takeoff.
- Inappropriate lift-off procedures.
- Improper initial climb attitude, power setting and airspeed to clear obstacle.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Soft-Field Takeoff & Climb (C-172S)

Objective:

To align the airplane with the takeoff path, become airborne as quickly as possible, and establish a positive climb to a safe maneuvering altitude.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane enters the runways with full up elevator deflection and accelerates to an airspeed at which the airplane will lift off.
2) The acceleration to lift off speed while remaining in ground effect.
3) The initial climb when the airplane establishes a pitch attitude to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) Set flaps to 10°.
4) Use aircraft lighting as recommended by the current version of AC 91-73.
5) Ensure runway is clear, taxi onto runway with back elevator pressure and align nose with runway centerline without stopping or the use of brakes.
6) Smoothly advance throttle to takeoff power.
7) Ensure toes are resting on rudder pedals, not on brakes.
8) Check engine instruments during ground roll for normal indications.
9) Maintain directional control with rudder pedals and appropriate aileron deflection.
10) Use back elevator pressure to establish a positive pitch attitude and allow the aircraft to fly itself off the ground.
11) When the aircraft becomes airborne, reduce pitch to remain in ground effect while accelerating to 62 kts (V_X) then simultaneously climb and accelerate to 74 kts (V_Y).
12) Retract flaps after a safe altitude of at least 200 ft. and an airspeed of 74 kts are attained.
13) At 500 ft., or as workload permits, complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a soft-field takeoff and climb.
- Positions the flight controls for existing wind conditions and to maximize lift as quickly as possible.
- Clears the area; taxies on to the takeoff surface at a speed consistent with safety without stopping while advancing the throttle smoothly to takeoff power.
- Establishes and maintains a pitch attitude that will transfer the weight of the airplane from the wheels to the wings as rapidly as possible.
- Lifts off at the lowest possible airspeed and remains in ground effect while accelerating to V_X, while simultaneously accelerating to V_Y and climbing.
- Establishes a pitch attitude for V_Y, and maintains selected airspeed +10/-5 kts to a safest maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss proper soft-field takeoff technique.
- Explain runway selection criteria.
- Predict the height of ground effect and discuss its relevance.
- Discuss how to maintain directional control during ground roll.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not allow the airplane to climb above ground effect too soon, causing it to settle back onto the runway.

Common Errors:

- Improper runway incursion avoidance procedures.
- Improper use of controls during a soft-field takeoff.
- Improper lift-off procedures.
- Improper climb attitude, power setting and airspeed.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Traffic Pattern (C-172S)

Objective:

To assure that air traffic flows into and out of an airport in an orderly manner.

Description:

The airplane is flown on a rectangular course around a runway at an altitude specified in the current Airport/Facility Directory.

Setup Procedure:

Departures

1) All departures:
    a. Fly the departure leg straight out until reaching traffic pattern altitude.
    b. Once reaching traffic pattern altitude, continue climbing and turn on course.

Arrivals

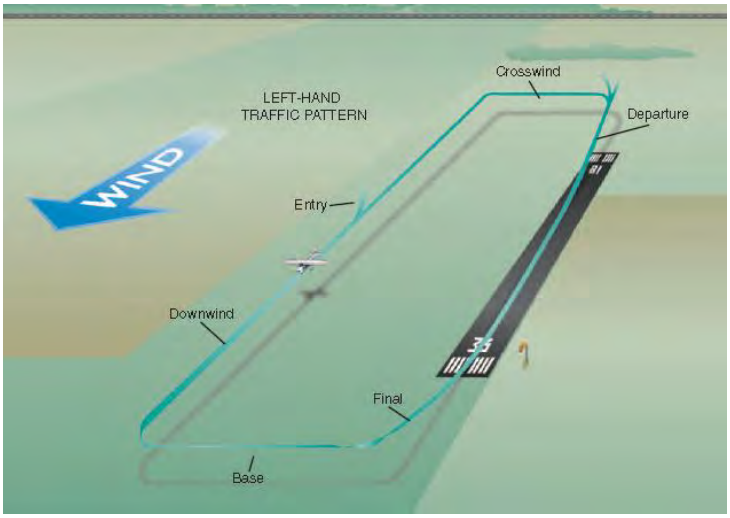
1) Prior to reaching 5 NM from the airfield, complete the following:
    a. Monitor local AWOS/ASOS/ATIS
    b. Ask “Is there any traffic between me and the airport?” and cancel flight following (if applicable)
    c. Complete the Before Landing checklist
2) Slow down below the approach flap airspeed prior to pattern entry.

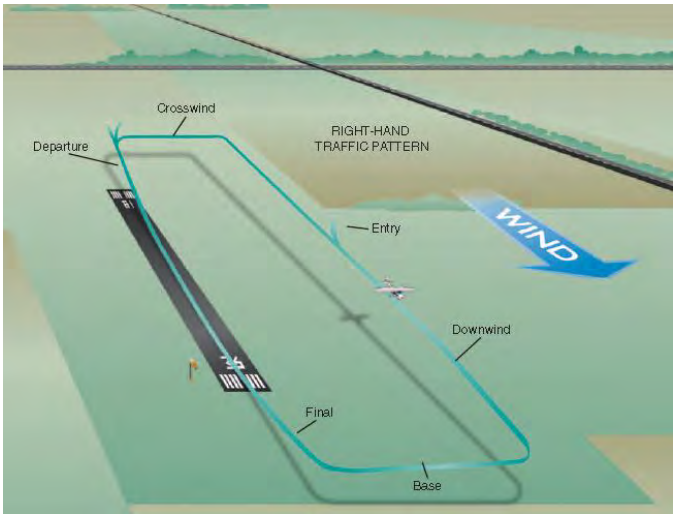
    If already established on the downwind side, skip to step 4.*

3) For a midfield entry:
    a. Cross midfield 500’ above traffic pattern altitude, observing traffic flow and wind direction.
    b. Fly 2-3 miles beyond the downwind leg, then descend to pattern altitude.
    c. Complete a tear-drop shaped turn to the right or left as necessary to position the aircraft at a 45 degree angle to the downwind leg.

    If less than two aircraft are currently in the pattern, the alternate method (cross midfield at traffic pattern altitude, enter directly into downwind leg) may be used.

4) Enter the traffic pattern at the designated traffic pattern altitude (normally 1,000’ AGL) at a 45 degree angle to the downwind leg at midfield.
5) Apply appropriate crosswind correction to allow for a parallel flight path approximately ½ mile from the runway
6) Allow for proper spacing from other aircraft in the pattern as to prevent runway incursions upon landing.
7) Maintain airspeed below the flap speed required for each configuration change.





Flight Proficiency Standards:

- Exhibits knowledge of the elements related to traffic patterns. This shall include procedures at airports with and without operating control towers, prevention of runway incursions, collision avoidance, wake turbulence avoidance, and wind shear.
- Complies with proper traffic pattern procedures.
- Maintains proper spacing from other aircraft.
- Corrects for wind drift to maintain the proper ground track.
- Maintains orientation with the runway/landing area in use.
- Maintains traffic pattern altitude, ±100 feet and the appropriate airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss traffic patterns at controlled and uncontrolled airports.
- Explain traffic pattern procedures.
- Explain how to maintain the proper ground track.

Safety Considerations:

- Maintain proper traffic pattern altitude.
- Maintain a distance from the runway that is within power-off gliding distance.
- Preferred bank of 30 degrees while in pattern.
- Maneuver within 300 feet of traffic pattern altitude before turning crosswind to base.
- Maintain proper aircraft separation.
- Comply with standards traffic pattern procedures or ATC instructions.

Common Errors:

- Failure to comply with traffic pattern instructions, procedures, and rules.
- Improper correction for wind drift.
- Inadequate spacing from other traffic.
- Poor altitude or airspeed control.
- Flying too wide of a pattern.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Normal Approach & Landing (C-172S)

Objective:

To safely transition from flight to ground operations during normal conditions.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. At key position, assess approach position.
    b. With wings level, set flaps to 20° as required.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Set flaps to 30° as required.
    b. Adjust pitch and power as required to maintain a stabilized approach, at 65 kts, toward the selected aiming point until flare to land.
    c. Complete the GUMPS check.
8) During the flare to land simultaneously reduce power to idle and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline.
9) Maintain positive pitch attitude for aerodynamic braking.
10) Exit runway and complete after landing checklist.

***The above condition is based on a no wind condition.*
*Adjust configuration and airspeed to compensate for wind and gust factor.***

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a normal and crosswind approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point
- Establishes the recommended approach and landing configuration and airspeed, and adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{S0}, +10/-5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the flare and touchdown.
- Touches down smoothly at approximate stalling speed.
- Touches down at or within 400 feet beyond a specified point, with no drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Completes the appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain proper use of crosswind control inputs.

Safety Considerations:

- Observe flap extension speeds.
- Maintain proper airspeed at all times.
- Use proper crosswind correction to avoid drifting from runway centerline.

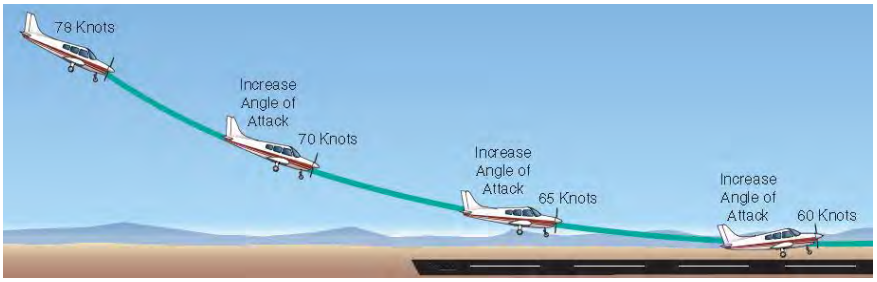
Common Errors:

- Improper use of landing performance data and limitations.
- Failure to establish proper crosswind correction.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Improper procedure during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.

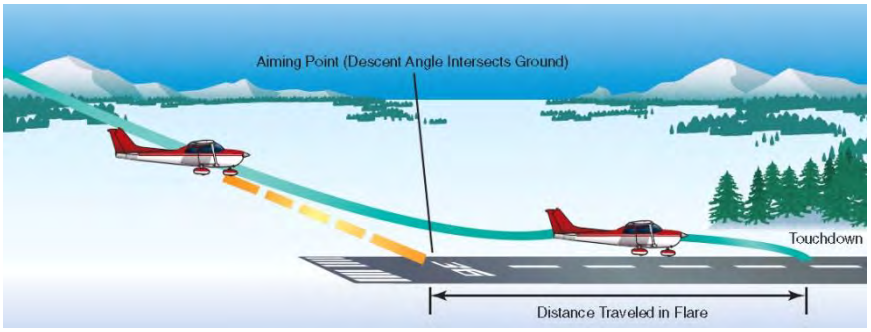
References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

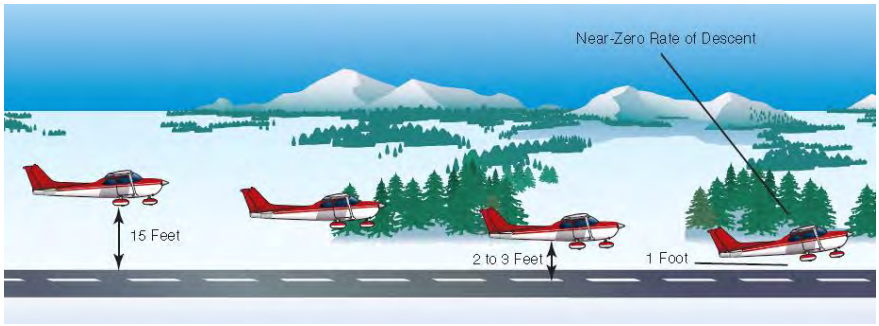
Changing angle of attack during round out



Aiming point of a stabilized approach



Example of a well-executed round out and proper landing attitude


Near-Zero Rate of Descent
15 Feet
2 to 3 Feet
1 Foot

Crosswind Approach & Landing (C-172S)

Objective:

To safely transition from flight to ground operations during crosswind conditions.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown.

Setup Procedure:

2) Complete the before landing and normal landing checklist at least 3 nm before the airport.
3) Enter and fly the appropriate pattern.
4) Select touchdown and aiming points.
5) Set flaps to 10° no later than abeam the touchdown point.
6) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
7) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
8) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 65 kts, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    e. Complete the GUMPS check.
9) During the flare to land simultaneously reduce power to idle and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline.
10) Maintain positive pitch attitude for aerodynamic braking.
11) Exit runway and complete after landing checklist.

*** Adjust configuration and airspeed to compensate for strong crosswind and/or gust factor.***

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a normal and crosswind approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point
- Establishes the recommended approach and landing configuration and airspeed, and adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{S0}, +10/-5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the flare and touchdown.
- Touches down smoothly at approximate stalling speed.
- Touches down at or within 400 feet beyond a specified point, with no drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Completes the appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain proper use of crosswind control inputs.

Safety Considerations:

- Observe flap extension speeds.
- Maintain proper airspeed at all times.
- Use proper crosswind correction to avoid drifting from runway centerline.

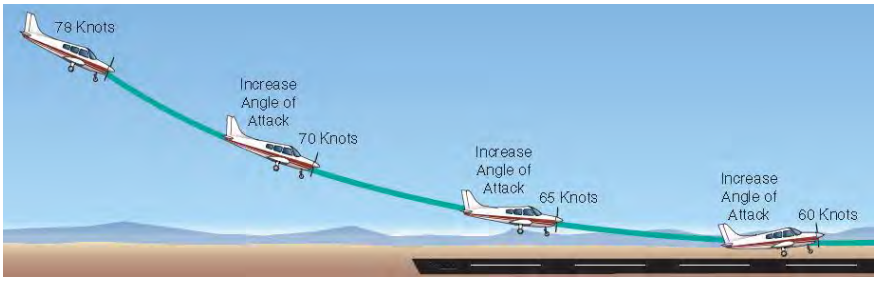
Common Errors:

- Improper use of landing performance data and limitations.
- Failure to establish proper crosswind correction.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Improper procedure during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.

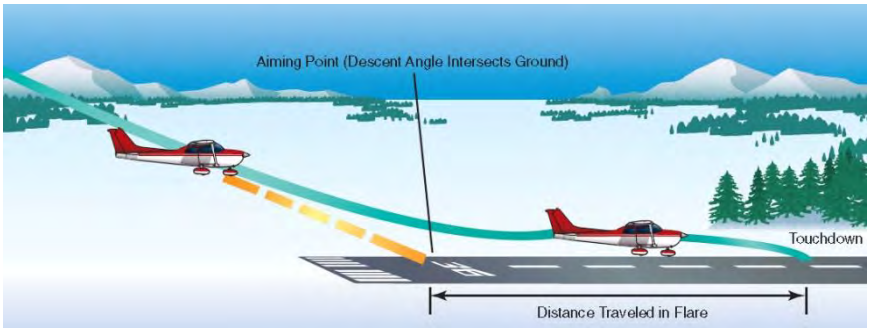
References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Changing angle of attack during round out

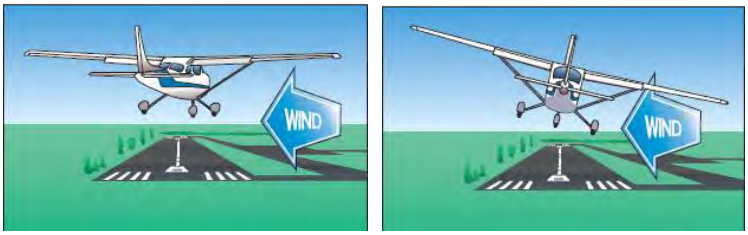


Aiming point of a stabilized approach

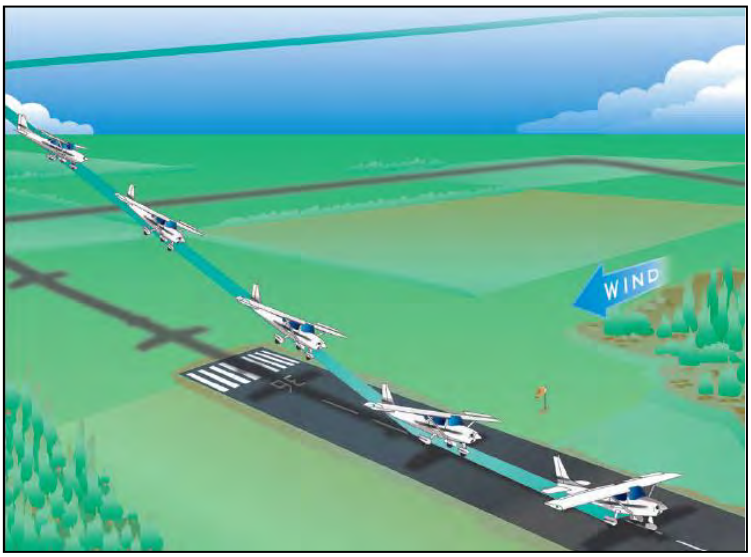


Example of a well-executed round out and proper landing attitude

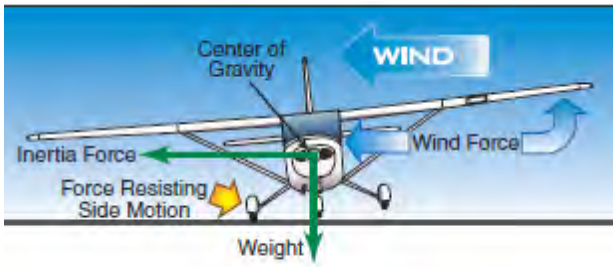
Crabbed Method (Left) / Wing-Low Method (Right)
(Recommended)



Crosswind Approach and Landing using wing low method



Drifting during touchdown (inappropriate crosswind correction)



Short-Field Approach & Landing (C-172S)

Objective:

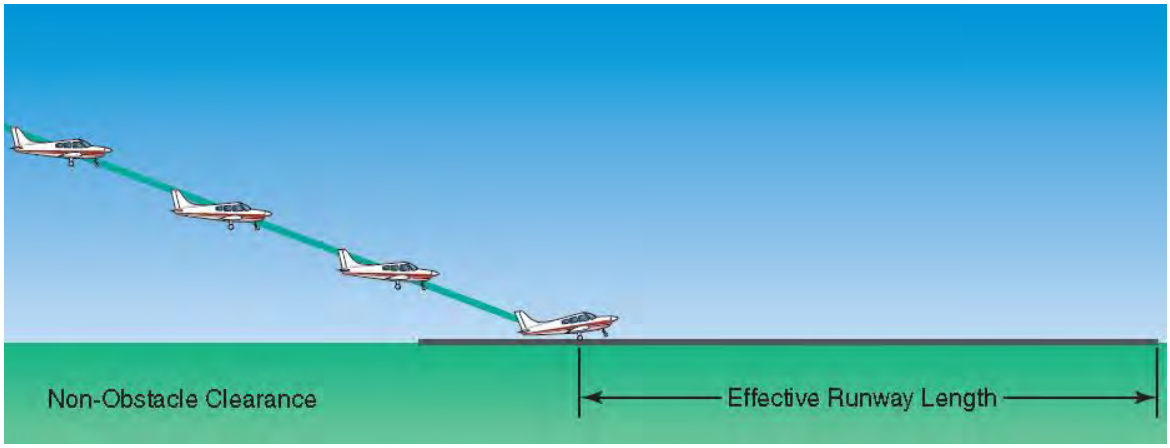
To safely transition from flight to ground operations at an airport with a relatively short runway or where an approach is made over obstacles.

Description:

The airplane is configured for a stabilized approach over a 50 foot obstacle. There will be little or no float during the round out, allowing the airplane to touch down at a specified point, and be stopped in a shorter than normal distance.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 61 kts, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    e. Maintain a stabilized descent above the 50 ft obstacle and land at the specified point.
    f. Complete the GUMPS check.
8) During the flare to land simultaneously reduce power to idle and maintain aircraft approximately one foot above runway until it slows to stall speed.
9) Touch down at approximate stall speed on the runway centerline.
10) Maintain positive pitch attitude for aerodynamic braking.
11) Apply maximum braking (simulated) to a complete stop without skidding the tires.
12) Exit runway and complete after landing checklist.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a short-field approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects the most suitable touchdown point.
- Establishes the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended approach airspeed, or in its absence not more than 1.3 V_{SO}, +10/-5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the round out and touchdown.
- Touches down smoothly at minimum control airspeed.
- Touches down at or within 200 feet beyond a specified point, with no side drift, minimum float and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Applies brakes, as necessary, to stop in the shortest distance consistent with safety.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on an approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain how to compensate for obstacles and shortened runway lengths.

Safety Considerations:

- Maintain proper airspeed at all times.
- Compensate for crosswind.
- Do not skid tires.
- Use of aerodynamic braking as available.

Common Errors:

- Excessive airspeed on final approach.
- Slow airspeed prior to touchdown.
- Failure to establish proper crosswind correction.
- Improper use of landing performance data and limitations.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Improper procedure during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Soft-Field Approach & Landing (C-172S)

Objective:

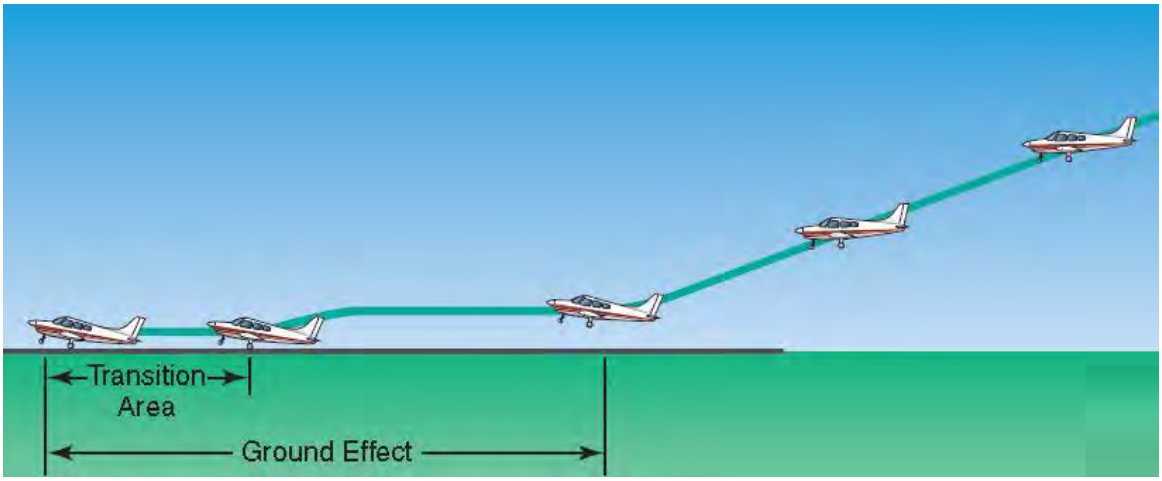
To safely transition the airplane from flight to ground operations on a rough or soft surface.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown on a field that is unimproved.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 65 kts, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    e. Adjust stabilized approach to clear obstacles and land at the specified point.
    f. Complete the GUMPS check.
8) During the flare to land reduce power as required to maintain aircraft approximately one foot above runway until it slows to stall speed.
9) Touch down at approximate stall speed on the runway centerline as smoothly as possible.
10) Maintain back elevator pressure to keep nose wheel off the ground as long as possible.
11) Maintain directional control with rudder and aileron deflection.
12) Adjust power as necessary to maintain aircraft movement on soft surfaces.
13) Exit the runway with minimal braking and complete after landing checklist.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a soft-field approach and landing.
- Considers the wind conditions, landing surface and obstructions, and selects the most suitable touchdown area.
- Establishes the recommended approach and landing configurations, and airspeed; adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence not more than 1.3 V_{SO}, +10/-5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the round out and touchdown.
- Touches down softly with no drift, and with the airplane's longitudinal axis aligned with the runway/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Maintains proper position of the flight controls and sufficient speed to taxi on the soft surface.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss effect of flaps on an approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain how to touchdown and maneuver the aircraft on soft of unimproved surfaces.

Safety Considerations:

- Do not land on fields that exceed the capabilities of the aircraft or pilot.
- Fly over and visually check the field prior to landing.
- Check field length and density altitude.
- Only land on public, published, unimproved runways with UCM aircraft.
- Use caution when landing on wet grass.

Common Errors:

- Failure to maintain elevator back-pressure after touchdown.
- Improper use of brakes.
- Failure to consider effect of wind and landing surface.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Touch and Go (C-172S)

Objective:

To transition from a landing rollout to a takeoff roll while remaining on the runway.

Description:

A touch and go is a landing which transitions into a takeoff while the aircraft remains rolling on the runway.

Setup Procedure:

1) Perform a normal landing.
2) Upon touchdown:
    a. Allow the aircraft to continue rolling.
    b. Maintain runway centerline.
    c. Apply proper crosswind correction.
3) Reconfigure the aircraft for takeoff.
    a. Retract flaps to 10°.
    b. Set trim to the takeoff position.
4) Smoothly apply full-power.
5) Upon reaching rotation speed, 55 kts (V_R), increase back elevator pressure to establish the lift-off attitude that is approximately V_Y or V_X and allow the aircraft to fly off the ground.
6) Apply adequate drift correction to maintain runway centerline.
7) At 500 ft., or as workload permits, complete the climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to touch and go procedures.
- Maintains runway centerline upon touchdown.
- Applies proper crosswind controls upon touchdown, reconfiguration and climb out.
- Demonstrates proper aircraft reconfiguration.
- Lifts off at the recommended airspeed and accelerates to V_X or V_Y, as appropriate.
- Retracts flaps at 200' or a safe altitude, if appropriate.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Complies with noise abatement procedures.
- Completes the appropriate checklist.

Note: These are the UCM standards. The aforementioned standards are not found in the Airman Certification Standards.

Learning Outcomes:

- Explain the purpose(s) of touch and go's.
- Discuss how crosswind correction will change throughout the maneuver.
- Discuss the importance of maintaining runway centerline during aircraft reconfiguration.

Safety Considerations:

- Maintain runway centerline.
- Proper crosswind correction.
- Maintain situational awareness.
- Proper reconfiguration.

Common Errors:

- Failure to maintain runway centerline.
- Touchdown beyond the first 1/3rd of the runway and attempting a touch and go.
- Improper aircraft reconfiguration.
- Failure to use checklist.
- Failure to maintain adequate crosswind correction.
- Attempting to lift-off prior to rotation speed.

Emergency Descent (C-172S)

Objective:

To descend the airplane as soon and as rapidly as possible, within the structural limitations of the airplane.

Description:

The emergency descent is a maneuver for descending as rapidly as possible to a lower altitude or to the ground for an emergency landing.

Setup Procedure:

9) Perform clearing turns.
10) If utilizing flight following, contact ATC for traffic advisories below.
11) Reduce power to idle.
12) Confirm flaps 0°
13) Set mixture to rich.
14) Roll into a 30° – 45° bank to the left and pitch down to achieve 120 kts (If in turbulent air, maintain an airspeed below V_A).
15) Initiate recovery to level flight at least 300' prior to assigned altitude by:
    c. Rolling out the bank.
    d. Pitching up.
16) Return to cruise flight and complete the cruise checklist to include leaning procedures

Flight Proficiency Standards:

- Exhibit knowledge of the elements related to emergency descent.
- Recognizes situations, such as depressurization, cockpit smoke, and/or fire that require an emergency descent.
- Establish the appropriate airspeed and configuration for the emergency descent.
- Exhibit orientation, division of attention, and proper planning.
- Maintains positive load factors during the descent.
- Follow the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the purpose(s) of an emergency descent.
- Discuss engine cooling characteristics during an emergency descent.
- Discuss the importance of proper planning as it pertains to emergencies.

Safety Considerations:

- Maintain positive aircraft control.
- Clear the engine periodically
- Clear below then GO.
- Steep spiral over airport.
- Continue on to emergency approach and landing.

Common Errors:

- Failure to recognize the urgency of the emergency descent.
- Failure to use emergency checklist for situation.
- Failure to maintain appropriate configuration and airspeed.
- Poor orientation, planning, and division of attention.

Emergency Approach & Landing (C-172S)

Objective:

To develop accuracy, judgment, planning, procedures, and confidence when little or no power is available.

Description:

An engine failure is simulated by the instructor after which the airplane is safely maneuvered to a landing.

Setup Procedure:

1) The instructor will reduce engine power to idle and announce “simulated emergency landing.”
2) Establish an airspeed of 68 kts ($V_{L/D}$) and trim to maintain airspeed.
3) Select a suitable landing location and spiral over it.
4) Complete an engine restart flow.
5) Complete the engine failure checklists as time permits.
6) Establish communication to report emergency situation.
7) Configure and maneuver the aircraft to fly a normal traffic pattern as applicable.
8) Initiate a go-around no lower than 500 feet AGL.

Flight Proficiency Standards:

- Exhibit knowledge of the elements related to emergency approach and landing procedures.
- Establish and maintain the recommended best-glide airspeed, ±10 kts.
- Select a suitable landing area.
- Plan and follow a flight pattern to the selected landing area considering altitude, wind, terrain, and obstructions.
- Prepare for landing or go-around as specified by the instructor.
- Follow the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the criteria for a good emergency landing field.
- Explain the steps to follow after an engine failure.
- Explain how to trouble shoot for problems after an engine failure.

Safety Considerations:

- Maintain positive aircraft control.
- Clear the engine periodically.
- Maintain awareness for towers and other obstacles.
- Maintain situational awareness.
- This is a **dual only** maneuver.

Common Errors:

- Improper airspeed control.
- Poor judgment in the selection of an emergency landing area.
- Failure to estimate the approximate wind speed and direction.
- Failure to fly the most suitable pattern for existing situation.
- Failure to accomplish the emergency checklists.
- Undershooting or overshooting selected landing area.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Forward Slip to a Landing (C-172S)

Objective:

To dissipate altitude without increasing airspeed.

Description:

The upwind wing is lowered and opposite rudder is used to maintain the ground track bringing the aircrafts longitudinal axis at an angle to its flight path. The pitch is adjusted to maintain the desired airspeed.

Setup Procedure:

1) Determine the wind direction.
2) Reduce power to idle.
3) Simultaneously bank into the wind and apply full opposite rudder.
4) Adjust pitch to maintain desired airspeed.
5) Adjust aileron input to maintain the ground track of the aircraft with the extended runway centerline.

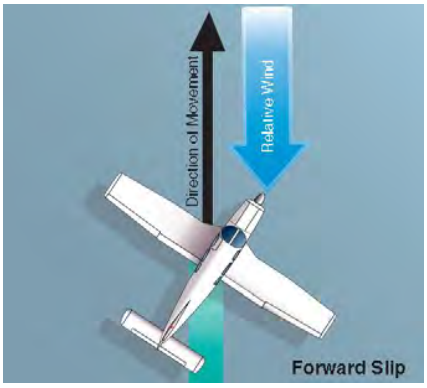
Flight Proficiency Standards:

- Exhibits knowledge of the elements related to forward slip to a landing.
- Considers the wind conditions, landing surface and obstructions, and selects the most suitable touchdown point.
- Establishes the slipping attitude at the point from which a landing can be made using the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power as required.
- Maintains a ground track aligned with the runway center/landing path and an airspeed, which results in minimum float during the flare.
- Makes smooth, timely, and correct control application during the recovery from the slip, the flare, and the touchdown.
- Touchdown smoothly at the approximate stalling speed, at or within 400 feet beyond a specified point with no side drift and with the airplane's longitudinal axis aligned with and over the runway centerline.
- Maintain crosswind correction and directional control throughout the approach and landing sequence.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance of maintaining the proper attitude to avoid a stall.
- Predict the amount of control input required to maintain the desired ground track.
- Discuss the applications in which a forward slip might be used.
- Explain the proper control inputs to perform a forward slip.
- Explain flap configuration considerations applicable to forward slips.
- Explain aircraft limitations applicable to forward slips.



Safety Considerations:

- Maintain sufficient airspeed as to avoid a stall.
- Observe maximum forward slip duration limitations.
- Terminate the maneuver with sufficient altitude to complete a landing.

Common Errors:

- Improper aileron and/or rudder control inputs.
- Failure to maintain airspeed.
- Failure to maintain stabilized slip.
- Inappropriate removal of hand from throttle.
- Improper technique during transition from the slip to the touchdown.
- Failure to maintain runway centerline.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Go-Around (C-172S)

Objective:

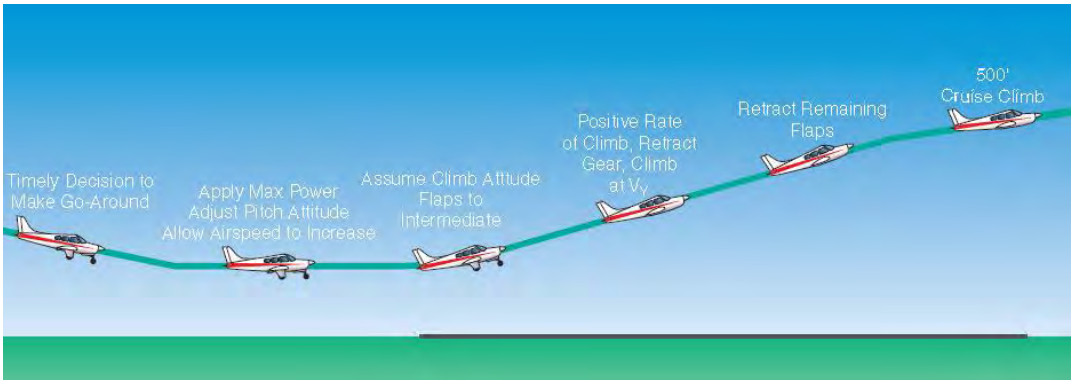
To safely discontinue the landing approach if unstable or other unsatisfactory conditions exist.

Description:

As full power is applied, the aircraft attitude is adjusted to accelerate to V_Y and climb. As a safe airspeed is attained, flaps are retracted 10° at a time allowing stabilization between each retraction.

Setup Procedure:

1) Simultaneously apply maximum power and establish a go-around pitch attitude.
2) Set flaps to 20°.
3) Establish a pitch attitude to accelerate to 55 kts.
4) Allow the airplane to accelerate to V_X or V_Y and climb.
5) If there is an aircraft on the runway, sidestep to clear the departure path of the airplane and allow the pilot to view the landing or departing traffic.
6) Set flaps to 10° and stabilize in between configuration changes then flaps to 0°.
7) Verify Go Around checklist is complete.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a go-around/rejected landing.
- Makes a timely decision to discontinue the approach to landing.
- Applies takeoff power immediately and transitions to climb pitch attitude for V_X, and maintains V_Y+10/-5 kts.
- Retracts the flaps as appropriate.
- Retracts the landing gear, if appropriate, after a positive rate of climb is established.
- Maneuvers to the side of the runway/landing area to clear and avoid conflicting traffic.
- Maintains takeoff power V_y+10/-5 to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the climb.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss events that may require a go-around.
- Explain the importance of maintaining airspeed and coordination during the go-around procedure.
- Discuss the necessity for maneuvering to the side of the runway after making the decision to go-around.

Safety Considerations:

- Maneuver the airplane to the side of the runway.
- Do not establish a pitch up attitude too quickly.
- Maintain coordination.
- Timely decision making.
- Be watchful for situation which may require a go-around.

Common Errors:

- Delayed decision to make a go-around.
- Improper application of power.
- Failure to control pitch attitude.
- Improper trim technique.
- Failure to compensate for torque effect.
- Failure to maintain 79 kts (V_Y).
- Improper wing flap retraction.
- Failure to maintain well clear of obstructions and other traffic.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Maneuvering During Slow Flight (C-172S)

Objective:

To demonstrate the flight characteristics and controllability of an airplane at speeds lower than normal cruise and develop proficiency in performing maneuvers that require slow airspeeds.

Description:

Slow flight consists of slowing the aircraft to a minimum controllable airspeed in the landing configuration and maneuvering the aircraft while maintaining altitude and airspeed.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1,500 RPM or less.
5) Below 110 kts, set flaps to 10°.
6) Adjust pitch and power as necessary to maintain altitude.
7) Below 85 kts, set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
8) Establish and maintain an airspeed at which any further increase in pitch or reduction of power would result in an immediate stall or a higher speed as specified by your instructor.
    a. Slow flight should be practiced at varying speeds and configurations above the 1G stall speed of the aircraft as specified by the instructor.
9) Maneuver as instructed.
10) Recover when instructed by:
    a. Adding full power
    b. Set flaps to 20° and allow the aircraft to stabilize.
    c. Then set flaps to 10° and 0° allowing the aircraft to stabilize between each setting.
11) Return to cruise flight and perform the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to maneuvering during slow flight.
- Selects an entry altitude that will allow the task to be completed no lower than 1,500 feet AGL.
- Establish and maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in a stall warning (e.g., airplane buffet, stall horn, etc.).
- Accomplishes coordinated straight and level flight, turns, climbs, and descents with landing gear and flap configurations specified by the instructor.
- Divides attention between airplane control and orientation.

- Maintains the specified altitude, ±100 feet; specified heading, ±10°; airspeed, +10/-0 kts; and specified angle of bank, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the relationship between pitch and power in maintaining airspeed and altitude during slow flight.
- Discuss how flight at minimum airspeeds develops the ability to estimate the margin of safety above the stalling speed.
- Compare the practice of slow flight to various phases of flight such as; takeoffs, climbs, descents, go-arounds, and approaches to landing.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified gear and flap configuration.
- Improper entry technique.
- Failure to establish and maintain the specified airspeed.
- Excessive variations of altitude and heading.
- Rough or uncoordinated control technique.
- Improper correction for left turning tendency.
- Improper trim technique.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Power – Off Stall (C-172S)

Objective:

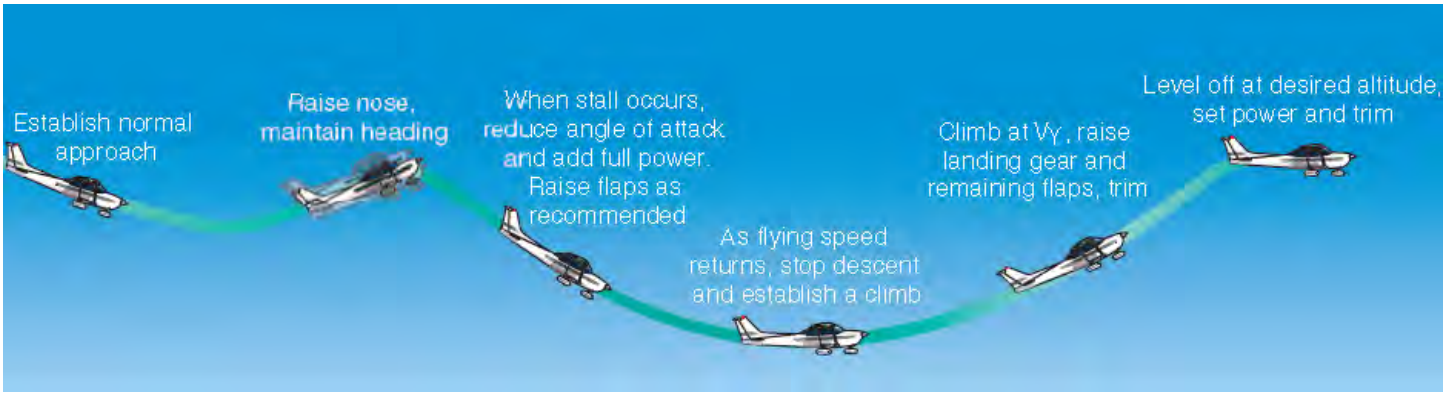
To familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop the skills to prevent and recover from stalls in the landing configuration.

Description:

The aircraft is slowed down and placed in the landing configuration after which a stall is induced and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1,500 RPM or less allowing the aircraft to slow to approach speed while maintaining altitude.
5) Below 110 kts, set flaps to 10°.
6) Below 85 kts, set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
7) Establish a stabilized descent at 65 kts.
8) Reduce power to idle.
9) Maintain coordinated flight and altitude until recognition of the stall. As the stall occurs, recover from the stall by simultaneously reducing the angle of attack, adding full power, and leveling the wings.
10) Set flaps to 20°.
11) Accelerate the aircraft to V_X (recommended) or V_Y and climb while retracting the remaining flaps in 10° increments.
12) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-off stalls.
- Selects an entry altitude that allows the task to be completed no lower than 1,500' feet AGL.
- Establishes a stabilized descent in the approach or landing configuration, as specified by the instructor.
- Transitions smoothly from the approach or landing attitude to a pitch attitude that will induce a stall.
- Maintains a specified heading, ±10°, in straight flight; maintains a specified angle of bank not to exceed 20°, ±10°; in turning flight, while inducing the stall.
- Recognizes and recovers promptly after the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable and leveling the wings to return to a straight and level flight attitude with minimum loss of altitude appropriate for the airplane.
- Retract the flaps to the recommended setting; retracts the landing gear, if retractable, after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flap retraction; returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Power – On Stall (C-172S)

Objective:

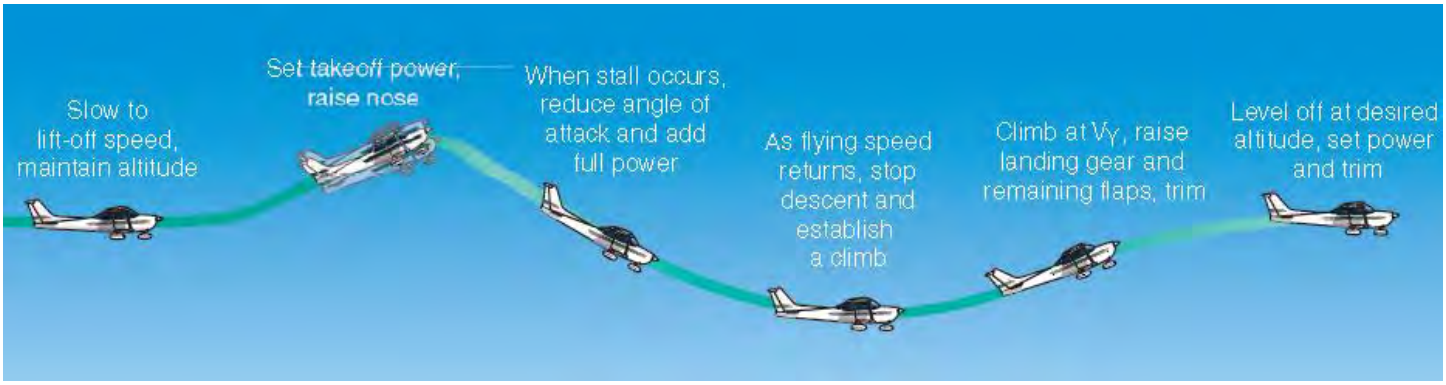
To familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in the takeoff configuration.

Description:

The aircraft is slowed down and placed in the takeoff configuration after which a stall is induced and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1200 RPM or less, allowing the aircraft to slow to takeoff speed while maintaining altitude.
5) Add full power at 55 kts (V_R).
6) Transition smoothly to the pitch attitude that will induce a stall.
7) Recognize and recover promptly after a fully developed stall occurs by simultaneously reducing the angle of attack, confirming full power, and leveling the wings.
8) Accelerate the aircraft to 74 kts (V_Y) and climb.
9) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-on stalls.
- Selects an entry altitude that allows the task to be completed no lower than 1,500' AGL.
- Establishes the takeoff or departure configuration. Sets power to no less than 65 percent available power.
- Transitions smoothly from the takeoff or departure attitude to the pitch attitude that will induce a stall.
- Maintains a specified heading, ±10°, in straight flight; maintains a specified angle of bank not to exceed 20°, ±10°, in turning flight, while inducing the stall.
- Recognizes and recovers promptly after the stall occurs by simultaneously reducing the angle of attack, increasing power as appropriate, and leveling the wings to return to a straight and level flight attitude with a minimum loss of altitude appropriate for the airplane.
- Retracts the flaps to the recommended setting; retracts the landing gear if retractable, after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flap retraction; returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Recovery from Unusual Flight Attitudes (C-172S)

Objective:

To safely re-establish control of the airplane after recognition of an unusual attitude.

Description:

The aircraft is maneuvered with the proper use of pitch, power, and bank to safely recover from a nose-high or nose-low unusual attitude.

Setup Procedure:

1) The instructor will position the aircraft into a level or banked nose-high or nose-low unusual attitude while the student has his or her eyes closed.
2) The instructor will instruct the student to recover from the unusual attitude visually or by using a view limiting device.
3) For a nose-high attitude:
    a. Simultaneously add full power and lower the pitch.
    b. Level the wings.
4) For a nose-low attitude:
    a. Reduce power.
    b. Level the wings.
    c. Increase pitch.
5) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to attitude instrument flying during unusual attitudes.
- Recognizes unusual flight attitudes solely by reference to instruments; recovers promptly to a stabilized level flight attitude using proper instrument cross-check and interpretation and smooth, coordinated control application in the correct sequence.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the importance of quickly and accurately determining an unusual attitude.
- Explain proper control inputs to recover from an unusual attitude.

Safety Considerations:

- Maintain positive aircraft control.
- Observe aircraft limitations with respect to airspeed and load factors.

Common Errors:

- Incorrect interpretation of the flight instruments.
- Inappropriate application of controls.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Steep Turns (C-172S)

Objective:

To develop coordination, orientation, division of attention and smooth control techniques while executing high performance turns.

Description:

The maneuver consists of a 360° turn using a bank angle of approximately 45° while maintaining a constant airspeed and altitude.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Adjust the mixture in accordance with the POH.
4) Reduce power to establish an airspeed of 95 kts.
5) Enter a coordinated 45° banking turn to the left or right.
6) Increase power and adjust trim and pitch as required to maintain altitude and airspeed.
7) Begin rollout at ½ the bank angle prior to rollout heading.
8) Reduce power and pitch on rollout as needed to remain at 95 kts.
9) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to steep turns.
- Establishes the manufacturer's recommended airspeed (95 kts) or if one is not stated, a safe airspeed not to exceed V_A.
- Rolls into a coordinated 360° turn; maintains a 45° bank.
- Perform the task in the opposite direction, as specified by the instructor.
- Divide attention between airplane control and orientation.
- Maintain the entry altitude, ±100 feet, airspeed, ±10 kts, bank, ±5°; and roll out on the entry heading, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain why load factor increases as bank angle increases.
- Discuss the relationship between load factor and stall speed.
- Discuss the principle of over-banking tendency.
- Explain how to maintain altitude and airspeed.
- Explain limit load factor and what happens if it's exceeded.

Safety Considerations:

- Do not exceed manufacturer's recommended airspeed or Va.
- Always clear the area before initiating the maneuver.
- The maneuver is to be completed no lower than 1,500' feet AGL.
- Division of attention between maneuver and scanning for traffic.

Common Errors:

- Improper pitch, bank, and power coordination during entry and rollout.
- Uncoordinated use of flight controls.
- Improper procedure in correcting altitude deviations.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Tracking A Straight Line (C-172S)

Objective:

To maintain a uniform ground track along a selected straight line or road with a constant airspeed and altitude while controlling the effect of wind drift on the airplane and the proper correction using varying crosswind correction.

Description:

Tracking a straight line is a training maneuver, in which the ground track of the airplane is flown following a straight line on the ground correcting for wind drift.

Setup Procedure:

1) Select a straight line at least 1 mile in length with a crosswind in an area free of obstructions.
2) Perform clearing turns and establish 1,000' AGL.
3) Adjust the mixture in accordance with the POH.
4) Position the airplane to follow a path over or parallel to a straight line.
5) Maintain an equal distance from the straight line as you fly along it crabbing as necessary.
6) Return to cruise flight and perform the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to tracking a straight line.
- Selects a suitable reference area.
- Plans the maneuver so as to track the straight line, 1,000' AGL at an appropriate distance from the selected reference area.
- Applies adequate wind-drift correction during straight and turning flight to maintain a constant ground track along the straight line reference area.
- Divides attention between airplane control and the ground track while maintaining coordinated flight.
- Maintains altitude, ±100 feet; maintains airspeed, ±10 kts.

Learning Outcomes:

- Describe proper division of attention.
- Explain the correlation between the maneuver and a traffic pattern at an airport.
- Predict amount of wind correction based on conditions.

Safety Considerations:

- Avoid tall obstacles and populated areas.
- Locate a landing area to use in the event of an emergency
- Maintain separation from other aircraft.

Common Errors:

- Improper crab angle.
- Fixation on one aspect of the maneuver.
- Uncoordinated flight.

References:

Airplane Flying Handbook; POH/AFM;

Rectangular Course (C-172S)

Objective:

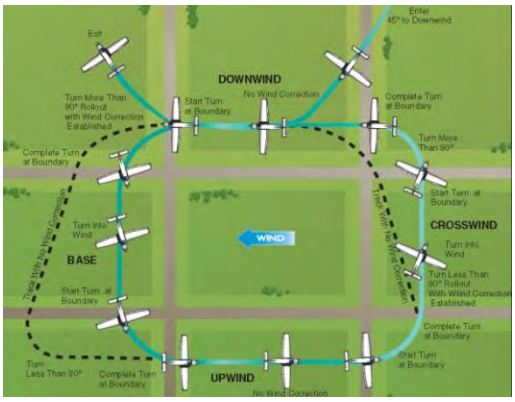
To maintain a uniform ground track around a selected rectangular ground reference with a constant airspeed and altitude while controlling the effect of wind drift on the airplane and the proper correction using varying crosswind correction.

Description:

The rectangular course is a training maneuver, in which the ground track of the airplane is equidistant from all sides of the selected rectangular area on the ground.

Setup Procedure:

1) Select a rectangular area approximately 1 mile in length in an area free of obstructions.
2) Perform clearing turns and establish 1,000' AGL.
3) Adjust the mixture in accordance with the POH.
4) Maintain a safe airspeed (recommended 95 kts).
5) Enter the pattern at a 45° angle to midfield of the downwind approximately ½ mile from the field.
6) Maintain an equal distance from the field as you fly around it crabbing as necessary.
7) Exit the maneuver at a 45° angle to midfield of the downwind.
8) Return to cruise flight and perform the cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a rectangular course.
- Selects a suitable reference area.
- Plans the maneuver so as to enter a left or right pattern, 1,000' AGL at an appropriate distance from the selected reference area, 45° to the downwind leg.
- Applies adequate wind-drift correction during straight and turning flight to maintain a constant ground track around the rectangular reference area.
- Divides attention between airplane control and the ground track while maintaining coordinated flight.
- Maintains altitude, ±100 feet; maintains airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Describe proper division of attention.
- Explain the correlation between the maneuver and a traffic pattern at an airport.
- Predict amount of wind correction based on conditions.

Safety Considerations:

- Avoid tall obstacles and populated areas.
- Locate a landing area to use in the event of an emergency
- Maintain separation from other aircraft.

Common Errors:

- Improper crab angle.
- Fixation on one aspect of the maneuver.
- Uncoordinated flight.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Turns Around a Point (C-172S)

Objective:

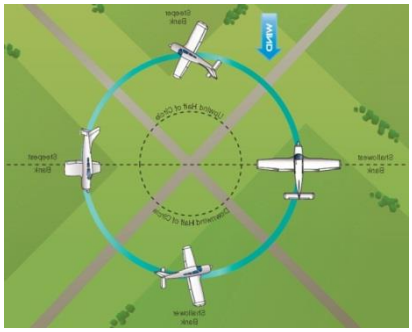
To maintain a uniform ground track around a reference point with a constant airspeed and altitude while demonstrating the effect of wind drift on the airplane and the proper correction using varying bank angle.

Description:

The airplane's ground track makes two complete circles, with a constant radius, around a selected point on the ground.

Setup Procedure:

1) Select a prominent reference point on the ground.
2) Perform clearing turns and establish 1,000' AGL.
3) Adjust the mixture in accordance with the POH.
4) Maintain a safe airspeed (recommended 95 kts).
5) Enter the maneuver on the downwind.
6) Initiate the turn when abeam the point.
7) Apply wind correction, as necessary, to maintain a constant radius around the selected reference point.
8) Exit on the downwind.
9) Return to cruise flight and perform the cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to turns around a point.
- Selects a suitable ground reference point.
- Plans the maneuver so as to enter left or right at 1,000' AGL, at an appropriate distance from the reference point.
- Applies adequate wind-drift correction to track a constant radius turn around the selected reference point.
- Divides attention between airplane control and the ground track while maintaining coordinated flight.
- Maintains altitude, ±100 feet; maintains airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Student should demonstrate wind drift correction with varying bank angle and proper aircraft control to maintain the desired ground track.
- Plan maneuver radius by assessing wind speed and direction.

Safety Considerations:

- Always clear area before beginning a maneuver.
- Select area with an emergency landing field close.
- Avoid areas with towers or tall buildings/towns.

Common Errors:

- Faulty entry procedure.
- Poor planning or division of attention.
- Uncoordinated flight control application.
- Improper wind-drift correction.
- Failure to maintain selected altitude or airspeed.
- Failure to establish approximately 45° bank at the steepest point.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

S-Turns (C-172S)

Objective:

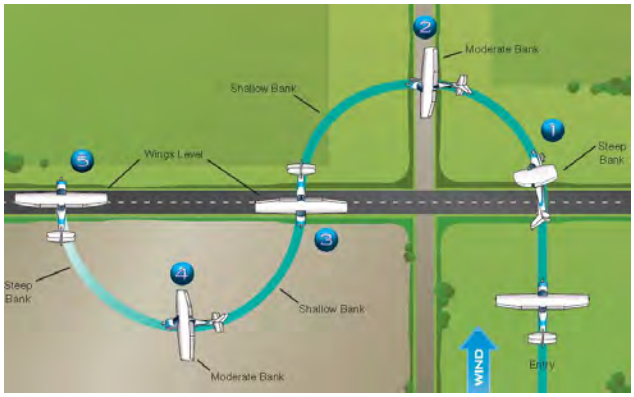
To maintain a uniform ground track of semicircles along a selected reference line with a constant airspeed and altitude while demonstrating the effect of wind drift on the airplane and the proper correction using varying bank angle.

Description:

The airplane's ground track describes semicircles of equal radii on each side of a selected straight line on the ground.

Setup Procedure:

1) Select a prominent line on the ground perpendicular to the wind.
2) Perform clearing turns and establish 1,000' AGL.
3) Adjust the mixture in accordance with the POH.
4) Maintain a safe airspeed (recommended 95 kts).
5) Enter the maneuver on the downwind.
6) Initiate the first turn upon reaching the reference line.
7) Apply wind correction, as necessary, to maintain a constant radius around a point on the reference line.
8) After a 180° turn, reverse the turn.
9) After two 180° turns are completed, exit on the downwind.
10) Return to cruise flight and perform the cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to S-turns.
- Selects a suitable ground reference line.
- Plans the maneuver so as to enter at 1,000' feet AGL, perpendicular to the selected reference line.
- Applies adequate wind-drift correction to track a constant radius turn on each side of the selected reference line.
- Reverses the direction of turn directly over the selected reference line.
- Divides attention between airplane control and the ground track while maintaining coordinated flight.
- Maintains altitude, ±100 feet; maintains airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Demonstrate wind drift correction with varying bank angle and proper aircraft control to maintain the desired ground track.
- Plan maneuver radius by assessing wind speed and direction.

Safety Considerations:

- Always clear area before beginning a maneuver.
- Select an area with an emergency landing field nearby.
- Avoid areas with towers or tall buildings/towns.

Common Errors:

- Faulty entry procedure.
- Poor planning or division of attention.
- Uncoordinated flight control application.
- Improper wind-drift correction.
- Failure to maintain selected altitude or airspeed.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

C-152

Passenger Briefing (C-152)

Objective:

To provide a standard pre-flight briefing to passengers.

Description:

The pilot in command is required by the Federal Aviation Regulations to provide a passenger briefing.

Setup Procedure:

1) Before starting the engine the Pilot-in-Command will provide the passenger safety briefing to include, but not limited to:
   c. Designation of Pilot-in-Command.
   d. Procedures for positively exchanging flight controls.

S

i. Seat belts and shoulder harnesses (location and operation).
ii. Seat belts & shoulder harnesses fastened for taxi, takeoff and landing.
iii. Seat position adjusted and locked in place (controls and operation).

A

iv. Air vents (location and operation).
v. All environmental controls (discussed).
vi. Action in case of any passenger discomfort.

F

vii. Fire extinguisher (location and operation).
viii. Smoking is prohibited.

E

ix. Exit doors (how to secure; how to open).
x. Emergency evacuation plan.
xi. Emergency/survival kit (location and contents).
xii. Equipment (location & operation, i.e., ELT, flight controls).

T

xiii. Traffic (scanning, spotting, notifying pilot).
xiv. Talking ("sterile cockpit" expectations).

Y

xv. Your questions?

Flight Proficiency Standards:

- Briefs occupants on the use of safety belts, shoulder harnesses, doors, and emergency procedures.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance and regulatory requirement for providing a passenger briefing.

Common Errors:

- Failure to perform a passenger briefing.
- Incomplete passenger briefing.

References:

Airman Airman Certification Standards, Federal Aviation Regulations, AC 121-24, AOPA Passenger Safety Briefing Video

Taxiing (C-152)

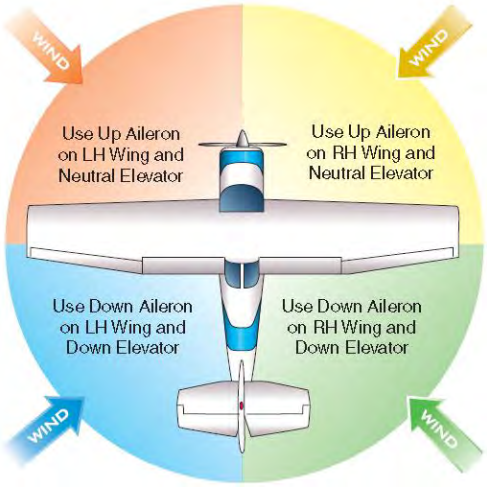
Objective:

To safely maneuver the airplane on the surface of the airport.

Description:

Taxiing is the controlled movement of the airplane under its own power while on the ground.

Setup Procedure:



1) Complete before taxi checklist.
2) Set heading bug to the wind direction.
3) After engine start, check for traffic in both directions, increase power and allow the airplane to roll slight forward and apply brakes.
4) To turn right, use right rudder. To turn left, use left rudder. Differential braking can be used to make a sharper turn.
5) Taxi at a speed consistent with safety, but no faster than a brisk walk. Use power to control taxi speed before using brakes.
6) Apply proper crosswind taxi control deflections.
7) To come to a stop, reduce power to idle and smoothly apply brakes.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to safe taxi procedures.
- Performs a brake check immediately after the airplane begins moving.
- Positions the flight controls properly for the existing wind conditions.
- Controls direction and speed without excessive use of brakes.
- Complies with airport/taxiway markings, signals, ATC clearances, and instructions.
- Taxies so as to avoid other aircraft and hazards.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance of crosswind taxi techniques.
- Explain the importance of using minimal power and braking.

Safety Considerations:

- Maintain taxiway centerline.
- Use taxi lights.
- Use proper crosswind taxi techniques.
- Taxi at a speed consistent with safety.

Common Errors:

- Not performing a brake check.
- Improper crosswind taxi control deflections.
- Improper use of power and brakes.
- Taxiing at a speed not consistent with safety.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Normal & Crosswind Takeoff & Climb (C-152)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude.

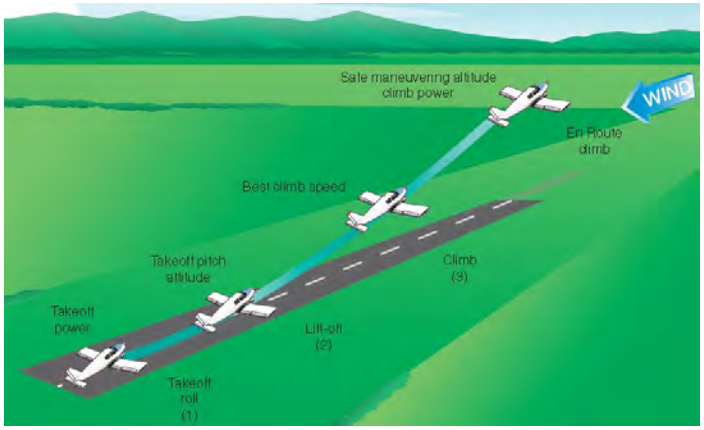
Description:

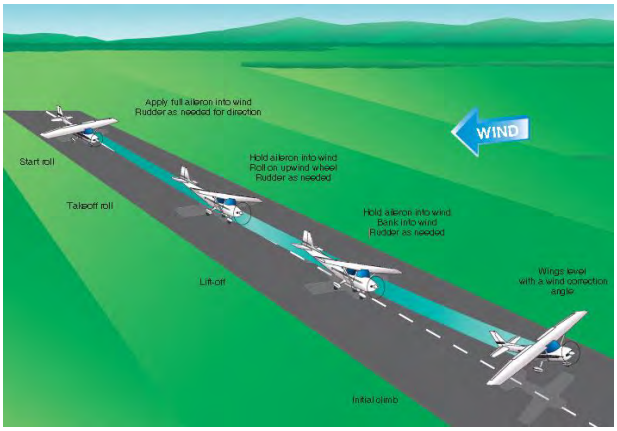
The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane is accelerated to an airspeed that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and establishes a pitch attitude to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete takeoff checklist and takeoff briefing.
3) Use aircraft lighting as recommended by the current version of AC 91-73.
4) Ensure runway is clear, align aircraft with runway centerline, confirm DG is aligned with runway, and ensure nose wheel is straight.
5) Position flight controls for wind for existing conditions.
6) Advance throttle smoothly to takeoff power ensuring toes are resting on rudder pedals, not on brakes.
7) Check engine instruments during takeoff roll for normal indications.
8) Maintain directional control with rudder pedals and crosswind control with appropriate aileron deflection
9) Maintain a slightly tail low attitude.
10) Upon reaching rotation speed, 50 kts (V_R), increase back elevator pressure to establish the lift-off attitude that is approximately that for V_Y and allow the aircraft to fly off the ground.
11) Apply adequate drift correction to maintain runway centerline.
12) Accelerate to 67 kts (V_Y).
13) At 500 ft., or as workload permits, complete climb checklist.





Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a normal and crosswind takeoff, climb operations, and rejected takeoff procedures.
- Positions the flight controls for the existing wind conditions.
- Clears the area; taxies into the takeoff position and aligns the airplane on the runway centerline.
- Lifts off at the recommended airspeed and accelerates to V_Y.
- Establishes a pitch attitude that will maintain V_Y +10/-5 kts.
- Retracts flaps at 200' or a safe altitude.
- Maintains takeoff power and V_Y +10/-5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Complies with noise abatement procedures.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria.
- Discuss how to maintain directional control during the ground roll.
- Discuss proper lift-off technique.
- Explain how to use ailerons during crosswind situations.
- Describe how to correct for wind-drift.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force aircraft off runway too early, causing it to settle back on the runway.
- Do not allow upwind wing to rise during takeoff.
- Do not exceed maximum demonstrated crosswind.
- Consider the effect of density altitude on performance.

Common Errors:

- Improper runway incursion avoidance procedures.
- Improper use of controls during a normal/crosswind takeoff.
- Inappropriate lift-off procedures.
- Improper climb attitude, power setting, and airspeed.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Short-Field Takeoff & Climb (C-152)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude when the takeoff area is short or restricted by obstructions.

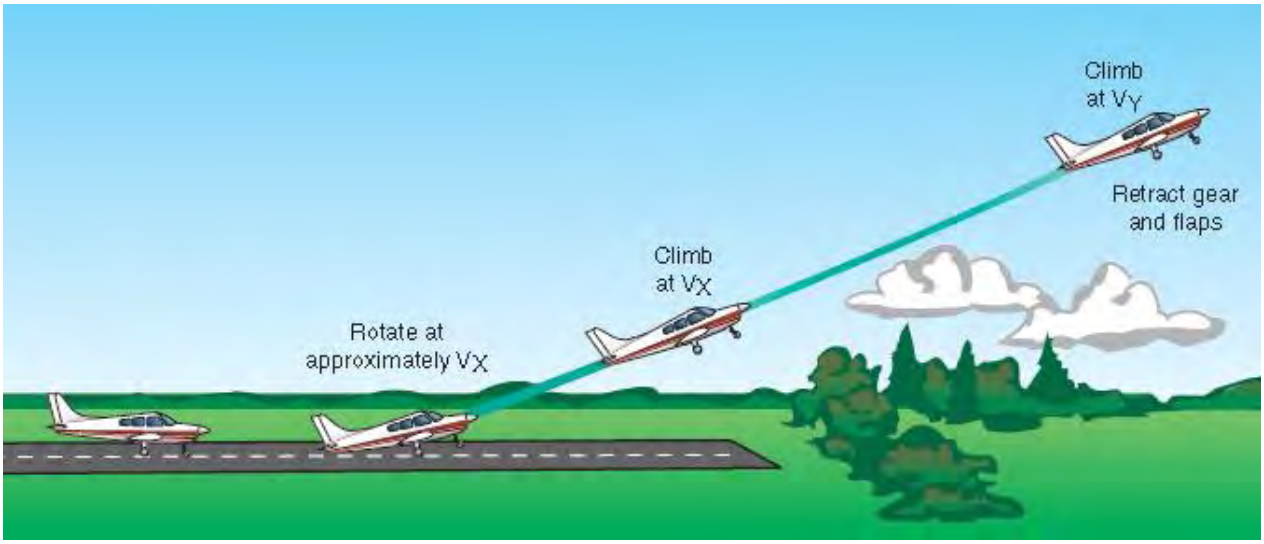
Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane is accelerated to an airspeed that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and a pitch attitude is established to climb away from the runway and clear a 50 foot obstacle.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) Set flaps to 10°.
4) Use aircraft lighting as recommended by the current version of AC 91-73.
5) Back taxi and align aircraft with runway centerline, confirm DG is aligned with runway, and ensure nose wheel is straight.
6) Ensure runway is clear, advance throttle smoothly to takeoff power while holding brakes; check engine instruments.
7) Release brakes and ensure toes are resting on rudder pedals, not brakes.
8) Maintain directional control with rudder pedals and appropriate aileron deflection.
9) Upon reaching rotation speed, 50 kts (V_R), increase back elevator pressure to establish lift-off attitude and allow aircraft to fly off ground.
10) Accelerate the aircraft to 55 kts (V_X) until obstacle is cleared or 50 feet above takeoff surface is attained and then accelerate to 67 kts (V_Y).
11) Retract flaps after a safe altitude of at least 200 ft. and an airspeed of 67 kts are attained.
12) At 500 ft., or as workload permits, complete climb checklist.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a short-field takeoff and maximum performance climb.
- Positions the flight controls for the existing wind conditions; set the flaps as recommended.
- Clears the area; taxies into takeoff position utilizing maximum available takeoff area and aligns the airplane on the runway center/takeoff path.
- Applies brakes (if appropriate), while advancing throttle smoothly to takeoff power.
- Lifts off at the recommended airspeed, and accelerates to the recommended obstacle clearance airspeed or V_X.
- Establishes a pitch attitude that will maintain the recommended obstacle clearance airspeed, or V_X, +10/-5 kts, until the obstacle is cleared, or until the airplane is 50 feet above the surface.
- After clearing the obstacle, establishes the pitch attitude for V_Y, accelerates to V_Y, and maintains V_Y, +10/-5 kts, during the climb.
- Retracts the landing gear, if appropriate, and flaps after a positive rate of climb is established.
- Retracts flaps at 200' or a safe altitude.
- Maintains takeoff power and V_Y +10/-5 to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria.
- Discuss how to maintain directional control during ground roll.
- Discuss proper lift-off technique.
- Explain the difference between V_X and V_Y.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force aircraft off runway too early, causing it to settle back onto runway.
- Use of entire runway length.
- Retraction of flaps as recommended.
- Consider effect of density altitude on performance.

Common Errors:

- Improper runway incursion avoidance procedures.
- Improper use of controls during a short-field takeoff.
- Inappropriate lift-off procedures.
- Improper initial climb attitude, power setting and airspeed to clear obstacle.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Soft-Field Takeoff & Climb (C-152)

Objective:

To align the airplane with the takeoff path, become airborne as quickly as possible, and establish a positive climb to a safe maneuvering altitude.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane enters the runways with full up elevator deflection and accelerates to an airspeed at which the airplane will lift off.
2) The acceleration to lift off speed while remaining in ground effect.
3) The initial climb when the airplane establishes a pitch attitude to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) Set flaps to 10°.
4) Use aircraft lighting as recommended by the current version of AC 91-73.
5) Ensure runway is clear, taxi onto runway with back elevator pressure and align nose with runway centerline without stopping or the use of brakes.
6) Smoothly advance throttle to takeoff power.
7) Ensure toes are resting on rudder pedals, not on brakes.
8) Check engine instruments during ground roll for normal indications.
9) Maintain directional control with rudder pedals and appropriate aileron deflection.
10) Use back elevator pressure to establish a positive pitch attitude and allow the aircraft to fly itself off the ground.
11) When the aircraft becomes airborne, reduce pitch to remain in ground effect while accelerating to 50 kts (V_X) then simultaneously climb and accelerate to 67 kts (V_Y).
12) Retract flaps after a safe altitude of at least 200 ft. and an airspeed of 67 kts are attained.
13) At 500 ft., or as workload permits, complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a soft-field takeoff and climb.
- Positions the flight controls for existing wind conditions and to maximize lift as quickly as possible.
- Clears the area; taxies on to the takeoff surface at a speed consistent with safety without stopping while advancing the throttle smoothly to takeoff power.
- Establishes and maintains a pitch attitude that will transfer the weight of the airplane from the wheels to the wings as rapidly as possible.
- Lifts off at the lowest possible airspeed and remains in ground effect while accelerating to V_X, while simultaneously accelerating to V_Y and climbing.
- Establishes a pitch attitude for V_Y, and maintains selected airspeed +10/-5 kts to a safest maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss proper soft-field takeoff technique.
- Explain runway selection criteria.
- Predict the height of ground effect and discuss its relevance.
- Discuss how to maintain directional control during ground roll.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not allow the airplane to climb above ground effect too soon, causing it to settle back onto the runway.

Common Errors:

- Improper runway incursion avoidance procedures.
- Improper use of controls during a soft-field takeoff.
- Improper lift-off procedures.
- Improper climb attitude, power setting and airspeed.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Traffic Pattern (C-152)

Objective:

To assure that air traffic flows into and out of an airport in an orderly manner.

Description:

The airplane is flown on a rectangular course around a runway at an altitude specified in the current Airport/Facility Directory or as outlined in the FAR/AIM.

Setup Procedure:

Departures

1) All departures:
    a. Fly the departure leg straight out until reaching traffic pattern altitude.
    b. Once reaching traffic pattern altitude, continue climbing and turn on course.

Arrivals

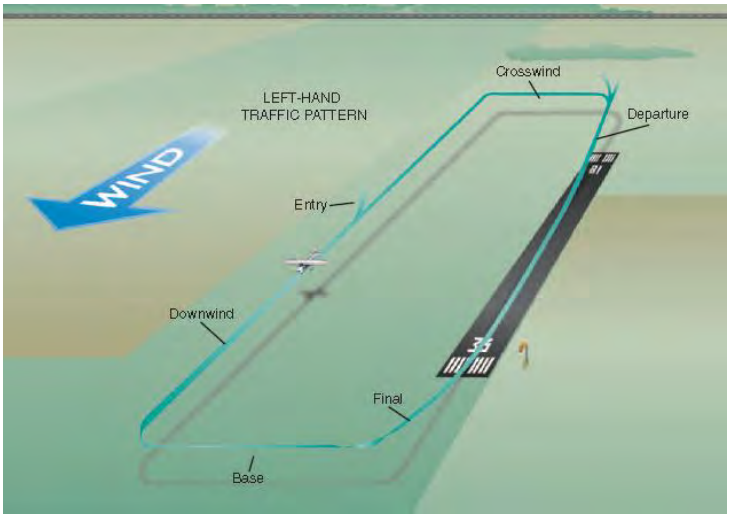
1) Prior to reaching 5 NM from the airfield, complete the following:
    a. Monitor local AWOS/ASOS/ATIS
    b. Ask “Is there any traffic between me and the airport?” and cancel flight following (if applicable)
    c. Complete the Before Landing checklist
2) Slow down below the approach flap airspeed prior to pattern entry.

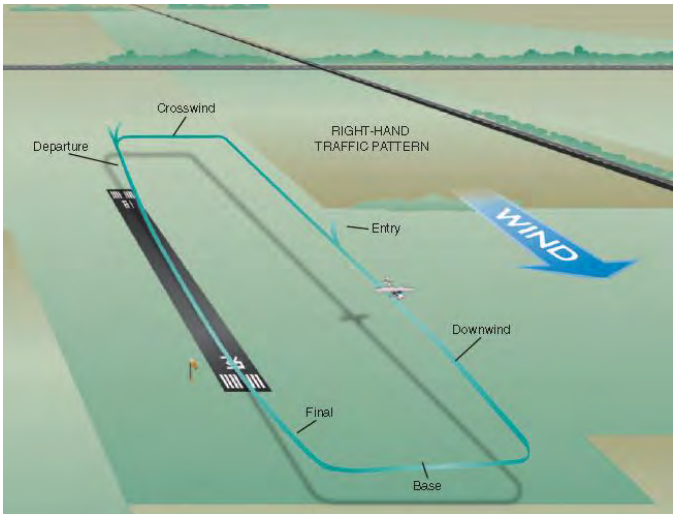
    If already established on the downwind side, skip to step 4.*

3) For a midfield entry:
    a. Cross midfield 500’ above traffic pattern altitude, observing traffic flow and wind direction.
    b. Fly 2-3 miles beyond the downwind leg, then descend to pattern altitude.
    c. Complete a tear-drop shaped turn to the right or left as necessary to position the aircraft at a 45 degree angle to the downwind leg.

    If less than two aircraft are currently in the pattern, the alternate method (cross midfield at traffic pattern altitude, enter directly into downwind leg) may be used.

4) Enter the traffic pattern at the designated traffic pattern altitude (normally 1,000’ AGL) at a 45 degree angle to the downwind leg at midfield.
5) Apply appropriate crosswind correction to allow for a parallel flight path approximately ½ mile from the runway
6) Allow for proper spacing from other aircraft in the pattern as to prevent runway incursions upon landing.
7) Maintain airspeed below the flap speed required for each configuration change.





Flight Proficiency Standards:

- Exhibits knowledge of the elements related to traffic patterns. This shall include procedures at airports with and without operating control towers, prevention of runway incursions, collision avoidance, wake turbulence avoidance, and wind shear.
- Complies with proper traffic pattern procedures.
- Maintains proper spacing from other aircraft.
- Corrects for wind drift to maintain the proper ground track.
- Maintains orientation with the runway/landing area in use.
- Maintains traffic pattern altitude, ±100 feet and the appropriate airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss traffic patterns at controlled and uncontrolled airports.
- Explain traffic pattern procedures.
- Explain how to maintain the proper ground track.

Safety Considerations:

- Maintain proper traffic pattern altitude.
- Maintain a distance from the runway that is within power-off gliding distance.
- Preferred bank of 30 degrees while in pattern.
- Maneuver within 300 feet of traffic pattern altitude before turning crosswind to base.
- Maintain proper aircraft separation.
- Comply with standards traffic pattern procedures or ATC instructions.

Common Errors:

- Failure to comply with traffic pattern instructions, procedures, and rules.
- Improper correction for wind drift.
- Inadequate spacing from other traffic.
- Poor altitude or airspeed control.
- Flying too wide of a pattern.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Normal Approach & Landing (C-152)

Objective:

To safely transition from flight to ground operations during normal conditions.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 65 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. At key position, assess approach position.
    b. With wings level, set flaps to 20° as required.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 60 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Set flaps to 30° as required.
    b. Adjust pitch and power as required to maintain a stabilized approach, at 55 kts, toward the selected aiming point until flare to land.
    c. Complete the GUMPS check.
8) During the flare to land simultaneously reduce power to idle and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline.
9) Maintain positive pitch attitude for aerodynamic braking.
10) Exit runway and complete after landing checklist.

***The above condition is based on a no wind condition.*
*Adjust configuration and airspeed to compensate for wind and gust factor.***

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a normal and crosswind approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point
- Establishes the recommended approach and landing configuration and airspeed, and adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{S0}, +10/-5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the flare and touchdown.
- Touches down smoothly at approximate stalling speed.
- Touches down at or within 400 feet beyond a specified point, with no drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Completes the appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain proper use of crosswind control inputs.

Safety Considerations:

- Observe flap extension speeds.
- Maintain proper airspeed at all times.
- Use proper crosswind correction to avoid drifting from runway centerline.

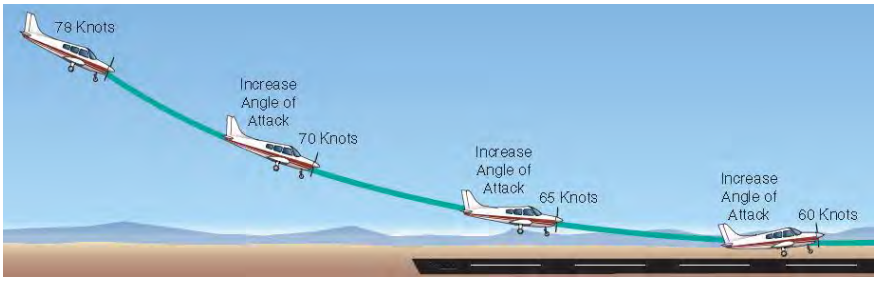
Common Errors:

- Improper use of landing performance data and limitations.
- Failure to establish proper crosswind correction.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Improper procedure during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.

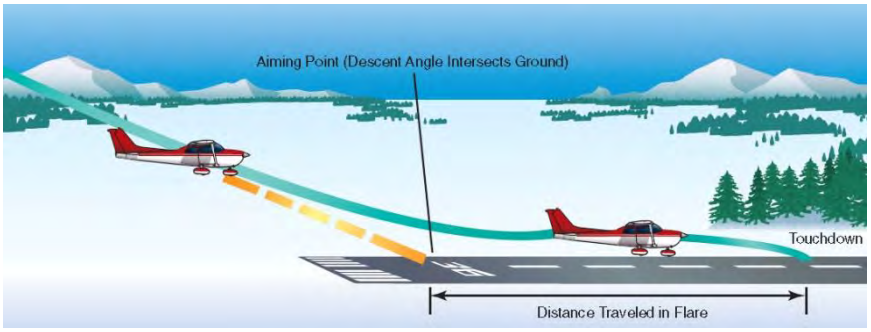
References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Changing angle of attack during round out



Aiming point of a stabilized approach



Example of a well-executed round out and proper landing attitude

Crosswind Approach & Landing (C-152)

Objective:

To safely transition from flight to ground operations during crosswind conditions.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 65 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 60 kts.
7) Turn final on the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 55 kts, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    e. Complete the GUMPS check.
8) During the flare to land simultaneously reduce power to idle and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline.
9) Maintain positive pitch attitude for aerodynamic braking.
10) Exit runway and complete after landing checklist.

*** Adjust configuration and airspeed to compensate for strong crosswind and/or gust factor.***

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a normal and crosswind approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point
- Establishes the recommended approach and landing configuration and airspeed, and adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{S0}, +10/-5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the flare and touchdown.
- Touches down smoothly at approximate stalling speed.
- Touches down at or within 400 feet beyond a specified point, with no drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Completes the appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain proper use of crosswind control inputs.

Safety Considerations:

- Observe flap extension speeds.
- Maintain proper airspeed at all times.
- Use proper crosswind correction to avoid drifting from runway centerline.

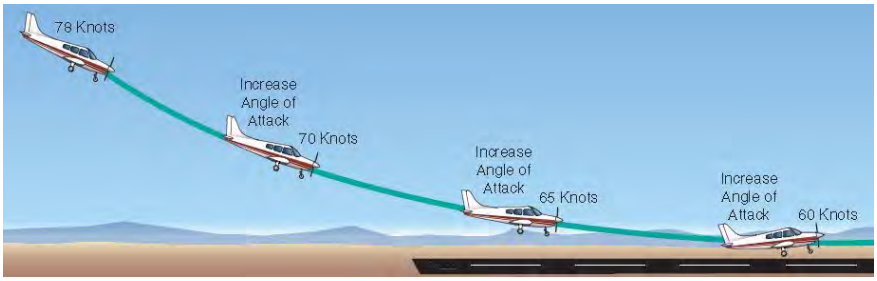
Common Errors:

- Improper use of landing performance data and limitations.
- Failure to establish proper crosswind correction.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Improper procedure during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.

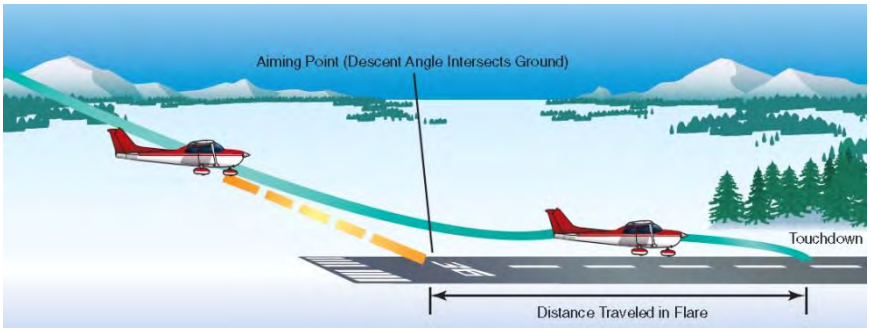
References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Changing angle of attack during round out

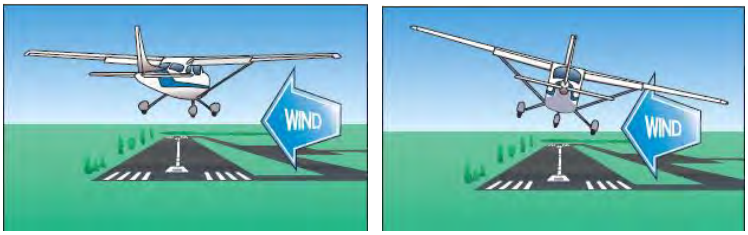


Aiming point of a stabilized approach

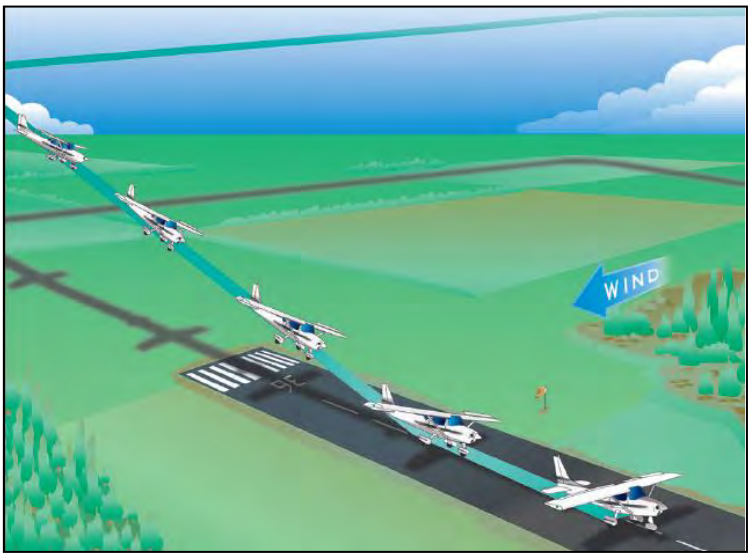


Example of a well-executed round out and proper landing attitude

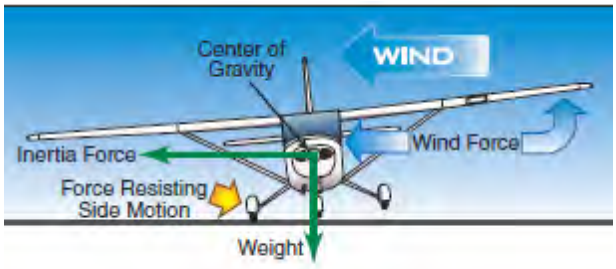
Crabbed Method (Left) / Wing-Low Method (Right)
(Recommended)



Crosswind Approach and Landing using wing low method



Drifting during touchdown (inappropriate crosswind correction)



Short-Field Approach & Landing (C-152)

Objective:

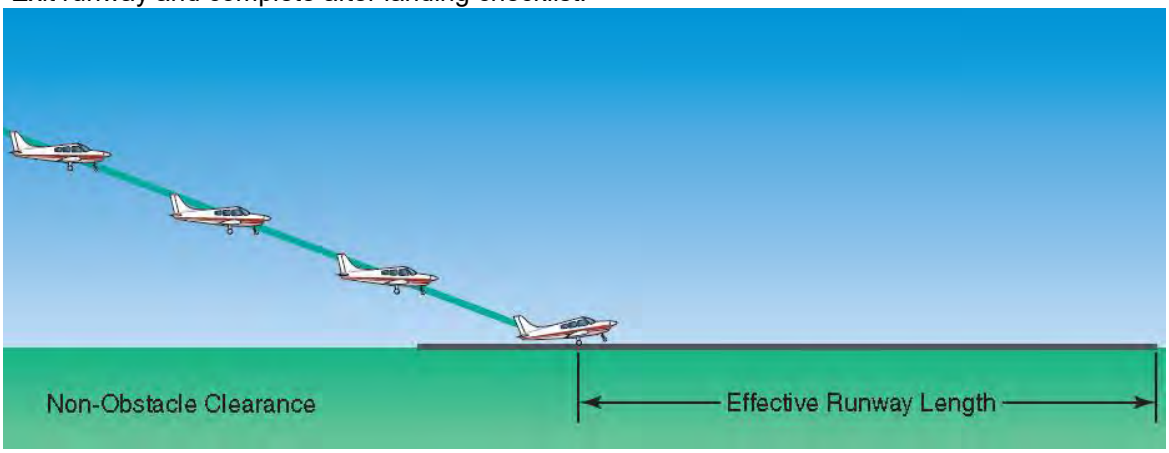
To safely transition from flight to ground operations at an airport with a relatively short runway or where an approach is made over obstacles.

Description:

The airplane is configured for a stabilized approach with or without a 50 foot obstacle. There will be little or no float during the round out, allowing the airplane to touch down at a specified point, and be stopped in a shorter than normal distance.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 65 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 60 kts.
7) Turn final on the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    a. Adjust pitch and power as required to maintain a stabilized approach, at 54 kts, toward the selected aiming point until flare to land.
    c. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    d. Maintain a stabilized descent above the 50 ft obstacle and land at the specified point.
    e. Complete the GUMPS check.
8) During the flare to land simultaneously reduce power to idle and maintain aircraft approximately one foot above runway until it slows to stall speed.
9) Touch down at approximate stall speed on the runway centerline.
10) Maintain positive pitch attitude for aerodynamic braking.
11) Apply maximum braking (simulated) to a complete stop without skidding the tires.
12) Exit runway and complete after landing checklist.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a short-field approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects the most suitable touchdown point.
- Establishes the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended approach airspeed, or in its absence not more than 1.3 V_{SO}, +10/-5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the round out and touchdown.
- Touches down smoothly at minimum control airspeed.
- Touches down at or within 200 feet beyond a specified point, with no side drift, minimum float and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Applies brakes, as necessary, to stop in the shortest distance consistent with safety.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on an approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain how to compensate for obstacles and shortened runway lengths.

Safety Considerations:

- Maintain proper airspeed at all times.
- Compensate for crosswind.
- Do not skid tires.
- Use of aerodynamic braking as available.

Common Errors:

- Excessive airspeed on final approach.
- Slow airspeed prior to touchdown.
- Failure to establish proper crosswind correction.
- Improper use of landing performance data and limitations.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Improper procedure during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Soft-Field Approach & Landing (C-152)

Objective:

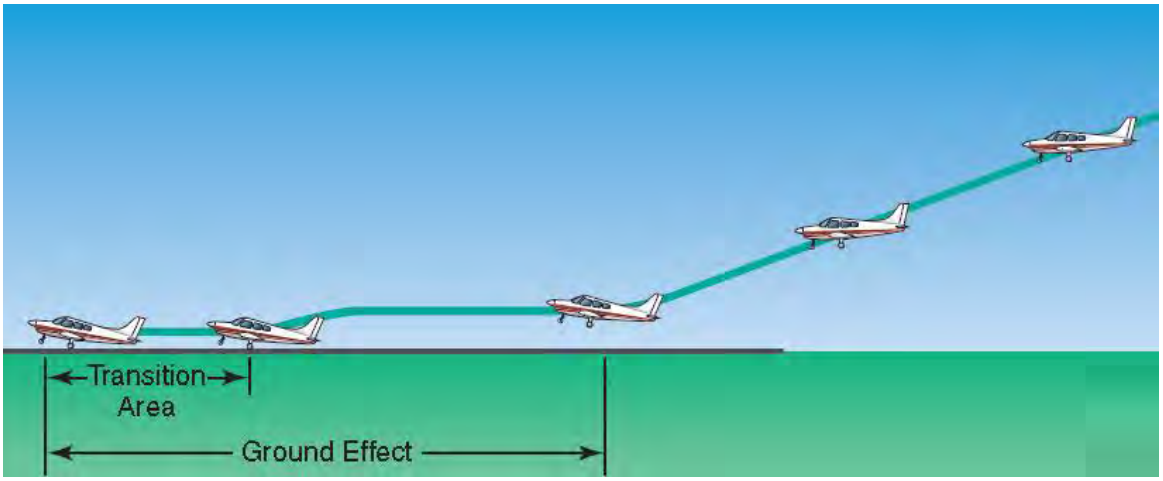
To safely transition the airplane from flight to ground operations on a rough or soft surface.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown on a field that is unimproved.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 65 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 60 kts.
7) Turn final on the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 55 kts, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    e. Adjust stabilized approach to clear obstacles and land at the specified point.
    f. Complete the GUMPS check.
8) During the flare to land reduce power as required to maintain aircraft approximately one foot above runway until it slows to stall speed.
9) Touch down at approximate stall speed on the runway centerline as smoothly as possible.
10) Maintain back elevator pressure to keep nose wheel off the ground as long as possible.
11) Maintain directional control with rudder and aileron deflection.
12) Adjust power as necessary to maintain aircraft movement on soft surfaces.
13) Exit the runway with minimal braking and complete after landing checklist.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a soft-field approach and landing.
- Considers the wind conditions, landing surface and obstructions, and selects the most suitable touchdown area.
- Establishes the recommended approach and landing configurations, and airspeed; adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence not more than 1.3 V_{SO}, +10/-5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the round out and touchdown.
- Touches down softly with no drift, and with the airplane's longitudinal axis aligned with the runway/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Maintains proper position of the flight controls and sufficient speed to taxi on the soft surface.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss effect of flaps on an approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain how to touchdown and maneuver the aircraft on soft of unimproved surfaces.

Safety Considerations:

- Do not land on fields that exceed the capabilities of the aircraft or pilot.
- Fly over and visually check the field prior to landing.
- Check field length and density altitude.
- Only land on public, published, unimproved runways with UCM aircraft.
- Use caution when landing on wet grass.

Common Errors:

- Failure to maintain elevator back-pressure after touchdown.
- Improper use of brakes.
- Failure to consider effect of wind and landing surface.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Touch and Go (C-152)

Objective:

To transition from a landing rollout to a takeoff roll while remaining on the runway.

Description:

A touch and go is a landing which transitions into a takeoff while the aircraft remains rolling on the runway.

Setup Procedure:

1) Perform a normal landing.
2) Upon touchdown:
    a. Allow the aircraft to continue rolling.
    b. Maintain runway centerline.
    c. Apply proper crosswind correction.
3) Reconfigure the aircraft for takeoff.
    a. Retract flaps to desired value (10^o or less).
    b. Set trim to the takeoff position.
4) Smoothly apply full-power.
5) Upon reaching rotation speed, 50 kts (V_R), increase back elevator pressure to establish the lift-off attitude that is approximately V_Y or V_X and allow the aircraft to fly off the ground.
6) Apply adequate drift correction to maintain runway centerline.
7) At 500 ft., or as workload permits, complete the climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to touch and go procedures.
- Maintains runway centerline upon touchdown.
- Applies proper crosswind controls upon touchdown, reconfiguration and climb out.
- Demonstrates proper aircraft reconfiguration.
- Lifts off at the recommended airspeed and accelerates to V_X or V_Y, as appropriate.
- Retracts flaps at 200' or a safe altitude, if appropriate.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Complies with noise abatement procedures.
- Completes the appropriate checklist.

Note: These are the UCM standards. The aforementioned standards are not found in the Airman Certification Standards.

Learning Outcomes:

- Explain the purpose(s) of touch and go's.
- Discuss how crosswind correction will change throughout the maneuver.
- Discuss the importance of maintaining runway centerline during aircraft reconfiguration.

Safety Considerations:

- Maintain runway centerline.
- Proper crosswind correction.
- Maintain situational awareness.
- Proper reconfiguration.

Common Errors:

- Failure to maintain runway centerline.
- Touchdown beyond the first 1/3rd of the runway and attempting a touch and go.
- Improper aircraft reconfiguration.
- Failure to maintain adequate crosswind correction.
- Attempting to lift-off prior to rotation speed.

Emergency Descent (C-152)

Objective:

To descend the airplane as soon and as rapidly as possible, within the structural limitations of the airplane.

Description:

The emergency descent is a maneuver for descending as rapidly as possible to a lower altitude or to the ground for an emergency landing.

Setup Procedure:

1) Perform clearing turns.
2) If utilizing flight following, contact ATC for traffic advisories below.
3) Reduce power to idle.
4) Confirm flaps 0º
5) Set mixture to rich.
6) Roll into a 30º - 45º bank to the left and pitch down to achieve 105 kts (If in turbulent air, maintain an airspeed below V_A).
7) Initiate recovery to level flight at least 300' prior to assigned altitude by:
    e. Rolling out the bank.
    f. Pitching up.
8) Return to cruise flight and complete the cruise checklist to include leaning procedures

Flight Proficiency Standards:

- Exhibit knowledge of the elements related to emergency descent.
- Recognizes situations, such as depressurization, cockpit smoke, and/or fire that require an emergency descent.
- Establish the appropriate airspeed and configuration for the emergency descent.
- Exhibit orientation, division of attention, and proper planning.
- Maintains positive load factors during the descent.
- Follow the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the purpose(s) of an emergency descent.
- Discuss engine cooling characteristics during an emergency descent.
- Discuss the importance of proper planning as it pertains to emergencies.

Safety Considerations:

- Maintain positive aircraft control.
- Clear the engine periodically
- Clear below then GO.
- Steep spiral over airport.
- Continue on to emergency approach and landing.

Common Errors:

- Failure to recognize the urgency of the emergency descent.
- Failure to use emergency checklist for situation.
- Failure to maintain appropriate configuration and airspeed.
- Poor orientation, planning, and division of attention.

Emergency Approach & Landing (C-152)

Objective:

To develop accuracy, judgment, planning, procedures, and confidence when little or no power is available.

Description:

An engine failure is simulated by the instructor after which the airplane is safely maneuvered to a landing.

Setup Procedure:

1) The instructor will reduce engine power to idle and announce “simulated emergency landing.”
2) Establish an airspeed of 60 kts ($V_{L/D}$) and trim to maintain airspeed.
3) Select a suitable landing location and spiral over it.
4) Complete an engine restart flow.
5) Complete the engine failure checklists as time permits.
6) Establish communication to report emergency situation.
7) Configure and maneuver the aircraft to fly a normal traffic pattern as applicable.
8) Initiate a go-around no lower than 500 feet AGL.

Flight Proficiency Standards:

- Exhibit knowledge of the elements related to emergency approach and landing procedures.
- Establish and maintain the recommended best-glide airspeed, ±10 kts.
- Select a suitable landing area.
- Plan and follow a flight pattern to the selected landing area considering altitude, wind, terrain, and obstructions.
- Prepare for landing or go-around as specified by the instructor.
- Follow the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the criteria for a good emergency landing field.
- Explain the steps to follow after an engine failure.
- Explain how to trouble shoot for problems after an engine failure.

Safety Considerations:

- Maintain positive aircraft control.
- Clear the engine periodically.
- Maintain awareness for towers and other obstacles.
- Maintain situational awareness.
- This is a **dual only** maneuver.

Common Errors:

- Improper airspeed control.
- Poor judgment in the selection of an emergency landing area.
- Failure to estimate the approximate wind speed and direction.
- Failure to fly the most suitable pattern for existing situation.
- Failure to accomplish the emergency checklists.
- Undershooting or overshooting selected landing area.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Forward Slip to a Landing (C-152)

Objective:

To dissipate altitude without increasing airspeed.

Description:

The upwind wing is lowered and opposite rudder is used to maintain the ground track bringing the aircrafts longitudinal axis at an angle to its flight path. The pitch is adjusted to maintain the desired airspeed.

Setup Procedure:

1) Determine the wind direction.
2) Reduce power to idle.
3) Simultaneously bank into the wind and apply full opposite rudder.
4) Adjust pitch to maintain desired airspeed.
5) Adjust aileron input to maintain the ground track of the aircraft with the extended runway centerline.

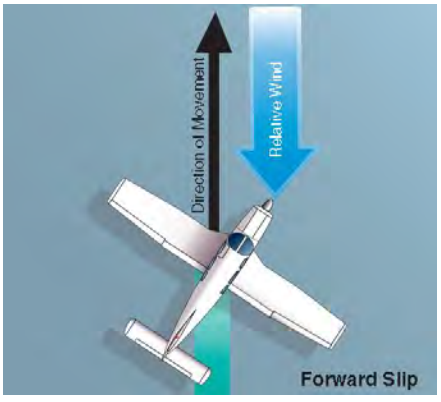
Flight Proficiency Standards:

- Exhibits knowledge of the elements related to forward slip to a landing.
- Considers the wind conditions, landing surface and obstructions, and selects the most suitable touchdown point.
- Establishes the slipping attitude at the point from which a landing can be made using the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power as required.
- Maintains a ground track aligned with the runway center/landing path and an airspeed, which results in minimum float during the flare.
- Makes smooth, timely, and correct control application during the recovery from the slip, the flare, and the touchdown.
- Touchdown smoothly at the approximate stalling speed, at or within 400 feet beyond a specified point with no side drift and with the airplane's longitudinal axis aligned with and over the runway centerline.
- Maintain crosswind correction and directional control throughout the approach and landing sequence.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance of maintaining the proper attitude to avoid a stall.
- Predict the amount of control input required to maintain the desired ground track.
- Discuss the applications in which a forward slip might be used.
- Explain the proper control inputs to perform a forward slip.
- Explain flap configuration considerations applicable to forward slips.
- Explain aircraft limitations applicable to forward slips.



Safety Considerations:

- Maintain sufficient airspeed as to avoid a stall.
- Observe maximum forward slip duration limitations.
- Terminate the maneuver with sufficient altitude to complete a landing.

Common Errors:

- Improper aileron and/or rudder control inputs.
- Failure to maintain airspeed and a stabilized slip.
- Inappropriate removal of hand from throttle.
- Improper technique during transition from the slip to the touchdown.
- Failure to maintain runway centerline.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Go-Around (C-152)

Objective:

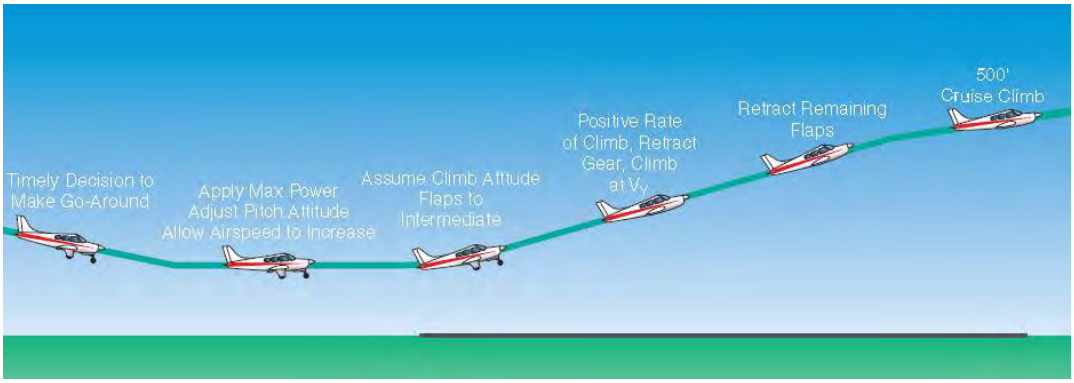
To safely discontinue the landing approach if unstable or other unsatisfactory conditions exist.

Description:

As full power is applied, the aircraft attitude is adjusted to accelerate to V_Y and climb. As a safe airspeed is attained, flaps are retracted 10° at a time allowing stabilization between each retraction.

Setup Procedure:

1) Simultaneously apply maximum power and establish a go-around pitch attitude.
2) Set flaps to 20°.
3) Establish a pitch attitude to accelerate to 55 kts.
4) Allow the airplane to accelerate to V_X or V_Y and climb.
5) If there is an aircraft on the runway, sidestep to clear the departure path of the airplane and allow the pilot to view the landing or departing traffic.
6) Set flaps to 10° and stabilize in between configuration changes then flaps to 0°.
7) Verify Go Around checklist is complete.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a go-around/rejected landing.
- Makes a timely decision to discontinue the approach to landing.
- Applies takeoff power immediately and transitions to climb pitch attitude for V_X, and maintains V_Y+10/-5 kts.
- Retracts the flaps as appropriate.
- Retracts the landing gear, if appropriate, after a positive rate of climb is established.
- Maneuvers to the side of the runway/landing area to clear and avoid conflicting traffic.
- Maintains takeoff power V_Y+10/-5 to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the climb.
- Completes the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss events that may require a go-around.
- Explain the importance of maintaining airspeed and coordination during the go-around procedure.
- Discuss the necessity for maneuvering to the side of the runway after making the decision to go-around.

Safety Considerations:

- Maneuver the airplane to the side of the runway.
- Do not establish a pitch up attitude too quickly.
- Maintain coordination.
- Timely decision making.
- Be watchful for situation which may require a go-around.

Common Errors:

- Delayed decision to make a go-around.
- Improper application of power.
- Failure to control pitch attitude.
- Improper trim technique.
- Failure to compensate for torque effect.
- Failure to maintain 79 kts (V_Y).
- Improper wing flap retraction.
- Failure to maintain well clear of obstructions and other traffic.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Maneuvering During Slow Flight (C-152)

Objective:

To demonstrate the flight characteristics and controllability of an airplane at speeds lower than normal cruise and develop proficiency in performing maneuvers that require slow airspeeds.

Description:

Slow flight consists of slowing the aircraft to a minimum controllable airspeed in the landing configuration and maneuvering the aircraft while maintaining altitude and airspeed.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1,500 RPM or less.
5) Below 85 kts, set flaps to 10°.
6) Adjust pitch and power as necessary to maintain altitude.
7) Set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
8) Establish and maintain an airspeed at which any further increase in pitch or reduction of power would result in an immediate stall or a higher speed as specified by your instructor.
    a. Slow flight should be practiced at varying speeds and configurations above the 1G stall speed of the aircraft as specified by the instructor.
9) Maneuver as instructed.
10) Recover when instructed by:
    a. Adding full power
    b. Set flaps to 20° and allow the aircraft to stabilize.
    c. Then set flaps to 10° and 0° allowing the aircraft to stabilize between each setting.
11) Return to cruise flight and perform the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to maneuvering during slow flight.
- Selects an entry altitude that will allow the task to be completed no lower than 1,500'AGL.
- Establish and maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in a stall warning (e.g., airplane buffet, stall horn, etc.).
- Accomplishes coordinated straight and level flight, turns, climbs, and descents with landing gear and flap configurations specified by the instructor.
- Divides attention between airplane control and orientation.

- Maintains the specified altitude, ±100 feet; specified heading, ±10°; airspeed, +10/-0 kts; and specified angle of bank, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the relationship between pitch and power in maintaining airspeed and altitude during slow flight.
- Discuss how flight at minimum airspeeds develops the ability to estimate the margin of safety above the stalling speed.
- Compare the practice of slow flight to various phases of flight such as; takeoffs, climbs, descents, go-arounds, and approaches to landing.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified gear and flap configuration.
- Improper entry technique.
- Failure to establish and maintain the specified airspeed.
- Excessive variations of altitude and heading.
- Rough or uncoordinated control technique.
- Improper correction for left turning tendency.
- Improper trim technique.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Power – Off Stall (C-152)

Objective:

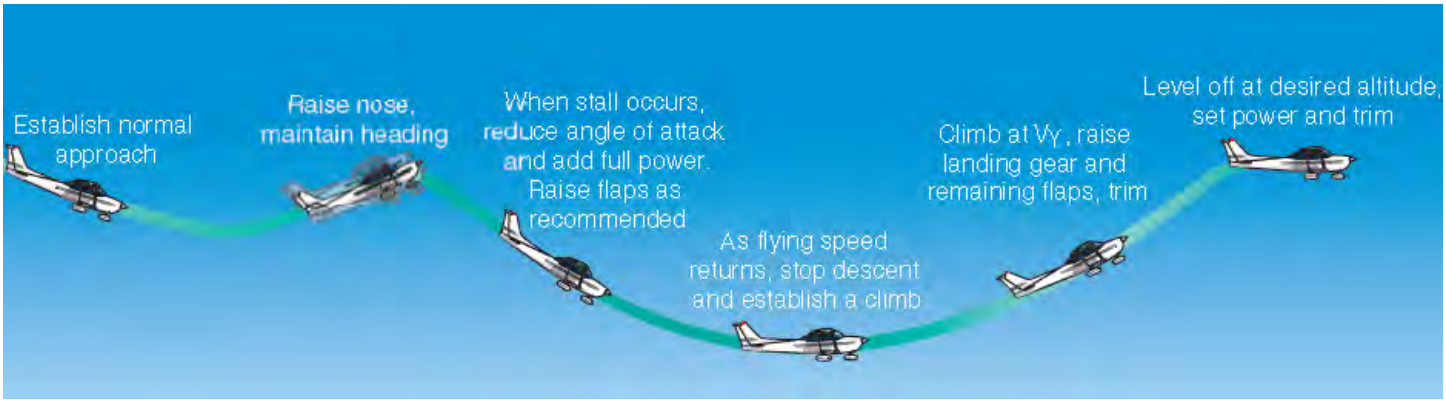
To familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop the skills to prevent and recover from stalls in the landing configuration.

Description:

The aircraft is slowed down and placed in the landing configuration after which a stall is induced and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1,500 RPM or less allowing the aircraft to slow to approach speed while maintaining altitude.
5) Below 85 kts, set flaps to 10°.
6) Set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
7) Establish a stabilized descent at 55 kts.
8) Reduce power to idle.
9) Maintain coordinated flight and altitude until recognition of the stall. As the stall occurs, recover from the stall by simultaneously reducing the angle of attack, adding full power, and leveling the wings.
10) Set flaps to 20°.
11) Accelerate the aircraft to V_X (recommended) or V_Y and climb while retracting the remaining flaps in 10° increments.
12) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-off stalls.
- Selects an entry altitude that allows the task to be completed no lower than 1,500'AGL.
- Establishes a stabilized descent in the approach or landing configuration, as specified by the instructor.
- Transitions smoothly from the approach or landing attitude to a pitch attitude that will induce a stall.
- Maintains a specified heading, ±10°, in straight flight; maintains a specified angle of bank not to exceed 20°, ±10°; in turning flight, while inducing the stall.
- Recognizes and recovers promptly after the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable and leveling the wings to return to a straight and level flight attitude with minimum loss of altitude appropriate for the airplane.
- Retract the flaps to the recommended setting; retracts the landing gear, if retractable, after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flap retraction; returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Power – On Stall (C-152)

Objective:

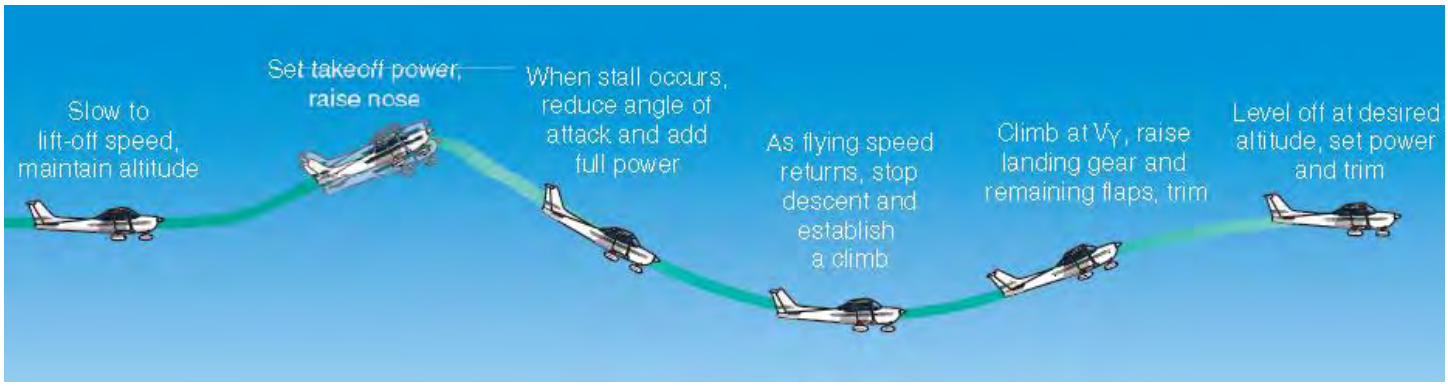
To familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in the takeoff configuration.

Description:

The aircraft is slowed down and placed in the takeoff configuration after which a stall is induced and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1200 RPM or less, allowing the aircraft to slow to takeoff speed while maintaining altitude.
5) Add full power at 50 kts (V_R).
6) Transition smoothly to the pitch attitude that will induce a stall.
7) Recognize and recover promptly after a fully developed stall occurs by simultaneously reducing the angle of attack, confirming full power, and leveling the wings.
8) Accelerate the aircraft to 67 kts (V_Y) and climb.
9) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-on stalls.
- Selects an entry altitude that allows the task to be completed no lower than 1,500' AGL.
- Establishes the takeoff or departure configuration. Sets power to no less than 65 percent available power.
- Transitions smoothly from the takeoff or departure attitude to the pitch attitude that will induce a stall.
- Maintains a specified heading, ±10°, in straight flight; maintains a specified angle of bank not to exceed 20°, ±10°, in turning flight, while inducing the stall.
- Recognizes and recovers promptly after the stall occurs by simultaneously reducing the angle of attack, increasing power as appropriate, and leveling the wings to return to a straight and level flight attitude with a minimum loss of altitude appropriate for the airplane.
- Retracts the flaps to the recommended setting; retracts the landing gear if retractable, after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flap retraction; returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Recovery from Unusual Flight Attitudes (C-152)

Objective:

To safely re-establish control of the airplane after recognition of an unusual attitude.

Description:

The aircraft is maneuvered with the proper use of pitch, power, and bank to safely recover from a nose-high or nose-low unusual attitude.

Setup Procedure:

1) The instructor will position the aircraft into a level or banked nose-high or nose-low unusual attitude while the student has his or her eyes closed.
2) The instructor will instruct the student to recover from the unusual attitude visually or by using a view limiting device.
3) For a nose-high attitude:
    a. Simultaneously add full power and lower the pitch.
    b. Level the wings.
4) For a nose-low attitude:
    a. Reduce power.
    b. Level the wings.
    c. Increase pitch.
5) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to attitude instrument flying during unusual attitudes.
- Recognizes unusual flight attitudes solely by reference to instruments; recovers promptly to a stabilized level flight attitude using proper instrument cross-check and interpretation and smooth, coordinated control application in the correct sequence.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the importance of quickly and accurately determining an unusual attitude.
- Explain proper control inputs to recover from an unusual attitude.

Safety Considerations:

- Maintain positive aircraft control.
- Observe aircraft limitations with respect to airspeed and load factors.

Common Errors:

- Incorrect interpretation of the flight instruments.
- Inappropriate application of controls.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Steep Turns (C-152)

Objective:

To develop coordination, orientation, division of attention and smooth control techniques while executing high performance turns.

Description:

The maneuver consists of a 360° turn using a bank angle of approximately 45° while maintaining a constant airspeed and altitude.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Adjust the mixture in accordance with the POH.
4) Reduce power to establish an airspeed of 95 kts.
5) Enter a coordinated 45° banking turn to the left or right.
6) Increase power and adjust trim and pitch as required to maintain altitude and airspeed.
7) Begin rollout at ½ the bank angle prior to rollout heading.
8) Reduce power and pitch on rollout as needed to remain at 95 kts.
9) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to steep turns.
- Establishes the manufacturer's recommended airspeed (95 kts) or if one is not stated, a safe airspeed not to exceed V_A.
- Rolls into a coordinated 360° turn; maintains a 45° bank.
- Perform the task in the opposite direction, as specified by the instructor.
- Divide attention between airplane control and orientation.
- Maintain the entry altitude, ±100 feet, airspeed, ±10 kts, bank, ±5°; and roll out on the entry heading, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain why load factor increases as bank angle increases.
- Discuss the relationship between load factor and stall speed.
- Discuss the principle of over-banking tendency.
- Explain how to maintain altitude and airspeed.
- Explain limit load factor and what happens if it's exceeded.

Safety Considerations:

- Do not exceed manufacturer's recommended airspeed or V_A.
- Always clear the area before initiating the maneuver.
- The maneuver is to be completed no lower than 1,500' AGL.
- Division of attention between maneuver and scanning for traffic.

Common Errors:

- Improper pitch, bank, and power coordination during entry and rollout.
- Uncoordinated use of flight controls.
- Improper procedure in correcting altitude deviations.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Tracking A Straight Line (C-152)

Objective:

To maintain a uniform ground track along a selected straight line or road with a constant airspeed and altitude while controlling the effect of wind drift on the airplane and the proper correction using varying crosswind correction.

Description:

Tracking a straight line is a training maneuver, in which the ground track of the airplane is flown following a straight line on the ground correcting for wind drift.

Setup Procedure:

1) Select a straight line at least 1 mile in length with a crosswind in an area free of obstructions.
2) Perform clearing turns and establish 1,000' AGL.
3) Adjust the mixture in accordance with the POH.
4) Position the airplane to follow a path over or parallel to a straight line.
5) Maintain an equal distance from the straight line as you fly along it crabbing as necessary.
6) Return to cruise flight and perform the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to tracking a straight line.
- Selects a suitable reference area.
- Plans the maneuver so as to track the straight line, 1,000' AGL at an appropriate distance from the selected reference area.
- Applies adequate wind-drift correction during straight and turning flight to maintain a constant ground track along the straight line reference area.
- Divides attention between airplane control and the ground track while maintaining coordinated flight.
- Maintains altitude, ±100 feet; maintains airspeed, ±10 kts.

Learning Outcomes:

- Describe proper division of attention.
- Explain the correlation between the maneuver and a traffic pattern at an airport.
- Predict amount of wind correction based on conditions.

Safety Considerations:

- Avoid tall obstacles and populated areas.
- Locate a landing area to use in the event of an emergency.
- Maintain separation from other aircraft.

Common Errors:

- Improper crab angle.
- Fixation on one aspect of the maneuver.
- Uncoordinated flight.

References:

Airplane Flying Handbook; POH/AFM;

Rectangular Course (C-152)

Objective:

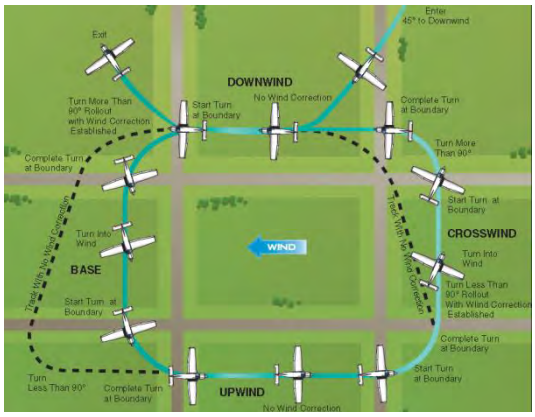
To maintain a uniform ground track around a selected rectangular ground reference with a constant airspeed and altitude while controlling the effect of wind drift on the airplane and the proper correction using varying crosswind correction.

Description:

The rectangular course is a training maneuver, in which the ground track of the airplane is equidistant from all sides of the selected rectangular area on the ground.

Setup Procedure:

1) Select a rectangular area approximately 1 mile in length in an area free of obstructions.
2) Perform clearing turns and establish 1,000' AGL.
3) Adjust the mixture in accordance with the POH.
4) Maintain a safe airspeed (recommended 95 kts).
5) Enter the pattern at a 45° angle to midfield of the downwind approximately ½ mile from the field.
6) Maintain an equal distance from the field as you fly around it crabbing as necessary.
7) Exit the maneuver at a 45° angle to midfield of the downwind.
8) Return to cruise flight and perform the cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a rectangular course.
- Selects a suitable reference area.
- Plans the maneuver so as to enter a left or right pattern, 1,000' AGL at an appropriate distance from the selected reference area, 45° to the downwind leg.
- Applies adequate wind-drift correction during straight and turning flight to maintain a constant ground track around the rectangular reference area.
- Divides attention between airplane control and the ground track while maintaining coordinated flight.
- Maintains altitude, ±100 feet; maintains airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Describe proper division of attention.
- Explain the correlation between the maneuver and a traffic pattern at an airport.
- Predict amount of wind correction based on conditions.

Safety Considerations:

- Avoid tall obstacles and populated areas.
- Locate a landing area to use in the event of an emergency.
- Maintain separation from other aircraft.

Common Errors:

- Improper crab angle.
- Fixation on one aspect of the maneuver.
- Uncoordinated flight.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Turns Around a Point (C-152)

Objective:

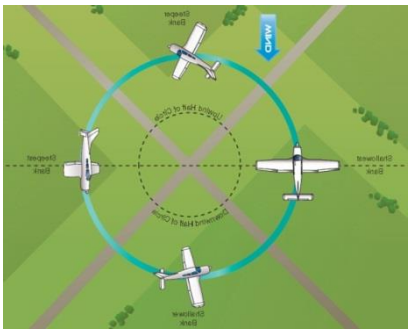
To maintain a uniform ground track around a reference point with a constant airspeed and altitude while demonstrating the effect of wind drift on the airplane and the proper correction using varying bank angle.

Description:

The airplane's ground track makes two complete circles, with a constant radius, around a selected point on the ground.

Setup Procedure:

1) Select a prominent reference point on the ground.
2) Perform clearing turns and establish 1,000' AGL.
3) Adjust the mixture in accordance with the POH.
4) Maintain a safe airspeed (recommended 95 kts).
5) Enter the maneuver on the downwind.
6) Initiate the turn when abeam the point.
7) Apply wind correction, as necessary, to maintain a constant radius around the selected reference point.
8) Exit on the downwind.
9) Return to cruise flight and perform the cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to turns around a point.
- Selects a suitable ground reference point.
- Plans the maneuver so as to enter left or right at 1,000' AGL, at an appropriate distance from the reference point.
- Applies adequate wind-drift correction to track a constant radius turn around the selected reference point.
- Divides attention between airplane control and the ground track while maintaining coordinated flight.
- Maintains altitude, ±100 feet; maintains airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Student should demonstrate wind drift correction with varying bank angle and proper aircraft control to maintain the desired ground track.
- Plan maneuver radius by assessing wind speed and direction.

Safety Considerations:

- Always clear area before beginning a maneuver.
- Select area with an emergency landing field close.
- Avoid areas with towers or tall buildings/towns.

Common Errors:

- Faulty entry procedure.
- Poor planning or division of attention.
- Uncoordinated flight control application.
- Improper wind-drift correction.
- Failure to maintain selected altitude or airspeed.
- Failure to establish approximately 45° bank at the steepest point.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

S-Turns (C-152)

Objective:

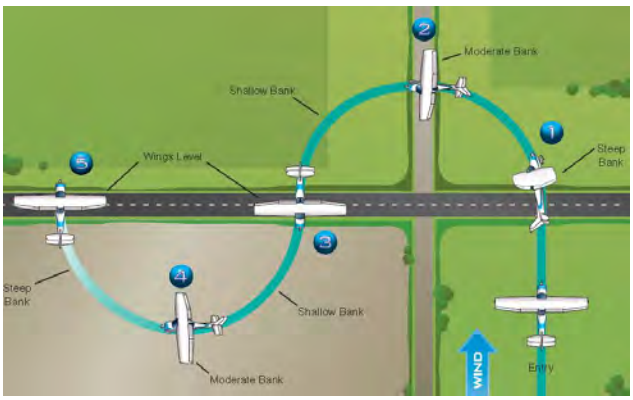
To maintain a uniform ground track of semicircles along a selected reference line with a constant airspeed and altitude while demonstrating the effect of wind drift on the airplane and the proper correction using varying bank angle.

Description:

The airplane's ground track describes semicircles of equal radii on each side of a selected straight line on the ground.

Setup Procedure:

1) Select a prominent line on the ground perpendicular to the wind.
2) Perform clearing turns and establish 1,000' AGL.
3) Adjust the mixture in accordance with the POH.
4) Maintain a safe airspeed (recommended 95 kts).
5) Enter the maneuver on the downwind.
6) Initiate the first turn upon reaching the reference line.
7) Apply wind correction, as necessary, to maintain a constant radius around a point on the reference line.
8) After a 180° turn, reverse the turn.
9) After two 180° turns are completed, exit on the downwind.
10) Return to cruise flight and perform the cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to S-turns.
- Selects a suitable ground reference line.
- Plans the maneuver so as to enter at 1,000' feet AGL, perpendicular to the selected reference line.
- Applies adequate wind-drift correction to track a constant radius turn on each side of the selected reference line.
- Reverses the direction of turn directly over the selected reference line.
- Divides attention between airplane control and the ground track while maintaining coordinated flight.
- Maintains altitude, ±100 feet; maintains airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Demonstrate wind drift correction with varying bank angle and proper aircraft control to maintain the desired ground track.
- Plan maneuver radius by assessing wind speed and direction.

Safety Considerations:

- Always clear area before beginning a maneuver.
- Select an area with an emergency landing field nearby.
- Avoid areas with towers or tall buildings/towns.

Common Errors:

- Faulty entry procedure.
- Poor planning or division of attention.
- Uncoordinated flight control application.
- Improper wind-drift correction.
- Failure to maintain selected altitude or airspeed.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Section 5 – INSTRUMENT RATING

The Instrument Rating is divided into two flight courses and a ground school. All degree seeking students will conduct training under CFR 14 Part 141 unless approved by the Chief Flight Instructor.

This section contains references to both the C-172R and C-172S.

C-172R

Instrument Cockpit Check (C-172R)

Objective:

To develop good habits for checking the operation of flight instruments and their power source prior to takeoff in instrument meteorological conditions (IMC).

Description:

Each instrument relating to Instrument Flight Rules (IFR) is checked for proper indications during the taxi to the run up area or runway.

Setup Procedure:

1) Check the magnetic compass for freedom of movement; confirm that it is full of fluid and showing known headings.
2) Check clock for correct digital display.
3) The airspeed indicator should indicate zero.
4) Allow 5 minutes for the gyro of the attitude indicator to spin up and then it should remain erect to the horizontal position and not dip more than 5° while turning on the ground.
5) With the altimeter set to the current altimeter setting, note any variation between field elevation and the altimeter indication. Discrepancies of 75 feet or more indicate questionable reliability.
6) Check engine instruments for proper indications.
7) During taxi turns, check the turn coordinator for turns in direction of the turn and the ball should move opposite to the direction of turns.
8) Allow 5 minutes for the gyro of the heading indicator to spin up and set it according to the magnetic compass.
9) Note VSI needle position. The VSI should read zero. If it does not, the ground indication should be interpreted as the zero position.

Flight Proficiency Standards:

- Exhibit adequate knowledge of the elements related to the preflight check of instruments, avionics, and navigation equipment.
- Perform the preflight on instruments, avionics, and navigation equipment.
- Determine that the aircraft is in condition for safe instrument flight.
- Note any discrepancies and determine whether the aircraft is safe for instrument fight or requires maintenance.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance of performing an instrument cockpit check.
- Discuss how each instrument check determines the operational status of the instrument and power source.
- Demonstrate the instrument cockpit check.
- Determine if an unsafe condition exists based on the results of the instrument cockpit check.

Safety Considerations:

- Division of attention during the instrument taxi check.
- Proper interpretation of the instruments.

Common Errors:

- Failure to check all instruments.
- Improperly checking instruments.
- Failure to maintain control of the aircraft while performing the check.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Straight and Level Flight (C-172R)

Objective:

To fly by reference to instruments while maintaining a constant altitude and heading.

Description:

In straight and level flight you must keep the wings level with the horizon and a pitch attitude which allows no climb or descent.

Setup Procedure:

1) Begin your level off by approximately 10% of your climb rate before desired altitude.
2) Perform cruise checklist to include leaning procedures.
3) Set heading bug to desired heading.
4) Trim for level flight.
5) Maintain straight and level flight through instrument scan, interpretation, and aircraft control.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to attitude instrument flying during straight and level flight while conducting various instrument flight procedures.
- Maintains altitude within ±100 feet during level flight, headings within ±10°, airspeed within ±10 kts, and bank angles within ±5° during turns.
- Uses proper instrument crosscheck and interpretation, and apply the appropriate pitch, bank, power, and trim corrections when applicable.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss proper instrument scan techniques including both the primary and supporting method and the control and performance method.
- Explain instrument cross-check and interpretation.

Safety Considerations:

- Maintain positive aircraft control.
- Maintain orientation.

Common Errors:

- Slow or improper cross-check during straight and level flight.
- Improper power control.
- Failure to make smooth, precise corrections, as required.
- Uncoordinated use of controls.
- Improper trim control.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Turns (C-172R)

Objective:

To fly by reference to instruments while changing direction.

Description:

On the roll-in, use the attitude indicator to establish the approximate angle of bank, and then check the turn coordinator's miniature aircraft for a standard-rate turn indication.

Setup Procedure:

1) Set the heading bug before initiating a turn.
2) Apply coordinated aileron and rudder pressures in the desired direction of turn.
3) Establish the bank angle using the attitude indicator and verify standard rate with the turn coordinator and slip/skid indicator.
4) Maintain the standard rate of turn, using the turn coordinator as the primary bank reference.
5) Use the altimeter, VSI, and attitude indicator for necessary pitch adjustments.
6) To recover, roll out at ½ the bank angle prior to the desired heading.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to attitude instrument flying during turns while conducting various instrument flight procedures.
- Maintains altitude within ±100 feet during level flight, headings within ±10°, airspeed within ±10 kts, and bank angles within ±5° during turns.
- Uses proper instrument crosscheck and interpretation, and apply the appropriate pitch, bank, power, and trim corrections when applicable.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss proper instrument scan techniques including the primary and supporting method and the control and performance method.
- Explain instrument cross-check and interpretation.

Safety Considerations:

- Maintain positive aircraft control.
- Maintain orientation.

Common Errors:

- Improper cross-check procedures.
- Improper bank control during roll-in and roll-out.
- Failure to make smooth, precise corrections, as required.
- Uncoordinated use of controls.
- Improper trim technique.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Constant Airspeed Climbs and Descents (C-172R)

Objective:

To change the airplane's altitude while maintaining a constant airspeed.

Description:

Raise or lower the miniature aircraft to the approximate indication for the predetermined climb speed by applying light elevator pressure.

Setup Procedure:

1) Adjust power as required for a climb or descent configuration.
2) Apply elevator pressure to move the attitude indicator to the approximate indication.
3) Complete climb or descent checklist.
4) Cross check with airspeed indicator for proper airspeed making pitch adjustments if necessary.
5) Level off at desired altitude.
6) Complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to attitude instrument flying during climbs and descents while conducting various instrument flight procedures.
- Maintains altitude within ±100 feet during level flight, headings within ±10°, airspeed within ±10 kts, and bank angles within ±5° during turns.
- Uses proper instrument crosscheck and interpretation, and apply the appropriate pitch, bank, power, and trim corrections when applicable.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss proper instrument scan techniques including the primary and supporting method and the performance method.
- Explain instrument scan techniques including the primary and supporting method and the control and performance method.
- Explain instrument cross-check and interpretation.

Safety Considerations:

- Maintain positive aircraft control.
- Maintain orientation.

Common Errors:

- Improper cross-check procedures.
- Improper bank control during roll-in and roll-out.
- Failure to make smooth, precise corrections, as required.
- Uncoordinated use of controls.
- Improper trim technique.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Recovery from Unusual Flight Attitudes (C-172R)

Objective:

To safely re-establish control of the airplane after recognition of an unusual attitude.

Description:

The aircraft is maneuvered with the proper use of pitch, power, and bank to safely recover from a nose-high or nose-low unusual attitude.

Setup Procedure:

1) The instructor will position the aircraft into a level or banked nose-high or nose-low unusual attitude while the student has his or her eyes closed.
2) The instructor will instruct the student to recover from the unusual attitude using a view limiting device.
3) Check airspeed indicator and altimeter for indications and attitude interpretation.
4) For a nose-high attitude:
    a. Simultaneously add full power and lower the pitch.
    b. Level the wings.
5) For a nose-low attitude:
    a. Reduce power.
    b. Level the wings.
    c. Increase pitch.
6) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibit adequate knowledge of the elements relating to attitude instrument flying during recovery from unusual attitudes (both nose-high and nose-low).
- Use proper instrument cross-check and interpretation, and apply the appropriate pitch, bank, and power corrections in the correct sequence to return the aircraft to a stabilized level attitude.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the importance of quickly and accurately determining an unusual attitude.
- Explain proper control inputs to recover from an unusual attitude.

Safety Considerations:

- Maintain positive aircraft control.
- Observe aircraft limitations with respect to airspeed and load factors.

Common Errors:

- Incorrect interpretation of the flight instruments.
- Inappropriate applications of controls.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

VOR Navigation (C-172R)

Objective:

To develop the operational knowledge of how to use the VOR navigation equipment in instrument flight.

Description:

The location of the aircraft will be determined using VOR equipment and then maneuvered to most efficiently intercept the assigned radial. Tracking of the course will be maintained while adjusting for wind.

Setup Procedure:

1) Tune in the appropriate VOR frequency and positively identify the station using aural indications.
2) Determine where you are by rotating the OBS until the CDI centers with correct TO/FROM indication and visualize your position relative to the station.
3) Visualize where you want to go relative to the station and your location.
4) Determine what heading you need to intercept your desired course and track this heading.
5) Rotate the OBS until the desired course is indicated.
6) Interpreting CDI indications; turn as necessary to intercept and track course to include wind drift correction.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to intercepting and tracking VORs.
- Tunes and correctly identifies the navigation facility.
- Sets and correctly orients the course to be intercepted into the course selector or correctly identifies the course on the RMI.
- Intercepts the specified course at a predetermined angle, inbound or outbound from a navigational facility.
- Maintains the airspeed within ±10 kts, altitude within ±100 feet, and selected headings within ±5°.
- Applies proper correction to maintain a course, allowing no more than ¾ scale deflection of the CDI or within ±10° in case of an RMI.
- Determines the aircraft position relative to the navigational facility or from a waypoint in the case of GPS.
- Recognizes navigational receiver or facility failure, and when required, reports the failure to ATC.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss how to orient the aircraft to a particular station using airborne VOR equipment.
- Explain how to intercept, track, and correct for wind while navigating with a VOR facility.
- Discuss why visualization is important rather than blindly following CDI deviations left or right.
- Explain what reverse sensing is and how to avoid it.

Safety Considerations:

- Avoid special disorientation by relying on instrument reference.
- Do not navigate aircraft into airspace without clearance.

Common Errors:

- Incorrect orientation of aircraft to VOR facility.
- Turning aircraft wrong direction for intercept.
- Choosing an inappropriate intercept angle.
- Overshooting the on course turn.
- Not correcting for wind while tracking the radial.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

NDB Navigation (C-172R)

Objective:

To develop the operational knowledge of how to use the NDB navigation equipment in instrument flight.

Description:

The location of the aircraft will be determined using NDB equipment and then maneuvered to most efficiently intercept the assigned bearing. Tracking of the course will be maintained while adjusting for wind.

Setup Procedure:

1) Tune in the appropriate NDB frequency and positively identify the station (continually monitor during NDB approach).
2) Determine where you are by looking at the ADF needle (the head of the needle always points to the station) and visualize your position relative to the station.
3) Visualize where you want to go relative to the station and your location.
4) Determine what heading you need to intercept your desired course and track this heading.
5) Turn on course when the desired course is intercepted to include wind drift correction.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to intercepting and tracking NDBs.
- Tunes and correctly identifies the navigation facility.
- Intercepts the specified course at a predetermined angle, inbound or outbound from a navigational facility.
- Maintains the airspeed within ±10 kts, altitude within ±100 feet, and selected headings within ±5°.
- Applies proper correction to maintain a course, within ±10°.
- Determines the aircraft position relative to the navigational facility.
- Recognizes navigational receiver or facility failure, and when required, reports the failure to ATC.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss how to orient the aircraft to a particular station using airborne ADF equipment.
- Explain how to intercept, track, and correct for wind while navigating with a NDB facility.
- Discuss why visualization is important when navigating with a NDB station.
- Explain how to determine the aircraft's relative bearing and magnetic bearing TO and FROM the station.
- Explain which direction the needle will move when intercepting off the head of the needle and off the tail of the needle.

Safety Considerations:

- Avoid special disorientation by relying on instrument reference.
- Do not navigate aircraft into airspace without clearance.

Common Errors:

- Incorrect orientation of aircraft to NDB facility.
- Turning aircraft wrong direction for intercept.
- Choosing an inappropriate intercept angle.
- Overshooting the on course turn.
- Not correcting for wind while tracking the bearing.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

GPS Navigation (C-172R)

Objective:

To develop the operational knowledge of how to use the GPS navigation equipment in instrument flight.

Description:

The location of the aircraft will be determined using GPS equipment and then maneuvered to most efficiently intercept the assigned course. Tracking of the course will be maintained while adjusting for wind.

Setup Procedure:

1) During Start up
    a. Determine the operational status of the GPS unit by verifying that the self-test page gives correct indications.
    b. Verify that the date and time given during the startup is correct.
    c. Determine if the database is current. Based on operations, decide whether the database is acceptable.
    d. Decide how the GPS will be used, and program it appropriately, i.e. direct to navigation, flight plan.
    e. Verify RAIM is available, call out "GPS Active."
    f. Set OBS to the desired course and ensure in GPS mode.
2) Determine how you will intercept course if necessary.
3) Apply wind correction as necessary to track the course.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to intercepting and tracking the navigational system.
- Sets and correctly orients the course to be intercepted into the course selector.
- Intercepts the specified course at a predetermined angle, inbound or outbound from a navigational fix.
- Maintains the airspeed within ±10 kts, altitude within ±100 feet, and selected headings within ±5°.
- Applies proper correction to maintain a course, allowing no more than ¾ scale deflection of the CDI.
- Determines the aircraft position relative to a specified waypoint.
- Recognizes navigational receiver or facility failure, and when required, reports the failure to ATC.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the operation of the airborne equipment and the satellite constellation.
- Discuss how to preflight the equipment and determine whether its use is appropriate for the proposed flight.
- Properly set up the GPS for navigation and use of the functions.
- Explain how to intercept, track, and correct for wind while navigating with a GPS unit.
- Discuss why visualization is important instead of blindly following the GPS indications.

Safety Considerations:

- Avoid special disorientation by relying on instrument reference.
- Do not navigate aircraft into airspace without clearance

Common Errors:

- No pre-flight of the equipment prior to use.
- Lack of knowledge of GPS unit (only knows how to "direct to" a location).
- No RAIM check.
- Improper use of OBS function.
- Loss of situational awareness.
- GPS/NAV switch in wrong position.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Holding (C-172R)

Objective:

To maneuver the aircraft in a racetrack pattern at a specified location while waiting further instructions from ATC.

Description:

Determine and fly the appropriate entry procedure into the hold. Once established in the hold, the aircraft follows the specified course inbound to the holding fix, turns 180°, flies an outbound heading for a specified distance or a time that allows the inbound leg to be 1 minute or specified distance and turns another 180° to the inbound course returning to the fix.

Setup Procedure:

1) Receive your holding clearance and determine if you have all the necessary information. Read it back to the controller to verify.
2) Determine where the aircraft is relative to the holding fix.
3) Visualize your hold and determine the proper entry.
4) Navigate to the fix (5 T's) and execute the proper entry.
5) Establish the inbound course while applying wind drift correction.
6) Upon reaching the holding fix, make the outbound turn.
7) Start outbound timing when abeam the fix or wings level, whichever comes last. Triple your inbound wind correction for the outbound wind correction angle.
8) Report to ATC when established in the hold.
9) After a specified distance or a time that allows the inbound leg to be 1 minute, make the inbound turn.
10) When established inbound, start inbound timing and apply wind correction angle.
11) Cross fix again and adjust outbound timing to establish inbound legs of 1 minute if applicable.
12) Leave hold as instructed, report exiting the hold, and continue on course.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to holding procedures.
- Changes to the holding airspeed appropriate for the altitude or aircraft within 3 minutes of the holding fix.
- Explains and uses an entry procedure that ensures the aircraft remains within the protected airspace for the hold.
- Recognizes arrival at the holding fix and initiates prompt entry into the holding pattern.
- Complies with ATC reporting requirements.
- Uses the proper timing criteria, where applicable, as required by altitude or ATC instructions.
- Complies with pattern leg lengths when a DME distance is specified.
- Uses proper wind correction procedures to maintain the desired pattern and to arrive over the fix as close as possible to a specified time.
- Maintains the airspeed within ±10 kts; altitude within ±100 feet; headings within ±10°; and tracks a selected course, radial or bearing within ¾ scale deflection of the CDI.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Identifies the components of a hold.
- Properly interprets a holding clearance.
- Explain how to properly enter a hold using the 3 recommended entry techniques.
- Discusses use of timing and wind correction angle to establish the inbound and outbound legs.
- Explains how to identify the abeam point with VOR, NDB, and intersection holds.

Safety Considerations:

- Holding outside the protected airspace.
- Not receiving an Expect Further Clearance (EFC) time.

Common Errors:

- Failure to maintain orientation in relation to holding fix.
- Improper hold entry.
- Improper direction of turns.
- Not adjusting outbound timing to achieve a one minute inbound leg.
- Improperly using wind correction angle outbound.
- Not identifying the abeam point.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

VOR DME ARCS (C-172R)

Objective:

To intercept and track a circular path around a VOR.

Description:

The aircraft is maneuvered to intercept a circular path around a VOR at a specified distance from the VOR.

Setup Procedure:

1) Positively identify the VOR station and DME facility.
2) Visualize the aircraft's position relative to the VOR and track "TO" or "FROM" the VOR as required to the specified DME distance.
3) Lead the turn to intercept the arc by approximately a ½ mile.
4) Turn approximately 90° to the radial from the VOR in the proper direction.
5) Rotate OBS to center CDI with a "TO" or "FROM" indication ("TO" when final approach course is towards the VOR and "FROM" when the final approach course is away from the VOR). Turn OBS 10° toward final approach course heading.
6) When the CDI centers, turn the aircraft approximately 10° and rotate the OBS 10° more.
7) Repeat step 6) around the arc.
8) Apply wind correction as necessary to maintain the specified DME distance.
9) Exit the arc at the specified location and continue on course.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to intercepting and tracking navigational systems and DME arcs.
- Tunes and correctly identifies the navigation facility.
- Sets and correctly orients the course to be intercepted into the course selector or correctly identifies the course on the RMI.
- Intercepts the specified course at a predetermined angle, inbound or outbound from a navigational facility.
- Maintains the airspeed within ±10 kts, altitude within ±100 feet, and selected headings within ±5°.
- Applies proper correction to maintain a course, allowing no more than ¾ scale deflection of the CDI or within ±10° in case of an RMI.
- Determines the aircraft position relative to the navigational facility or from a waypoint in the case of GPS.
- Intercepts a DME arc and maintain that arc within ±1 nautical mile.
- Recognizes navigational receiver or facility failure, and when required, reports the failure to ATC.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss how to plan an intercept to a DME ARC using VOR, DME, and GPS equipment.
- Explain how to intercept, track, and correct for wind while tracking the arc.
- Discuss why visualization is important instead of blindly following CDI either left or right.

Safety Considerations:

- Avoid spatial disorientation by relying on instrument reference.
- Do not navigate aircraft into airspace without clearance.

Common Errors:

- Incorrect orientation of aircraft to VOR facility.
- Turning aircraft wrong direction for interception.
- Choosing an inappropriate intercept angle.
- Overshooting the on course turn.
- Not correcting for wind while tracking the arc.
- Not being able to intercept an arc from the inside of the arc.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Non-Precision Approach (C-172R)

Objective:

To safely navigate the aircraft from the enroute environment to align it with the final approach course while maintaining obstruction clearance.

Description:

The non-precision instrument approach allows you to navigate from the IAF to the MAP with lateral navigation and obstruction clearance.

Setup Procedure:

1) Complete the Before IAF checklist.
    a. NAV Source – Set & Check
    b. DG – Align With Compass
    c. Weather – Check
    d. Approach – Brief
2) Prior to the final approach fix (FAF):
    a. 3 Miles – Complete checklist.
        i. Seat Backs & Seat Belts – Upright Position, Fastened
        ii. Fuel Selector Valve – Both
        iii. Mixture – Rich
        iv. Landing Light & Taxi Light – On
    b. 2 Miles - Reduce power and slow aircraft to a speed of 90 kts.
        i. If GPS approach, verify correct approach is active.
    c. 1 Mile - Set approach flaps to 10°. Verify aircraft configured and stabilized for the approach.
3) At FAF, reduce power to approximately 1,400-1,600 RPM and start a descent maintaining approach airspeed of 80 kts.
4) Report position at 5nm, 3nm, and 1nm from MAP.
5) 500' above MDA complete the GUMPS check.
6) Maintain a stabilized approach at 700-1,000 FPM until reaching 100’ above the minimum descent altitude (MDA) and begin to add power (1,800-2,000 RPM).
7) Fly the aircraft at MDA until the missed approach point or until a normal descent to landing can be made.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to an instrument approach procedure.
- Selects and complies with the appropriate instrument approach procedure to be performed.
- Establishes two-way communications with ATC, as appropriate, to the phase of flight or approach segment and uses proper communication phraseology and technique.
- Selects, tunes, identifies, and confirms the operational status of the navigation equipment to be used for the approach procedure.
- Complies with all clearances issued by ATC or the instructor.
- Recognizes if any flight instrumentation is inaccurate or inoperative, and takes appropriate action.
- Advises ATC or instructor anytime that the aircraft is unable to comply with a clearance.
- Establishes the appropriate aircraft configuration and airspeed considering turbulence and wind shear, and completes the aircraft checklist items appropriate to the phase of flight.
- Maintains, prior to beginning the final approach segment, altitude within ±100 feet, heading within ±10° and allows less than a ¾ scale deflection of the CDI or within ±10° in the case of an RMI, and maintains airspeed within ±10 kts.
- Applies the necessary adjustments to the published MDA and visibility criteria for the aircraft approach category when required, such as –
    - NOTAMs
    - Inoperative aircraft and ground navigation equipment
    - Inoperative visual aids associated with the landing environment
    - NWS reporting factors and criteria

- Establishes a rate of descent and track that will ensure arrival at the MDA prior to reaching the MAP with the aircraft continuously in a position from which descent to a landing on the intended runway can be made at a normal rate using normal maneuvers.
- Allows, while on the final approach segment, no more than ¾ scale deflection of the CDI or within 10° of an RMI, and maintains airspeed within ±10 kts of that desired.
- Maintains the MDA, when reached, within +100/– 0 feet to the MAP.
- Executes the missed approach procedure at the MAP when the required visual references for the intended runway are not distinctly visible, the visibility minimums prescribed by the approach procedure are not met, or the aircraft is not in a position to make a landing using a normal descent rate and normal maneuvers.
- Execute a normal landing from a straight-in or circling approach when instructed by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain how to read the instrument approach charts.
- Discuss how to fly the approach.
- Identify symbols on the instrument approach chart.
- Discuss the importance of a stabilized approach.

Safety Considerations:

- Flying a stabilized approach.
- Avoid spatial disorientation by relying on instrument reference.
- Do not navigate aircraft into airspace without clearance.
- Do not descend below MDA prior to having required visual references.
- Do not attempt a landing from a point where such attempt should not be made.
- Identify the missed approach point and fly appropriate missed approach procedures.

Common Errors:

- Not properly identifying the navigation stations.
- Not performing required checklists.
- Not configuring the aircraft appropriately.
- Chasing the course.
- Descending at an inappropriate rate.
- Failure to start timing when appropriate.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Precision Approach (and LPV) (C-172R)

Objective:

To safely navigate the aircraft from the enroute environment to align it with the final approach course while maintaining obstruction clearance.

Description:

The precision instrument approach allows you to navigate from the IAF to the MAP with lateral and vertical navigation.

Setup Procedure:

1) Complete the Before IAF checklist.
    a. NAV Source – Set & Check
    b. DG – Align With Compass
    c. Weather – Check
    d. Approach – Brief
1) Prior to glide slope intercept:
    a. Glideslope becomes active - Complete 3 mile Before FAF checklist.
        i. Seat Backs & Seat Belts – Upright Position, Fastened
        ii. Fuel Selector Valve – Both
        iii. Mixture – Rich
        iv. Landing Light & Taxi Light – On
    b. 2 dots below glideslope interception - Reduce power and slow aircraft to approach speed of 90 kts.
        i. If GPS approach, verify correct approach is active.
    c. 1 dot below glideslope interception - Set approach flaps to 10°. Verify aircraft configured and stabilized for the approach.
2) At glide slope interception:
    a. Reduce power to between 1,600 to 1,800 RPM to maintain a descent at 80 kts.
    b. Maintain a stabilized approach on the glide slope until reaching DA/DH.
        i. Minor pitch changes to maintain glide slope.
        ii. Use power to control airspeed.
3) Report position at 5nm, 3nm, and 1nm from MAP.
4) 500' above DA/DH complete the GUMPS check.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the precision instrument approach procedures.
- Accomplishes the appropriate precision instrument approaches as selected by the instructor.
- Selects and complies with the appropriate instrument approach procedure to be performed.
- Establishes two-way communications with ATC using the proper communication phraseology and techniques, as required for the phase of flight or approach segment.
- Complies, in a timely manner with all clearances, instructions, and procedures.
- Advises ATC or instructor anytime that the aircraft is unable to comply with a clearance.
- Establishes the appropriate airplane configuration and airspeed/V-speed considering turbulence, wind shear, microburst conditions, or other meteorological and operating conditions.
- Completes the aircraft checklist items appropriate to the phase of flight or approach segment, including engine out approach and landing checklists, if appropriate.
- Prior to beginning the final approach segment, maintains the desired altitude ±100 feet, the desired airspeed within ±10 kts, the desired heading within ±10°; and accurately tracks radials, courses, and bearings.
- Selects, tunes, identifies, and monitors the operational status of ground and airplane navigation equipment used for the approach.

- Applies the necessary adjustments to the published DA/DH and visibility criteria for the aircraft approach category when required, such as –
  - NOTAMs
  - Inoperative aircraft and ground navigation equipment
  - Inoperative visual aids associated with the landing environment
  - NWS reporting factors and criteria
- Establishes a predetermined rate of descent at glide slope intercept which approximates that required for the aircraft to follow the glide slope.
- Maintains a stabilized final approach, from the FAF to DA/DH allowing no more than ¾ scale deflection of either the glide slope or localizer indications and maintains the desired airspeed within ±10 kts.
- A missed approach or transition to a landing shall be initiated at DA/DH.
- Immediately initiates the missed approach at DA/DH when the required visual references for the intended runway are not distinctly visible, the visibility minimums prescribed by the approach procedure are not met, or the aircraft is not in a position to make a landing using a normal descent rate and normal maneuvers.
- Transitions to a normal landing approach only when the aircraft is in a position from which a descent to a landing on the runway can be made at a normal rate of descent using normal maneuvering.
- Maintains localizer and glide slope within ¾ scale deflection of the indicators during the visual descent from DA/DH to a point over the runway where glide slop must be abandoned to accomplish a normal landing.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain how to read the instrument approach charts.
- Discuss how to fly the approach.
- Identify symbols on the instrument approach chart.
- Discuss the importance of a stabilized approach.
- Explain how to estimate the rate of descent required to follow the glide slope.

Safety Considerations:

- Fly a stabilized approach.
- Avoid spatial disorientation by relying on instrument reference.
- Do not navigate aircraft into airspace without clearance.
- Do not descend below DA/DH prior to having required visual references.
- Do not attempt a landing from a point where such attempt should not be made.
- Identify the missed approach point and fly appropriate missed approach procedures.

Common Errors:

- Not properly identifying the navigation stations.
- Not performing required checklists.
- Not configuring the aircraft appropriately.
- Chasing the course.
- Descending at an inappropriate rate.
- Failure to start timing when appropriate.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Non Precision Approach (Coupled) (C-172R)

Objective:

To safely navigate the aircraft from the enroute environment to align it with the final approach course while maintaining obstruction clearance.

Description:

The non-precision instrument approach allows you to navigate from the IAF to the MAP with lateral navigation and obstruction clearance.

Setup Procedure:

1) Engage autopilot (AP).
2) Engage autopilot mode (HDG, NAV).
3) Complete the Before IAF checklist.
    a. NAV Source – Set & Check
    b. DG – Align With Compass
    c. Weather – Check
    d. Approach – Brief
4) Prior to the final approach fix (FAF):
    a. 3 Miles – Complete checklist:
        i. Seat Backs & Seat Belts – Upright Position, Fastened
        ii. Fuel Selector Valve – Both
        iii. Mixture – Rich
        iv. Landing Light & Taxi Light – On
    b. 2 Miles - Reduce power and slow aircraft to a speed of 90 kts.
        i. If GPS approach, verify correct approach is active.
    c. 1 Mile - Set approach flaps to 10°. Verify aircraft configured and stabilized for the approach.
5) At FAF, reduce power to approximately 1,400-1,600 RPM and start a descent maintaining approach airspeed of 80 kts.
6) Report position at 5nm, 3nm, and 1nm from MAP.
7) 500' above MDA complete the GUMPS check.
8) Maintain a stabilized approach at 700-1,000 FPM until reaching 100’ above the minimum descent altitude (MDA) and begin to add power (1,800-2,000 RPM).
9) Disengage autopilot no lower than 200’ AGL.
10) Fly the aircraft at MDA until the missed approach point or until a normal descent to landing can be made.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to an instrument approach procedure.
- Selects and complies with the appropriate instrument approach procedure to be performed.
- Establishes two-way communications with ATC, as appropriate, to the phase of flight or approach segment and uses proper communication phraseology and technique.
- Selects, tunes, identifies, and confirms the operational status of the navigation equipment to be used for the approach procedure.
- Complies with all clearances issued by ATC or the instructor.
- Recognizes if any flight instrumentation is inaccurate or inoperative, and takes appropriate action.
- Advises ATC or instructor anytime that the aircraft is unable to comply with a clearance.
- Establishes the appropriate aircraft configuration and airspeed considering turbulence and wind shear, and completes the aircraft checklist items appropriate to the phase of flight.
- Maintains, prior to beginning the final approach segment, altitude within ±100 feet, heading within ±10° and allows less than a ¾ scale deflection of the CDI or within ±10° in the case of an RMI, and maintains airspeed within ±10 kts.
- Applies the necessary adjustments to the published MDA and visibility criteria for the aircraft approach category when required, such as –
    - NOTAMs

  - Inoperative aircraft and ground navigation equipment
  - Inoperative visual aids associated with the landing environment
  - NWS reporting factors and criteria
- Establishes a rate of descent and track that will ensure arrival at the MDA prior to reaching the MAP with the aircraft continuously in a position from which descent to a landing on the intended runway can be made at a normal rate using normal maneuvers.
- Allows, while on the final approach segment, no more than ¾ scale deflection of the CDI or within 10° of an RMI, and maintains airspeed within ±10 kts of that desired.
- Maintains the MDA, when reached, within +100/– 0 feet to the MAP.
- Executes the missed approach procedure at the MAP when the required visual references for the intended runway are not distinctly visible, the visibility minimums prescribed by the approach procedure are not met, or the aircraft is not in a position to make a landing using a normal descent rate and normal maneuvers.
- Execute a normal landing from a straight-in or circling approach when instructed by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain how to read the instrument approach charts.
- Discuss how to fly the approach.
- Identify symbols on the instrument approach chart.
- Discuss the importance of a stabilized approach.

Safety Considerations:

- Flying a stabilized approach.
- Avoid spatial disorientation by relying on instrument reference.
- Do not navigate aircraft into airspace without clearance.
- Do not descend below MDA prior to having required visual references.
- Do not attempt a landing from a point where such attempt should not be made.
- Identify the missed approach point and fly appropriate missed approach procedures.

Common Errors:

- Not properly identifying the navigation stations.
- Not performing required checklists.
- Not configuring the aircraft appropriately.
- Chasing the course.
- Descending at an inappropriate rate.
- Failure to start timing when appropriate.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Straight in Approach (C-172R)

Objective:

To transition the aircraft from MDA or DH to landing on a runway aligned with the final approach course.

Description:

The aircraft will transition from the approach configuration to the landing configuration while continuing from the DH or MDA to point of intended landing while maintaining a stabilized approach.

Setup Procedure:

1) Confirm that all requirements to descend below DA/DH, VDP, or MDA have been achieved.
2) Configure the aircraft for a normal landing.
3) Continue a stabilized approach.
4) Accomplish a normal landing and roll out.
5) Exit runway and complete after landing checklists.
6) Close IFR flight plan if necessary.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to the pilot's responsibilities, and the environmental, operational, and meteorological factors, which affect a landing from a straight-in approach.
- Transitions at the DA/DH, MDA, or VDP to a visual flight condition, allowing for safe visual maneuvering and a normal landing.
- Adheres to all ATC (or instructor) advisories, such as NOTAMs, wind shear, wake turbulence, runway surface, braking conditions, and other operational considerations.
- Completes appropriate checklist items for the pre-landing and landing phase.
- Maintains positive aircraft control throughout the complete landing maneuver.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Determine straight in approach categories and criteria.
- Explain the proper aircraft configuration.
- Discuss how to maintain a stabilized descent to landing.
- List the requirements for descending below DA/DH or MDA.
- Explain what to do if visual reference to the airport environment is lost.

Safety Considerations:

- Collision avoidance of VFR traffic.
- Situational awareness of position, airspeed, bank, and aircraft configuration.

Common Errors:

- Selecting incorrect approach category.
- Descends below DA/DH or MDA without having the airport environment in sight.
- Attempts a descent to landing that would be considered abnormal.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Circling Approach (C-172R)

Objective:

To transition the aircraft from MDA to landing on a runway not aligned with the final approach course.

Description:

The aircraft will transition from the approach configuration to the landing configuration while maneuvering to align the aircraft with the runway and continue to a point of intended landing while maintaining a stabilized approach.

Setup Procedure:

1) Prior to arriving at circling MDA or VDP, develop a plan to maneuver the aircraft to align with the active runway.
2) Remain within the required circling distances.
3) Maneuver the aircraft to align it with the runway, being cautious of other aircraft operating in the vicinity.
4) Confirm that all requirements to descend below MDA have been achieved.
5) Configure the aircraft for a stabilized normal approach to landing.
6) Accomplish a normal landing and roll out.
7) Exit runway and complete after landing checklists.
8) Close IFR flight plan if necessary.

*Note – If approach is in opposite direction of traffic flow, break off the approach 2 miles prior to the MAP.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to a circling approach procedure.
- Selects and complies with the appropriate circling approach procedure considering turbulence and wind shear and considering the maneuvering capabilities of the aircraft.
- Confirms the direction of traffic and adheres to all restrictions and instructions issued by ATC and the instructor.
- Does not exceed the visibility criteria or descend below the appropriate circling altitude until in a position from which a descent to a normal landing can be made.
- Maneuvers the aircraft, after reaching the authorized MDA and maintains that altitude within +100/-0 feet and a flight path that permits a normal landing on a runway. The runway selected must be such that it requires at least a 90° change of direction, from the final approach course, to align the aircraft for landing.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Determine circling approach categories and criteria.
- Explain the proper aircraft configuration.
- Discuss how to maintain a stabilized descent to landing.
- List the requirements for descending below MDA.
- Explain what to do if visual reference to the airport environment is lost.

Safety Considerations:

- Collision avoidance of VFR traffic.
- Situational awareness of position, airspeed, bank, and aircraft configuration.

Common Errors:

- Selecting incorrect approach category.
- Descends below DH or MDA without having the airport environment in sight.
- Attempting a descent to landing that would be considered abnormal.
- Losing visual reference to runway.
- Improper circling planning considering traffic flow.
- Circling to far from runway environment.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Missed Approach (C-172R)

Objective:

To determine when it is necessary to execute the missed approach procedures and safely execute the published missed approach procedures.

Description:

If the decision is made to execute a missed approach procedure, the aircraft will be reconfigured to the departure configuration. Precisely follow the missed approach procedure to ensure terrain and obstruction clearance and repositioning of the aircraft to attempt another approach or proceed to a new destination.

Setup Procedure:

1) Initiate the missed approach and configure the aircraft for a Go Around.
2) Advise ATC of the missed approach.
3) Follow the missed approach instructions on the instrument approach chart unless otherwise instructed by ATC.
4) Verify the Go-Around checklist and complete the climb checklist as workload permits.
5) Follow any clearance issued by ATC and advise them of any preferred course of action, i.e. attempt another approach at the same airport, depart the area.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to missed approach procedures associated with standard instrument approaches.
- Initiates the missed approach promptly by applying power, establishing a climb attitude, and reducing drag in accordance with the aircraft manufacturer's recommendations.
- Reports to ATC the missed approach procedure.
- Complies with the published or alternate missed approach procedure.
- Advise ATC or instructor anytime that the aircraft is unable to comply with a clearance, restriction, or climb gradient.
- Follows the recommended checklist items appropriate to the Go Around procedure.
- Requests, if appropriate, ATC clearance to the alternate airport, clearance limit, or as directed by the instructor.
- Maintains the recommended airspeed within ±10 kts; heading, course, or bearing within ±10°; and altitude(s) ±100 feet during the missed approach procedure.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the situations in which a missed approach is necessary.
- Discuss how to execute a missed approach prior to the missed approach point
- Discuss how to execute a missed approach while circling.

Safety Considerations:

- Establish a climbing attitude in the departure configuration.
- Remain coordinated and at a safe flying airspeed.
- Establish contact with ATC and advise them of the missed approach.

Common Errors:

- Turns prior to the missed approach point.
- Does not establish a climbing attitude.
- Allows the aircraft to get too slow.
- Flies past the missed approach point without executing the missed approach procedure.
- Is not familiar enough with the missed approach procedure to execute the first few steps without referring to the approach chart.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

C-172S

Instrument Cockpit Check (C-172S)

Objective:

To develop good habits for checking the operation of flight instruments and their power source prior to takeoff in instrument meteorological conditions (IMC).

Description:

Each instrument relating to Instrument Flight Rules (IFR) is checked for proper indications during the taxi to the run up area or runway.

Setup Procedure:

1) Check the magnetic compass for freedom of movement; confirm that it is full of fluid and showing known headings.
2) The airspeed indicator should indicate zero.
3) The attitude indicator should remain erect to the horizontal position and not dip more than 5° while turning on the ground.
4) With the altimeter set to the current altimeter setting, note any variation between field elevation and the altimeter indication. Discrepancies of 75 feet or more indicate questionable reliability.
5) The VSI should read zero. If it does not, the ground indication should be interpreted as the zero position.
6) During taxi turns, check the turn coordinator for turns in direction of the turn and the ball should move opposite to the direction of turns.
7) Verify the heading indicator matches the magnetic compass.
8) Check clock for correct digital display
9) The standby airspeed indicator should indicate zero.
10) Allow 5 minutes for the stand-by gyro of the attitude indicator to spin up and then it should remain erect to the horizontal position and not dip more than 5° while turning on the ground.
11) With the stand by altimeter set to the current altimeter setting, note any variation between field elevation and the altimeter indication. Discrepancies of 75 feet or more indicate questionable reliability.
12) Check engine instruments for proper indications.

Flight Proficiency Standards:

- Exhibit adequate knowledge of the elements related to the preflight check of instruments, avionics, and navigation equipment.
- Perform the preflight on instruments, avionics, and navigation equipment.
- Determine that the aircraft is in condition for safe instrument flight.
- Note any discrepancies and determine whether the aircraft is safe for instrument fight or requires maintenance.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance of performing an instrument cockpit check.
- Discuss how each instrument check determines the operational status of the instrument and power source.
- Demonstrate the instrument cockpit check.
- Determine if an unsafe condition exists based on the results of the instrument cockpit check.

Safety Considerations:

- Division of attention during the instrument taxi check.
- Proper interpretation of the instruments.

Common Errors:

- Failure to check all instruments.
- Improperly checking instruments.
- Failure to maintain control of the aircraft while performing the check.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Straight and Level Flight (C-172S)

Objective:

To fly by reference to instruments while maintaining a constant altitude and heading.

Description:

In straight and level flight you must keep the wings level with the horizon and a pitch attitude which allows no climb or descent.

Setup Procedure:

1) Begin your level off by approximately 10% of your climb rate before desired altitude.
2) Perform cruise checklist to include leaning procedures.
3) Set heading bug to desired heading.
4) Trim for level flight.
5) Maintain straight and level flight through instrument scan, interpretation, and aircraft control.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to attitude instrument flying during straight and level flight while conducting various instrument flight procedures.
- Maintains altitude within ±100 feet during level flight, headings within ±10°, airspeed within ±10 kts, and bank angles within ±5° during turns.
- Uses proper instrument crosscheck and interpretation, and apply the appropriate pitch, bank, power, and trim corrections when applicable.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss proper instrument scan techniques including both the primary and supporting method and the control and performance method.
- Explain instrument cross-check and interpretation.

Safety Considerations:

- Maintain positive aircraft control.
- Maintain orientation.

Common Errors:

- Slow or improper cross-check during straight and level flight.
- Improper power control.
- Failure to make smooth, precise corrections, as required.
- Uncoordinated use of controls.
- Improper trim control.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Turns (C-172S)

Objective:

To fly by reference to instruments while changing direction.

Description:

On the roll-in, use the attitude indicator to establish the approximate angle of bank, and then check the turn coordinator's miniature aircraft for a standard-rate turn indication.

Setup Procedure:

1) Set the heading bug before initiating a turn.
2) Apply coordinated aileron and rudder pressures in the desired direction of turn.
3) Establish the bank angle using the attitude indicator and verify standard rate with the turn coordinator and slip/skid indicator.
4) Maintain the standard rate of turn, using the turn coordinator as the primary bank reference.
5) Use the altimeter, VSI, and attitude indicator for necessary pitch adjustments.
6) To recover, roll out at ½ the bank angle prior to the desired heading.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to attitude instrument flying during turns while conducting various instrument flight procedures.
- Maintains altitude within ±100 feet during level flight, headings within ±10°, airspeed within ±10 kts, and bank angles within ±5° during turns.
- Uses proper instrument crosscheck and interpretation, and apply the appropriate pitch, bank, power, and trim corrections when applicable.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss proper instrument scan techniques including the primary and supporting method and the control and performance method.
- Explain instrument cross-check and interpretation.

Safety Considerations:

- Maintain positive aircraft control.
- Maintain orientation.

Common Errors:

- Improper cross-check procedures.
- Improper bank control during roll-in and roll-out.
- Failure to make smooth, precise corrections, as required.
- Uncoordinated use of controls.
- Improper trim technique.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Constant Airspeed Climbs and Descents (C-172S)

Objective:

To change the airplane's altitude while maintaining a constant airspeed.

Description:

Raise or lower the miniature aircraft to the approximate indication for the predetermined climb speed by applying light elevator pressure.

Setup Procedure:

1) Set target altitude.
2) Set climb or descent configuration.
3) Adjust power as required.
4) Apply elevator pressure to move the attitude indicator to the approximate indication.
5) Complete climb or descent checklist.
6) Cross check with airspeed indicator for proper airspeed making pitch adjustments if necessary.
7) Level off at desired altitude.
8) Complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to attitude instrument flying during climbs and descents while conducting various instrument flight procedures.
- Maintains altitude within ±100 feet during level flight, headings within ±10°, airspeed within ±10 kts, and bank angles within ±5° during turns.
- Uses proper instrument crosscheck and interpretation, and apply the appropriate pitch, bank, power, and trim corrections when applicable.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss proper instrument scan techniques including the primary and supporting method and the performance method.
- Explain instrument scan techniques including the primary and supporting method and the control and performance method.
- Explain instrument cross-check and interpretation.

Safety Considerations:

- Maintain positive aircraft control.
- Maintain orientation.

Common Errors:

- Improper cross-check procedures.
- Improper bank control during roll-in and roll-out.
- Failure to make smooth, precise corrections, as required.
- Uncoordinated use of controls.
- Improper trim technique.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Recovery from Unusual Flight Attitudes (C-172S)

Objective:

To safely re-establish control of the airplane after recognition of an unusual attitude.

Description:

The aircraft is maneuvered with the proper use of pitch, power, and bank to safely recover from a nose-high or nose-low unusual attitude.

Setup Procedure:

1) The instructor will position the aircraft into a level or banked nose-high or nose-low unusual attitude while the student has his or her eyes closed.
2) The instructor will instruct the student to recover from the unusual attitude using a view limiting device.
3) Check airspeed indicator and altimeter for indications and attitude interpretation.
4) For a nose-high attitude:
    c. Simultaneously add full power and lower the pitch.
    d. Level the wings.
5) For a nose-low attitude:
    d. Reduce power.
    e. Level the wings.
    f. Increase pitch.
6) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibit adequate knowledge of the elements relating to attitude instrument flying during recovery from unusual attitudes (both nose-high and nose-low).
- Use proper instrument cross-check and interpretation, and apply the appropriate pitch, bank, and power corrections in the correct sequence to return the aircraft to a stabilized level attitude.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the importance of quickly and accurately determining an unusual attitude.
- Explain proper control inputs to recover from an unusual attitude.

Safety Considerations:

- Maintain positive aircraft control.
- Observe aircraft limitations with respect to airspeed and load factors.

Common Errors:

- Incorrect interpretation of the flight instruments.
- Inappropriate applications of controls.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

VOR Navigation (C-172S)

Objective:

To develop the operational knowledge of how to use the VOR navigation equipment in instrument flight.

Description:

The location of the aircraft will be determined using VOR equipment and then maneuvered to most efficiently intercept the assigned radial. Tracking of the course will be maintained while adjusting for wind.

Setup Procedure:

1) Tune in the appropriate VOR frequency and positively identify the station using aural indications.
2) Determine where you are by rotating the OBS until the CDI centers with correct TO/FROM indication and visualize your position relative to the station.
3) Visualize where you want to go relative to the station and your location.
4) Determine what heading you need to intercept your desired course and track this heading.
5) Rotate the OBS until the desired course is indicated.
6) Interpreting CDI indications; turn as necessary to intercept and track course to include wind drift correction.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to intercepting and tracking VORs.
- Tunes and correctly identifies the navigation facility.
- Sets and correctly orients the course to be intercepted into the course selector or correctly identifies the course on the RMI.
- Intercepts the specified course at a predetermined angle, inbound or outbound from a navigational facility.
- Maintains the airspeed within ±10 kts, altitude within ±100 feet, and selected headings within ±5°.
- Applies proper correction to maintain a course, allowing no more than ¾ scale deflection of the CDI or within ±10° in case of an RMI.
- Determines the aircraft position relative to the navigational facility or from a waypoint in the case of GPS.
- Recognizes navigational receiver or facility failure, and when required, reports the failure to ATC.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss how to orient the aircraft to a particular station using airborne VOR equipment.
- Explain how to intercept, track, and correct for wind while navigating with a VOR facility.
- Discuss why visualization is important rather than blindly following CDI deviations left or right.
- Explain what reverse sensing is and how to avoid it.

Safety Considerations:

- Avoid special disorientation by relying on instrument reference.
- Do not navigate aircraft into airspace without clearance.

Common Errors:

- Incorrect orientation of aircraft to VOR facility.
- Turning aircraft wrong direction for intercept.
- Choosing an inappropriate intercept angle.
- Overshooting the on course turn.
- Not correcting for wind while tracking the radial.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

GPS Navigation (C-172S)

Objective:

To develop the operational knowledge of how to use the GPS navigation equipment in instrument flight.

Description:

The location of the aircraft will be determined using GPS equipment and then maneuvered to most efficiently intercept the assigned course. Tracking of the course will be maintained while adjusting for wind.

Setup Procedure:

1) During Start up
    a. Determine the operational status of the GPS unit by verifying that the self-test page gives correct indications.
    b. Verify that the date and time given during the startup is correct.
    c. Determine if the database is current. Based on operations, decide whether the database is acceptable.
    d. Decide how the GPS will be used, and program it appropriately, i.e. direct to navigation, flight plan.
    e. Verify RAIM is available, call out “GPS Active.”
    f. Set OBS to the desired course and ensure in GPS mode.
2) Determine how you will intercept course if necessary.
3) Apply wind correction as necessary to track the course.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to intercepting and tracking the navigational system.
- Sets and correctly orients the course to be intercepted into the course selector.
- Intercepts the specified course at a predetermined angle, inbound or outbound from a navigational fix.
- Maintains the airspeed within ±10 kts, altitude within ±100 feet, and selected headings within ±5°.
- Applies proper correction to maintain a course, allowing no more than ¾ scale deflection of the CDI.
- Determines the aircraft position relative to a specified waypoint.
- Recognizes navigational receiver or facility failure, and when required, reports the failure to ATC.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the operation of the airborne equipment and the satellite constellation.
- Discuss how to preflight the equipment and determine whether its use is appropriate for the proposed flight.
- Properly set up the GPS for navigation and use of the functions.
- Explain how to intercept, track, and correct for wind while navigating with a GPS unit.
- Discuss why visualization is important instead of blindly following the GPS indications.

Safety Considerations:

- Avoid special disorientation by relying on instrument reference.
- Do not navigate aircraft into airspace without clearance

Common Errors:

- No pre-flight of the equipment prior to use.
- Lack of knowledge of GPS unit (only knows how to “direct to” a location).
- No RAIM check.
- Improper use of OBS function.
- Loss of situational awareness.
- GPS/NAV switch in wrong position.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Holding (C-172S)

Objective:

To maneuver the aircraft in the racetrack pattern at a specified location while waiting further instructions from ATC.

Description:

Determine and fly the appropriate entry procedure into the hold. Once established in the hold, the aircraft follows the specified course inbound to the holding fix, turns 180°, flies an outbound heading for a specified distance or a time that allows the inbound leg to be 1 minute or specified distance and turns another 180° to the inbound course returning to the fix.

Setup Procedure:

1) Receive your holding clearance and determine if you have all the necessary information. Read it back to the controller to verify.
2) Determine where the aircraft is relative to the holding fix.
3) Visualize your hold and determine the proper entry.
4) Navigate to the fix (5 T's) and execute the proper entry.
5) Establish the inbound course while applying wind drift correction.
6) Upon reaching the holding fix, make the outbound turn.
7) Start outbound timing when abeam the fix or wings level, whichever comes last. Triple your inbound wind correction for the outbound wind correction angle.
8) Report to ATC when established in the hold.
9) After a specified distance or a time that allows the inbound leg to be 1 minute, make the inbound turn.
10) When established inbound, start inbound timing and apply wind correction angle.
11) Cross fix again and adjust outbound timing to establish inbound legs of 1 minute if applicable.
12) Leave hold as instructed, report exiting the hold, and continue on course.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to holding procedures.
- Changes to the holding airspeed appropriate for the altitude or aircraft within 3 minutes of the holding fix.
- Explains and uses an entry procedure that ensures the aircraft remains within the protected airspace for the hold.
- Recognizes arrival at the holding fix and initiates prompt entry into the holding pattern.
- Complies with ATC reporting requirements.
- Uses the proper timing criteria, where applicable, as required by altitude or ATC instructions.
- Complies with pattern leg lengths when a DME distance is specified.
- Uses proper wind correction procedures to maintain the desired pattern and to arrive over the fix as close as possible to a specified time.
- Maintains the airspeed within ±10 kts; altitude within ±100 feet; headings within ±10°; and tracks a selected course, radial or bearing within ¾ scale deflection of the CDI.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Identifies the components of a hold.
- Properly interprets a holding clearance.
- Explain how to properly enter a hold using the 3 recommended entry techniques.
- Discusses use of timing and wind correction angle to establish the inbound and outbound legs.
- Explains how to identify the abeam point with VOR, NDB, and intersection holds.

Safety Considerations:

- Holding outside the protected airspace.
- Not receiving an Expect Further Clearance (EFC) time.

Common Errors:

- Failure to maintain orientation in relation to holding fix.
- Improper hold entry.
- Improper direction of turns.
- Not adjusting outbound timing to achieve a one minute inbound leg.
- Improperly using wind correction angle outbound.
- Not identifying the abeam point.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

VOR DME ARCS (C-172S)

Objective:

To intercept and track a circular path around a VOR.

Description:

The aircraft is maneuvered to intercept a circular path around a VOR at a specified distance from the VOR.

Setup Procedure:

1) Positively identify the VOR station and DME facility.
2) Visualize the aircraft's position relative to the VOR and track "TO" or "FROM" the VOR as required to the specified DME distance.
3) Lead the turn to intercept the arc by approximately a ½ mile.
4) Turn approximately 90° to the radial from the VOR in the proper direction.
5) Rotate OBS to center CDI with a "TO" or "FROM" indication ("TO" when final approach course is towards the VOR and "FROM" when the final approach course is away from the VOR). Turn OBS 10° toward final approach course heading.
6) When the CDI centers, turn the aircraft approximately 10° and rotate the OBS 10° more.
7) Repeat step 6) around the arc.
8) Apply wind correction as necessary to maintain the specified DME distance.
9) Exit the arc at the specified location and continue on course.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to intercepting and tracking navigational systems and DME arcs.
- Tunes and correctly identifies the navigation facility.
- Sets and correctly orients the course to be intercepted into the course selector or correctly identifies the course on the RMI.
- Intercepts the specified course at a predetermined angle, inbound or outbound from a navigational facility.
- Maintains the airspeed within ±10 kts, altitude within ±100 feet, and selected headings within ±5°.
- Applies proper correction to maintain a course, allowing no more than ¾ scale deflection of the CDI or within ±10° in case of an RMI.
- Determines the aircraft position relative to the navigational facility or from a waypoint in the case of GPS.
- Intercepts a DME arc and maintain that arc within ±1 nautical mile.
- Recognizes navigational receiver or facility failure, and when required, reports the failure to ATC.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss how to plan an intercept to a DME ARC using VOR, DME, and GPS equipment.
- Explain how to intercept, track, and correct for wind while tracking the arc.
- Discuss why visualization is important instead of blindly following CDI either left or right.

Safety Considerations:

- Avoid spatial disorientation by relying on instrument reference.
- Do not navigate aircraft into airspace without clearance.

Common Errors:

- Incorrect orientation of aircraft to VOR facility.
- Turning aircraft wrong direction for interception.
- Choosing an inappropriate intercept angle.
- Overshooting the on course turn.
- Not correcting for wind while tracking the arc.
- Not being able to intercept an arc from the inside of the arc.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Non Precision Approach (C-172S)

Objective:

To safely navigate the aircraft from the enroute environment to align it with the final approach course while maintaining obstruction clearance.

Description:

The non-precision instrument approach allows you to navigate from the IAF to the MAP with lateral navigation and obstruction clearance.

Setup Procedure:

1) Complete the Before IAF checklist.
    a. NAV Source – Set & Check
    b. HSI – Check Against Compass
    c. Weather – Check
    d. Approach – Brief
2) Prior to the final approach fix (FAF):
    a. 3 Miles – Complete checklist.
        i. Seat Backs & Seat Belts – Upright Position, Fastened
        ii. Fuel Selector Valve – Both
        iii. Mixture – Rich
        iv. Landing Light & Taxi Light – On
    b. 2 Miles - Reduce power and slow aircraft to a speed of 90 kts.
        i. If GPS approach, verify correct approach is active.
    c. 1 Mile - Set approach flaps to 10°. Verify aircraft configured and stabilized for the approach.
3) At FAF, reduce power to approximately 1,400-1,600 RPM and start a descent maintaining approach airspeed of 80 kts.
4) Report position at 5nm, 3nm, and 1nm from MAP.
5) 500' above MDA complete the GUMPS check.
6) Maintain a stabilized approach at 700-1,000 FPM until reaching 100’ above the minimum descent altitude (MDA) and begin to add power (1,800-2,000 RPM).
7) Fly the aircraft at MDA until the missed approach point or until a normal descent to landing can be made.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to an instrument approach procedure.
- Selects and complies with the appropriate instrument approach procedure to be performed.
- Establishes two-way communications with ATC, as appropriate, to the phase of flight or approach segment and uses proper communication phraseology and technique.
- Selects, tunes, identifies, and confirms the operational status of the navigation equipment to be used for the approach procedure.
- Complies with all clearances issued by ATC or the instructor.
- Recognizes if any flight instrumentation is inaccurate or inoperative, and takes appropriate action.
- Advises ATC or instructor anytime that the aircraft is unable to comply with a clearance.
- Establishes the appropriate aircraft configuration and airspeed considering turbulence and wind shear, and completes the aircraft checklist items appropriate to the phase of flight.
- Maintains, prior to beginning the final approach segment, altitude within ±100 feet, heading within ±10° and allows less than a ¾ scale deflection of the CDI or within ±10° in the case of an RMI, and maintains airspeed within ±10 kts.
- Applies the necessary adjustments to the published MDA and visibility criteria for the aircraft approach category when required, such as –
    - NOTAMs
    - Inoperative aircraft and ground navigation equipment
    - Inoperative visual aids associated with the landing environment
    - NWS reporting factors and criteria

- Establishes a rate of descent and track that will ensure arrival at the MDA prior to reaching the MAP with the aircraft continuously in a position from which descent to a landing on the intended runway can be made at a normal rate using normal maneuvers.
- Allows, while on the final approach segment, no more than ¾ scale deflection of the CDI or within 10° of an RMI, and maintains airspeed within ±10 kts of that desired.
- Maintains the MDA, when reached, within +100/– 0 feet to the MAP.
- Executes the missed approach procedure at the MAP when the required visual references for the intended runway are not distinctly visible, the visibility minimums prescribed by the approach procedure are not met, or the aircraft is not in a position to make a landing using a normal descent rate and normal maneuvers.
- Execute a normal landing from a straight-in or circling approach when instructed by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain how to read the instrument approach charts.
- Discuss how to fly the approach.
- Identify symbols on the instrument approach chart.
- Discuss the importance of a stabilized approach.

Safety Considerations:

- Flying a stabilized approach.
- Avoid spatial disorientation by relying on instrument reference.
- Do not navigate aircraft into airspace without clearance.
- Do not descend below MDA prior to having required visual references.
- Do not attempt a landing from a point where such attempt should not be made.
- Identify the missed approach point and fly appropriate missed approach procedures.

Common Errors:

- Not properly identifying the navigation stations.
- Not performing required checklists.
- Not configuring the aircraft appropriately.
- Chasing the course.
- Descending at an inappropriate rate.
- Failure to start timing when appropriate.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Precision Approach (and LPV) (C-172S)

Objective:

To safely navigate the aircraft from the enroute environment aligning it with the final approach course while maintaining obstruction clearance.

Description:

The precision instrument approach allows you to navigate from the IAF to the MAP with lateral navigation and vertical navigation.

Setup Procedure:

1) Complete the Before IAF checklist.
    a. NAV Source – Set & Check (If LPV approach, verify WAAS is enabled)
    b. HSI – Check Against Compass
    c. Weather – Check
    d. Approach – Brief
2) Prior to glide slope intercept:
    a. Glideslope becomes active - Complete 3 mile Before FAF checklist.
        i. Seat Backs & Seat Belts – Upright Position, Fastened
        ii. Fuel Selector Valve – Both
        iii. Mixture – Rich
        iv. Landing Light & Taxi Light – On
    b. 2 dots below glideslope interception - Reduce power and slow aircraft to approach speed of 90 kts.
        i. If GPS approach, verify correct approach is active.
    c. 1 dot below glideslope interception - Set approach flaps to 10°. Verify aircraft configured and stabilized for the approach.
3) At glide slope interception:
    a. Reduce power to between 1,600 to 1,800 RPM to maintain a descent at 80 kts.
    b. Maintain a stabilized approach on the glide slope until reaching DA/DH.
        i. Minor pitch changes to maintain glide slope.
        ii. Use power to control airspeed.
4) Report position at 5nm, 3nm, and 1nm from MAP.
5) 500' above DA/DH complete the GUMPS check.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the precision instrument approach procedures.
- Accomplishes the appropriate precision instrument approaches as selected by the instructor.
- Selects and complies with the appropriate instrument approach procedure to be performed.
- Establishes two-way communications with ATC using the proper communication phraseology and techniques, as required for the phase of flight or approach segment.
- Complies, in a timely manner with all clearances, instructions, and procedures.
- Advises ATC or instructor anytime that the aircraft is unable to comply with a clearance.
- Establishes the appropriate airplane configuration and airspeed/V-speed considering turbulence, wind shear, microburst conditions, or other meteorological and operating conditions.
- Completes the aircraft checklist items appropriate to the phase of flight or approach segment, including engine out approach and landing checklists, if appropriate.
- Prior to beginning the final approach segment, maintains the desired altitude ±100 feet, the desired airspeed within ±10 kts, the desired heading within ±10°; and accurately tracks radials, courses, and bearings.
- Selects, tunes, identifies, and monitors the operational status of ground and airplane navigation equipment used for the approach.

- Applies the necessary adjustments to the published DA/DH and visibility criteria for the aircraft approach category when required, such as –
  - NOTAMs
  - Inoperative aircraft and ground navigation equipment
  - Inoperative visual aids associated with the landing environment
  - NWS reporting factors and criteria
- Establishes a predetermined rate of descent at glide slope intercept which approximates that required for the aircraft to follow the glide slope.
- Maintains a stabilized final approach, from the FAF to DA/DH allowing no more than ¾ scale deflection of either the glide slope or localizer indications and maintains the desired airspeed within ±10 kts.
- A missed approach or transition to a landing shall be initiated at DA/DH.
- Immediately initiates the missed approach at DA/DH when the required visual references for the intended runway are not distinctly visible, the visibility minimums prescribed by the approach procedure are not met, or the aircraft is not in a position to make a landing using a normal descent rate and normal maneuvers.
- Transitions to a normal landing approach only when the aircraft is in a position from which a descent to a landing on the runway can be made at a normal rate of descent using normal maneuvering.
- Maintains localizer and glide slope within ¾ scale deflection of the indicators during the visual descent from DA/DH to a point over the runway where glide slop must be abandoned to accomplish a normal landing.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain how to read the instrument approach charts.
- Discuss how to fly the approach.
- Identify symbols on the instrument approach chart.
- Discuss the importance of a stabilized approach.
- Explain how to estimate the rate of descent required to follow the glide slope.

Safety Considerations:

- Fly a stabilized approach.
- Avoid spatial disorientation by relying on instrument reference.
- Do not navigate aircraft into airspace without clearance.
- Do not descend below DA/DH prior to having required visual references.
- Do not attempt a landing from a point where such attempt should not be made.
- Identify the missed approach point and fly appropriate missed approach procedures.

Common Errors:

- Not properly identifying the navigation stations.
- Not performing required checklists.
- Not configuring the aircraft appropriately.
- Chasing the course.
- Descending at an inappropriate rate.
- Failure to start timing when appropriate.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Non Precision Approach (Coupled) (C-172S)

Objective:

To safely navigate the aircraft from the enroute environment to align it with the final approach course while maintaining obstruction clearance.

Description:

The non-precision instrument approach allows you to navigate from the IAF to the MAP with lateral navigation and obstruction clearance.

Setup Procedure:

1) Engage autopilot mode (HDG, NAV, ROL).
2) Set target altitude. Select Flight Level Change (FLC) and UP or DN to capture target airspeed. Set power as required.
3) Verify correct (AP) modes.
4) Engage autopilot (AP).
5) Complete the Before IAF checklist.
    a. NAV Source – Set & Check
    b. HSI – Check Against Compass
    c. Weather – Check
    d. Approach – Brief
6) Prior to the final approach fix (FAF):
    a. 3 Miles – Complete checklist:
        i. Seat Backs & Seat Belts – Upright Position, Fastened
        ii. Fuel Selector Valve – Both
        iii. Mixture – Rich
        iv. Landing Light & Taxi Light – On
    b. 2 Miles - Reduce power and slow aircraft to a speed of 90 kts.
        i. If GPS approach, verify correct approach is active.
    c. 1 Mile - Set approach flaps to 10°. Set target altitude in Altitude Box. Verify aircraft configured and stabilized for the approach.
7) At FAF, reduce power to approximately 1,500-1,700 RPM and slow aircraft down to 80 kts.
8) Engage the Flight Level Change (FLC) function of the autopilot. Set power as required to maintain a stabilized approach at 700-1,000 FPM until reaching 100’ above the minimum descent altitude (MDA) and begin to add power (1,800-2,000 RPM).
9) 500' above MDA complete the GUMPS check.
10) Disengage autopilot no lower than 200’ AGL.
11) Fly the aircraft at MDA until the missed approach point or until a normal descent to landing can be made.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to an instrument approach procedure.
- Selects and complies with the appropriate instrument approach procedure to be performed.
- Establishes two-way communications with ATC, as appropriate, to the phase of flight or approach segment and uses proper communication phraseology and technique.
- Selects, tunes, identifies, and confirms the operational status of the navigation equipment to be used for the approach procedure.
- Complies with all clearances issued by ATC or the instructor.
- Recognizes if any flight instrumentation is inaccurate or inoperative, and takes appropriate action.
- Advises ATC or instructor anytime that the aircraft is unable to comply with a clearance.
- Establishes the appropriate aircraft configuration and airspeed considering turbulence and wind shear, and completes the aircraft checklist items appropriate to the phase of flight.
- Maintains, prior to beginning the final approach segment, altitude within ±100 feet, heading within ±10° and allows less than a ¾ scale deflection of the CDI or within ±10° in the case of an RMI, and maintains airspeed within ±10 kts.

- Applies the necessary adjustments to the published MDA and visibility criteria for the aircraft approach category when required, such as –
  - NOTAMs
  - Inoperative aircraft and ground navigation equipment
  - Inoperative visual aids associated with the landing environment
  - NWS reporting factors and criteria
- Establishes a rate of descent and track that will ensure arrival at the MDA prior to reaching the MAP with the aircraft continuously in a position from which descent to a landing on the intended runway can be made at a normal rate using normal maneuvers.
- Allows, while on the final approach segment, no more than ¾ scale deflection of the CDI or within 10° of an RMI, and maintains airspeed within ±10 kts of that desired.
- Maintains the MDA, when reached, within +100/– 0 feet to the MAP.
- Executes the missed approach procedure at the MAP when the required visual references for the intended runway are not distinctly visible, the visibility minimums prescribed by the approach procedure are not met, or the aircraft is not in a position to make a landing using a normal descent rate and normal maneuvers.
- Execute a normal landing from a straight-in or circling approach when instructed by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain how to read the instrument approach charts.
- Discuss how to fly the approach.
- Identify symbols on the instrument approach chart.
- Discuss the importance of a stabilized approach.

Safety Considerations:

- Flying a stabilized approach.
- Avoid spatial disorientation by relying on instrument reference.
- Do not navigate aircraft into airspace without clearance.
- Do not descend below MDA prior to having required visual references.
- Do not attempt a landing from a point where such attempt should not be made.
- Identify the missed approach point and fly appropriate missed approach procedures.

Common Errors:

- Not properly identifying the navigation stations.
- Not performing required checklists.
- Not configuring the aircraft appropriately.
- Chasing the course.
- Descending at an inappropriate rate.
- Failure to start timing when appropriate.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Precision and LPV Approach (Coupled) (C-172S)

Objective:

To safely navigate the aircraft from the enroute environment to align it with the final approach course while maintaining obstruction clearance.

Description:

The precision instrument approach allows you to navigate from the IAF to the MAP with lateral navigation and vertical navigation.

Setup Procedure:

1) Engage autopilot mode (HDG, NAV, ROL).
2) Set target altitude in Altitude Box. Select Flight Level Change (FLC) and UP or DN to capture target airspeed. Set power as required.
3) Verify correct (AP) modes.
4) Engage autopilot (AP).
5) Complete the Before IAF checklist.
    a. NAV Source – Set & Check (If LPV approach, verify WAAS is enabled)
    b. HSI – Check Against Compass
    c. Weather – Check
    d. Approach – Brief
6) Prior to glide slope intercept: Engage Approach mode (APR) on the autopilot.
    a. Glideslope becomes active - Complete 3 mile Before FAF checklist.
        i. Seat Backs & Seat Belts – Upright Position, Fastened
        ii. Fuel Selector Valve – Both
        iii. Mixture – Rich
        iv. Landing Light & Taxi Light – On
    b. 2 dots below glideslope interception - Reduce power and slow aircraft to approach speed of 90 kts.
        i. If GPS approach, verify correct approach is active.
    c. 1 dot below glideslope interception - Set approach flaps to 10°. Verify aircraft configured and stabilized for the approach.
7) At glide slope interception:
    a. Reduce power to between 1,600 to 1,800 RPM to maintain a descent at 80 kts.
    b. Maintain a stabilized approach on the glide slope until reaching DA/DH.
        i. Use power to control airspeed.
8) Report position at 5nm, 3nm, and 1nm from MAP.
9) 500' above DA/DH complete the GUMPS check.
10) Disengage autopilot no lower than 200’ AGL. OR Engage the Go Around function (GA) next to the throttle quadrant. This will cycle the approach to the missed approach segment and disengage the autopilot.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the precision instrument approach procedures.
- Accomplishes the appropriate precision instrument approaches as selected by the instructor.
- Selects and complies with the appropriate instrument approach procedure to be performed.
- Establishes two-way communications with ATC using the proper communication phraseology and techniques, as required for the phase of flight or approach segment.
- Complies, in a timely manner with all clearances, instructions, and procedures.
- Advises ATC or instructor anytime that the aircraft is unable to comply with a clearance.
- Establishes the appropriate airplane configuration and airspeed/V-speed considering turbulence, wind shear, microburst conditions, or other meteorological and operating conditions.
- Completes the aircraft checklist items appropriate to the phase of flight or approach segment, including engine out approach and landing checklists, if appropriate.

- Prior to beginning the final approach segment, maintains the desired altitude ±100 feet, the desired airspeed within ±10 kts, the desired heading within ±10°; and accurately tracks radials, courses, and bearings.
- Selects, tunes, identifies, and monitors the operational status of ground and airplane navigation equipment used for the approach.
- Applies the necessary adjustments to the published DA/DH and visibility criteria for the aircraft approach category when required, such as –
    - NOTAMs
    - Inoperative aircraft and ground navigation equipment
    - Inoperative visual aids associated with the landing environment
    - NWS reporting factors and criteria
- Establishes a predetermined rate of descent at glide slope intercept which approximates that required for the aircraft to follow the glide slope.
- Maintains a stabilized final approach, from the FAF to DA/DH allowing no more than ¾ scale deflection of either the glide slope or localizer indications and maintains the desired airspeed within ±10 kts.
- A missed approach or transition to a landing shall be initiated at DA/DH.
- Immediately initiates the missed approach at DA/DH when the required visual references for the intended runway are not distinctly visible, the visibility minimums prescribed by the approach procedure are not met, or the aircraft is not in a position to make a landing using a normal descent rate and normal maneuvers.
- Transitions to a normal landing approach only when the aircraft is in a position from which a descent to a landing on the runway can be made at a normal rate of descent using normal maneuvering.
- Maintains localizer and glide slope within ¾ scale deflection of the indicators during the visual descent from DA/DH to a point over the runway where glide slop must be abandoned to accomplish a normal landing.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain how to read the instrument approach charts.
- Discuss how to fly the approach.
- Identify symbols on the instrument approach chart.
- Discuss the importance of a stabilized approach.
- Explain how to estimate the rate of descent required to follow the glide slope.

Safety Considerations:

- Fly a stabilized approach.
- Avoid spatial disorientation by relying on instrument reference.
- Do not navigate aircraft into airspace without clearance.
- Do not descend below DA/DH prior to having required visual references.
- Do not attempt a landing from a point where such attempt should not be made.
- Identify the missed approach point and fly appropriate missed approach procedures.

Common Errors:

- Not properly identifying the navigation stations.
- Not performing required checklists.
- Not configuring the aircraft appropriately.
- Chasing the course.
- Descending at an inappropriate rate.
- Failure to start timing when appropriate.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Straight in Approach (C-172S)

Objective:

To transition the aircraft from MDA or DH to landing on a runway aligned with the final approach course.

Description:

The aircraft will transition from the approach configuration to the landing configuration while continuing from the DH or MDA to point of intended landing while maintaining a stabilized approach.

Setup Procedure:

1) Confirm that all requirements to descend below DA/DH, VDP, or MDA have been achieved.
2) Configure the aircraft for a normal landing.
3) Continue a stabilized approach.
4) Accomplish a normal landing and roll out.
5) Exit runway and complete after landing checklists.
6) Close IFR flight plan if necessary.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to the pilot's responsibilities, and the environmental, operational, and meteorological factors, which effect a landing from a straight-in approach.
- Transitions at the DA/DH, MDA, or VDP to a visual flight condition, allowing for safe visual maneuvering and a normal landing.
- Adheres to all ATC (or instructor) advisories, such as NOTAMs, wind shear, wake turbulence, runway surface, braking conditions, and other operational considerations.
- Completes appropriate checklist items for the pre-landing and landing phase.
- Maintains positive aircraft control throughout the complete landing maneuver.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Determine straight in approach categories and criteria.
- Explain the proper aircraft configuration.
- Discuss how to maintain a stabilized descent to landing.
- List the requirements for descending below DA/DH or MDA.
- Explain what to do if visual reference to the airport environment is lost.

Safety Considerations:

- Collision avoidance of VFR traffic.
- Situational awareness of position, airspeed, bank, and aircraft configuration.

Common Errors:

- Selecting incorrect approach category.
- Descends below DA/DH or MDA without having the airport environment in sight.
- Attempts a descent to landing that would be considered abnormal.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Circling Approach (C-172S)

Objective:

To transition the aircraft from MDA to landing on a runway not aligned with the final approach course.

Description:

The aircraft will transition from the approach configuration to the landing configuration while maneuvering to align the aircraft with the runway and continue to a point of intended landing while maintaining a stabilized approach.

Setup Procedure:

1) Prior to arriving at circling MDA or VDP, develop a plan to maneuver the aircraft to align with the active runway.
2) Remain within the required circling distances.
3) Maneuver the aircraft to align it with the runway, being cautious of other aircraft operating in the vicinity.
4) Confirm that all requirements to descend below MDA have been achieved.
5) Configure the aircraft for a stabilized normal approach to landing.
6) Accomplish a normal landing and roll out.
7) Exit runway and complete after landing checklists.
7) Close IFR flight plan if necessary.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to a circling approach procedure.
- Selects and complies with the appropriate circling approach procedure considering turbulence and wind shear and considering the maneuvering capabilities of the aircraft.
- Confirms the direction of traffic and adheres to all restrictions and instructions issued by ATC and the instructor.
- Does not exceed the visibility criteria or descend below the appropriate circling altitude until in a position from which a descent to a normal landing can be made.
- Maneuvers the aircraft, after reaching the authorized MDA and maintains that altitude within +100/-0 feet and a flight path that permits a normal landing on a runway. The runway selected must be such that it requires at least a 90° change of direction, from the final approach course, to align the aircraft for landing.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Determine circling approach categories and criteria.
- Explain the proper aircraft configuration.
- Discuss how to maintain a stabilized descent to landing.
- List the requirements for descending below MDA.
- Explain what to do if visual reference to the airport environment is lost.

Safety Considerations:

- Collision avoidance of VFR traffic.
- Situational awareness of position, airspeed, bank, and aircraft configuration.

Common Errors:

- Selecting incorrect approach category.
- Descends below DH or MDA without having the airport environment in sight.
- Attempting a descent to landing that would be considered abnormal.
- Losing visual reference to runway.
- Improper circling planning considering traffic flow.
- Circling to far from runway environment.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Missed Approach (C-172S)

Objective:

To determine when it is necessary to execute the missed approach procedures and safely execute the published missed approach procedures.

Description:

If the decision is made to execute a missed approach procedure, the aircraft will be reconfigured to the departure configuration. Precisely follow the missed approach procedure to ensure terrain and obstruction clearance and repositioning of the aircraft to attempt another approach or proceed to a new destination.

Setup Procedure:

1) Simultaneously advance the throttle and press the Go Around (GA) button, initiate the missed approach, and configure the aircraft for a Go Around.
2) Advise ATC of the missed approach.
3) Follow the missed approach instructions on the instrument approach chart unless otherwise instructed by ATC.
4) Verify the Go-Around checklist and complete the climb checklist as workload permits.
5) Follow any clearance issued by ATC and advise them of any preferred course of action, i.e. attempt another approach at the same airport, depart the area.
6) Once established in the Missed Approach climb, engage the Control Wheel Steering (CWS) button to adjust the Flight Director to maintain a 74 kt climb.

Flight Proficiency Standards:

- Exhibits adequate knowledge of the elements related to missed approach procedures associated with standard instrument approaches.
- Initiates the missed approach promptly by applying power, establishing a climb attitude, and reducing drag in accordance with the aircraft manufacturer's recommendations.
- Reports to ATC the missed approach procedure.
- Complies with the published or alternate missed approach procedure.
- Advise ATC or instructor anytime that the aircraft is unable to comply with a clearance, restriction, or climb gradient.
- Follows the recommended checklist items appropriate to the Go Around procedure.
- Requests, if appropriate, ATC clearance to the alternate airport, clearance limit, or as directed by the instructor.
- Maintains the recommended airspeed within ±10 kts; heading, course, or bearing within ±10°; and altitude(s) ±100 feet during the missed approach procedure.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the situations in which a missed approach is necessary.
- Discuss how to execute a missed approach prior to the missed approach point
- Discuss how to execute a missed approach while circling.

Safety Considerations:

- Establish a climbing attitude in the departure configuration.
- Remain coordinated and at a safe flying airspeed.
- Establish contact with ATC and advise them of the missed approach.

Common Errors:

- Turns prior to the missed approach point.
- Does not establish a climbing attitude.
- Allows the aircraft to get too slow.
- Flies past the missed approach point without executing the missed approach procedure.
- Is not familiar enough with the missed approach procedure to execute the first few steps without referring to the approach chart.

References:

Instrument Flying Handbook; POH/AFM; Instrument Pilot ACS; CFII PTS

Section 6 – COMMERCIAL PILOT

The Commercial Pilot rating is divided into six flight courses and a ground school. All degree seeking students will conduct training under CFR 14 Part 141 unless approved by the Chief Flight Instructor.

This section contains references to the C-172R, C-172S, and the C-172RG.

C-172R

Passenger Briefing (C-172R)

Objective:

To provide a standard pre-flight briefing to passengers.

Description:

The pilot in command is required by the Federal Aviation Regulations to provide a passenger briefing.

Setup Procedure:

1) Before starting the engine the Pilot-in-Command will provide the passenger safety briefing to include, but not limited to:
    a. Designation of Pilot-in-Command.
    b. Procedures for positively exchanging flight controls.

S

i. Seat belts and shoulder harnesses (location and operation).
ii. Seat belts & shoulder harnesses fastened for taxi, takeoff and landing.
iii. Seat position adjusted and locked in place (controls and operation).

A

iv. Air vents (location and operation).
v. All environmental controls (discussed).
vi. Action in case of any passenger discomfort.

F

vii. Fire extinguisher (location and operation).
viii. Smoking is prohibited.

E

ix. Exit doors (how to secure; how to open).
x. Emergency evacuation plan.
xi. Emergency/survival kit (location and contents).
xii. Equipment (location & operation, i.e., ELT, flight controls).

T

xiii. Traffic (scanning, spotting, notifying pilot).
xiv. Talking ("sterile cockpit" expectations).

Y

xv. Your questions?

Flight Proficiency Standards:

- Briefs occupants on the use of safety belts, shoulder harnesses, doors, and emergency procedures.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance and regulatory requirement for providing a passenger briefing.

Common Errors:

- Failure to perform a passenger briefing.
- Incomplete passenger briefing.

References:

Airman Airman Certification Standards, Federal Aviation Regulations, AC 121-24, AOPA Passenger Safety Briefing Video

Normal & Crosswind Takeoff & Climb (C-172R)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane is accelerated to an airspeed that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and establishes a pitch attitude to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete takeoff checklist and takeoff briefing.
3) Use aircraft lighting as recommended by the current version of AC 91-73.
4) Ensure runway is clear, align aircraft with runway centerline, confirm DG is aligned with runway, and ensure nose wheel is straight.
5) Position flight controls for wind for existing conditions.
6) Advance throttle smoothly to takeoff power ensuring toes are resting on rudder pedals, not on brakes.
7) Check engine instruments during takeoff roll for normal indications.
8) Maintain directional control with rudder pedals and crosswind control with appropriate aileron deflection
9) Maintain a slightly tail low attitude.
10) Upon reaching rotation speed, 55 kts (V_R), increase back elevator pressure to establish the lift-off attitude that is approximately that for V_Y and allow the aircraft to fly off the ground.
11) Apply adequate drift correction to maintain runway centerline.
12) Accelerate to 79 kts (V_Y).
13) At 500 ft., or as workload permits, complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to normal and crosswind takeoff, climb operations and rejected takeoff procedures.
- Positions the flight controls for the existing wind conditions.
- Clears the area, taxies onto the takeoff surface and aligns the airplane on the runway center/takeoff path.
- Lifts off at the recommended airspeed and accelerates to V_Y.
- Establishes a pitch attitude that will maintain V_Y ±5 kts.
- Retracts the landing gear if appropriate, and flaps after a positive rate of climb is established.
- Maintains takeoff power and V_Y ±5 kts.
- Maintains directional control, proper wind-drift correction throughout the takeoff and climb.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria.
- Discuss how to maintain directional control during the ground roll.
- Discuss proper lift-off technique.
- Explain how to use ailerons during crosswind situations.
- Describe how to correct for wind-drift.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force aircraft off runway too early, causing it to settle back on the runway.
- Consider the effect of density altitude on performance.
- Do not retract landing gear too soon.
- Do not allow upwind wing to rise during takeoff.
- Do not exceed maximum demonstrated crosswind velocity.

Common Errors:

- Improper runway incursion avoidance procedures.
- Inappropriate lift-off procedures.
- Improper climb attitude, power setting, and airspeed.
- Improper use of checklists.
- Improper positioning of the flight controls and wing flaps.
- Drift during climb.
- Failure to establish and maintain proper climb configuration and airspeeds.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Short-Field Takeoff & Climb (C-172R)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude when the takeoff area is short or restricted by obstructions.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane is accelerated to an airspeed that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and a pitch attitude is established to climb away from the runway and clear a 50 foot obstacle.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) Set flaps to 10°.
4) Use aircraft lighting as recommended by the current version of AC 91-73.
5) Back taxi and align aircraft with runway centerline, confirm DG is aligned with runway, and ensure nose wheel is straight.
6) Ensure runway is clear, advance throttle smoothly to takeoff power while holding brakes; check engine instruments.
7) Release brakes and ensure toes are resting on rudder pedals, not brakes.
8) Maintain directional control with rudder pedals and appropriate aileron deflection.
9) Upon reaching rotation speed, 55 kts (V_R), increase back elevator pressure to establish lift-off attitude and allow aircraft to fly off ground.
10) Accelerate the aircraft to 57 kts (V_X) until obstacle is cleared or 50 feet above takeoff surface is attained and then accelerate to 79 kts (V_Y).
11) Retract flaps after a safe altitude of at least 200 ft. and an airspeed of 79 kts are attained.
12) At 500 ft., or as workload permits, complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a short-field takeoff and maximum performance climb.
- Positions the flight controls for the existing wind conditions, sets flaps as recommended.
- Clears the area; taxies into takeoff position utilizing maximum available takeoff area and aligns the airplane on the runway center/takeoff path.
- Applies brakes (if appropriate) while advancing the throttle smoothly to takeoff power.
- Lifts off at the recommended airspeed, and accelerates to recommended obstacle clearance airspeed, or V_X.
- Establishes a pitch attitude that will maintain the recommended obstacle clearance airspeed, or V_X +5/-0 kts, until the obstacle is cleared, or until the airplane is 50 feet above the surface.
- After clearing the obstacle, establishes the pitch attitude for V_Y, accelerates to V_Y, and maintains V_Y ±5 kts, during the climb.
- Retracts the landing gear, if appropriate and flaps after clear of any obstacles or as recommended by manufacturer.
- Maintains takeoff power and V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Completes appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria.
- Discuss how to maintain directional control during ground roll.
- Discuss proper lift-off technique.
- Explain the difference between V_X and V_Y.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force aircraft off runway too early, causing it to settle back onto runway.
- Do not force aircraft to stay on the ground when it is ready to lift off, wheelbarrow.
- Back taxi to ensure use of entire runway length.
- Retraction of gear and flaps as recommended.

Common Errors:

- Failure to position the airplane for maximum utilization of available runway.
- Improper runway incursion avoidance procedures.
- Improper use of controls during a short-field takeoff.
- Inappropriate lift-off procedures.
- Improper initial climb attitude, power setting and airspeed to clear obstacle.
- Improper use of checklists.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Soft-Field Takeoff & Climb (C-172R)

Objective:

To align the airplane with the takeoff path, become airborne as quickly as possible, and establish a positive climb to a safe maneuvering altitude.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane enters the runways with full up elevator deflection and accelerates to an airspeed at which the airplane will lift off.
2) The acceleration to lift off speed while remaining in ground effect.
3) The initial climb when the airplane establishes a pitch attitude to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) Set flaps to 10°.
4) Use aircraft lighting as recommended by the current version of AC 91-73.
5) Ensure runway is clear, taxi onto runway with back elevator pressure and align nose with runway centerline, confirm DG is aligned with runway, without stopping or the use of brakes.
6) Smoothly advance throttle to takeoff power.
7) Ensure toes are resting on rudder pedals, not on brakes.
8) Check engine instruments during ground roll for normal indications.
9) Maintain directional control with rudder pedals and appropriate aileron deflection.
10) Use back elevator pressure to establish a positive pitch attitude and allow the aircraft to fly itself off the ground.
11) When the aircraft becomes airborne, reduce pitch to remain in ground effect while accelerating to 60 kts (V_X) then simultaneously climb and accelerate to 79 kts (V_Y).
12) Retract flaps after a safe altitude of at least 200 ft. and an airspeed of 79 kts are attained.
13) At 500 ft., or as workload permits, complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a soft-field takeoff and climb.
- Positions the flight controls for existing conditions and to maximize lift as quickly as possible.
- Clears the area; taxies onto takeoff surface at a speed consistent with safety without stopping while advancing the throttle smoothly to takeoff power.
- Establishes and maintains a pitch attitude that will transfer the weight of the airplane from the wheels to the wings as rapidly as possible.
- Lifts off at the lowest possible airspeed and remains in ground effect while accelerating to V_X.
- Establishes a pitch attitude for V_X or V_Y, as appropriate, and maintains selected airspeed ±5 kts, during the climb.
- Retracts the landing gear, if appropriate and flaps after clear of any obstacles or as recommended by the manufacturer.
- Maintains takeoff power and V_X or V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss proper soft-field takeoff technique.
- Explain runway selection criteria.
- Predict the height of ground effect and discuss its relevance.
- Discuss how to maintain directional control during ground roll.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force the aircraft off runway too quickly.
- Do not retract landing gear too soon.
- Do not allow the airplane to climb above ground effect too soon, causing it to settle back onto the runway.

Common Errors:

- Improper runway incursion avoidance procedures.
- Improper use of controls during a soft-field takeoff.
- Improper lift-off procedures.
- Improper climb attitude, power setting and airspeed.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Traffic Pattern (C-172R)

Objective:

To assure that air traffic flows into and out of an airport in an orderly manner.

Description:

The airplane is flown on a rectangular course around a runway at an altitude specified in the current Airport/Facility Directory or as outlined in the FAR/AIM.

Setup Procedure:

Departures

1) All departures:
    a. Fly the departure leg straight out until reaching traffic pattern altitude.
    b. Once reaching traffic pattern altitude, continue climbing and turn on course.

Arrivals

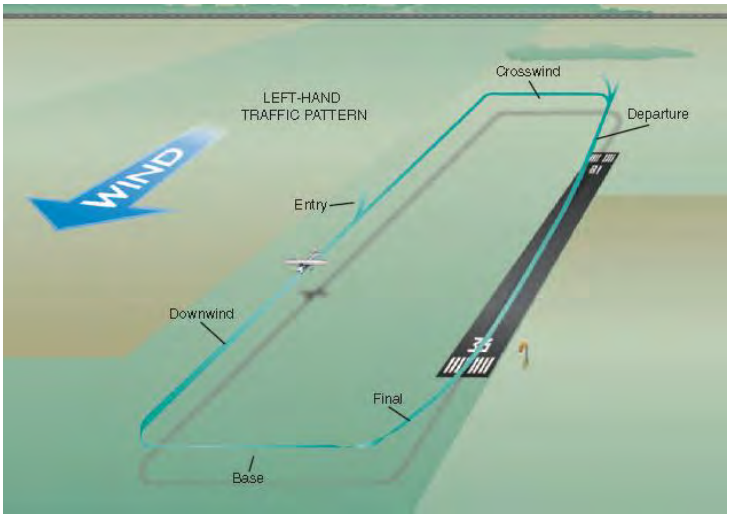
1) Prior to reaching 5 NM from the airfield, complete the following:
    a. Monitor local AWOS/ASOS/ATIS
    b. Ask “Is there any traffic between me and the airport?” and cancel flight following (if applicable)
    c. Complete the Before Landing checklist
2) Slow down below the approach flap airspeed prior to pattern entry.

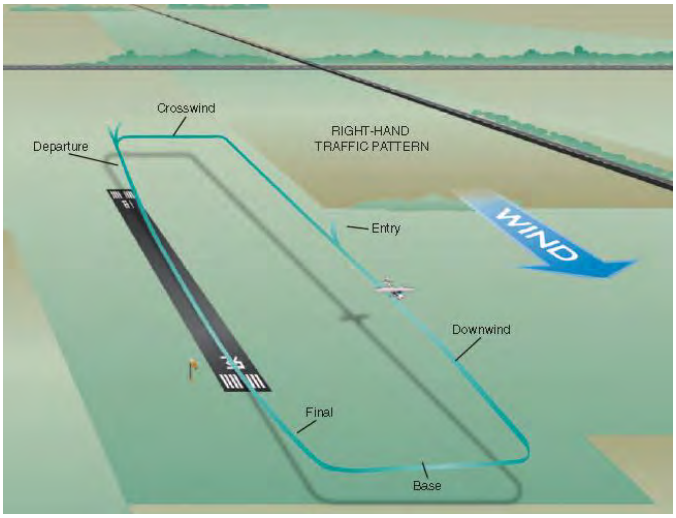
    If already established on the downwind side, skip to step 4.*

3) For a midfield entry:
    a. Cross midfield 500’ above traffic pattern altitude, observing traffic flow and wind direction.
    b. Fly 2-3 miles beyond the downwind leg, then descend to pattern altitude.
    c. Complete a tear-drop shaped turn to the right or left as necessary to position the aircraft at a 45 degree angle to the downwind leg.

    If less than two aircraft are currently in the pattern, the alternate method (cross midfield at traffic pattern altitude, enter directly into downwind leg) may be used.

4) Enter the traffic pattern at the designated traffic pattern altitude (normally 1,000’ AGL) at a 45 degree angle to the downwind leg at midfield.
5) Apply appropriate crosswind correction to allow for a parallel flight path approximately ½ mile from the runway
6) Allow for proper spacing from other aircraft in the pattern as to prevent runway incursions upon landing.
7) Maintain airspeed below the flap speed required for each configuration change.





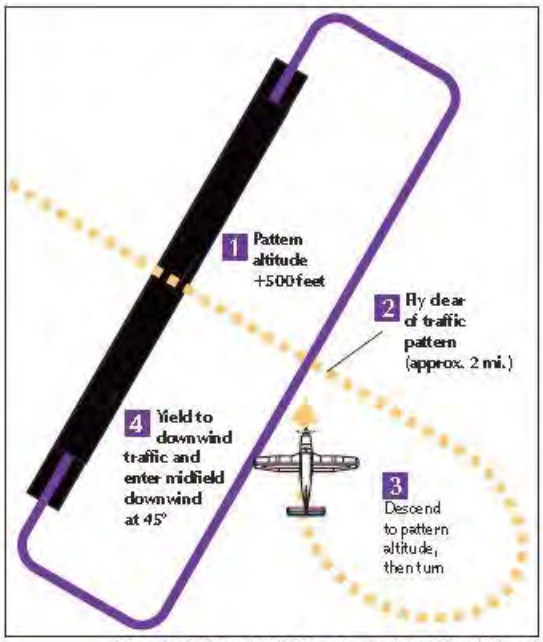


Figure 9. Preferred Entry from Upwind Leg Side of Airport

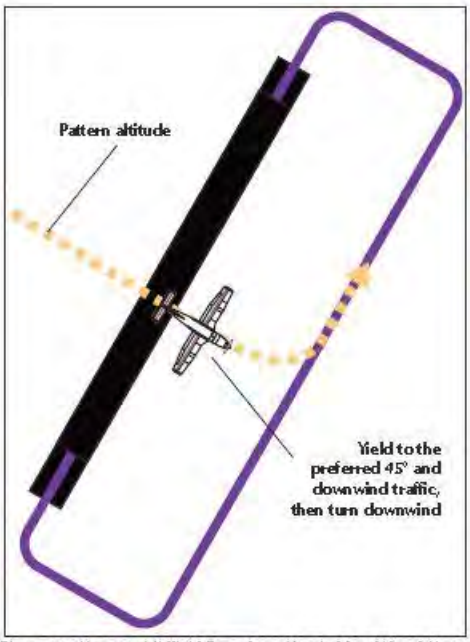


Figure 10. Alternate Midfield Entry from Upwind Leg Side of Airport

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to traffic patterns. This shall include procedures at airports with and without operating control towers, prevention of runway incursions, collision avoidance, wake turbulence avoidance, and wind shear.
- Complies with proper traffic pattern procedures.
- Maintains proper spacing from other aircraft.
- Corrects for wind drift to maintain the proper ground track.
- Maintains orientation with the runway/landing area in use.
- Maintains traffic pattern altitude, ±100 feet and the appropriate airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss traffic patterns at controlled and uncontrolled airports.
- Explain traffic pattern procedures.
- Explain how to maintain the proper ground track.

Safety Considerations:

- Maintain proper traffic pattern altitude.
- Maintain a distance from the runway that is within power-off gliding distance.
- Preferred bank of approximately 30 degrees (and not to exceed 30) while in pattern.
- Maneuver within 300 feet of traffic pattern altitude before turning crosswind to base.
- Maintain proper aircraft separation.
- Comply with standards traffic pattern procedures or ATC instructions.

Common Errors:

- Failure to comply with traffic pattern instructions, procedures, and rules.
- Improper correction for wind drift.
- Inadequate spacing from other traffic.
- Poor altitude or airspeed control.
- Flying too wide of a pattern.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Normal & Crosswind Approach & Landing (C-172R)

Objective:

To safely transition the aircraft from flight to ground operations during normal conditions.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 65 kts, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
8) During the flare to land simultaneously reduce power to idle and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline.
9) Maintain positive pitch attitude for aerodynamic braking.
10) Exit runway and complete after landing checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to normal and crosswind approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point.
- Establishes the recommended approach and landing configuration and airspeed and adjust pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, nor more than 1.3 V_{S0} ±5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the round out and touchdown.
- Touches down smoothly at approximate stall speed.
- Touches down at or within 200 feet beyond a specified point, with no drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control through the approach and landing sequence.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain proper use of crosswind control inputs.

Safety Considerations:

- Observe flap extension speeds.
- Maintain proper airspeed at all times.
- Use proper crosswind correction to avoid drifting from runway centerline.
- Ensure landing gear is extended and locked.

Common Errors:

- Failure to establish proper crosswind correction.
- Improper use of landing performance data and limitations.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Failure to establish and maintain a stabilized approach.
- Improper technique during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Short-Field Approach & Landing (C-172R)

Objective:

To safely transition from flight to ground operations at an airport with a relatively short runway or where an approach is made over obstacles.

Description:

The airplane is configured for a stabilized approach over a 50 foot obstacle. There will be little or no float during the round out, allowing the airplane to touch down at a specified point, and be stopped in a shorter than normal distance.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 62 kts, to clear obstacles, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
8) During the flare to land simultaneously reduce power as required and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline.
9) Maintain positive pitch attitude for aerodynamic braking.
10) Apply maximum braking to a complete stop without skidding the tires.
11) Exit runway and complete after landing checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a short-field approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects the most suitable touchdown point.
- Establishes the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power.
- Maintains a stabilized approach and recommended approach airspeed, or in its absence, not more than 1.3 V_{SO} ±5 kts with wind gust factor applied.
- Makes smooth, timely, and correct control application during the round out and touchdown.
- Touches down smoothly at minimum control airspeed.
- Touches down at or within 100 feet beyond a specified point, with no side drift, minimum float and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Applies brakes, as necessary, to stop in the shortest distance consistent with safety.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on an approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain how to compensate for obstacles and shortened runway lengths.

Safety Considerations:

- Maintain proper airspeed at all times.
- Compensate for crosswind.
- Do not skid tires.
- Use of aerodynamic braking as available.
- Ensure landing gear is extended and locked.

Common Errors:

- Failure to establish and maintain a stabilized approach.
- Improper technique in use of power, wing flaps, and trim.
- Excessive airspeed on final approach.
- Failure to establish proper crosswind correction.
- Improper use of landing performance data and limitations.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Improper use of brakes.
- Poor directional control after touchdown.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Soft-Field Approach & Landing (C-172R)

Objective:

To safely transition the airplane from flight to ground operations on a rough or soft surface.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown on a field that is unimproved.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 65 kts toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
8) During the flare to land simultaneously reduce power as required to maintain aircraft approximately one foot above runway until it slows to stall speed.
9) Touch down at approximate stall speed on the runway centerline as smoothly as possible.
10) Maintain back elevator pressure to keep nose wheel off the ground as long as possible.
11) Maintain directional control with rudder and aileron deflection.
12) Adjust power as necessary to maintain aircraft movement on soft surfaces.
13) Exit the runway with minimal braking and complete after landing checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a soft-field approach and landing.
- Considers the wind conditions, landing surface, and obstructions, and selects the most suitable touchdown area.
- Establishes the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{S0} ±5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the round out and touchdown.
- Touches down softly, with no drift, and with the airplane's longitudinal axis aligned with the runway/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Maintains proper position of the flight controls and sufficient speed to taxi on the soft surface.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss effect of flaps on an approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain how to touchdown and maneuver the aircraft on soft of unimproved surfaces.

Safety Considerations:

- Do not land on fields that exceed the capabilities of the aircraft or pilot.
- Fly over and visually check the field prior to landing.
- Check field length and density altitude.
- UCM retractable gear aircraft can only land on paved, public, published runways.
- Ensure landing gear is extended and locked.

Common Errors:

- Failure to maintain elevator back-pressure after touchdown.
- Improper use of brakes.
- Failure to consider effect of wind and landing surface.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Power-Off 180° Accuracy Landing (C-172R)

Objective:

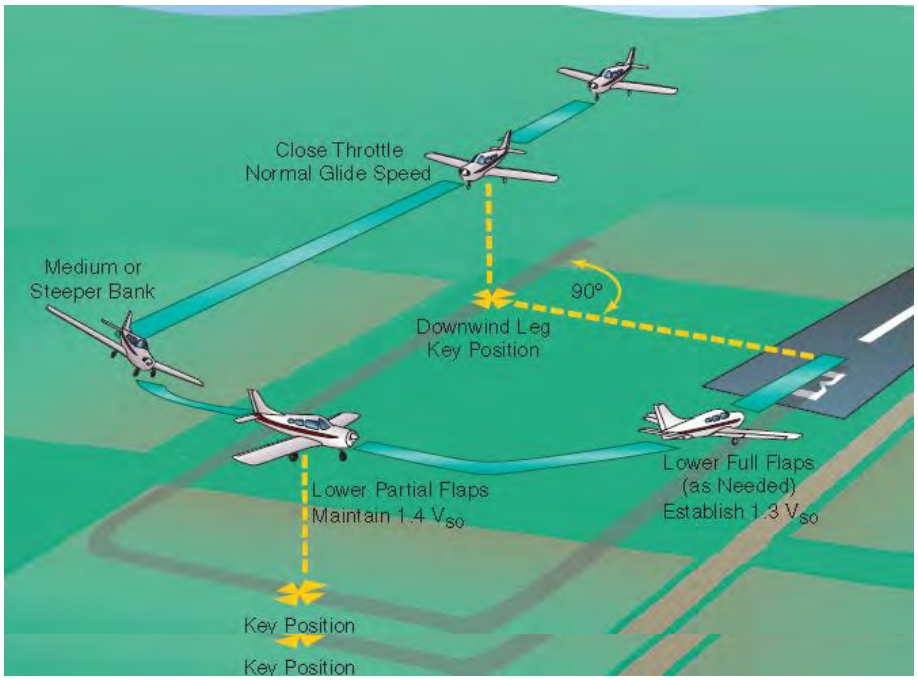
To instill in the pilot the judgment and procedures necessary for accurately flying the airplane, without power, to a safe landing.

Description:

Power-off accuracy approaches are approaches and landings made by gliding with the engine idling, through a specific pattern to a touchdown within 200 feet of a designated line or mark on the runway.

Setup Procedure:

1) Complete the before landing checklist.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming point.
4) When abeam the intended touchdown point:
    a. Close throttle.
    b. Set flaps 10°.
5) Maintain altitude while decelerating to the recommended glide speed 65 kts.
6) Base leg turn will be determined by the glide angle of the airplane, weight, and velocity of the wind.
7) Extend flaps as required.
8) Turn to final approach and extend flaps, as necessary.
9) Adjust trim and make slight adjustments in pitch attitude of flap setting to control glide angle and airspeed.
10) Touch down at approximate stalling speed on the runway centerline at the designated point.
11) Exit the runway and complete after landing checklist.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a power-off 180° accuracy approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects an appropriate touchdown point.
- Positions airplane on downwind leg, parallel to landing runway, and not more than 1,000 feet AGL.
- Abeam the specified touchdown point closes throttle and establishes appropriate glide speed.
- Completes final airplane configuration.
- Touches down in a normal landing attitude, at or within 200 feet beyond the specified touchdown point.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the effect of wind velocity on required altitude and bank angle.
- Discuss the importance of controlling glide angle and airspeed on final approach.

Safety Consideration:

- Maintain coordinated flight throughout the maneuver.
- Be aware of the position of other traffic in the pattern.
- Maintain appropriate airspeed throughout the maneuver.

Common Errors:

- Failure to touchdown within 200 feet of the intended touchdown point.
- Failure to maintain constant airspeed and glide angle.
- Failure to accurately determine the wind direction and velocity.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Touch and Go/Stop and Go (C-172R)

Objective:

To transition from a landing rollout to a takeoff roll while remaining on the runway.

Description:

A touch and go is a landing which transitions into a takeoff while the aircraft remains rolling on the runway.

Setup Procedure:

1) Perform a normal landing.
2) Upon touchdown:
    a. Allow the aircraft to continue rolling.
    b. Maintain runway centerline.
    c. Apply proper crosswind correction.
3) Reconfigure the aircraft for takeoff.
    a. Retract flaps to (10^{o} or less).
    b. Set trim to the takeoff position.
4) Smoothly apply full-power.
5) Upon reaching rotation speed, 55 kts, increase back elevator pressure to establish the lift-off attitude that is approximately V_Y or V_X and allow the aircraft to fly off the ground.
6) Apply adequate drift correction to maintain runway centerline.
7) At a safe altitude, of at least 200 ft., retract flaps to 0^{o}.
8) At 500 ft., or as workload permits, complete the climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to touch and go procedures.
- Maintains runway centerline upon touchdown.
- Applies proper crosswind controls upon touchdown, reconfiguration and climb out.
- Demonstrates proper aircraft reconfiguration.
- Lifts off at the recommended airspeed and accelerates to V_X or V_Y, as appropriate.
- Retracts flaps at 200' or a safe altitude, if appropriate.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Complies with noise abatement procedures.
- Completes the appropriate checklist.

Note: These are the UCM standards. The aforementioned standards are not found in the Airman Certification Standards.

Learning Outcomes:

- Explain the purpose(s) of touch and go's.
- Discuss how crosswind correction will change throughout the maneuver.
- Discuss the importance of maintaining runway centerline during aircraft reconfiguration.

Safety Considerations:

- Maintain runway centerline.
- Proper crosswind correction.
- Maintain situational awareness.
- Proper reconfiguration.

Common Errors:

- Failure to maintain runway centerline.
- Touchdown beyond the first 1/3rd of the runway and attempting a touch and go.
- Improper aircraft reconfiguration.
- Failure to use checklist.
- Failure to maintain adequate crosswind correction.

- Attempting to lift-off prior to rotation speed.

Go-Around (C-172R)

Objective:

To safely discontinue the landing approach when unsatisfactory conditions exist.

Description:

As full power is applied, the aircraft attitude is adjusted to accelerate to V_Y and climb. As a safe airspeed is attained, flaps are retracted 10° at a time allowing stabilization between each retraction.

Setup Procedure:

1) Simultaneously apply maximum power and establish a go-around pitch attitude.
2) Set flaps to 20°.
3) Establish a pitch attitude to accelerate to 55 kts.
4) Allow the airplane to accelerate to V_X or V_Y and climb.
5) If there is an aircraft on the runway, sidestep to clear the departure path of the airplane and allow the pilot to view the landing or departing traffic.
6) Set flaps to 10° and stabilize in between configuration changes then flaps to 0°.
7) Verify Go Around checklist is complete.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a go-around/rejected landing.
- Makes a timely decision to discontinue the approach to landing.
- Applies takeoff power immediately and transitions to climb pitch attitude for V_X, and maintains V_Y+10/-5 kts.
- Retracts the flaps as appropriate.
- Retracts the landing gear, if appropriate, after a positive rate of climb is established.
- Maneuvers to the side of the runway/landing area to clear and avoid conflicting traffic.
- Maintains takeoff power V_y+10/-5 to a safe maneuvering altitude.
- Maintains takeoff power V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the climb.
- Completes the appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss events that may require a go-around.
- Explain the importance of maintaining airspeed and coordination during the go-around procedure.
- Discuss the necessity for maneuvering to the side of the runway after making the decision to go-around.

Safety Considerations:

- Maneuver the airplane to the side of the runway.
- Do not establish a pitch up attitude too quickly.
- Maintain coordination.
- Timely decision making.
- Be watchful for situation which may require a go-around.

Common Errors:

- Delayed decision to make a go-around.
- Improper application of power.
- Failure to control pitch attitude.
- Improper trim technique.
- Failure to compensate for torque effect.
- Failure to maintain V_Y as appropriate.
- Improper wing flap retraction.
- Improper gear retraction.
- Failure to maintain well clear of obstructions and other traffic.
- Improper use of checklists.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Emergency Descent (C-172R)

Objective:

To descend the airplane as soon and as rapidly as possible, within the structural limitations of the airplane.

Description:

The emergency descent is a maneuver for descending as rapidly as possible to a lower altitude or to the ground for an emergency landing.

Setup Procedure:

1) Perform clearing turns.
2) If utilizing flight following, contact ATC for traffic advisories below.
3) Reduce power to idle.
4) Confirm flaps 0°
5) Set mixture to rich.
6) Roll into a 30° bank to the left and pitch down to achieve 120 kts (If in turbulent air, maintain an airspeed below V_A).
7) Initiate recovery to level flight at least 300' prior to assigned altitude by:
    a. Rolling out the bank.
    b. Pitching up.
8) Return to cruise flight and complete the cruise checklist to include leaning procedures

Flight Proficiency Standards:

- Exhibit knowledge of the elements related to emergency descent.
- Recognizes situations, such as depressurization, cockpit smoke, and/or fire that require an emergency descent.
- Establish the appropriate airspeed and configuration for the emergency descent.
- Exhibit orientation, division of attention, and proper planning.
- Maintains positive load factors during the descent.
- Follow the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the purpose(s) of an emergency descent.
- Discuss engine cooling characteristics during an emergency descent.
- Discuss the importance of proper planning as it pertains to emergencies.

Safety Considerations:

- Maintain positive aircraft control.
- Clear the engine periodically
- Clear below then GO.
- Steep spiral over airport.
- Continue on to emergency approach and landing.

Common Errors:

- Failure to recognize the urgency of the emergency descent.
- Failure to use emergency checklist for situation.
- Failure to maintain appropriate configuration and airspeed.
- Poor orientation, planning, and division of attention.

Maneuvering During Slow Flight (C-172R)

Objective:

To demonstrate the flight characteristics and controllability of an airplane at speeds lower than normal cruise and develop proficiency in performing maneuvers that require slow airspeeds.

Description:

Slow flight consists of slowing the aircraft to a minimum controllable airspeed in the landing configuration and maneuvering the aircraft while maintaining altitude and airspeed.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1,500 RPM or less.
5) Below 110 kts, set flaps to 10°.
6) Adjust pitch and power as necessary to maintain altitude.
7) Below 85 kts, set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
8) Establish and maintain an airspeed at which any further increase in pitch or reduction of power would result in an immediate stall or a higher speed as specified by your instructor.
    a. Slow flight should be practiced at varying speeds and configurations above the 1G stall speed of the aircraft as specified by the instructor.
9) Establish Maneuver as instructed.
10) Recover when instructed by:
    a. Adding full power
    b. Set flaps to 20° and allow the aircraft to stabilize.
11) Then set flaps to 10° and 0° allowing the aircraft to stabilize between each setting.
12) Return to cruise flight and perform the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to maneuvering during slow flight.
- Selects an entry altitude that will allow the task to be completed no lower than 1,500' AGL.
- Establish and maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in a stall warning (e.g., airplane buffet, stall horn, etc.).
- Accomplishes coordinated straight and level flight, turns, climbs, and descents with landing gear and flap configurations specified by the instructor.
- Divides attention between airplane control and orientation.
- Maintains the specified altitude, ±50 feet; specified headings, ±10°; airspeed +5/-0 kts, and specified angle of bank, ±5°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the relationship between pitch and power in maintaining airspeed and altitude during slow flight.
- Discuss how flight at minimum airspeeds develops the ability to estimate the margin of safety above the stalling speed.
- Compare the practice of slow flight to various phases of flight such as; takeoffs, climbs, descents, go-around, and approaches to landing.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified flap configuration.
- Improper entry technique.
- Failure to establish and maintain the specified airspeed.
- Excessive variations of altitude and heading when a constant altitude and heading are specified.
- Rough or uncoordinated control technique.
- Improper correction for left turning tendency.
- Improper trim technique.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Power – Off Stall (C-172R)

Objective:

To familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop the skills to prevent and recover from stalls in the landing configuration.

Description:

The aircraft is slowed down and placed in the landing configuration after which a stall is induced and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery by at least 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1,500 RPM or less allowing the aircraft to slow to approach speed while maintaining altitude.
5) Below 110 kts, set flaps to 10°.
6) Below 85 kts, set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
7) Establish a stabilized descent at 65 kts.
8) Reduce power to idle.
9) Maintain coordinated flight and altitude until recognition of the stall.
10) Recognize and recover from the impending stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, leveling the wings, and adding full power.
11) Set flaps to 20°.
12) Accelerate the aircraft to V_X (recommended) or V_Y and climb while retracting the remaining flaps in 10° increments.
13) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-off stalls.
- Selects an entry altitude that allows the task to be completed no lower than 1,500' AGL.
- Establishes a stabilized descent in the approach or landing configuration, as specified by the instructor.
- Transitions smoothly from the approach or landing attitude to a pitch attitude that will induce a stall.
- Maintains a specified heading, ±10° in straight flight; maintains a specified angle of bank, not to exceed 20°, ±5°, in turning flight while inducing the stall.
- Recognizes and recovers promptly as the "on set" of the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable and leveling the wings to return to a straight and level flight attitude with a minimum loss of altitude appropriate for the airplane.
- Retracts the flaps to the recommended setting, retracts the landing gear if retractable after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flap retraction.
- Returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.

- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Power – On Stall (C-172R)

Objective:

To familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in the takeoff configuration.

Description:

The aircraft is slowed down and placed in the takeoff configuration after which a stall is induced and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1200 RPM or less, allowing the aircraft to slow to takeoff speed while maintaining altitude.
5) Add full power at 55 kts (V_R).
6) Transition smoothly to the pitch attitude that will induce a stall.
7) Recognize and recover from the impending stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, leveling the wings, and adding full power.
8) Accelerate the aircraft to 74 kts (V_Y) and climb.
9) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-on stalls.
- Selects an entry altitude that allows the task to be completed no lower than 1,500' AGL.
- Establishes the takeoff or departure configuration. Sets power to no less than 65 percent available power.
- Transitions smoothly from the takeoff or departure attitude to a pitch attitude that will induce a stall.
- Maintains a specified heading ±5°, in straight flight; maintains a specified angle of bank, not to exceed a 20°, ±10°, turning flight, while inducing the stall.
- Recognizes and recovers promptly as the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable and leveling the wings to return to a straight and level flight attitude, with a minimum loss of altitude appropriate for the airplane.
- Retracts flaps to the recommended setting and retracts the landing gear if retractable after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flaps retraction; returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Accelerated Stall (C-172R)

Objective:

To familiarize the pilot with the conditions that produce accelerated stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in an accelerated configuration.

Description:

The aircraft is slowed down and placed in the clean configuration. After which a steep turn is applied with excessive back elevator pressure and therefore a stall is induced at a higher than normal stalling speed and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery by at least 3,000' AGL.
2) Perform clearing turns.
3) Reduce power to 1500 RPM allowing the aircraft to slow below maneuvering speed while maintaining altitude.
4) Set mixture to rich.
5) Verify flaps up.
6) Upon reaching 75 kts, transition smoothly to an approximate 45 degree bank and apply back pressure to induce an accelerated stall.
7) Recognize and recover from the stall (aerodynamic buffeting) as the stall occurs by simultaneously leveling the wings, reducing the angle of attack, and increasing power.
8) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to accelerated stalls.
- Selects an entry altitude that allows the task to be completed no lower than 3,000' AGL.
- Establishes the configuration as specified by the instructor.
- Establish and maintain a coordinated turn in a 45° bank, increasing elevator back pressure smoothly and firmly until an impending stall is reached.
- Recognizes and recovers promptly at the first indication of an impending stall.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Cross-Control Stall (C-172R)

Objective:

To familiarize the pilot with the conditions that produce cross-control stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in a cross-control configuration.

Description:

The aircraft is left in a clean configuration while power is reduced to simulate landing conditions after which a stall is initiated by using excessive rudder in the direction of the base-to-final turn and back elevator pressure is applied to keep the nose from lowering. Recovery procedures should be initiated at first indication of stall by applying full power and removing opposite aileron and rudder inputs simultaneously.

Setup Procedure:

1) Select an altitude which allows recovery by 3000' AGL.
2) Perform clearing turns.
3) Reduce power to 1300 RPM allowing the aircraft to slow to 65 kts while maintaining altitude.
4) Set mixture to rich.
5) Verify flaps up.
6) Select a point on the ground to act as a runway and position aircraft on a base leg.
7) Upon reaching 65 kts begin a "base-to-final" turn that overshoots final approach and simultaneously:
    a. Correct for final approach path by smoothly applying excessive rudder in the direction of turn.
    b. Use opposite aileron to hold constant bank.
    c. Increase elevator back pressure to keep the nose from dropping below horizon.
8) Recognize and recover from the impending stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, removing opposite rudder and aileron inputs, and adding full power.
9) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards

- Exhibits knowledge of the elements of the elements of cross-controlled stalls, with the landing gear extended.
- Exhibits instructional knowledge of common errors related to cross-control stalls, with the landing gear extended.
- Demonstrates and simultaneously explains a cross-control stall, with landing gear extended, from an instructional standpoint.
- Analyzes and corrects simulated common errors related to a cross-control stall with the landing gear extended.

Note: These are the PTS standards for the CFI certificate as these maneuvers are only to be demonstrated to commercial pilot students and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a cross-control stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a cross-control stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.

- Failure to recognize indications of a stall.
- Spin entry due to stalling aircraft in uncoordinated condition.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; CFI PTS

Elevator Trim Stall (C-172R)

Objective:

To familiarize the pilot with the conditions that produce elevator trim stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls with excessive elevator trim.

Description:

The aircraft is left in a clean configuration while power is reduced to simulate landing conditions and elevator trim is added to maintain a stable descent. After which a go-around is simulated with the excessive trim and therefore a stall attitude is reached rapidly and recovery is initiated returning the aircraft to normal cruise.

Setup Procedure:

1) Select an altitude which allows recovery by 3000' AGL.
2) Perform clearing turns.
3) Reduce power to 1,500 RPM or less allowing the aircraft to slow to approach speed while maintaining altitude.
4) Below 110 kts, set flaps to 10°.
5) Below 85 kts, set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
6) Apply nose up elevator trim to establish a descent at 65kts.
7) Once a 65 kt descent has been established simulate a go-around by applying full power.
8) Recognize and recover once an attitude has been reached that would result in an impending stall by:
    a. Reducing angle of attack.
    b. Hold forward elevator pressure while reducing nose up elevator trim.
    c. Set flaps to 20°
9) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits instructional knowledge of the elements of elevator trim stalls, in selected landing gear and flap configurations.
- Exhibits instructional knowledge of common errors related to elevator trim stalls, in selected landing gear and flap configurations.
- Demonstrates and simultaneously explains elevator trim stalls, in selected landing gear and flap configurations, from an instructional standpoint.
- Analyzes and corrects simulated common errors related to elevator trim stalls in selected configurations.

Note: These are the PTS standards for the CFI certificate as these maneuvers are only to be demonstrated to commercial pilot students and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of an elevator trim stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from an elevator trim stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.
- Forward elevator pressure required in recovery.

Common Errors:

- Failure to establish specified configuration.

- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Spin entry due to stalling aircraft in uncoordinated condition.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; CFI PTS

Secondary Stall (C-172R)

Objective:

To familiarize the pilot with the conditions that produce secondary stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls that could occur due to improper recovery techniques.

Description:

The aircraft configured for and placed into a power off stall. During recovery a secondary stall is induced by abrupt control inputs, attempting to return to normal cruise to early, or by not adequately reducing angle of attack during initial stall recovery.

Setup Procedure:

1) Select an altitude which allows recovery by at least 3,000' AGL.
2) Reduce power to 1,500 RPM or less allowing the aircraft to slow to approach speed while maintaining altitude.
3) Below 110 kts, set flaps to 10°.
4) Below 85 kts, set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
5) Establish a stabilized descent at 65 kts.
6) Reduce power to idle.
7) Maintain coordinated flight and altitude until recognition of the stall.
8) Induce secondary stall by:
    a. Allowing nose to pitch down, but immediately pitch the nose up excessively to maintain desired altitude.
    or
    b. Hold aircraft in stall by not reducing angle of attack.
9) Recover from the secondary stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, leveling the wings, and adding full power.
10) Set flaps to 20°.
11) Accelerate the aircraft to V_X (recommended) or V_Y and climb while retracting the remaining flaps in 10° increments.
12) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits instructional knowledge of the elements of secondary stalls, in selected configurations.
- Exhibits instructional knowledge of common errors related to secondary stalls, in selected configurations.
- Demonstrates and simultaneously explains secondary stalls, in selected landing gear and flap configurations, form an instructional standpoint.
- Analyzes and corrects simulated common errors related to secondary stalls in selected configurations.

Note: These are the PTS standards for the CFI certificate as these maneuvers are only to be demonstrated to commercial pilot students and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a secondary stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a secondary stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Spin entry due to stalling aircraft in uncoordinated condition.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.

References:

Airplane Flying Handbook; POH/AFM; CFI PTS

Steep Turns (C-172R)

Objective:

To develop coordination, orientation, division of attention and smooth control techniques while executing high performance turns.

Description:

The maneuver consists of two 360° turns in opposite directions, using a bank angle of 50° while maintaining a constant airspeed and altitude.

Setup Procedure:

1) Select an altitude which allows performance of maneuver no lower than 1,500' AGL.
2) Perform clearing turns.
3) Adjust the mixture in accordance with the POH.
4) Reduce power to establish an airspeed of 95 kts.
5) Enter a coordinated 50° banking turn to the left or right.
6) Increase power and adjust trim and pitch as required to maintain altitude and airspeed.
7) Begin rollout at ½ the bank angle prior to rollout heading.
8) Reduce power and pitch on rollout as needed to remain at 95 kts.
9) Continue the maneuver in the opposite direction.
10) Reduce power and pitch on rollout as needed to remain at 95 kts.
11) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to steep turns.
- Establishes the manufacturer's recommended airspeed or if one is not stated, a safe airspeed not to exceed Va.
- Rolls into a coordinated 360° steep turn with at least a 50° bank, followed by a 360° turn in the opposite direction.
- Divides attention between airplane control and orientation.
- Maintains the entry altitude, ±100 feet, airspeed, 10 kts, bank, ±5°, and rolls out on the entry heading, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain why load factor increases as bank angle increases.
- Discuss the relationship between load factor and stall speed.
- Discuss the principle of over-banking tendency.
- Explain how to maintain altitude and airspeed.
- Explain limit load factor and what happens if it's exceeded.

Safety Considerations:

- Do not exceed manufacturer's recommended airspeed or Va.
- Always clear the area before initiating the maneuver.
- The maneuver is to be completed no lower than 1,500' feet AGL.
- Division of attention between maneuver and scanning for traffic.

Common Errors:

- Improper pitch, bank, and power coordination during entry and rollout.
- Uncoordinated use of flight controls.
- Improper procedure in correcting altitude deviations.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Chandelle (C-172R)

Objective:

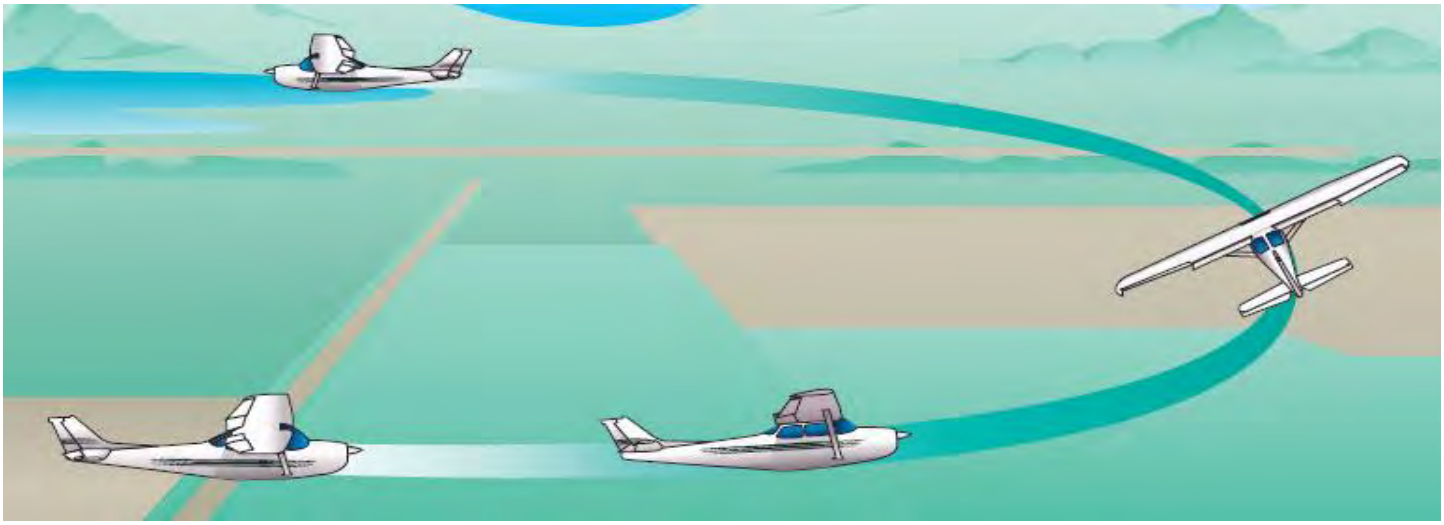
To develop the pilot's coordination, orientation, planning and accuracy of control during maximum performance flight.

Description:

A chandelle is a maximum performance climbing turn beginning from approximately straight and level flight, and ending at the completion of a 180° turn in a wings level, nose high attitude at the minimum controllable airspeed.

Setup Procedure:

1) Select an altitude to perform the maneuver no lower than 1,500' AGL.
2) Perform clearing turns.
3) Orient the airplane so that the turn is into the wind.
4) Maintain an airspeed of 105 kts.
5) Establish a 30° bank turn.
6) Simultaneously apply full power and pitch to maintain a smooth coordinated climbing turn to the 90° degree point with a constant bank.
7) At the 90° point, gradually increase back pressure to maintain pitch attitude and begin a coordinated roll out to reach wings level at the 180° point, just above the stall speed.
8) At the 180° point, establish level flight within 50 feet of final altitude.
9) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to chandelles.
- Selects an altitude that will allow the maneuver to be performed no lower than 1,500' AGL.
- Establishes the recommended entry configuration, power and airspeed.
- Establishes the angle of bank at approximately 30°.
- Simultaneously applies power and pitch to maintain a smooth, coordinated climbing turn to the 90° point, with a constant bank.
- Begins a coordinated constant rate rollout from the 90° point to the 180° point maintaining power and a constant pitch attitude.
- Completes rollout at the 180° point, ±10° just above stall airspeed, and maintains that airspeed momentarily avoiding a stall.
- Resumes straight and level flight with minimum loss of altitude.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Coordination during high power settings and high angles of attack.
- Maneuvering the aircraft at high performance levels.

Safety Considerations:

- This maneuver should be performed no lower than 1,500’ AGL.
- Divide attention between flying the airplane and scanning for traffic.
- Maintain coordinated flight.

Common Errors:

- Improper pitch, bank, and power coordination during entry or completion.
- Uncoordinated use of flight controls.
- Improper planning and timing of pitch and bank attitude changes.
- Factors related to failure in achieving maximum performance.
- A stall during the maneuver.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Lazy Eights (C-172R)

Objective:

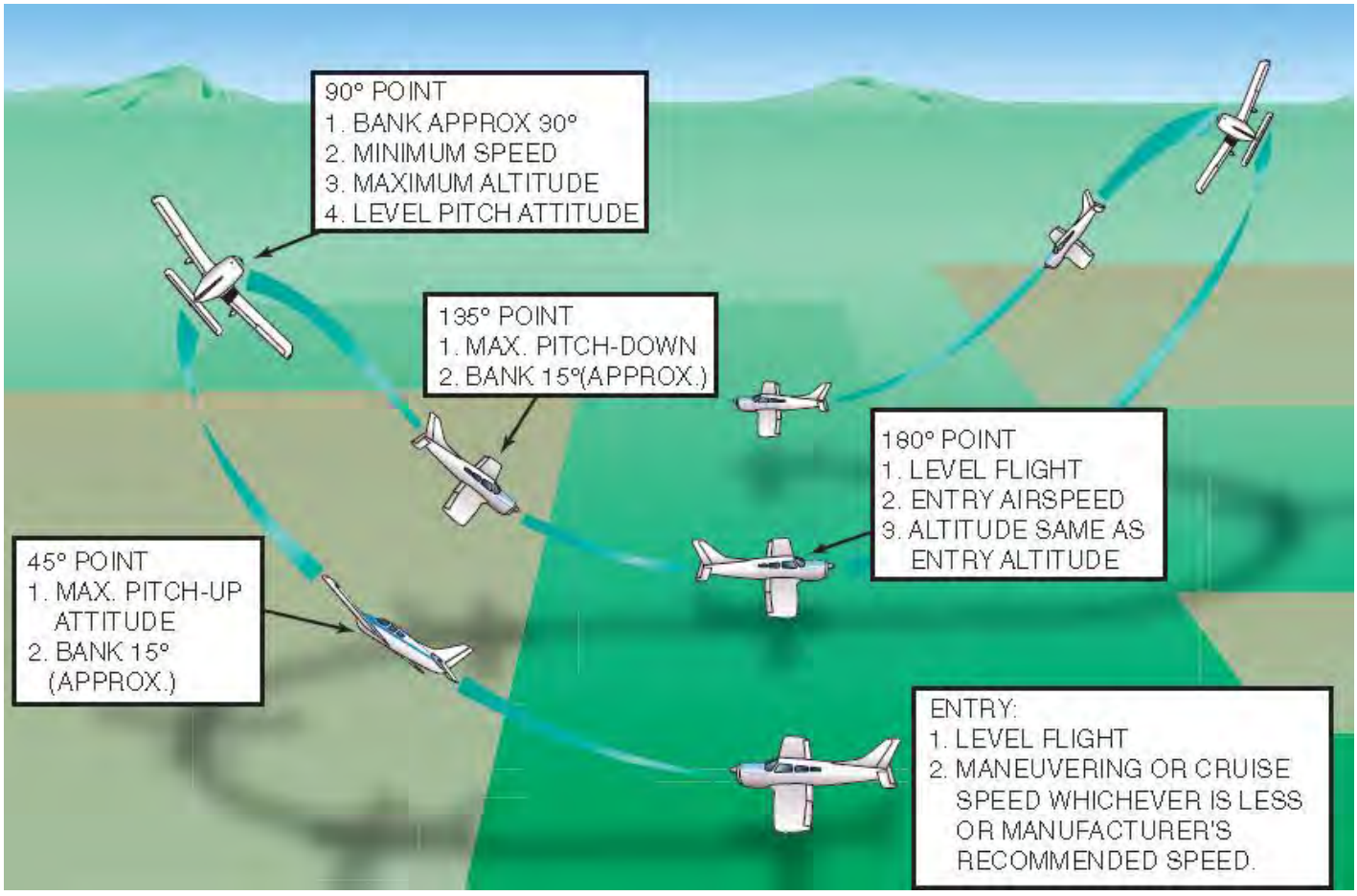
To develop coordination of controls through a wide range of airspeeds and altitudes so that certain accuracy points are reached with planned attitude and bank.

Description:

Two 180° turns, in opposite direction, while making a climb and a descent in a symmetrical pattern during each of the turns. At no time is the airplane flown straight and level.

Setup Procedure:

1) Select an altitude to perform the maneuver no lower than 1,500' AGL.
2) Perform clearing turns.
3) Orient the airplane so that the first turn is to the left and into the wind.
4) Maintain an airspeed of 105 kts.
5) Begin the maneuver by constantly changing pitch and bank to achieve the following:
    a. 45° point – 15° of bank and max pitch up.
    b. 90° point – 30° of bank, level pitch attitude, minimum controllable airspeed.
    c. 135° point – 15° of bank and max pitch down.
    d. 180° point – back to starting airspeed, altitude, and reciprocal heading.
6) Repeat in opposite direction.
7) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to lazy eights.
- Selects an altitude that will allow the maneuver to be performed no lower than 1,500' AGL.
- Establishes the recommended entry configuration, power, and airspeed.
- Maintains coordinated flight throughout the maneuver.
- Achieves the following throughout the maneuver
    - Approximately 30° bank at the steepest point.
    - Constant change of pitch and roll rate.
    - Altitude tolerance at 180° points, ±100 feet from entry altitude.
    - Airspeed tolerance at the 180° point, ±10 kts from entry airspeed.
    - Heading tolerance at the 180° point ±10°.
- Continues the maneuver through the number of symmetrical loops specified and resumes straight and level flight.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance of proper power setting.
- Explain the need for differing amounts of rudder pressure between the left and right turn.
- Discuss the effects of torque at the top of the eight in both the right and left turns.

Safety Considerations:

- Always clear the area before beginning a maneuver.
- Maintain coordination at all times during the maneuver.
- Use proper division of attention to see and avoid traffic.

Common Errors:

- Uncoordinated use of flight controls.
- Inconsistent airspeed and altitude at key points in the maneuver.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Steep Spiral (C-172R)

Objective:

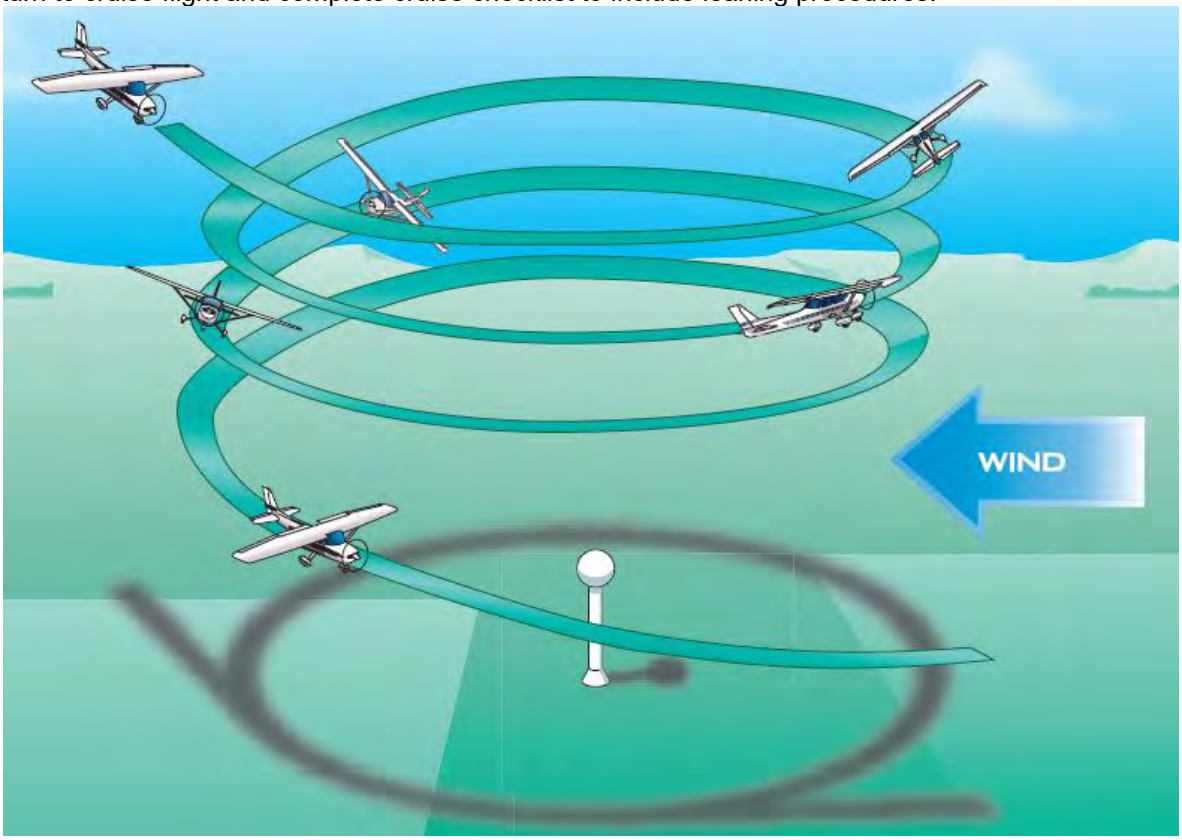
To improve pilot techniques for airspeed control, wind drift control, planning, orientation, and division of attention.

Description:

A steep spiral is a constant gliding turn, during which a constant radius around a point on the ground is maintained.

Setup Procedure:

1) Begin the maneuver with sufficient altitude to allow for three 360° degree turns without descending below 1,500' feet AGL.
2) Perform clearing turns.
3) Select a point to perform the maneuver around.
4) Enter on a downwind heading.
5) Reduce power and slow to 75 kts.
6) Reduce the power to idle when abeam the point.
7) Maintain 75 kts ($V_{L/D}$ +10 kts).
8) Change bank angle as necessary to maintain an equal distance from the reference point 45-55° of bank at the steepest point in the turn, not to exceed 60°.
9) Clear the engine, momentarily advancing power to normal cruise power, on each upwind leg.
10) Roll out on a downwind heading.
11) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a steep spiral.
- Selects an altitude sufficient to continue through a series of at least three 360° turns.
- Selects a suitable ground reference point.
- Applies wind-drift correction to track a constant radius circle around the selected reference point with bank not to exceed 60° at steepest point in turn.
- Divides attention between airplane control and ground track, while maintaining coordinated flight.
- Maintains the specified airspeed, ±10 kts, rolls out toward specified heading, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the effect of bank angle on ground track.
- Discuss the effect of ground speed on the radius of the turn.
- Recognize the importance of clearing the engine during extended periods of engine operations at low power settings.

Safety Considerations:

- Clear the area.
- Divide attention between aircraft control and orientation.
- Choose a reference point with emergency landing field within gliding distance.

Common Errors:

- Failure to maintain constant radius around reference point.
- Failure to maintain constant airspeed.
- Uncoordinated use of flight controls.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Eights On Pylons (C-172R)

Objective:

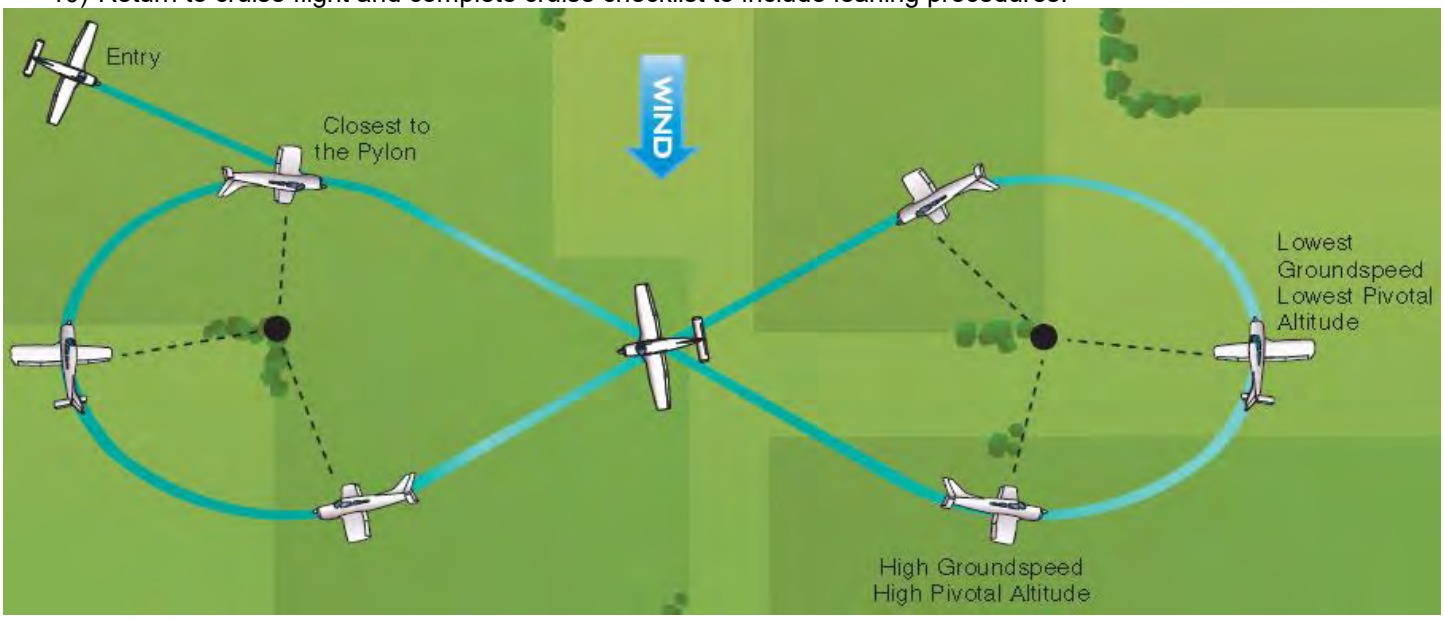
To develop a fine control touch, coordination, and the division of attention necessary for accurate and safe maneuvering of the airplane.

Description:

The airplane is flown in circular paths, alternately left and right, in the form of a figure 8 around two selected points on the ground at such a precise altitude and airspeed that a line parallel to the airplane's lateral axis appears to pivot on each of the pylons.

Setup Procedure:

1) Select two pylons perpendicular to the wind with suitable emergency landing area within gliding distance and a distant apart to obtain a 3 to 5 second straight and level flight segement.
2) Perform clearing turns.
3) Select appropriate emergency landing field.
4) Establish the appropriate pivotal altitude.
5) Establish airspeed below V_A.
6) Enter the maneuver at a 45° to the downwind with the first turn to the left.
7) When abeam the pylon, begin your turn.
8) Maintain the point on your reference line by climbing or descending as the pivotal altitude changes.
9) Fly straight and level between pylons and repeat around the other pylon.
10) Return to cruise flight and complete cruise checklist to include leaning procedures.



Completion Standards:

- Exhibits knowledge of the elements related to eights on pylons.
- Determines the approximate pivotal altitude.
- Selects suitable pylons that will permit straight and level flight between the pylons.
- Enters the maneuver at the appropriate altitude and airspeed and at a bank angle of approximately 30° or 40° at the steepest point.
- Applies the necessary corrections so that the line of sight reference line remains on the pylon.
- Divides attention between accurate coordinated airplane control and outside visual references.
- Holds pylon using appropriate pivotal altitude avoiding slips and skids.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain how pivotal altitude is affected with changes in groundspeed.
- Compute pivotal altitude.
- Explain the relationship between pivotal altitude and angle of bank.

Safety Considerations:

- Clear the area of traffic and obstacles.
- Look for an emergency landing field nearby.
- Division of attention between maneuver and scanning for traffic.
- Maintain coordinated flight.

Common Errors:

- Faulty entry technique.
- Poor planning, orientation, and division of attention.
- Uncoordinated flight.
- Use of improper line of sight reference.
- Improper timing of turn entries and rollouts.
- Improper wind-drift correction between pylons.
- Selection of pylons where there is no suitable emergency landing area within gliding distance.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

C-172S

Passenger Briefing (C-172S)

Objective:

To provide a standard pre-flight briefing to passengers.

Description:

The pilot in command is required by the Federal Aviation Regulations to provide a passenger briefing.

Setup Procedure:

2) Before starting the engine the Pilot-in-Command will provide the passenger safety briefing to include, but not limited to:
    a. Designation of Pilot-in-Command.
    b. Procedures for positively exchanging flight controls.

S

i. Seat belts and shoulder harnesses (location and operation).
ii. Seat belts & shoulder harnesses fastened for taxi, takeoff and landing.
iii. Seat position adjusted and locked in place (controls and operation).

A

iv. Air vents (location and operation).
v. All environmental controls (discussed).
vi. Action in case of any passenger discomfort.

F

vii. Fire extinguisher (location and operation).
viii. Smoking is prohibited.

E

ix. Exit doors (how to secure; how to open).
x. Emergency evacuation plan.
xi. Emergency/survival kit (location and contents).
xii. Equipment (location & operation, i.e., ELT, flight controls).

T

xiii. Traffic (scanning, spotting, notifying pilot).
xiv. Talking ("sterile cockpit" expectations).

Y

xv. Your questions?

Flight Proficiency Standards:

- Briefs occupants on the use of safety belts, shoulder harnesses, doors, and emergency procedures.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance and regulatory requirement for providing a passenger briefing.

Common Errors:

- Failure to perform a passenger briefing.
- Incomplete passenger briefing.

References:

Airman Airman Certification Standards, Federal Aviation Regulations, AC 121-24, AOPA Passenger Safety Briefing Video

Normal & Crosswind Takeoff & Climb (C-172S)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane is accelerated to an airspeed that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and establishes a pitch attitude to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete takeoff checklist and takeoff briefing.
3) Use aircraft lighting as recommended by the current version of AC 91-73.
4) Ensure runway is clear, align aircraft with runway centerline, confirm HSI is aligned with runway, and ensure nose wheel is straight.
5) Position flight controls for wind for existing conditions.
6) Advance throttle smoothly to takeoff power ensuring toes are resting on rudder pedals, not on brakes.
7) Check engine instruments during takeoff roll for normal indications.
8) Maintain directional control with rudder pedals and crosswind control with appropriate aileron deflection
9) Maintain a slightly tail low attitude.
10) Upon reaching rotation speed, 55 kts (V_R), increase back elevator pressure to establish the lift-off attitude that is approximately that for V_Y and allow the aircraft to fly off the ground.
11) Apply adequate drift correction to maintain runway centerline.
12) Accelerate to 74 kts (V_Y).
13) At 500 ft., or as workload permits, complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to normal and crosswind takeoff, climb operations and rejected takeoff procedures.
- Positions the flight controls for the existing wind conditions.
- Clears the area, taxies onto the takeoff surface and aligns the airplane on the runway center/takeoff path.
- Lifts off at the recommended airspeed and accelerates to V_Y.
- Establishes a pitch attitude that will maintain V_Y ±5 kts.
- Retracts the landing gear if appropriate, and flaps after a positive rate of climb is established.
- Maintains takeoff power and V_Y ±5 kts.
- Maintains directional control, proper wind-drift correction throughout the takeoff and climb.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria.
- Discuss how to maintain directional control during the ground roll.
- Discuss proper lift-off technique.
- Explain how to use ailerons during crosswind situations.
- Describe how to correct for wind-drift.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force aircraft off runway too early, causing it to settle back on the runway.
- Consider the effect of density altitude on performance.
- Do not retract landing gear too soon.
- Do not allow upwind wing to rise during takeoff.
- Do not exceed maximum demonstrated crosswind velocity.

Common Errors:

- Improper runway incursion avoidance procedures.
- Inappropriate lift-off procedures.
- Improper climb attitude, power setting, and airspeed.
- Improper use of checklists.
- Improper positioning of the flight controls and wing flaps.
- Drift during climb.
- Failure to establish and maintain proper climb configuration and airspeeds.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Short-Field Takeoff & Climb (C-172S)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude when the takeoff area is short or restricted by obstructions.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane is accelerated to an airspeed that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and a pitch attitude is established to climb away from the runway and clear a 50 foot obstacle.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) Set flaps to 10°.
4) Use aircraft lighting as recommended by the current version of AC 91-73.
5) Back taxi and align aircraft with runway centerline, confirm HSI is aligned with runway, and ensure nose wheel is straight.
6) Ensure runway is clear, advance throttle smoothly to takeoff power while holding brakes; check engine instruments.
7) Release brakes and ensure toes are resting on rudder pedals, not brakes.
8) Maintain directional control with rudder pedals and appropriate aileron deflection.
9) Upon reaching rotation speed, 55 kts (V_R), increase back elevator pressure to establish lift-off attitude and allow aircraft to fly off ground.
10) Accelerate the aircraft to 56 kts until obstacle is cleared or 50 feet above takeoff surface is attained and then accelerate to 74 kts (V_Y).
11) Retract flaps after a safe altitude of at least 200 ft. and an airspeed of 74 kts are attained.
12) At 500 ft., or as workload permits, complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a short-field takeoff and maximum performance climb.
- Positions the flight controls for the existing wind conditions, sets flaps as recommended.
- Clears the area; taxies into takeoff position utilizing maximum available takeoff area and aligns the airplane on the runway center/takeoff path.
- Applies brakes (if appropriate) while advancing the throttle smoothly to takeoff power.
- Lifts off at the recommended airspeed, and accelerates to recommended obstacle clearance airspeed, or V_X.
- Establishes a pitch attitude that will maintain the recommended obstacle clearance airspeed, or V_X +5/-0 kts, until the obstacle is cleared, or until the airplane is 50 feet above the surface.
- After clearing the obstacle, establishes the pitch attitude for V_Y, accelerates to V_Y, and maintains V_Y ±5 kts, during the climb.
- Retracts the landing gear, if appropriate and flaps after clear of any obstacles or as recommended by manufacturer.
- Maintains takeoff power and V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Completes appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria.
- Discuss how to maintain directional control during ground roll.
- Discuss proper lift-off technique.
- Explain the difference between V_X and V_Y.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force aircraft off runway too early, causing it to settle back onto runway.
- Do not force aircraft to stay on the ground when it is ready to lift off, wheelbarrow.
- Back taxi to ensure use of entire runway length.
- Retraction of gear and flaps as recommended.

Common Errors:

- Failure to position the airplane for maximum utilization of available runway.
- Improper runway incursion avoidance procedures.
- Improper use of controls during a short-field takeoff.
- Inappropriate lift-off procedures.
- Improper initial climb attitude, power setting and airspeed to clear obstacle.
- Improper use of checklists.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Soft-Field Takeoff & Climb (C-172S)

Objective:

To align the airplane with the takeoff path, become airborne as quickly as possible, and establish a positive climb to a safe maneuvering altitude.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane enters the runways with full up elevator deflection and accelerates to an airspeed at which the airplane will lift off.
2) The acceleration to lift off speed while remaining in ground effect.
3) The initial climb when the airplane establishes a pitch attitude to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) Set flaps to 10°.
4) Use aircraft lighting as recommended by the current version of AC 91-73.
5) Ensure runway is clear, taxi onto runway with back elevator pressure and align nose with runway centerline, confirm HSI is aligned with runway, without stopping or the use of brakes.
6) Smoothly advance throttle to takeoff power.
7) Ensure toes are resting on rudder pedals, not on brakes.
8) Check engine instruments during ground roll for normal indications.
9) Maintain directional control with rudder pedals and appropriate aileron deflection.
10) Use back elevator pressure to establish a positive pitch attitude and allow the aircraft to fly itself off the ground.
11) When the aircraft becomes airborne, reduce pitch to remain in ground effect while accelerating to 62 kts (V_X) then simultaneously climb and accelerate to 74 kts (V_Y).
12) Retract flaps after a safe altitude of at least 200 ft. and an airspeed of 74 kts are attained.
13) At 500 ft., or as workload permits, complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a soft-field takeoff and climb.
- Positions the flight controls for existing conditions and to maximize lift as quickly as possible.
- Clears the area; taxies onto takeoff surface at a speed consistent with safety without stopping while advancing the throttle smoothly to takeoff power.
- Establishes and maintains a pitch attitude that will transfer the weight of the airplane from the wheels to the wings as rapidly as possible.
- Lifts off at the lowest possible airspeed and remains in ground effect while accelerating to V_X.
- Establishes a pitch attitude for V_X or V_Y, as appropriate, and maintains selected airspeed ±5 kts, during the climb.
- Retracts the landing gear, if appropriate and flaps after clear of any obstacles or as recommended by the manufacturer.
- Maintains takeoff power and V_X or V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss proper soft-field takeoff technique.
- Explain runway selection criteria.
- Predict the height of ground effect and discuss its relevance.
- Discuss how to maintain directional control during ground roll.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force the aircraft off runway too quickly.
- Do not retract landing gear too soon.
- Do not allow the airplane to climb above ground effect too soon, causing it to settle back onto the runway.

Common Errors:

- Improper runway incursion avoidance procedures.
- Improper use of controls during a soft-field takeoff.
- Improper lift-off procedures.
- Improper climb attitude, power setting and airspeed.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Traffic Pattern (C-172S)

Objective:

To assure that air traffic flows into and out of an airport in an orderly manner.

Description:

The airplane is flown on a rectangular course around a runway at an altitude specified in the current Airport/Facility Directory or as outlined in the FAR/AIM.

Setup Procedure:

Departures

1) All departures:
    a. Fly the departure leg straight out until reaching traffic pattern altitude.
    b. Once reaching traffic pattern altitude, continue climbing and turn on course.

Arrivals

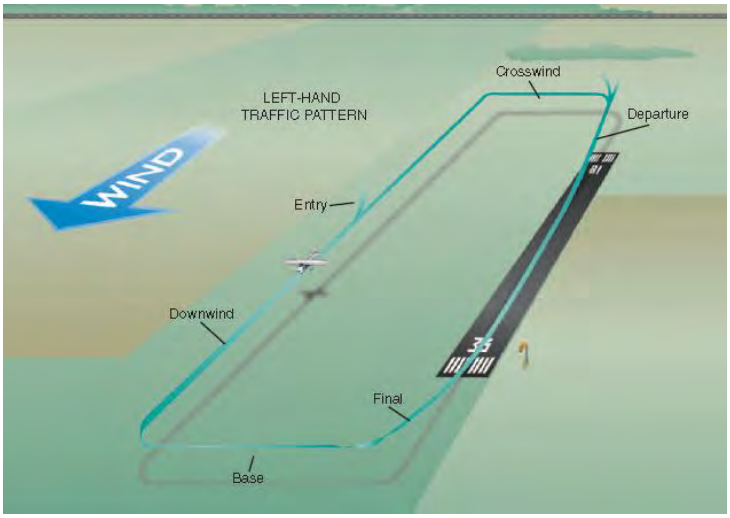
1) Prior to reaching 5 NM from the airfield, complete the following:
    a. Monitor local AWOS/ASOS/ATIS
    b. Ask “Is there any traffic between me and the airport?” and cancel flight following (if applicable)
    c. Complete the Before Landing checklist
2) Slow down below the approach flap airspeed prior to pattern entry.

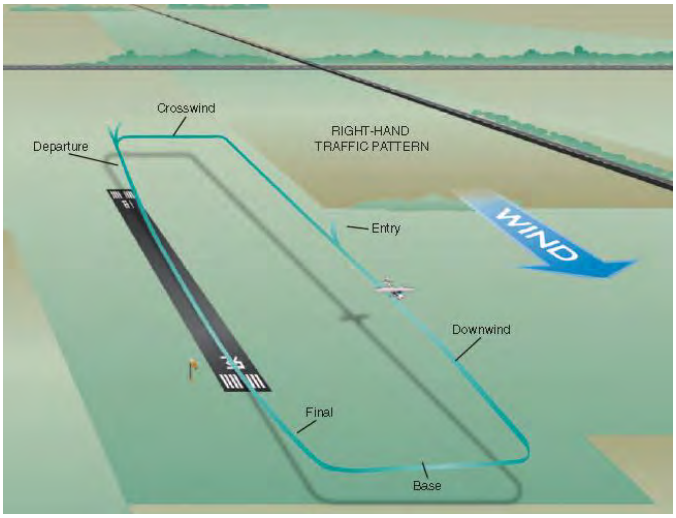
    If already established on the downwind side, skip to step 4.*

3) For a midfield entry:
    a. Cross midfield 500’ above traffic pattern altitude, observing traffic flow and wind direction.
    b. Fly 2-3 miles beyond the downwind leg, then descend to pattern altitude.
    c. Complete a tear-drop shaped turn to the right or left as necessary to position the aircraft at a 45 degree angle to the downwind leg.

    If less than two aircraft are currently in the pattern, the alternate method (cross midfield at traffic pattern altitude, enter directly into downwind leg) may be used.

4) Enter the traffic pattern at the designated traffic pattern altitude (normally 1,000’ AGL) at a 45 degree angle to the downwind leg at midfield.
5) Apply appropriate crosswind correction to allow for a parallel flight path approximately ½ mile from the runway
6) Allow for proper spacing from other aircraft in the pattern as to prevent runway incursions upon landing.
7) Maintain airspeed below the flap speed required for each configuration change.





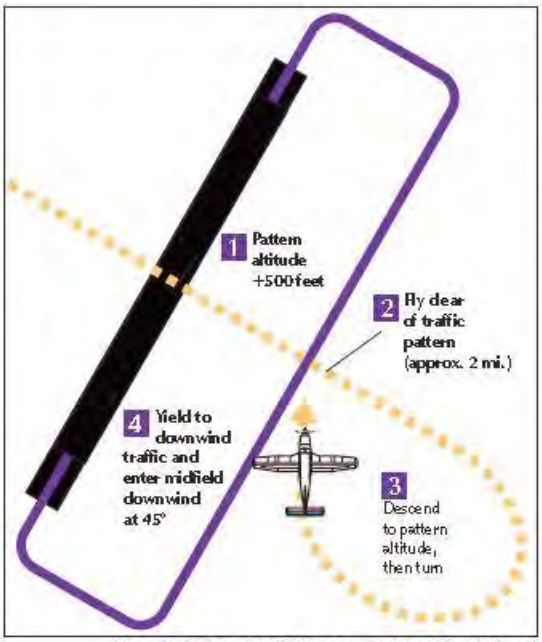


Figure 9. Preferred Entry from Upwind Leg Side of Airport

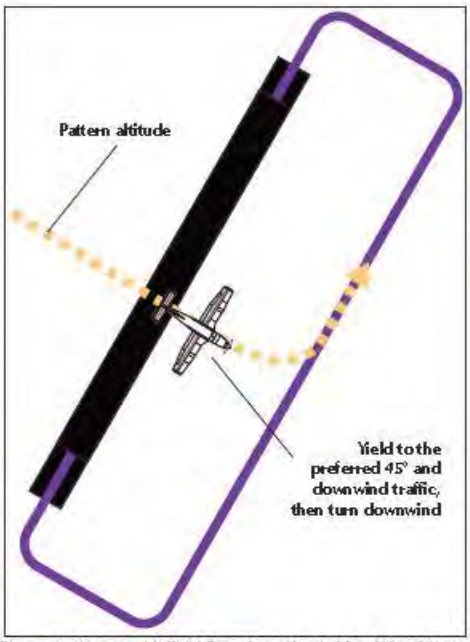


Figure 10. Alternate Midfield Entry from Upwind Leg Side of Airport

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to traffic patterns. This shall include procedures at airports with and without operating control towers, prevention of runway incursions, collision avoidance, wake turbulence avoidance, and wind shear.
- Complies with proper traffic pattern procedures.
- Maintains proper spacing from other aircraft.
- Corrects for wind drift to maintain the proper ground track.
- Maintains orientation with the runway/landing area in use.
- Maintains traffic pattern altitude, ±100 feet and the appropriate airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss traffic patterns at controlled and uncontrolled airports.
- Explain traffic pattern procedures.
- Explain how to maintain the proper ground track.

Safety Considerations:

- Maintain proper traffic pattern altitude.
- Maintain a distance from the runway that is within power-off gliding distance.
- Preferred bank of 30 degrees while in pattern (and not to exceed 30) while in pattern.
- Maneuver within 300 feet of traffic pattern altitude before turning crosswind to base.
- Maintain proper aircraft separation.
- Comply with standards traffic pattern procedures or ATC instructions.

Common Errors:

- Failure to comply with traffic pattern instructions, procedures, and rules.
- Improper correction for wind drift.
- Inadequate spacing from other traffic.
- Poor altitude or airspeed control.
- Flying too wide of a pattern.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Normal & Crosswind Approach & Landing (C-172S)

Objective:

To safely transition the aircraft from flight to ground operations during normal conditions.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 65 kts, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
8) During the flare to land simultaneously reduce power to idle and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline.
9) Maintain positive pitch attitude for aerodynamic braking.
10) Exit runway and complete after landing checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to normal and crosswind approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point.
- Establishes the recommended approach and landing configuration and airspeed and adjust pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, nor more than 1.3 V_{S0} ±5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the round out and touchdown.
- Touches down smoothly at approximate stall speed.
- Touches down at or within 200 feet beyond a specified point, with no drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control through the approach and landing sequence.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain proper use of crosswind control inputs.

Safety Considerations:

- Observe flap extension speeds.
- Maintain proper airspeed at all times.
- Use proper crosswind correction to avoid drifting from runway centerline.
- Ensure landing gear is extended and locked.

Common Errors:

- Failure to establish proper crosswind correction.
- Improper use of landing performance data and limitations.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Failure to establish and maintain a stabilized approach.
- Improper technique during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Short-Field Approach & Landing (C-172S)

Objective:

To safely transition from flight to ground operations at an airport with a relatively short runway or where an approach is made over obstacles.

Description:

The airplane is configured for a stabilized approach over a 50 foot obstacle. There will be little or no float during the round out, allowing the airplane to touch down at a specified point, and be stopped in a shorter than normal distance.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
   a. Reduce power to approximately 1,300 RPM.
   b. Confirm flaps 10°.
   c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
   a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
   b. At key position, assess approach position.
   c. With wings level, set flaps to 20° as required.
   d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
   a. Apply appropriate crosswind correction to maintain the extended runway centerline.
   b. Set flaps to 30° as required.
   c. Adjust pitch and power as required to maintain a stabilized approach, at 61 kts, to clear obstacles, toward the selected aiming point until flare to land.
   d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
   e. Complete the GUMPS check.
8) During the flare to land simultaneously reduce power as required and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline.
9) Maintain positive pitch attitude for aerodynamic braking.
10) Apply maximum braking to a complete stop without skidding the tires.
11) Exit runway and complete after landing checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a short-field approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects the most suitable touchdown point.
- Establishes the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power.
- Maintains a stabilized approach and recommended approach airspeed, or in its absence, not more than 1.3 V_{SO} ±5 kts with wind gust factor applied.
- Makes smooth, timely, and correct control application during the round out and touchdown.
- Touches down smoothly at minimum control airspeed.
- Touches down at or within 100 feet beyond a specified point, with no side drift, minimum float and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Applies brakes, as necessary, to stop in the shortest distance consistent with safety.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on an approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain how to compensate for obstacles and shortened runway lengths.

Safety Considerations:

- Maintain proper airspeed at all times.
- Compensate for crosswind.
- Do not skid tires.
- Use of aerodynamic braking as available.
- Ensure landing gear is extended and locked.

Common Errors:

- Failure to establish and maintain a stabilized approach.
- Improper technique in use of power, wing flaps, and trim.
- Excessive airspeed on final approach.
- Failure to establish proper crosswind correction.
- Improper use of landing performance data and limitations.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Improper use of brakes.
- Poor directional control after touchdown.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Soft-Field Approach & Landing (C-172S)

Objective:

To safely transition the airplane from flight to ground operations on a rough or soft surface.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown on a field that is unimproved.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 65 kts toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    e. Complete the GUMPS check.
8) During the flare to land simultaneously reduce power as required to maintain aircraft approximately one foot above runway until it slows to stall speed.
9) Touch down at approximate stall speed on the runway centerline as smoothly as possible.
10) Maintain back elevator pressure to keep nose wheel off the ground as long as possible.
11) Maintain directional control with rudder and aileron deflection.
12) Adjust power as necessary to maintain aircraft movement on soft surfaces.
13) Exit the runway with minimal braking and complete after landing checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a soft-field approach and landing.
- Considers the wind conditions, landing surface, and obstructions, and selects the most suitable touchdown area.
- Establishes the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{S0} ±5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the round out and touchdown.
- Touches down softly, with no drift, and with the airplane's longitudinal axis aligned with the runway/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Maintains proper position of the flight controls and sufficient speed to taxi on the soft surface.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss effect of flaps on an approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain how to touchdown and maneuver the aircraft on soft of unimproved surfaces.

Safety Considerations:

- Do not land on fields that exceed the capabilities of the aircraft or pilot.
- Fly over and visually check the field prior to landing.
- Check field length and density altitude.
- UCM retractable gear aircraft can only land on paved, public, published runways.
- Ensure landing gear is extended and locked.

Common Errors:

- Failure to maintain elevator back-pressure after touchdown.
- Improper use of brakes.
- Failure to consider effect of wind and landing surface.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Power-Off 180° Accuracy Landing (C-172S)

Objective:

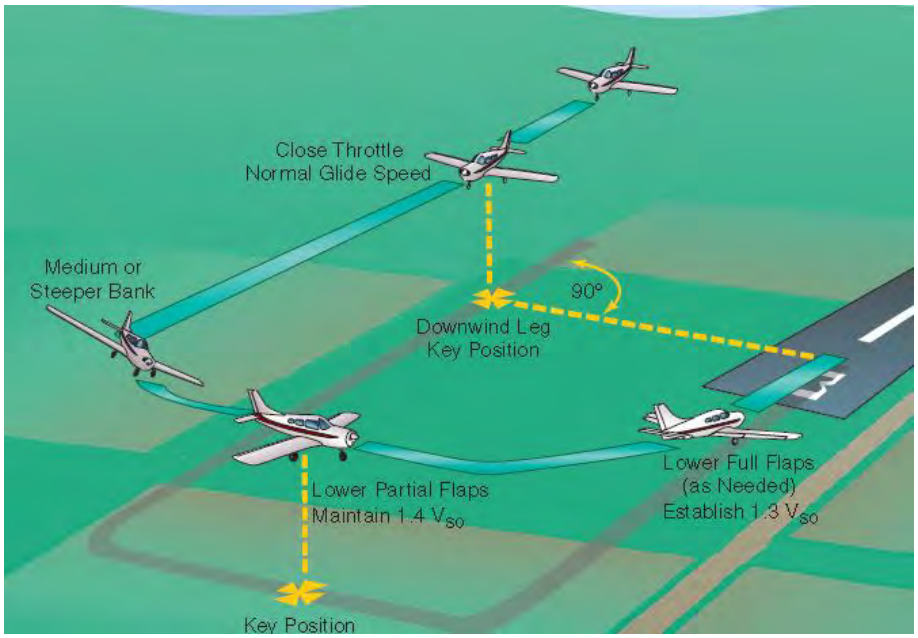
To instill in the pilot the judgment and procedures necessary for accurately flying the airplane, without power, to a safe landing.

Description:

Power-off accuracy approaches are approaches and landings made by gliding with the engine idling, through a specific pattern to a touchdown within 200 feet of a designated line or mark on the runway.

Setup Procedure:

1) Complete the before landing checklist.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming point.
4) When abeam the intended touchdown point:
    a. Close throttle.
    b. Set flaps 10°.
5) Maintain altitude while decelerating to the recommended glide speed 68 kts.
6) Base leg turn will be determined by the glide angle of the airplane, weight, and velocity of the wind.
7) Extend flaps as required.
8) Turn to final approach and extend flaps, as necessary.
9) Adjust trim and make slight adjustments in pitch attitude of flap setting to control glide angle and airspeed.
10) Touch down at approximate stalling speed on the runway centerline at the designated point.
11) Exit the runway and complete after landing checklist.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a power-off 180° accuracy approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects an appropriate touchdown point.
- Positions airplane on downwind leg, parallel to landing runway, and not more than 1,000 feet AGL.
- Abeam the specified touchdown point closes throttle and establishes appropriate glide speed.
- Completes final airplane configuration.
- Touches down in a normal landing attitude, at or within 200 feet beyond the specified touchdown point.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the effect of wind velocity on required altitude and bank angle.
- Discuss the importance of controlling glide angle and airspeed on final approach.

Safety Consideration:

- Maintain coordinated flight throughout the maneuver.
- Be aware of the position of other traffic in the pattern.
- Maintain appropriate airspeed throughout the maneuver.

Common Errors:

- Failure to touchdown within 200 feet of the intended touchdown point.
- Failure to maintain constant airspeed and glide angle.
- Failure to accurately determine the wind direction and velocity.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Touch and Go/Stop and Go (C-172S)

Objective:

To transition from a landing rollout to a takeoff roll while remaining on the runway.

Description:

A touch and go is a landing which transitions into a takeoff while the aircraft remains rolling on the runway.

Setup Procedure:

1) Perform a normal landing.
2) Upon touchdown:
    a. Allow the aircraft to continue rolling.
    b. Maintain runway centerline.
    c. Apply proper crosswind correction.
3) Reconfigure the aircraft for takeoff.
    a. Retract flaps to 10°.
    b. Set trim to the takeoff position.
4) Smoothly apply full-power.
5) Upon reaching rotation speed, 55 kts, increase back elevator pressure to establish the lift-off attitude that is approximately V_Y or V_X and allow the aircraft to fly off the ground.
6) Apply adequate drift correction to maintain runway centerline.
7) At a safe altitude, of at least 200 ft., retract flaps to 0°.
8) At 500 ft., or as workload permits, complete the climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to touch and go procedures.
- Maintains runway centerline upon touchdown.
- Applies proper crosswind controls upon touchdown, reconfiguration and climb out.
- Demonstrates proper aircraft reconfiguration.
- Lifts off at the recommended airspeed and accelerates to V_X or V_Y, as appropriate.
- Retracts flaps at 200' or a safe altitude, if appropriate.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Complies with noise abatement procedures.
- Completes the appropriate checklist.

Note: These are the UCM standards. The aforementioned standards are not found in the Airman Certification Standards.

Learning Outcomes:

- Explain the purpose(s) of touch and go's.
- Discuss how crosswind correction will change throughout the maneuver.
- Discuss the importance of maintaining runway centerline during aircraft reconfiguration.

Safety Considerations:

- Maintain runway centerline.
- Proper crosswind correction.
- Maintain situational awareness.
- Proper reconfiguration.

Common Errors:

- Failure to maintain runway centerline.
- Touchdown beyond the first 1/3rd of the runway and attempting a touch and go.
- Improper aircraft reconfiguration.
- Failure to use checklist.
- Failure to maintain adequate crosswind correction.

- Attempting to lift-off prior to rotation speed.

Go-Around (C-172S)

Objective:

To safely discontinue the landing approach when unsatisfactory conditions exist.

Description:

As full power is applied, the aircraft attitude is adjusted to accelerate to V_Y and climb. As a safe airspeed is attained, flaps are retracted 10° at a time allowing stabilization between each retraction.

Setup Procedure:

1) Simultaneously apply maximum power and establish a go-around pitch attitude.
2) Set flaps to 20°.
3) Establish a pitch attitude to accelerate to 55 kts.
4) Allow the airplane to accelerate to V_X or V_Y and climb.
5) If there is an aircraft on the runway, sidestep to clear the departure path of the airplane and allow the pilot to view the landing or departing traffic.
6) Set flaps to 10° and stabilize in between configuration changes then flaps to 0°.
7) Verify Go Around checklist is complete.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a go-around/rejected landing.
- Makes a timely decision to discontinue the approach to landing.
- Applies takeoff power immediately and transitions to climb pitch attitude for V_X, and maintains V_y+10/-5 kts.
- Retracts the flaps as appropriate.
- Retracts the landing gear, if appropriate, after a positive rate of climb is established.
- Maneuvers to the side of the runway/landing area to clear and avoid conflicting traffic.
- Maintains takeoff power V_y+10/-5 to a safe maneuvering altitude.
- Maintains takeoff power V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the climb.
- Completes the appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss events that may require a go-around.
- Explain the importance of maintaining airspeed and coordination during the go-around procedure.
- Discuss the necessity for maneuvering to the side of the runway after making the decision to go-around.

Safety Considerations:

- Maneuver the airplane to the side of the runway.
- Do not establish a pitch up attitude too quickly.
- Maintain coordination.
- Timely decision making.
- Be watchful for situation which may require a go-around.

Common Errors:

- Delayed decision to make a go-around.
- Improper application of power.
- Failure to control pitch attitude.
- Improper trim technique.
- Failure to compensate for torque effect.
- Failure to maintain V_Y as appropriate.
- Improper wing flap retraction.
- Improper gear retraction.
- Failure to maintain well clear of obstructions and other traffic.
- Improper use of checklists.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Emergency Descent (C-172S)

Objective:

To descend the airplane as soon and as rapidly as possible, within the structural limitations of the airplane.

Description:

The emergency descent is a maneuver for descending as rapidly as possible to a lower altitude or to the ground for an emergency landing.

Setup Procedure:

1) Perform clearing turns.
2) If utilizing flight following, contact ATC for traffic advisories below.
3) Reduce power to idle.
4) Confirm flaps 0°
5) Set mixture to rich.
6) Roll into a 30° - 45° bank to the left and pitch down to achieve 120 kts (If in turbulent air, maintain an airspeed below V_A).
7) Initiate recovery to level flight at least 300' prior to assigned altitude by:
    a. Rolling out the bank.
    b. Pitching up.
8) Return to cruise flight and complete the cruise checklist to include leaning procedures

Flight Proficiency Standards:

- Exhibit knowledge of the elements related to emergency descent.
- Recognizes situations, such as depressurization, cockpit smoke, and/or fire that require an emergency descent.
- Establish the appropriate airspeed and configuration for the emergency descent.
- Exhibit orientation, division of attention, and proper planning.
- Maintains positive load factors during the descent.
- Follow the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the purpose(s) of an emergency descent.
- Discuss engine cooling characteristics during an emergency descent.
- Discuss the importance of proper planning as it pertains to emergencies.

Safety Considerations:

- Maintain positive aircraft control.
- Clear the engine periodically
- Clear below then GO.
- Steep spiral over airport.
- Continue on to emergency approach and landing.

Common Errors:

- Failure to recognize the urgency of the emergency descent.
- Failure to use emergency checklist for situation.
- Failure to maintain appropriate configuration and airspeed.
- Poor orientation, planning, and division of attention.

Maneuvering During Slow Flight (C-172S)

Objective:

To demonstrate the flight characteristics and controllability of an airplane at speeds lower than normal cruise and develop proficiency in performing maneuvers that require slow airspeeds.

Description:

Slow flight consists of slowing the aircraft to a minimum controllable airspeed in the landing configuration and maneuvering the aircraft while maintaining altitude and airspeed.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1,500 RPM or less.
5) Below 110 kts, set flaps to 10°.
6) Adjust pitch and power as necessary to maintain altitude.
7) Below 85 kts, set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
8) Establish and maintain an airspeed at which any further increase in pitch or reduction of power would result in an immediate stall or a higher speed as specified by your instructor.
    a. Slow flight should be practiced at varying speeds and configurations above the 1G stall speed of the aircraft as specified by the instructor.
9) Maneuver as instructed.
10) Recover when instructed by:
    a. Adding full power
    b. Set flaps to 20° and allow the aircraft to stabilize.
11) Then set flaps to 10° and 0° allowing the aircraft to stabilize between each setting.
12) Return to cruise flight and perform the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to maneuvering during slow flight.
- Selects an entry altitude that will allow the task to be completed no lower than 1,500' AGL.
- Establish and maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in a stall warning (e.g., airplane buffet, stall horn, etc.).
- Accomplishes coordinated straight and level flight, turns, climbs, and descents with landing gear and flap configurations specified by the instructor.
- Divides attention between airplane control and orientation.
- Maintains the specified altitude, ±50 feet; specified headings, ±10°; airspeed +5/-0 kts, and specified angle of bank, ±5°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the relationship between pitch and power in maintaining airspeed and altitude during slow flight.
- Discuss how flight at minimum airspeeds develops the ability to estimate the margin of safety above the stalling speed.
- Compare the practice of slow flight to various phases of flight such as; takeoffs, climbs, descents, go-around, and approaches to landing.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified flap configuration.
- Improper entry technique.
- Failure to establish and maintain the specified airspeed.
- Excessive variations of altitude and heading when a constant altitude and heading are specified.
- Rough or uncoordinated control technique.
- Improper correction for left turning tendency.
- Improper trim technique.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Power – Off Stall (C-172S)

Objective:

To familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop the skills to prevent and recover from stalls in the landing configuration.

Description:

The aircraft is slowed down and placed in the landing configuration after which a stall is induced and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery by at least 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1,500 RPM or less allowing the aircraft to slow to approach speed while maintaining altitude.
5) Below 110 kts, set flaps to 10°.
6) Below 85 kts, set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
7) Establish a stabilized descent at 65 kts.
8) Reduce power to idle.
9) Maintain coordinated flight and altitude until recognition of the stall.
10) Recognize and recover from the impending stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, leveling the wings, and adding full power.
11) Set flaps to 20°.
12) Accelerate the aircraft to V_X (recommended) or V_Y and climb while retracting the remaining flaps in 10° increments.
13) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-off stalls.
- Selects an entry altitude that allows the task to be completed no lower than 1,500' AGL.
- Establishes a stabilized descent in the approach or landing configuration, as specified by the instructor.
- Transitions smoothly from the approach or landing attitude to a pitch attitude that will induce a stall.
- Maintains a specified heading, ±10° in straight flight; maintains a specified angle of bank, not to exceed 20°, ±5°, in turning flight while inducing the stall.
- Recognizes and recovers promptly as the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable and leveling the wings to return to a straight and level flight attitude with a minimum loss of altitude appropriate for the airplane.
- Retracts the flaps to the recommended setting, retracts the landing gear if retractable after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flap retraction.
- Returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.

- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Power – On Stall (C-172S)

Objective:

To familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in the takeoff configuration.

Description:

The aircraft is slowed down and placed in the takeoff configuration after which a stall is induced and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1200 RPM or less, allowing the aircraft to slow to takeoff speed while maintaining altitude.
5) Add full power at 55 kts (V_R).
6) Transition smoothly to the pitch attitude that will induce a stall.
7) Recognize and recover from the impending stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, leveling the wings, and adding full power.
8) Accelerate the aircraft to 74 kts (V_Y) and climb.
9) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-on stalls.
- Selects an entry altitude that allows the task to be completed no lower than 1,500' AGL.
- Establishes the takeoff or departure configuration. Sets power to no less than 65 percent available power.
- Transitions smoothly from the takeoff or departure attitude to a pitch attitude that will induce a stall.
- Maintains a specified heading ±5°, in straight flight; maintains a specified angle of bank, not to exceed a 20°, ±10°, turning flight, while inducing the stall.
- Recognizes and recovers promptly as the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable and leveling the wings to return to a straight and level flight attitude, with a minimum loss of altitude appropriate for the airplane.
- Retracts flaps to the recommended setting and retracts the landing gear if retractable after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flaps retraction; returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Accelerated Stall (C-172S)

Objective:

To familiarize the pilot with the conditions that produce accelerated stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in an accelerated configuration.

Description:

The aircraft is slowed down and placed in the clean configuration. After which a steep turn is applied with excessive back elevator pressure and therefore a stall is induced at a higher than normal stalling speed and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery by at least 3,000' AGL.
2) Perform clearing turns.
3) Reduce power to 1500 RPM allowing the aircraft to slow below maneuvering speed while maintaining altitude.
4) Set mixture to rich.
5) Verify flaps up.
6) Upon reaching 75 kts, transition smoothly to an approximate 45 degree bank and apply back pressure to induce an accelerated stall.
7) Recognize and recover from the stall (aerodynamic buffeting) as the stall occurs by simultaneously leveling the wings, reducing the angle of attack, and increasing power.
8) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to accelerated stalls.
- Selects an entry altitude that allows the task to be completed no lower than 3,000' AGL.
- Establishes the configuration as specified by the instructor.
- Establish and maintain a coordinated turn in a 45° bank, increasing elevator back pressure smoothly and firmly until an impending stall is reached.
- Recognizes and recovers promptly at the first indication of an impending stall.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.

- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Cross-Control Stall (C-172S)

Objective:

To familiarize the pilot with the conditions that produce cross-control stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in a cross-control configuration.

Description:

The aircraft is left in a clean configuration while power is reduced to simulate landing conditions after which a stall is initiated by using excessive rudder in the direction of the base-to-final turn and back elevator pressure is applied to keep the nose from lowering. Recovery procedures should be initiated at first indication of stall by applying full power and removing opposite aileron and rudder inputs simultaneously.

Setup Procedure:

1) Select an altitude which allows recovery by 3000' AGL.
2) Perform clearing turns.
3) Reduce power to 1300 RPM allowing the aircraft to slow to 65 kts while maintaining altitude.
4) Set mixture to rich.
5) Verify flaps up.
6) Select a point on the ground to act as a runway and position aircraft on a base leg.
7) Upon reaching 65 kts begin a "base-to-final" turn that overshoots final approach and simultaneously:
    a. Correct for final approach path by smoothly applying excessive rudder in the direction of turn.
    b. Use opposite aileron to hold constant bank.
    c. Increase elevator back pressure to keep the nose from dropping below horizon.
8) Recognize and recover from the impending stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, removing opposite rudder and aileron inputs, and adding full power.
9) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards

- Exhibits knowledge of the elements of the elements of cross-controlled stalls, with the landing gear extended.
- Exhibits instructional knowledge of common errors related to cross-control stalls, with the landing gear extended.
- Demonstrates and simultaneously explains a cross-control stall, with landing gear extended, from an instructional standpoint.
- Analyzes and corrects simulated common errors related to a cross-control stall with the landing gear extended.

Note: These are the PTS standards for the CFI certificate as these maneuvers are only to be demonstrated to commercial pilot students and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a cross-control stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a cross-control stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.

- Failure to recognize indications of a stall.
- Spin entry due to stalling aircraft in uncoordinated condition.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; CFI PTS

Elevator Trim Stall (C-172S)

Objective:

To familiarize the pilot with the conditions that produce elevator trim stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls with excessive elevator trim.

Description:

The aircraft is left in a clean configuration while power is reduced to simulate landing conditions and elevator trim is added to maintain a stable descent. After which a go-around is simulated with the excessive trim and therefore a stall attitude is reached rapidly and recovery is initiated returning the aircraft to normal cruise.

Setup Procedure:

1) Select an altitude which allows recovery by 3000' AGL.
2) Perform clearing turns.
3) Reduce power to 1,500 RPM or less allowing the aircraft to slow to approach speed while maintaining altitude.
4) Below 110 kts, set flaps to 10°.
5) Below 85 kts, set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
6) Apply nose up elevator trim to establish a descent at 65kts.
7) Once a 65 kt descent has been established simulate a go-around by applying full power.
8) Recognize and recover once an attitude has been reached that would result in an impending stall by:
    d. Reducing angle of attack.
    e. Hold forward elevator pressure while reducing nose up elevator trim.
    f. Set flaps to 20°
9) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits instructional knowledge of the elements of elevator trim stalls, in selected landing gear and flap configurations.
- Exhibits instructional knowledge of common errors related to elevator trim stalls, in selected landing gear and flap configurations.
- Demonstrates and simultaneously explains elevator trim stalls, in selected landing gear and flap configurations, from an instructional standpoint.
- Analyzes and corrects simulated common errors related to elevator trim stalls in selected configurations.

Note: These are the PTS standards for the CFI certificate as these maneuvers are only to be demonstrated to commercial pilot students and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of an elevator trim stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from an elevator trim stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.
- Forward elevator pressure required in recovery.

Common Errors:

- Failure to establish specified configuration.

- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Spin entry due to stalling aircraft in uncoordinated condition.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; CFI PTS

Secondary Stall (C-172S)

Objective:

To familiarize the pilot with the conditions that produce secondary stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls that could occur due to improper recovery techniques.

Description:

The aircraft configured for and placed into a power off stall. During recovery a secondary stall is induced by abrupt control inputs, attempting to return to normal cruise to early, or by not adequately reducing angle of attack during initial stall recovery.

Setup Procedure:

1) Select an altitude which allows recovery by at least 3,000' AGL.
2) Reduce power to 1,500 RPM or less allowing the aircraft to slow to approach speed while maintaining altitude.
3) Below 110 kts, set flaps to 10°.
4) Below 85 kts, set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
5) Establish a stabilized descent at 65 kts.
6) Reduce power to idle.
7) Maintain coordinated flight and altitude until recognition of the stall.
8) Induce secondary stall by:
    a. Allowing nose to pitch down, but immediately pitch the nose up excessively to maintain desired altitude.
    or
    b. Hold aircraft in stall by not reducing angle of attack.
9) Recover from the secondary stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, leveling the wings, and adding full power.
10) Set flaps to 20°.
11) Accelerate the aircraft to V_X (recommended) or V_Y and climb while retracting the remaining flaps in 10° increments.
12) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits instructional knowledge of the elements of secondary stalls, in selected configurations.
- Exhibits instructional knowledge of common errors related to secondary stalls, in selected configurations.
- Demonstrates and simultaneously explains secondary stalls, in selected landing gear and flap configurations, form an instructional standpoint.
- Analyzes and corrects simulated common errors related to secondary stalls in selected configurations.

Note: These are the PTS standards for the CFI certificate as these maneuvers are only to be demonstrated to commercial pilot students and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a secondary stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a secondary stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Spin entry due to stalling aircraft in uncoordinated condition.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.

References:

Airplane Flying Handbook; POH/AFM; CFI PTS

Steep Turns (C-172S)

Objective:

To develop coordination, orientation, division of attention and smooth control techniques while executing high performance turns.

Description:

The maneuver consists of two 360° turns in opposite directions, using a bank angle of 50° while maintaining a constant airspeed and altitude.

Setup Procedure:

1) Select an altitude which allows performance of maneuver no lower than 1,500' AGL.
2) Perform clearing turns.
3) Adjust the mixture in accordance with the POH.
4) Reduce power to establish an airspeed of 95 kts.
5) Enter a coordinated 50° banking turn to the left or right.
6) Increase power and adjust trim and pitch as required to maintain altitude and airspeed.
7) Begin rollout at ½ the bank angle prior to rollout heading.
8) Reduce power and pitch on rollout as needed to remain at 95 kts.
9) Continue the maneuver in the opposite direction.
10) Reduce power and pitch on rollout as needed to remain at 95 kts.
11) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to steep turns.
- Establishes the manufacturer's recommended airspeed or if one is not stated, a safe airspeed not to exceed Va.
- Rolls into a coordinated 360° steep turn with at least a 50° bank, followed by a 360° turn in the opposite direction.
- Divides attention between airplane control and orientation.
- Maintains the entry altitude, ±100 feet, airspeed, ±10 kts, bank, ±5°, and rolls out on the entry heading, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain why load factor increases as bank angle increases.
- Discuss the relationship between load factor and stall speed.
- Discuss the principle of over-banking tendency.
- Explain how to maintain altitude and airspeed.
- Explain limit load factor and what happens if it's exceeded.

Safety Considerations:

- Do not exceed manufacturer's recommended airspeed or Va.
- Always clear the area before initiating the maneuver.
- The maneuver is to be completed no lower than 1,500' feet AGL.
- Division of attention between maneuver and scanning for traffic.

Common Errors:

- Improper pitch, bank, and power coordination during entry and rollout.
- Uncoordinated use of flight controls.
- Improper procedure in correcting altitude deviations.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Chandelle (C-172S)

Objective:

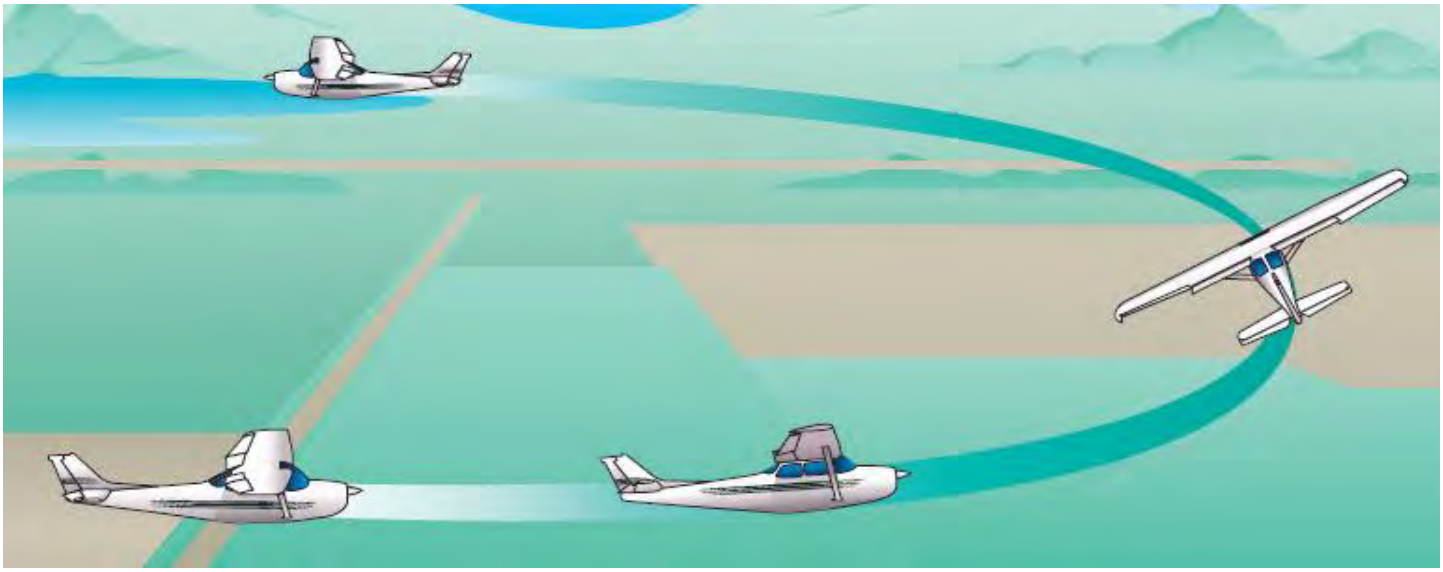
To develop the pilot's coordination, orientation, planning and accuracy of control during maximum performance flight.

Description:

A chandelle is a maximum performance climbing turn beginning from approximately straight and level flight, and ending at the completion of a 180° turn in a wings level, nose high attitude at the minimum controllable airspeed.

Setup Procedure:

1) Select an altitude to perform the maneuver no lower than 1,500' AGL.
2) Perform clearing turns.
3) Orient the airplane so that the turn is into the wind.
4) Maintain an airspeed of 105 kts.
5) Establish a 30° bank turn.
6) Simultaneously apply full power and pitch to maintain a smooth coordinated climbing turn to the 90° degree point with a constant bank.
7) At the 90° point, gradually increase back pressure to maintain pitch attitude and begin a coordinated roll out to reach wings level at the 180° point, just above the stall speed.
8) At the 180° point, establish level flight within 50 feet of final altitude.
9) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to chandelles.
- Selects an altitude that will allow the maneuver to be performed no lower than 1,500' AGL.
- Establishes the recommended entry configuration, power and airspeed.
- Establishes the angle of bank at approximately 30°.
- Simultaneously applies power and pitch to maintain a smooth, coordinated climbing turn to the 90° point, with a constant bank.
- Begins a coordinated constant rate rollout from the 90° point to the 180° point maintaining power and a constant pitch attitude.
- Completes rollout at the 180° point, ±10° just above stall airspeed, and maintains that airspeed momentarily avoiding a stall.
- Resumes straight and level flight with minimum loss of altitude.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Coordination during high power settings and high angles of attack.
- Maneuvering the aircraft at high performance levels.

Safety Considerations:

- This maneuver should be performed no lower than 1,500’ AGL.
- Divide attention between flying the airplane and scanning for traffic.
- Maintain coordinated flight.

Common Errors:

- Improper pitch, bank, and power coordination during entry or completion.
- Uncoordinated use of flight controls.
- Improper planning and timing of pitch and bank attitude changes.
- Factors related to failure in achieving maximum performance.
- A stall during the maneuver.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Lazy Eights (C-172S)

Objective:

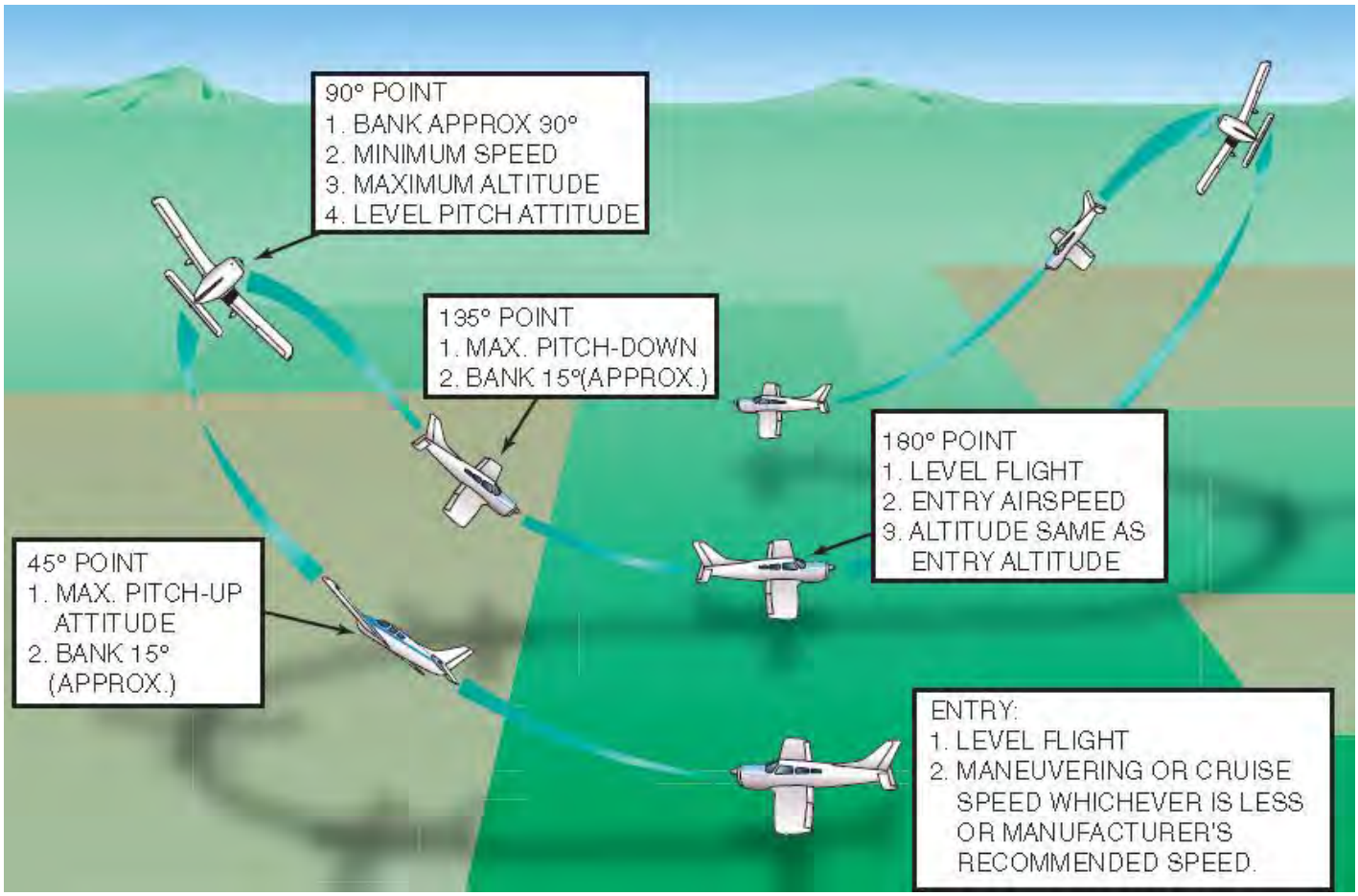
To develop coordination of controls through a wide range of airspeeds and altitudes so that certain accuracy points are reached with planned attitude and bank.

Description:

Two 180° turns, in opposite direction, while making a climb and a descent in a symmetrical pattern during each of the turns. At no time is the airplane flown straight and level.

Setup Procedure:

1) Select an altitude to perform the maneuver no lower than 1,500' AGL.
2) Perform clearing turns.
3) Orient the airplane so that the first turn is to the left and into the wind.
4) Maintain an airspeed of 105 kts.
5) Begin the maneuver by constantly changing pitch and bank to achieve the following:
    a. 45° point – 15° of bank and max pitch up.
    b. 90° point – 30° of bank, level pitch attitude, minimum controllable airspeed.
    c. 135° point – 15° of bank and max pitch down.
    d. 180° point – back to starting airspeed, altitude, and reciprocal heading.
6) Repeat in opposite direction.
7) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to lazy eights.
- Selects an altitude that will allow the maneuver to be performed no lower than 1,500' AGL.
- Establishes the recommended entry configuration, power, and airspeed.
- Maintains coordinated flight throughout the maneuver.
- Achieves the following throughout the maneuver
    - Approximately 30° bank at the steepest point.
    - Constant change of pitch and roll rate.
    - Altitude tolerance at 180° points, ±100 feet from entry altitude.
    - Airspeed tolerance at the 180° point, ±10 kts from entry airspeed.
    - Heading tolerance at the 180° point ±10°.
- Continues the maneuver through the number of symmetrical loops specified and resumes straight and level flight.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance of proper power setting.
- Explain the need for differing amounts of rudder pressure between the left and right turn.
- Discuss the effects of torque at the top of the eight in both the right and left turns.

Safety Considerations:

- Always clear the area before beginning a maneuver.
- Maintain coordination at all times during the maneuver.
- Use proper division of attention to see and avoid traffic.

Common Errors:

- Uncoordinated use of flight controls.
- Inconsistent airspeed and altitude at key points in the maneuver.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Steep Spiral (C-172S)

Objective:

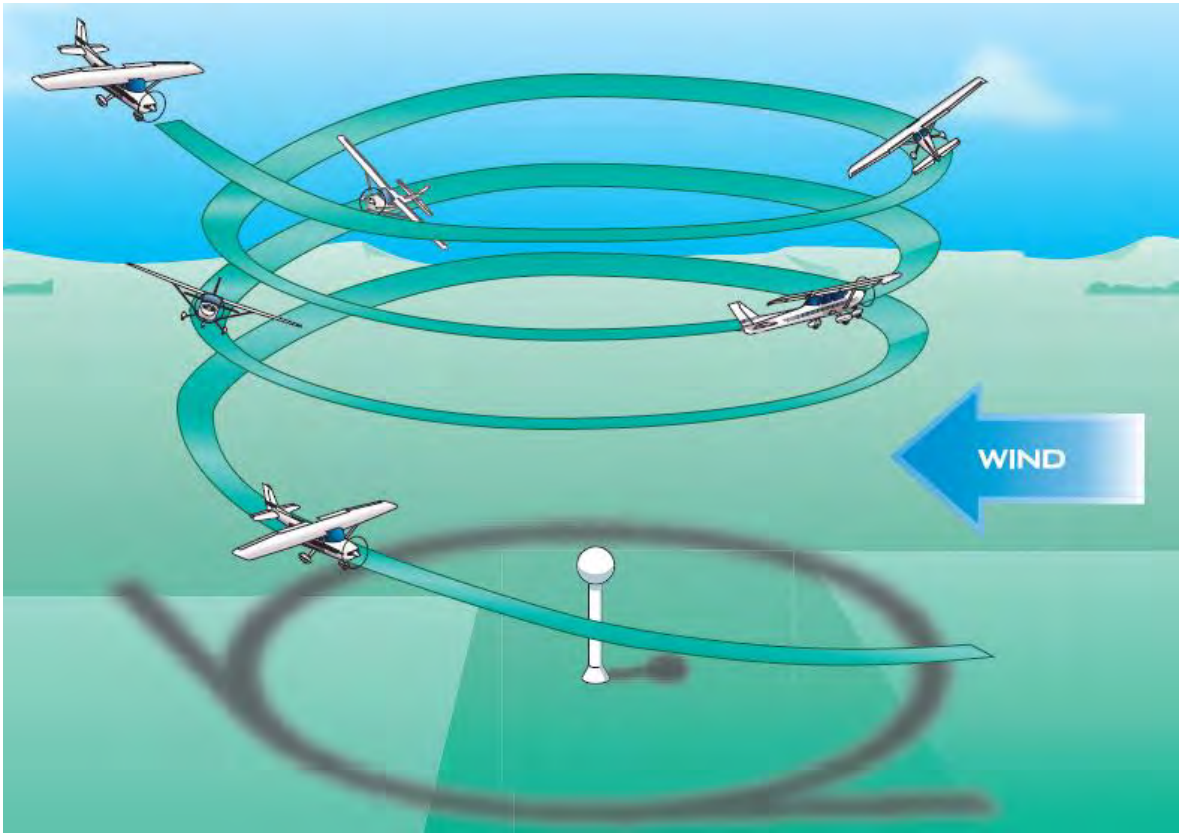
To improve pilot techniques for airspeed control, wind drift control, planning, orientation, and division of attention.

Description:

A steep spiral is a constant gliding turn, during which a constant radius around a point on the ground is maintained.

Setup Procedure:

1) Begin the maneuver with sufficient altitude to allow for three 360° degree turns without descending below 1,500' feet AGL.
2) Perform clearing turns.
3) Select a point to perform the maneuver around.
4) Enter on a downwind heading.
5) Reduce power and slow to 78 kts.
6) Reduce the power to idle when abeam the point.
7) Maintain 78 kts ($V_{L/D}$ +10 kts).
8) Change bank angle as necessary to maintain an equal distance from the reference point 45-55° of bank at the steepest point in the turn, not to exceed 60°.
9) Clear the engine, momentarily advancing power to normal cruise power, on each upwind leg.
10) Roll out on a downwind heading.
11) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a steep spiral.
- Selects an altitude sufficient to continue through a series of at least three 360° turns.
- Selects a suitable ground reference point.
- Applies wind-drift correction to track a constant radius circle around the selected reference point with bank not to exceed 60° at steepest point in turn.
- Divides attention between airplane control and ground track, while maintaining coordinated flight.
- Maintains the specified airspeed, ±10 kts, rolls out toward specified heading, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the effect of bank angle on ground track.
- Discuss the effect of ground speed on the radius of the turn.
- Recognize the importance of clearing the engine during extended periods of engine operations at low power settings.

Safety Considerations:

- Clear the area.
- Divide attention between aircraft control and orientation.
- Choose a reference point with emergency landing field within gliding distance.

Common Errors:

- Failure to maintain constant radius around reference point.
- Failure to maintain constant airspeed.
- Uncoordinated use of flight controls.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Eights On Pylons (C-172S)

Objective:

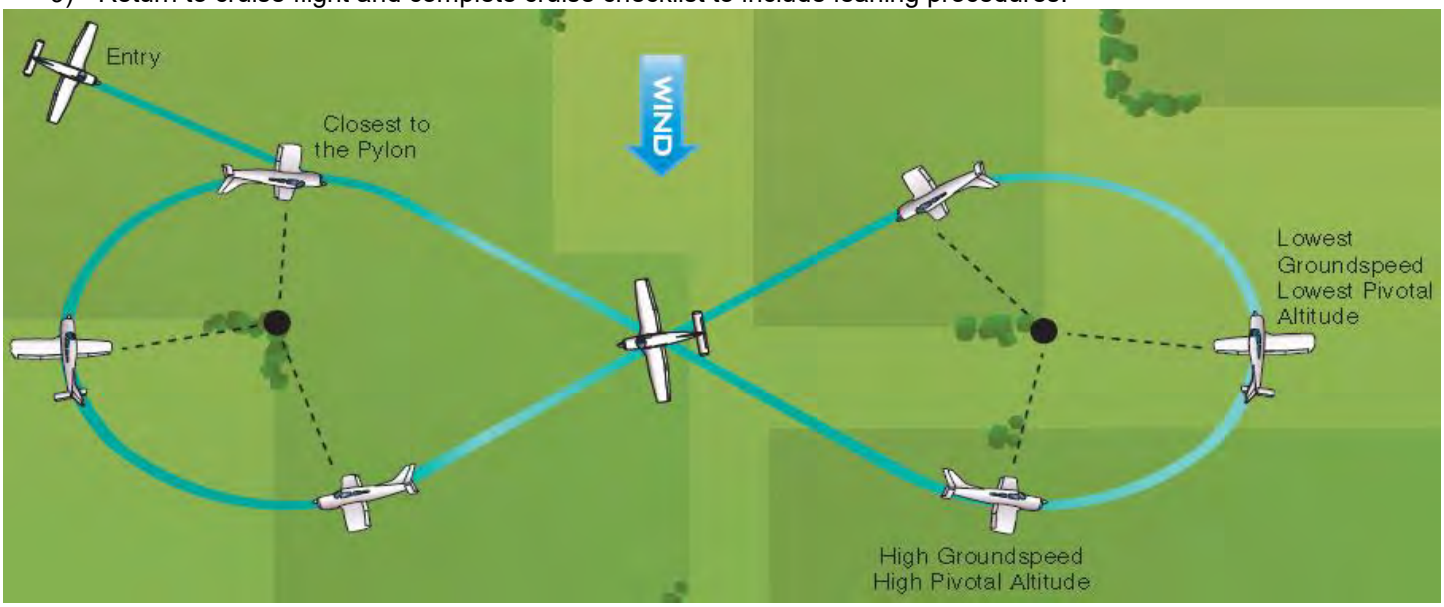
To develop a fine control touch, coordination, and the division of attention necessary for accurate and safe maneuvering of the airplane.

Description:

The airplane is flown in circular paths, alternately left and right, in the form of a figure 8 around two selected points on the ground at such a precise altitude and airspeed that a line parallel to the airplane's lateral axis appears to pivot on each of the pylons.

Setup Procedure:

1) Select two pylons perpendicular to the wind with suitable emergency landing area within gliding distance and a distant apart to obtain a 3 to 5 second straight and level flight segments.
1) Perform clearing turns.
2) Select appropriate emergency landing field.
3) Establish the appropriate pivotal altitude.
4) Establish airspeed below Va.
5) Enter the maneuver at a 45° to the downwind with the first turn to the left.
6) When abeam the pylon, begin your turn.
7) Maintain the point on your reference line by climbing or descending as the pivotal altitude changes.
8) Fly straight and level between pylons and repeat around the other pylon.
9) Return to cruise flight and complete cruise checklist to include leaning procedures.



Completion Standards:

- Exhibits knowledge of the elements related to eights on pylons.
- Determines the approximate pivotal altitude.
- Selects suitable pylons that will permit straight and level flight between the pylons.
- Enters the maneuver at the appropriate altitude and airspeed and at a bank angle of approximately 30° or 40° at the steepest point.
- Applies the necessary corrections so that the line of sight reference line remains on the pylon.
- Divides attention between accurate coordinated airplane control and outside visual references.
- Holds pylon using appropriate pivotal altitude avoiding slips and skids.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain how pivotal altitude is affected with changes in groundspeed.
- Compute pivotal altitude.
- Explain the relationship between pivotal altitude and angle of bank.

Safety Considerations:

- Clear the area of traffic and obstacles.
- Look for an emergency landing field nearby.
- Division of attention between maneuver and scanning for traffic.
- Maintain coordinated flight.

Common Errors:

- Faulty entry technique.
- Poor planning, orientation, and division of attention.
- Uncoordinated flight.
- Use of improper line of sight reference.
- Improper timing of turn entries and rollouts.
- Improper wind-drift correction between pylons.
- Selection of pylons where there is no suitable emergency landing area within gliding distance.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

C-152

Passenger Briefing (C-152)

Objective:

To provide a standard pre-flight briefing to passengers.

Description:

The pilot in command is required by the Federal Aviation Regulations to provide a passenger briefing.

Setup Procedure:

1) Before starting the engine the Pilot-in-Command will provide the passenger safety briefing to include, but not limited to:
    a. Designation of Pilot-in-Command.
    b. Procedures for positively exchanging flight controls.

S

i. Seat belts and shoulder harnesses (location and operation).
ii. Seat belts & shoulder harnesses fastened for taxi, takeoff and landing.
iii. Seat position adjusted and locked in place (controls and operation).

A

iv. Air vents (location and operation).
v. All environmental controls (discussed).
vi. Action in case of any passenger discomfort.

F

vii. Fire extinguisher (location and operation).
viii. Smoking is prohibited.

E

ix. Exit doors (how to secure; how to open).
x. Emergency evacuation plan.
xi. Emergency/survival kit (location and contents).
xii. Equipment (location & operation, i.e., ELT, flight controls).

T

xiii. Traffic (scanning, spotting, notifying pilot).
xiv. Talking ("sterile cockpit" expectations).

Y

xv. Your questions?

Flight Proficiency Standards:

- Briefs occupants on the use of safety belts, shoulder harnesses, doors, and emergency procedures.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance and regulatory requirement for providing a passenger briefing.

Common Errors:

- Failure to perform a passenger briefing.
- Incomplete passenger briefing.

References:

Airman Airman Certification Standards, Federal Aviation Regulations, AC 121-24, AOPA Passenger Safety Briefing Video

Normal & Crosswind Takeoff & Climb (C-152)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane is accelerated to an airspeed that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and establishes a pitch attitude to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete takeoff checklist and takeoff briefing.
3) Use aircraft lighting as recommended by the current version of AC 91-73.
4) Ensure runway is clear, align aircraft with runway centerline, confirm DG is aligned with runway, and ensure nose wheel is straight.
5) Position flight controls for wind for existing conditions.
6) Advance throttle smoothly to takeoff power ensuring toes are resting on rudder pedals, not on brakes.
7) Check engine instruments during takeoff roll for normal indications.
8) Maintain directional control with rudder pedals and crosswind control with appropriate aileron deflection
9) Maintain a slightly tail low attitude.
10) Upon reaching rotation speed, 50 kts (V_R), increase back elevator pressure to establish the lift-off attitude that is approximately that for V_Y and allow the aircraft to fly off the ground.
11) Apply adequate drift correction to maintain runway centerline.
12) Accelerate to 67 kts (V_Y).
13) At 500 ft., or as workload permits, complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to normal and crosswind takeoff, climb operations and rejected takeoff procedures.
- Positions the flight controls for the existing wind conditions.
- Clears the area, taxies onto the takeoff surface and aligns the airplane on the runway center/takeoff path.
- Lifts off at the recommended airspeed and accelerates to V_Y.
- Establishes a pitch attitude that will maintain V_Y ±5 kts.
- Retracts the landing gear if appropriate, and flaps after a positive rate of climb is established.
- Maintains takeoff power and V_Y ±5 kts.
- Maintains directional control, proper wind-drift correction throughout the takeoff and climb.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria.
- Discuss how to maintain directional control during the ground roll.
- Discuss proper lift-off technique.
- Explain how to use ailerons during crosswind situations.
- Describe how to correct for wind-drift.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force aircraft off runway too early, causing it to settle back on the runway.
- Consider the effect of density altitude on performance.
- Do not retract landing gear too soon.
- Do not allow upwind wing to rise during takeoff.
- Do not exceed maximum demonstrated crosswind velocity.

Common Errors:

- Improper runway incursion avoidance procedures.
- Inappropriate lift-off procedures.
- Improper climb attitude, power setting, and airspeed.
- Improper use of checklists.
- Improper positioning of the flight controls and wing flaps.
- Drift during climb.
- Failure to establish and maintain proper climb configuration and airspeeds.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Short-Field Takeoff & Climb (C-152)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude when the takeoff area is short or restricted by obstructions.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane is accelerated to an airspeed that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and a pitch attitude is established to climb away from the runway and clear a 50 foot obstacle.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) Set flaps to 10°.
4) Use aircraft lighting as recommended by the current version of AC 91-73.
5) Back taxi and align aircraft with runway centerline, confirm DG is aligned with runway, and ensure nose wheel is straight.
6) Ensure runway is clear, advance throttle smoothly to takeoff power while holding brakes; check engine instruments.
7) Release brakes and ensure toes are resting on rudder pedals, not brakes.
8) Maintain directional control with rudder pedals and appropriate aileron deflection.
9) Upon reaching rotation speed, 50 kts (V_R), increase back elevator pressure to establish lift-off attitude and allow aircraft to fly off ground.
10) Accelerate the aircraft to 54 kts (V_X) until obstacle is cleared or 50 feet above takeoff surface is attained and then accelerate to 67 kts (V_Y).
11) Retract flaps after a safe altitude of at least 200 ft. and an airspeed of 67 kts are attained.
12) At 500 ft., or as workload permits, complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a short-field takeoff and maximum performance climb.
- Positions the flight controls for the existing wind conditions, sets flaps as recommended.
- Clears the area; taxies into takeoff position utilizing maximum available takeoff area and aligns the airplane on the runway center/takeoff path.
- Applies brakes (if appropriate) while advancing the throttle smoothly to takeoff power.
- Lifts off at the recommended airspeed, and accelerates to recommended obstacle clearance airspeed, or V_X.
- Establishes a pitch attitude that will maintain the recommended obstacle clearance airspeed, or V_X +5/-0 kts, until the obstacle is cleared, or until the airplane is 50 feet above the surface.
- After clearing the obstacle, establishes the pitch attitude for V_Y, accelerates to V_Y, and maintains V_Y ±5 kts, during the climb.
- Retracts the landing gear, if appropriate and flaps after clear of any obstacles or as recommended by manufacturer.
- Maintains takeoff power and V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Completes appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria.
- Discuss how to maintain directional control during ground roll.
- Discuss proper lift-off technique.
- Explain the difference between V_X and V_Y.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force aircraft off runway too early, causing it to settle back onto runway.
- Do not force aircraft to stay on the ground when it is ready to lift off, wheelbarrow.
- Back taxi to ensure use of entire runway length.
- Retraction of gear and flaps as recommended.

Common Errors:

- Failure to position the airplane for maximum utilization of available runway.
- Improper runway incursion avoidance procedures.
- Improper use of controls during a short-field takeoff.
- Inappropriate lift-off procedures.
- Improper initial climb attitude, power setting and airspeed to clear obstacle.
- Improper use of checklists.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Soft-Field Takeoff & Climb (C-152)

Objective:

To align the airplane with the takeoff path, become airborne as quickly as possible, and establish a positive climb to a safe maneuvering altitude.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane enters the runways with full up elevator deflection and accelerates to an airspeed at which the airplane will lift off.
2) The acceleration to lift off speed while remaining in ground effect.
3) The initial climb when the airplane establishes a pitch attitude to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) Set flaps to 10°.
4) Use aircraft lighting as recommended by the current version of AC 91-73.
5) Ensure runway is clear, taxi onto runway with back elevator pressure and align nose with runway centerline, confirm DG is aligned with runway, without stopping or the use of brakes.
6) Smoothly advance throttle to takeoff power.
7) Ensure toes are resting on rudder pedals, not on brakes.
8) Check engine instruments during ground roll for normal indications.
9) Maintain directional control with rudder pedals and appropriate aileron deflection.
10) Use back elevator pressure to establish a positive pitch attitude and allow the aircraft to fly itself off the ground.
11) When the aircraft becomes airborne, reduce pitch to remain in ground effect while accelerating to 55 kts (V_X) then simultaneously climb and accelerate to 67 kts (V_Y).
12) Retract flaps after a safe altitude of at least 200 ft. and an airspeed of 67 kts are attained.
13) At 500 ft., or as workload permits, complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a soft-field takeoff and climb.
- Positions the flight controls for existing conditions and to maximize lift as quickly as possible.
- Clears the area; taxies onto takeoff surface at a speed consistent with safety without stopping while advancing the throttle smoothly to takeoff power.
- Establishes and maintains a pitch attitude that will transfer the weight of the airplane from the wheels to the wings as rapidly as possible.
- Lifts off at the lowest possible airspeed and remains in ground effect while accelerating to V_X.
- Establishes a pitch attitude for V_X or V_Y, as appropriate, and maintains selected airspeed ±5 kts, during the climb.
- Retracts the landing gear, if appropriate and flaps after clear of any obstacles or as recommended by the manufacturer.
- Maintains takeoff power and V_X or V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss proper soft-field takeoff technique.
- Explain runway selection criteria.
- Predict the height of ground effect and discuss its relevance.
- Discuss how to maintain directional control during ground roll.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force the aircraft off runway too quickly.
- Do not retract landing gear too soon.
- Do not allow the airplane to climb above ground effect too soon, causing it to settle back onto the runway.

Common Errors:

- Improper runway incursion avoidance procedures.
- Improper use of controls during a soft-field takeoff.
- Improper lift-off procedures.
- Improper climb attitude, power setting and airspeed.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Traffic Pattern (C-152)

Objective:

To assure that air traffic flows into and out of an airport in an orderly manner.

Description:

The airplane is flown on a rectangular course around a runway at an altitude specified in the current Airport/Facility Directory or as outlined in the FAR/AIM.

Setup Procedure:

Departures

1) All departures:
    a. Fly the departure leg straight out until reaching traffic pattern altitude.
    b. Once reaching traffic pattern altitude, continue climbing and turn on course.

Arrivals

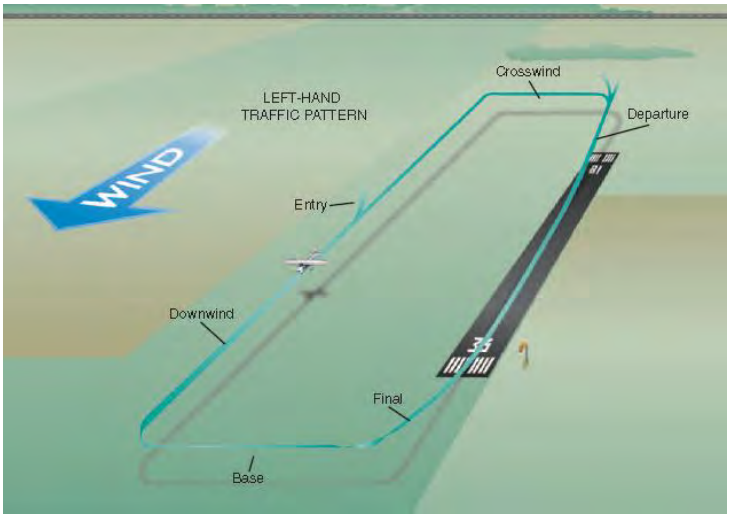
1) Prior to reaching 5 NM from the airfield, complete the following:
    a. Monitor local AWOS/ASOS/ATIS
    b. Ask “Is there any traffic between me and the airport?” and cancel flight following (if applicable)
    c. Complete the Before Landing checklist
2) Slow down below the approach flap airspeed prior to pattern entry.

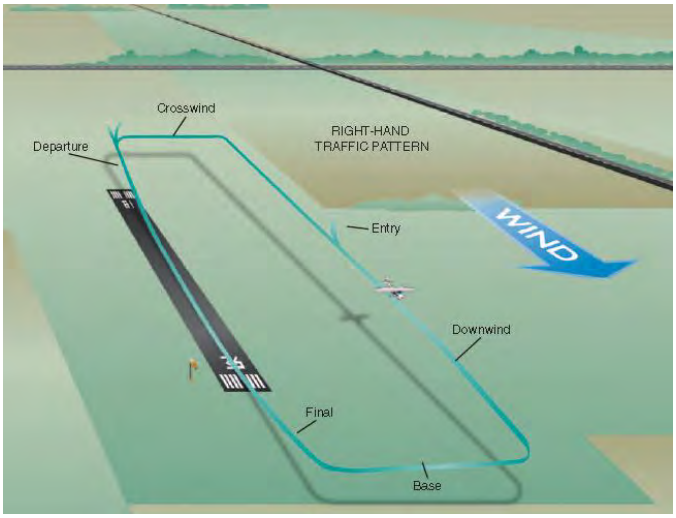
    If already established on the downwind side, skip to step 4.*

3) For a midfield entry:
    a. Cross midfield 500’ above traffic pattern altitude, observing traffic flow and wind direction.
    b. Fly 2-3 miles beyond the downwind leg, then descend to pattern altitude.
    c. Complete a tear-drop shaped turn to the right or left as necessary to position the aircraft at a 45 degree angle to the downwind leg.

    If less than two aircraft are currently in the pattern, the alternate method may (cross midfield at traffic pattern altitude, enter directly into downwind leg) may be used.

4) Enter the traffic pattern at the designated traffic pattern altitude (normally 1,000’ AGL) at a 45 degree angle to the downwind leg at midfield.
5) Apply appropriate crosswind correction to allow for a parallel flight path approximately ½ mile from the runway
6) Allow for proper spacing from other aircraft in the pattern as to prevent runway incursions upon landing.
7) Maintain airspeed below the flap speed required for each configuration change.





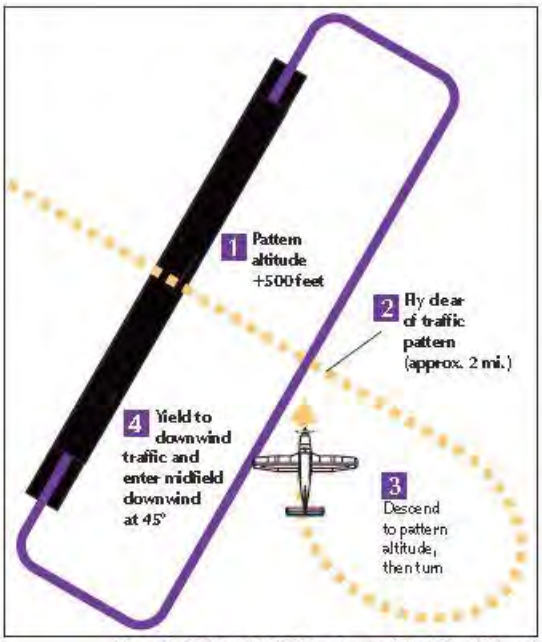


Figure 9. Preferred Entry from Upwind Leg Side of Airport

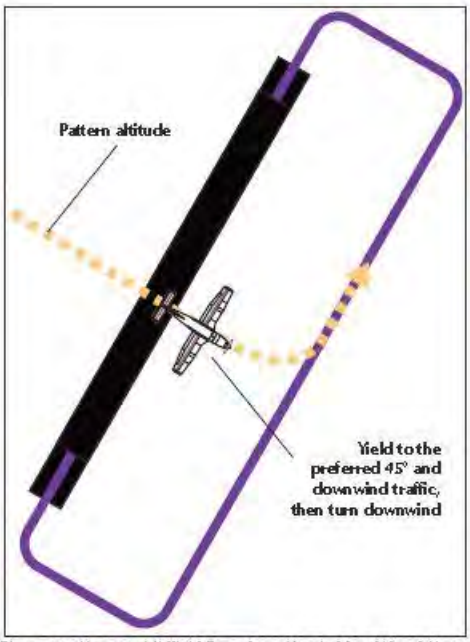


Figure 10. Alternate Midfield Entry from Upwind Leg Side of Airport

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to traffic patterns. This shall include procedures at airports with and without operating control towers, prevention of runway incursions, collision avoidance, wake turbulence avoidance, and wind shear.
- Complies with proper traffic pattern procedures.
- Maintains proper spacing from other aircraft.
- Corrects for wind drift to maintain the proper ground track.
- Maintains orientation with the runway/landing area in use.
- Maintains traffic pattern altitude, ±100 feet and the appropriate airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss traffic patterns at controlled and uncontrolled airports.
- Explain traffic pattern procedures.
- Explain how to maintain the proper ground track.

Safety Considerations:

- Maintain proper traffic pattern altitude.
- Maintain a distance from the runway that is within power-off gliding distance.
- Preferred bank of approximately 30 degrees (and not to exceed 30) while in pattern.
- Maneuver within 300 feet of traffic pattern altitude before turning crosswind to base.
- Maintain proper aircraft separation.
- Comply with standards traffic pattern procedures or ATC instructions.

Common Errors:

- Failure to comply with traffic pattern instructions, procedures, and rules.
- Improper correction for wind drift.
- Inadequate spacing from other traffic.
- Poor altitude or airspeed control.
- Flying too wide of a pattern.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Normal & Crosswind Approach & Landing (C-152)

Objective:

To safely transition the aircraft from flight to ground operations during normal conditions.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 65 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 60 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 55 kts, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    e. Complete the GUMPS check.
8) During the flare to land simultaneously reduce power to idle and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline.
9) Maintain positive pitch attitude for aerodynamic braking.
10) Exit runway and complete after landing checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to normal and crosswind approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point.
- Establishes the recommended approach and landing configuration and airspeed and adjust pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, nor more than 1.3 V_{S0} ±5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the round out and touchdown.
- Touches down smoothly at approximate stall speed.
- Touches down at or within 200 feet beyond a specified point, with no drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control through the approach and landing sequence.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain proper use of crosswind control inputs.

Safety Considerations:

- Observe flap extension speeds.
- Maintain proper airspeed at all times.
- Use proper crosswind correction to avoid drifting from runway centerline.
- Ensure landing gear is extended and locked.

Common Errors:

- Failure to establish proper crosswind correction.
- Improper use of landing performance data and limitations.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Failure to establish and maintain a stabilized approach.
- Improper technique during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Short-Field Approach & Landing (C-152)

Objective:

To safely transition from flight to ground operations at an airport with a relatively short runway or where an approach is made over obstacles.

Description:

The airplane is configured for a stabilized approach over a 50 foot obstacle. There will be little or no float during the round out, allowing the airplane to touch down at a specified point, and be stopped in a shorter than normal distance.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 65 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 54 kts, to clear obstacles, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    e. Complete the GUMPS check.
8) During the flare to land simultaneously reduce power as required and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline.
9) Maintain positive pitch attitude for aerodynamic braking.
10) Apply maximum braking to a complete stop without skidding the tires.
11) Exit runway and complete after landing checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a short-field approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects the most suitable touchdown point.
- Establishes the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power.
- Maintains a stabilized approach and recommended approach airspeed, or in its absence, not more than 1.3 V_{SO} ±5 kts with wind gust factor applied.
- Makes smooth, timely, and correct control application during the round out and touchdown.
- Touches down smoothly at minimum control airspeed.
- Touches down at or within 100 feet beyond a specified point, with no side drift, minimum float and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Applies brakes, as necessary, to stop in the shortest distance consistent with safety.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on an approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain how to compensate for obstacles and shortened runway lengths.

Safety Considerations:

- Maintain proper airspeed at all times.
- Compensate for crosswind.
- Do not skid tires.
- Use of aerodynamic braking as available.
- Ensure landing gear is extended and locked.

Common Errors:

- Failure to establish and maintain a stabilized approach.
- Improper technique in use of power, wing flaps, and trim.
- Excessive airspeed on final approach.
- Failure to establish proper crosswind correction.
- Improper use of landing performance data and limitations.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Improper use of brakes.
- Poor directional control after touchdown.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Soft-Field Approach & Landing (C-152)

Objective:

To safely transition the airplane from flight to ground operations on a rough or soft surface.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown on a field that is unimproved.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) Set flaps to 10° no later than abeam the touchdown point.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 1,300 RPM.
    b. Confirm flaps 10°.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 65 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 60 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 55 kts toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    e. Complete the GUMPS check.
8) During the flare to land simultaneously reduce power as required and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline as smoothly as possible.
9) Maintain back elevator pressure to keep nose wheel off the ground as long as possible.
10) Maintain directional control with rudder and aileron deflection.
11) Adjust power as necessary to maintain aircraft movement on soft surfaces.
12) Exit the runway with minimal braking and complete after landing checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a soft-field approach and landing.
- Considers the wind conditions, landing surface, and obstructions, and selects the most suitable touchdown area.
- Establishes the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{S0} ±5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the round out and touchdown.
- Touches down softly, with no drift, and with the airplane's longitudinal axis aligned with the runway/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Maintains proper position of the flight controls and sufficient speed to taxi on the soft surface.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss effect of flaps on an approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain how to touchdown and maneuver the aircraft on soft of unimproved surfaces.

Safety Considerations:

- Do not land on fields that exceed the capabilities of the aircraft or pilot.
- Fly over and visually check the field prior to landing.
- Check field length and density altitude.
- UCM retractable gear aircraft can only land on paved, public, published runways.
- Ensure landing gear is extended and locked.

Common Errors:

- Failure to maintain elevator back-pressure after touchdown.
- Improper use of brakes.
- Failure to consider effect of wind and landing surface.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Power-Off 180° Accuracy Landing (C-152)

Objective:

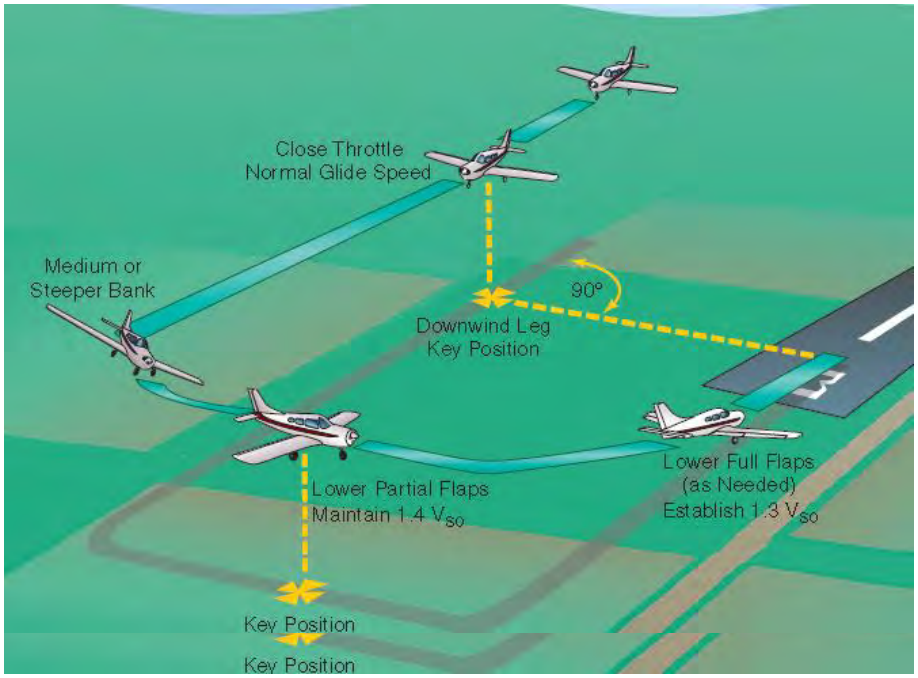
To instill in the pilot the judgment and procedures necessary for accurately flying the airplane, without power, to a safe landing.

Description:

Power-off accuracy approaches are approaches and landings made by gliding with the engine idling, through a specific pattern to a touchdown within 200 feet of a designated line or mark on the runway.

Setup Procedure:

1) Complete the before landing checklist.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming point.
4) When abeam the intended touchdown point:
    a. Close throttle.
    b. Set flaps 10°.
5) Maintain altitude while decelerating to the recommended glide speed 60 kts.
6) Base leg turn will be determined by the glide angle of the airplane, weight, and velocity of the wind.
7) Extend flaps as required.
8) Turn to final approach and extend flaps, as necessary.
9) Adjust trim and make slight adjustments in pitch attitude of flap setting to control glide angle and airspeed.
10) Complete the GUMPS check.
11) Touch down at approximate stalling speed on the runway centerline at the designated point.
12) Exit the runway and complete after landing checklist.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a power-off 180° accuracy approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects an appropriate touchdown point.
- Positions airplane on downwind leg, parallel to landing runway, and not more than 1,000 feet AGL.
- Abeam the specified touchdown point closes throttle and establishes appropriate glide speed.
- Completes final airplane configuration.
- Touches down in a normal landing attitude, at or within 200 feet beyond the specified touchdown point.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the effect of wind velocity on required altitude and bank angle.
- Discuss the importance of controlling glide angle and airspeed on final approach.

Safety Consideration:

- Maintain coordinated flight throughout the maneuver.
- Be aware of the position of other traffic in the pattern.
- Maintain appropriate airspeed throughout the maneuver.

Common Errors:

- Failure to touchdown within 200 feet of the intended touchdown point.
- Failure to maintain constant airspeed and glide angle.
- Failure to accurately determine the wind direction and velocity.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Touch and Go/Stop and Go (C-152)

Objective:

To transition from a landing rollout to a takeoff roll while remaining on the runway.

Description:

A touch and go is a landing which transitions into a takeoff while the aircraft remains rolling on the runway.

Setup Procedure:

1) Perform a normal landing.
2) Upon touchdown:
    a. Allow the aircraft to continue rolling.
    b. Maintain runway centerline.
    c. Apply proper crosswind correction.
3) Reconfigure the aircraft for takeoff.
    a. Retract flaps to (10^{o} or less).
    b. Set trim to the takeoff position.
4) Smoothly apply full-power.
5) Upon reaching rotation speed, 50 kts, increase back elevator pressure to establish the lift-off attitude that is approximately V_Y or V_X and allow the aircraft to fly off the ground.
6) Apply adequate drift correction to maintain runway centerline.
7) At a safe altitude, of at least 200 ft., retract flaps to 0^{o}.
8) At 500 ft., or as workload permits, complete the climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to touch and go procedures.
- Maintains runway centerline upon touchdown.
- Applies proper crosswind controls upon touchdown, reconfiguration and climb out.
- Demonstrates proper aircraft reconfiguration.
- Lifts off at the recommended airspeed and accelerates to V_X or V_Y, as appropriate.
- Retracts flaps at 200' or a safe altitude, if appropriate.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Complies with noise abatement procedures.
- Completes the appropriate checklist.

Note: These are the UCM standards. The aforementioned standards are not found in the Airman Certification Standards.

Learning Outcomes:

- Explain the purpose(s) of touch and go's.
- Discuss how crosswind correction will change throughout the maneuver.
- Discuss the importance of maintaining runway centerline during aircraft reconfiguration.

Safety Considerations:

- Maintain runway centerline.
- Proper crosswind correction.
- Maintain situational awareness.
- Proper reconfiguration.

Common Errors:

- Failure to maintain runway centerline.
- Touchdown beyond the first 1/3rd of the runway and attempting a touch and go.
- Improper aircraft reconfiguration.
- Failure to use checklist.
- Failure to maintain adequate crosswind correction.

- Attempting to lift-off prior to rotation speed.

Go-Around (C-152)

Objective:

To safely discontinue the landing approach when unsatisfactory conditions exist.

Description:

As full power is applied, the aircraft attitude is adjusted to accelerate to V_Y and climb. As a safe airspeed is attained, flaps are retracted 10° at a time allowing stabilization between each retraction.

Setup Procedure:

1) Simultaneously apply maximum power and establish a go-around pitch attitude.
2) Set flaps to 20°.
3) Establish a pitch attitude to accelerate to 55 kts.
4) Allow the airplane to accelerate to V_X or V_Y and climb.
5) If there is an aircraft on the runway, sidestep to clear the departure path of the airplane and allow the pilot to view the landing or departing traffic.
6) Set flaps to 10° and stabilize in between configuration changes then flaps to 0°.
7) Verify Go Around checklist is complete.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a go-around/rejected landing.
- Makes a timely decision to discontinue the approach to landing.
- Applies takeoff power immediately and transitions to climb pitch attitude for V_X, and maintains V_Y+10/-5 kts.
- Retracts the flaps as appropriate.
- Retracts the landing gear, if appropriate, after a positive rate of climb is established.
- Maneuvers to the side of the runway/landing area to clear and avoid conflicting traffic.
- Maintains takeoff power V_y+10/-5 to a safe maneuvering altitude.
- Maintains takeoff power V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the climb.
- Completes the appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss events that may require a go-around.
- Explain the importance of maintaining airspeed and coordination during the go-around procedure.
- Discuss the necessity for maneuvering to the side of the runway after making the decision to go-around.

Safety Considerations:

- Maneuver the airplane to the side of the runway.
- Do not establish a pitch up attitude too quickly.
- Maintain coordination.
- Timely decision making.
- Be watchful for situation which may require a go-around.

Common Errors:

- Delayed decision to make a go-around.
- Improper application of power.
- Failure to control pitch attitude.
- Improper trim technique.
- Failure to compensate for torque effect.
- Failure to maintain V_Y as appropriate.
- Improper wing flap retraction.
- Improper gear retraction.
- Failure to maintain well clear of obstructions and other traffic.
- Improper use of checklists.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Emergency Descent (C-152)

Objective:

To descend the airplane as soon and as rapidly as possible, within the structural limitations of the airplane.

Description:

The emergency descent is a maneuver for descending as rapidly as possible to a lower altitude or to the ground for an emergency landing.

Setup Procedure:

1) Perform clearing turns.
2) If utilizing flight following, contact ATC for traffic advisories below.
3) Reduce power to idle.
4) Roll into a 30° bank to the left and pitch down to achieve 105 kts (If in turbulent air, maintain an airspeed below V_A).
5) Set mixture to rich.
6) Confirm flaps 0°
7) Initiate recovery to level flight at least 300' prior to assigned altitude by:
    a. Rolling out the bank.
    b. Pitching up.
8) Return to cruise flight and complete the cruise checklist to include leaning procedures

Flight Proficiency Standards:

- Exhibit knowledge of the elements related to emergency descent.
- Recognizes situations, such as depressurization, cockpit smoke, and/or fire that require an emergency descent.
- Establish the appropriate airspeed and configuration for the emergency descent.
- Exhibit orientation, division of attention, and proper planning.
- Maintains positive load factors during the descent.
- Follow the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the purpose(s) of an emergency descent.
- Discuss engine cooling characteristics during an emergency descent.
- Discuss the importance of proper planning as it pertains to emergencies.

Safety Considerations:

- Maintain positive aircraft control.
- Clear the engine periodically
- Clear below then GO.
- Steep spiral over airport.
- Continue on to emergency approach and landing.

Common Errors:

- Failure to recognize the urgency of the emergency descent.
- Failure to use emergency checklist for situation.
- Failure to maintain appropriate configuration and airspeed.
- Poor orientation, planning, and division of attention.

Maneuvering During Slow Flight (C-152)

Objective:

To demonstrate the flight characteristics and controllability of an airplane at speeds lower than normal cruise and develop proficiency in performing maneuvers that require slow airspeeds.

Description:

Slow flight consists of slowing the aircraft to a minimum controllable airspeed in the landing configuration and maneuvering the aircraft while maintaining altitude and airspeed.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1,500 RPM or less.
5) Below 85 kts, set flaps to 10°.
6) Adjust pitch and power as necessary to maintain altitude.
7) Set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
8) Establish and maintain an airspeed at which any further increase in pitch or reduction of power would result in an immediate stall or a higher speed as specified by your instructor.
    a. Slow flight should be practiced at varying speeds and configurations above the 1G stall speed of the aircraft as specified by the instructor.
9) Maneuver as instructed.
10) Recover when instructed by:
    a. Adding full power
    b. Set flaps to 20° and allow the aircraft to stabilize.
11) Then set flaps to 10° and 0° allowing the aircraft to stabilize between each setting.
12) Return to cruise flight and perform the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to maneuvering during slow flight.
- Selects an entry altitude that will allow the task to be completed no lower than 1,500' AGL.
- Establish and maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in a stall warning (e.g., airplane buffet, stall horn, etc.).
- Accomplishes coordinated straight and level flight, turns, climbs, and descents with landing gear and flap configurations specified by the instructor.
- Divides attention between airplane control and orientation.
- Maintains the specified altitude, ±50 feet; specified headings, ±10°; airspeed +5/-0 kts, and specified angle of bank, ±5°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the relationship between pitch and power in maintaining airspeed and altitude during slow flight.
- Discuss how flight at minimum airspeeds develops the ability to estimate the margin of safety above the stalling speed.
- Compare the practice of slow flight to various phases of flight such as; takeoffs, climbs, descents, go-around, and approaches to landing.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified flap configuration.
- Improper entry technique.
- Failure to establish and maintain the specified airspeed.
- Excessive variations of altitude and heading when a constant altitude and heading are specified.
- Rough or uncoordinated control technique.
- Improper correction for left turning tendency.
- Improper trim technique.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Power – Off Stall (C-152)

Objective:

To familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop the skills to prevent and recover from stalls in the landing configuration.

Description:

The aircraft is slowed down and placed in the landing configuration after which a stall is induced and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery by at least 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1,500 RPM or less allowing the aircraft to slow to approach speed while maintaining altitude.
5) Below 85 kts, set flaps to 10°.
6) Set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
7) Establish a stabilized descent at 55 kts.
8) Reduce power to idle.
9) Maintain coordinated flight and altitude until recognition of the stall.
10) Recognize and recover from the impending stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, leveling the wings, and adding full power.
11) Set flaps to 20°.
12) Accelerate the aircraft to V_X (recommended) or V_Y and climb while retracting the remaining flaps in 10° increments.
13) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-off stalls.
- Selects an entry altitude that allows the task to be completed no lower than 1,500' AGL.
- Establishes a stabilized descent in the approach or landing configuration, as specified by the instructor.
- Transitions smoothly from the approach or landing attitude to a pitch attitude that will induce a stall.
- Maintains a specified heading, ±10° in straight flight; maintains a specified angle of bank, not to exceed 20°, ±5°, in turning flight while inducing the stall.
- Recognizes and recovers promptly as the "on set" of the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable and leveling the wings to return to a straight and level flight attitude with a minimum loss of altitude appropriate for the airplane.
- Retracts the flaps to the recommended setting, retracts the landing gear if retractable after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flap retraction.
- Returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.

- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Power – On Stall (C-152)

Objective:

To familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in the takeoff configuration.

Description:

The aircraft is slowed down and placed in the takeoff configuration after which a stall is induced and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 1,500' AGL.
2) Perform clearing turns.
3) Set mixture to rich.
4) Reduce power to 1200 RPM or less, allowing the aircraft to slow to takeoff speed while maintaining altitude.
5) Add full power at 50 kts (V_R).
6) Transition smoothly to the pitch attitude that will induce a stall.
7) Recognize and recover from the impending stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, leveling the wings, and adding full power.
8) Accelerate the aircraft to 67 kts (V_Y) and climb.
9) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-on stalls.
- Selects an entry altitude that allows the task to be completed no lower than 1,500' AGL.
- Establishes the takeoff or departure configuration. Sets power to no less than 65 percent available power.
- Transitions smoothly from the takeoff or departure attitude to a pitch attitude that will induce a stall.
- Maintains a specified heading ±5°, in straight flight; maintains a specified angle of bank, not to exceed a 20°, ±10°, turning flight, while inducing the stall.
- Recognizes and recovers promptly as the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable and leveling the wings to return to a straight and level flight attitude, with a minimum loss of altitude appropriate for the airplane.
- Retracts flaps to the recommended setting and retracts the landing gear if retractable after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flaps retraction; returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Accelerated Stall (C-152)

Objective:

To familiarize the pilot with the conditions that produce accelerated stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in an accelerated configuration.

Description:

The aircraft is slowed down and placed in the clean configuration. After which a steep turn is applied with excessive back elevator pressure and therefore a stall is induced at a higher than normal stalling speed and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery by at least 3,000' AGL.
2) Perform clearing turns.
3) Reduce power to 1500 RPM allowing the aircraft to slow below maneuvering speed while maintaining altitude.
4) Set mixture to rich.
5) Verify flaps up.
6) Upon reaching 75 kts, transition smoothly to an approximate 45 degree bank and apply back pressure to induce an accelerated stall.
7) Recognize and recover from the stall (aerodynamic buffeting) as the stall occurs by simultaneously leveling the wings, reducing the angle of attack, and increasing power.
8) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to accelerated stalls.
- Selects an entry altitude that allows the task to be completed no lower than 3,000' AGL.
- Establishes the configuration as specified by the instructor.
- Establish and maintain a coordinated turn in a 45° bank, increasing elevator back pressure smoothly and firmly until an impending stall is reached.
- Recognizes and recovers promptly at the first indication of an impending stall.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Cross-Control Stall (C-152)

Objective:

To familiarize the pilot with the conditions that produce cross-control stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in a cross-control configuration.

Description:

The aircraft is left in a clean configuration while power is reduced to simulate landing conditions after which a stall is initiated by using excessive rudder in the direction of the base-to-final turn and back elevator pressure is applied to keep the nose from lowering. Recovery procedures should be initiated at first indication of stall by applying full power and removing opposite aileron and rudder inputs simultaneously.

Setup Procedure:

1) Select an altitude which allows recovery by 3000' AGL.
2) Perform clearing turns.
3) Reduce power to 1300 RPM allowing the aircraft to slow to 55 kts while maintaining altitude.
4) Set mixture to rich.
5) Verify flaps up.
6) Select a point on the ground to act as a runway and position aircraft on a base leg.
7) Upon reaching 55 kts begin a "base-to-final" turn that overshoots final approach and simultaneously:
    a. Correct for final approach path by smoothly applying excessive rudder in the direction of turn.
    b. Use opposite aileron to hold constant bank.
    c. Increase elevator back pressure to keep the nose from dropping below horizon.
8) Recognize and recover from the impending stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, removing opposite rudder and aileron inputs, and adding full power.
9) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards

- Exhibits knowledge of the elements of the elements of cross-controlled stalls, with the landing gear extended.
- Exhibits instructional knowledge of common errors related to cross-control stalls, with the landing gear extended.
- Demonstrates and simultaneously explains a cross-control stall, with landing gear extended, from an instructional standpoint.
- Analyzes and corrects simulated common errors related to a cross-control stall with the landing gear extended.

Note: These are the PTS standards for the CFI certificate as these maneuvers are only to be demonstrated to commercial pilot students and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a cross-control stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a cross-control stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.

- Failure to recognize indications of a stall.
- Spin entry due to stalling aircraft in uncoordinated condition.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; CFI PTS

Elevator Trim Stall (C-152)

Objective:

To familiarize the pilot with the conditions that produce elevator trim stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls with excessive elevator trim.

Description:

The aircraft is left in a clean configuration while power is reduced to simulate landing conditions and elevator trim is added to maintain a stable descent. After which a go-around is simulated with the excessive trim and therefore a stall attitude is reached rapidly and recovery is initiated returning the aircraft to normal cruise.

Setup Procedure:

1) Select an altitude which allows recovery by 3000' AGL.
2) Perform clearing turns.
3) Reduce power to 1,500 RPM or less allowing the aircraft to slow to approach speed while maintaining altitude.
4) Below 85 kts, set flaps to 10°.
5) Set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
6) Apply nose up elevator trim to establish a descent at 55kts.
7) Once a 55 kt descent has been established simulate a go-around by applying full power.
8) Recognize and recover once an attitude has been reached that would result in an impending stall by:
    a. Reducing angle of attack.
    b. Hold forward elevator pressure while reducing nose up elevator trim.
    c. Set flaps to 20°
9) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits instructional knowledge of the elements of elevator trim stalls, in selected landing gear and flap configurations.
- Exhibits instructional knowledge of common errors related to elevator trim stalls, in selected landing gear and flap configurations.
- Demonstrates and simultaneously explains elevator trim stalls, in selected landing gear and flap configurations, from an instructional standpoint.
- Analyzes and corrects simulated common errors related to elevator trim stalls in selected configurations.

Note: These are the PTS standards for the CFI certificate as these maneuvers are only to be demonstrated to commercial pilot students and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of an elevator trim stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from an elevator trim stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.
- Forward elevator pressure required in recovery.

Common Errors:

- Failure to establish specified configuration.

- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Spin entry due to stalling aircraft in uncoordinated condition.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; CFI PTS

Secondary Stall (C-152)

Objective:

To familiarize the pilot with the conditions that produce secondary stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls that could occur due to improper recovery techniques.

Description:

The aircraft configured for and placed into a power off stall. During recovery a secondary stall is induced by abrupt control inputs, attempting to return to normal cruise to early, or by not adequately reducing angle of attack during initial stall recovery.

Setup Procedure:

1) Select an altitude which allows recovery by at least 3,000' AGL.
2) Reduce power to 1,500 RPM or less allowing the aircraft to slow to approach speed while maintaining altitude.
3) Below 85 kts, set flaps to 10°.
4) Set flaps to 20° and 30° allowing the aircraft to stabilize between each setting.
5) Establish a stabilized descent at 55 kts.
6) Reduce power to idle.
7) Maintain coordinated flight and altitude until recognition of the stall.
8) Induce secondary stall by:
    a. Allowing nose to pitch down, but immediately pitch the nose up excessively to maintain desired altitude.
    or
    b. Hold aircraft in stall by not reducing angle of attack.
9) Recover from the secondary stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, leveling the wings, and adding full power.
10) Set flaps to 20°.
11) Accelerate the aircraft to V_X (recommended) or V_Y and climb while retracting the remaining flaps in 10° increments.
12) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits instructional knowledge of the elements of secondary stalls, in selected configurations.
- Exhibits instructional knowledge of common errors related to secondary stalls, in selected configurations.
- Demonstrates and simultaneously explains secondary stalls, in selected landing gear and flap configurations, form an instructional standpoint.
- Analyzes and corrects simulated common errors related to secondary stalls in selected configurations.

Note: These are the PTS standards for the CFI certificate as these maneuvers are only to be demonstrated to commercial pilot students and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a secondary stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a secondary stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Spin entry due to stalling aircraft in uncoordinated condition.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.

References:

Airplane Flying Handbook; POH/AFM; CFI PTS

Steep Turns (C-152)

Objective:

To develop coordination, orientation, division of attention and smooth control techniques while executing high performance turns.

Description:

The maneuver consists of two 360° turns in opposite directions, using a bank angle of 50° while maintaining a constant airspeed and altitude.

Setup Procedure:

1) Select an altitude which allows performance of maneuver no lower than 1,500' AGL.
2) Perform clearing turns.
3) Adjust the mixture in accordance with the POH.
4) Reduce power to establish an airspeed of 95 kts.
5) Enter a coordinated 50° banking turn to the left or right.
6) Increase power and adjust trim and pitch as required to maintain altitude and airspeed.
7) Begin rollout at ½ the bank angle prior to rollout heading.
8) Reduce power and pitch on rollout as needed to remain at 95 kts.
9) Continue the maneuver in the opposite direction.
10) Reduce power and pitch on rollout as needed to remain at 95 kts.
11) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to steep turns.
- Establishes the manufacturer's recommended airspeed or if one is not stated, a safe airspeed not to exceed Va.
- Rolls into a coordinated 360° steep turn with at least a 50° bank, followed by a 360° turn in the opposite direction.
- Divides attention between airplane control and orientation.
- Maintains the entry altitude, ±100 feet, airspeed, 10 kts, bank, ±5°, and rolls out on the entry heading, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain why load factor increases as bank angle increases.
- Discuss the relationship between load factor and stall speed.
- Discuss the principle of over-banking tendency.
- Explain how to maintain altitude and airspeed.
- Explain limit load factor and what happens if it's exceeded.

Safety Considerations:

- Do not exceed manufacturer's recommended airspeed or Va.
- Always clear the area before initiating the maneuver.
- The maneuver is to be completed no lower than 1,500' feet AGL.
- Division of attention between maneuver and scanning for traffic.

Common Errors:

- Improper pitch, bank, and power coordination during entry and rollout.
- Uncoordinated use of flight controls.
- Improper procedure in correcting altitude deviations.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Chandelle (C-152)

Objective:

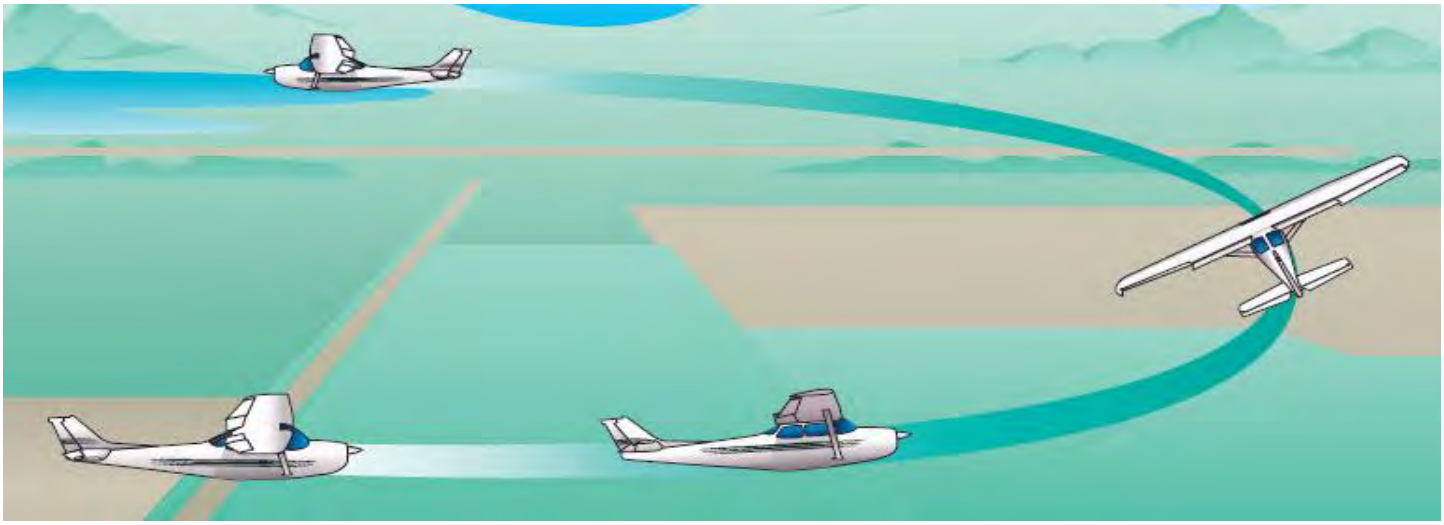
To develop the pilot's coordination, orientation, planning and accuracy of control during maximum performance flight.

Description:

A chandelle is a maximum performance climbing turn beginning from approximately straight and level flight, and ending at the completion of a 180° turn in a wings level, nose high attitude at the minimum controllable airspeed.

Setup Procedure:

1) Select an altitude to perform the maneuver no lower than 1,500' AGL.
2) Perform clearing turns.
3) Orient the airplane so that the turn is into the wind.
4) Maintain an airspeed of 95 kts.
5) Establish a 30° bank turn.
6) Simultaneously apply full power and pitch to maintain a smooth coordinated climbing turn to the 90° degree point with a constant bank.
7) At the 90° point, gradually increase back pressure to maintain pitch attitude and begin a coordinated roll out to reach wings level at the 180° point, just above the stall speed.
8) At the 180° point, establish level flight within 50 feet of final altitude.
9) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to chandelles.
- Selects an altitude that will allow the maneuver to be performed no lower than 1,500' AGL.
- Establishes the recommended entry configuration, power and airspeed.
- Establishes the angle of bank at approximately 30°.
- Simultaneously applies power and pitch to maintain a smooth, coordinated climbing turn to the 90° point, with a constant bank.
- Begins a coordinated constant rate rollout from the 90° point to the 180° point maintaining power and a constant pitch attitude.
- Completes rollout at the 180° point, ±10° just above stall airspeed, and maintains that airspeed momentarily avoiding a stall.
- Resumes straight and level flight with minimum loss of altitude.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Coordination during high power settings and high angles of attack.
- Maneuvering the aircraft at high performance levels.

Safety Considerations:

- This maneuver should be performed no lower than 1,500’ AGL.
- Divide attention between flying the airplane and scanning for traffic.
- Maintain coordinated flight.

Common Errors:

- Improper pitch, bank, and power coordination during entry or completion.
- Uncoordinated use of flight controls.
- Improper planning and timing of pitch and bank attitude changes.
- Factors related to failure in achieving maximum performance.
- A stall during the maneuver.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Lazy Eights (C-152)

Objective:

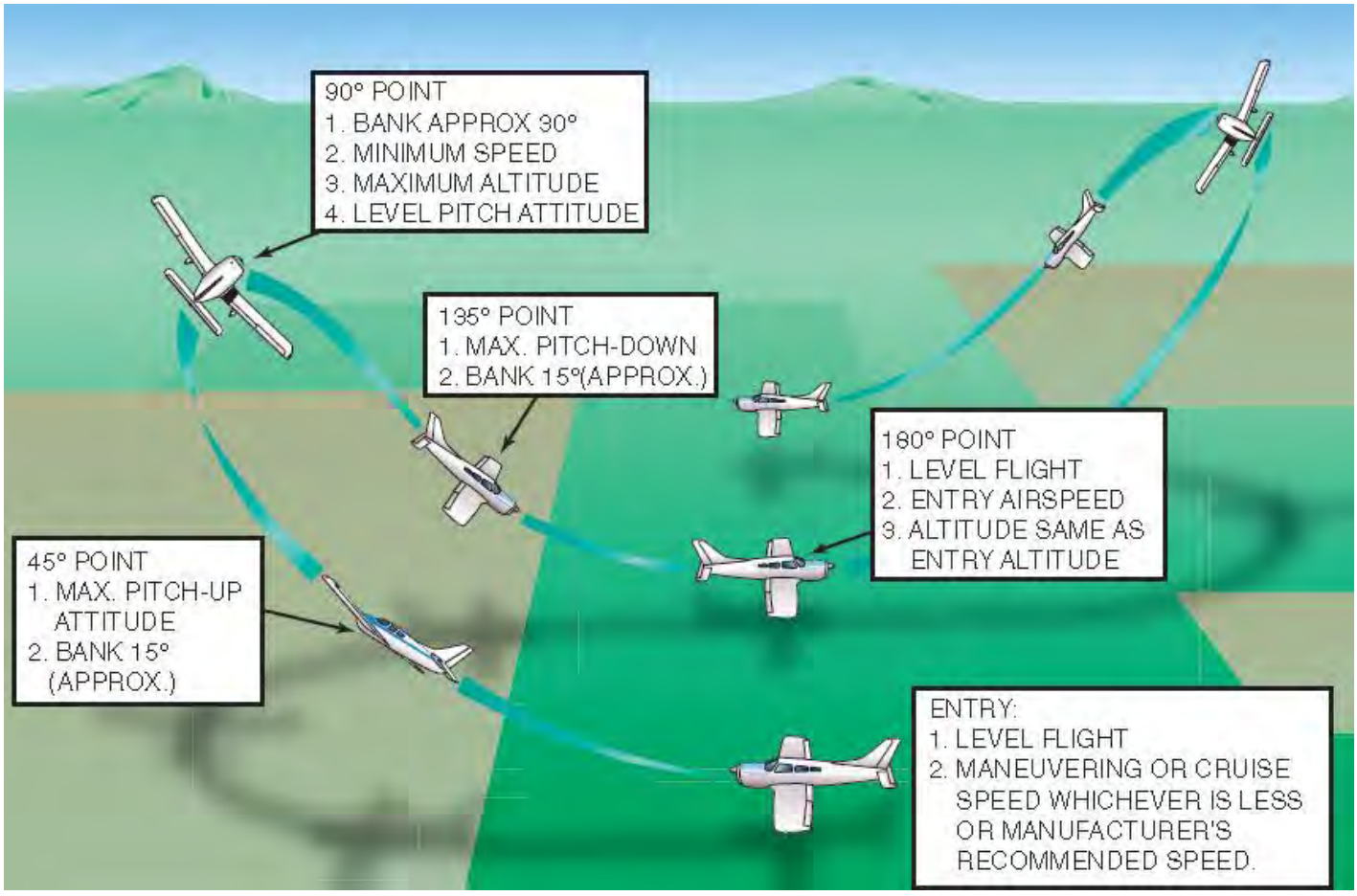
To develop coordination of controls through a wide range of airspeeds and altitudes so that certain accuracy points are reached with planned attitude and bank.

Description:

Two 180° turns, in opposite direction, while making a climb and a descent in a symmetrical pattern during each of the turns. At no time is the airplane flown straight and level.

Setup Procedure:

1) Select an altitude to perform the maneuver no lower than 1,500' AGL.
2) Perform clearing turns.
3) Orient the airplane so that the first turn is to the left and into the wind.
4) Maintain an airspeed of 95 kts.
5) Begin the maneuver by constantly changing pitch and bank to achieve the following:
    a. 45° point – 15° of bank and max pitch up.
    b. 90° point – 30° of bank, level pitch attitude, minimum controllable airspeed.
    c. 135° point – 15° of bank and max pitch down.
    d. 180° point – back to starting airspeed, altitude, and reciprocal heading.
6) Repeat in opposite direction.
7) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to lazy eights.
- Selects an altitude that will allow the maneuver to be performed no lower than 1,500' AGL.
- Establishes the recommended entry configuration, power, and airspeed.
- Maintains coordinated flight throughout the maneuver.
- Achieves the following throughout the maneuver
    - Approximately 30° bank at the steepest point.
    - Constant change of pitch and roll rate.
    - Altitude tolerance at 180° points, ±100 feet from entry altitude.
    - Airspeed tolerance at the 180° point, ±10 kts from entry airspeed.
    - Heading tolerance at the 180° point ±10°.
- Continues the maneuver through the number of symmetrical loops specified and resumes straight and level flight.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance of proper power setting.
- Explain the need for differing amounts of rudder pressure between the left and right turn.
- Discuss the effects of torque at the top of the eight in both the right and left turns.

Safety Considerations:

- Always clear the area before beginning a maneuver.
- Maintain coordination at all times during the maneuver.
- Use proper division of attention to see and avoid traffic.

Common Errors:

- Uncoordinated use of flight controls.
- Inconsistent airspeed and altitude at key points in the maneuver.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Steep Spiral (C-152)

Objective:

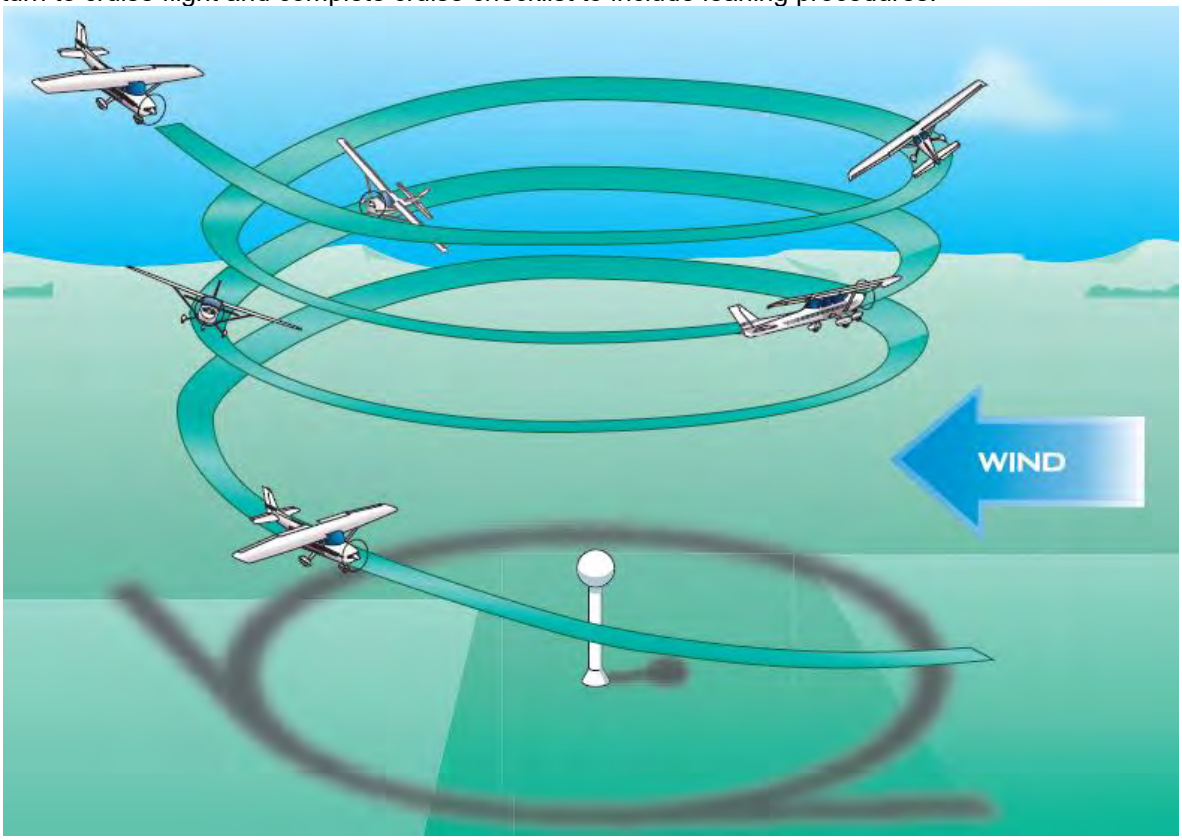
To improve pilot techniques for airspeed control, wind drift control, planning, orientation, and division of attention.

Description:

A steep spiral is a constant gliding turn, during which a constant radius around a point on the ground is maintained.

Setup Procedure:

1) Begin the maneuver with sufficient altitude to allow for three 360° degree turns without descending below 1,500' feet AGL.
2) Perform clearing turns.
3) Select a point to perform the maneuver around.
4) Enter on a downwind heading.
5) Reduce power and slow to 65 kts.
6) Reduce the power to idle when abeam the point.
7) Maintain 65 kts ($V_{L/D}$ +10 kts).
8) Change bank angle as necessary to maintain an equal distance from the reference point 45-55° of bank at the steepest point in the turn, not to exceed 60°.
9) Clear the engine, momentarily advancing power to normal cruise power, on each upwind leg.
10) Roll out on a downwind heading.
11) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a steep spiral.
- Selects an altitude sufficient to continue through a series of at least three 360° turns.
- Selects a suitable ground reference point.
- Applies wind-drift correction to track a constant radius circle around the selected reference point with bank not to exceed 60° at steepest point in turn.
- Divides attention between airplane control and ground track, while maintaining coordinated flight.
- Maintains the specified airspeed, ±10 kts, rolls out toward specified heading, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the effect of bank angle on ground track.
- Discuss the effect of ground speed on the radius of the turn.
- Recognize the importance of clearing the engine during extended periods of engine operations at low power settings.

Safety Considerations:

- Clear the area.
- Divide attention between aircraft control and orientation.
- Choose a reference point with emergency landing field within gliding distance.

Common Errors:

- Failure to maintain constant radius around reference point.
- Failure to maintain constant airspeed.
- Uncoordinated use of flight controls.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Eights On Pylons (C-152)

Objective:

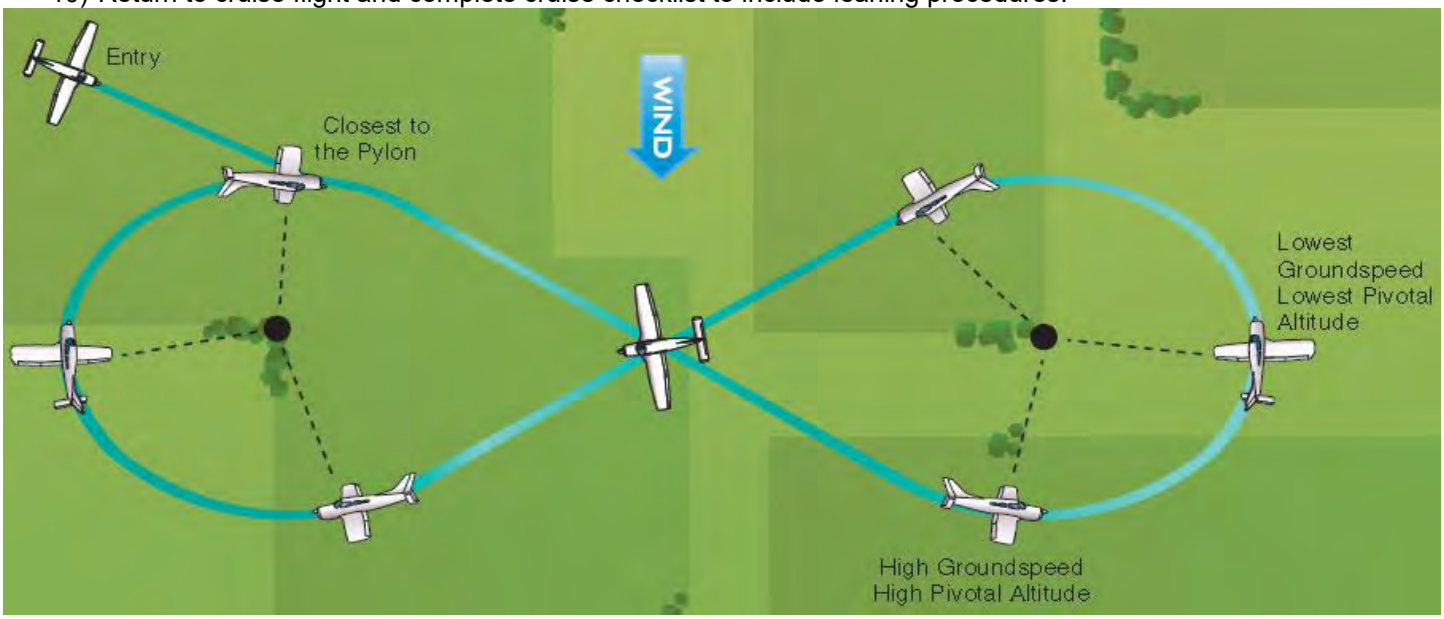
To develop a fine control touch, coordination, and the division of attention necessary for accurate and safe maneuvering of the airplane.

Description:

The airplane is flown in circular paths, alternately left and right, in the form of a figure 8 around two selected points on the ground at such a precise altitude and airspeed that a line parallel to the airplane's lateral axis appears to pivot on each of the pylons.

Setup Procedure:

1) Select two pylons perpendicular to the wind with suitable emergency landing area within gliding distance and a distant apart to obtain a 3 to 5 second straight and level segment.
2) Perform clearing turns.
3) Select appropriate emergency landing field.
4) Establish the appropriate pivotal altitude.
5) Establish airspeed below V_A.
6) Enter the maneuver at a 45° to the downwind with the first turn to the left.
7) When abeam the pylon, begin your turn.
8) Maintain the point on your reference line by climbing or descending as the pivotal altitude changes.
9) Fly straight and level between pylons and repeat around the other pylon.
10) Return to cruise flight and complete cruise checklist to include leaning procedures.



Completion Standards:

- Exhibits knowledge of the elements related to eights on pylons.
- Determines the approximate pivotal altitude.
- Selects suitable pylons that will permit straight and level flight between the pylons.
- Enters the maneuver at the appropriate altitude and airspeed and at a bank angle of approximately 30° or 40° at the steepest point.
- Applies the necessary corrections so that the line of sight reference line remains on the pylon.
- Divides attention between accurate coordinated airplane control and outside visual references.
- Holds pylon using appropriate pivotal altitude avoiding slips and skids.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain how pivotal altitude is affected with changes in groundspeed.
- Compute pivotal altitude.
- Explain the relationship between pivotal altitude and angle of bank.

Safety Considerations:

- Clear the area of traffic and obstacles.
- Look for an emergency landing field nearby.
- Division of attention between maneuver and scanning for traffic.
- Maintain coordinated flight.

Common Errors:

- Faulty entry technique.
- Poor planning, orientation, and division of attention.
- Uncoordinated flight.
- Use of improper line of sight reference.
- Improper timing of turn entries and rollouts.
- Improper wind-drift correction between pylons.
- Selection of pylons where there is no suitable emergency landing area within gliding distance.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

C-172RG

Passenger Briefing (C-172RG)

Objective:

To provide a standard pre-flight briefing to passengers.

Description:

The pilot in command is required by the Federal Aviation Regulations to provide a passenger briefing.

Setup Procedure:

2) Before starting the engine the Pilot-in-Command will provide the passenger safety briefing to include, but not limited to:
   a. Designation of Pilot-in-Command.
   b. Procedures for positively exchanging flight controls.

S

i. Seat belts and shoulder harnesses (location and operation).
ii. Seat belts & shoulder harnesses fastened for taxi, takeoff and landing.
iii. Seat position adjusted and locked in place (controls and operation).

A

iv. Air vents (location and operation).
v. All environmental controls (discussed).
vi. Action in case of any passenger discomfort.

F

vii. Fire extinguisher (location and operation).
viii. Smoking is prohibited.

E

ix. Exit doors (how to secure; how to open).
x. Emergency evacuation plan.
xi. Emergency/survival kit (location and contents).
xii. Equipment (location & operation, i.e., ELT, flight controls).

T

xiii. Traffic (scanning, spotting, notifying pilot).
xiv. Talking ("sterile cockpit" expectations).

Y

xv. Your questions?

Flight Proficiency Standards:

- Briefs occupants on the use of safety belts, shoulder harnesses, doors, and emergency procedures.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance and regulatory requirement for providing a passenger briefing.

Common Errors:

- Failure to perform a passenger briefing.
- Incomplete passenger briefing.

References:

Airman Airman Certification Standards, Federal Aviation Regulations, AC 121-24, AOPA Passenger Safety Briefing Video

Normal & Crosswind Takeoff & Climb (C-172RG)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane is accelerated to an airspeed that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and establishes a pitch attitude to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete takeoff checklist and takeoff briefing.
3) Use aircraft lighting as recommended by the current version of AC 91-73.
4) Ensure runway is clear, align aircraft with runway centerline, confirm DG is aligned with runway, and ensure nose wheel is straight.
5) Position flight controls for wind for existing conditions.
6) Advance throttle smoothly to takeoff power ensuring toes are resting on rudder pedals, not on brakes.
7) Check engine instruments during takeoff roll for normal indications.
8) Maintain directional control with rudder pedals and crosswind control with appropriate aileron deflection
9) Maintain a slightly tail low attitude.
10) Upon reaching rotation speed, 55 kts (V_R), increase back elevator pressure to establish the lift-off attitude that is approximately that for V_Y and allow the aircraft to fly off the ground.
11) Apply adequate drift correction to maintain runway centerline.
12) Accelerate to 84 kts (V_Y).
13) Tap the brakes and retract the landing gear when no more useable runway exists and a positive rate of climb is established.
14) At 500 ft. or as workload permits:
    a. Set climb power, 25” manifold pressure and 2500 RPM
    b. Complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to normal and crosswind takeoff, climb operations and rejected takeoff procedures.
- Positions the flight controls for the existing wind conditions.
- Clears the area, taxies onto the takeoff surface and aligns the airplane on the runway center/takeoff path.
- Lifts off at the recommended airspeed and accelerates to V_Y.
- Establishes a pitch attitude that will maintain V_Y ±5 kts.
- Retracts the landing gear if appropriate, and flaps after a positive rate of climb is established.
- Maintains takeoff power and V_Y ±5 kts.
- Maintains directional control, proper wind-drift correction throughout the takeoff and climb.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria.
- Discuss how to maintain directional control during the ground roll.
- Discuss proper lift-off technique.
- Explain how to use ailerons during crosswind situations.
- Describe how to correct for wind-drift.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force aircraft off runway too early, causing it to settle back on the runway.
- Consider the effect of density altitude on performance.
- Do not retract landing gear too soon.
- Do not allow upwind wing to rise during takeoff.
- Do not exceed maximum demonstrated crosswind velocity.

Common Errors:

- Improper runway incursion avoidance procedures.
- Inappropriate lift-off procedures.
- Improper climb attitude, power setting, and airspeed.
- Improper use of checklists.
- Improper positioning of the flight controls and wing flaps.
- Drift during climb.
- Failure to establish and maintain proper climb configuration and airspeeds.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Short – Field Takeoff & Climb (C-172RG)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude when the takeoff area is short or restricted by obstructions.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane is accelerated to an airspeed that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and a pitch attitude is established to climb away from the runway and clear a 50 foot obstacle.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) If no obstacle exists, set flaps to 10° if takeoff weight is 2550 lbs or less.
4) Use aircraft lighting as recommended by the current version of AC 91-73.
5) Back taxi and align aircraft with runway centerline, confirm HSI is aligned with runway, and ensure nose wheel is straight.
6) Ensure runway is clear, advance throttle smoothly to takeoff power while holding brakes; check engine instruments.
7) Release brakes and ensure toes are resting on rudder pedals, not brakes.
8) Maintain directional control with rudder pedals and appropriate aileron deflection.
9) Upon reaching rotation speed, 55 kts (V_R), increase back elevator pressure to establish lift-off attitude and allow aircraft to fly off ground.
10) Accelerate the aircraft to 63 kts until obstacle is cleared or 50 feet above takeoff surface is attained then accelerate to 84 kts (V_Y).
11) Tap the brakes and retract landing gear when no more useable runway is available and a positive rate of climb is established.
13) Retract flaps after a safe altitude of at least 200 ft. and an airspeed of 84 kts are attained.
12) At 500 ft. or as workload permits:
    a. Set climb power, 25” manifold pressure and 2500 RPM
    b. Complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a short-field takeoff and maximum performance climb.
- Positions the flight controls for the existing wind conditions, sets flaps as recommended.
- Clears the area; taxies into takeoff position utilizing maximum available takeoff area and aligns the airplane on the runway center/takeoff path.
- Applies brakes (if appropriate) while advancing the throttle smoothly to takeoff power.
- Lifts off at the recommended airspeed, and accelerates to recommended obstacle clearance airspeed, or V_X.
- Establishes a pitch attitude that will maintain the recommended obstacle clearance airspeed, or V_X +5/-0 kts, until the obstacle is cleared, or until the airplane is 50 feet above the surface.
- After clearing the obstacle, establishes the pitch attitude for V_Y, accelerates to V_Y, and maintains V_Y ±5 kts, during the climb.
- Retracts the landing gear, if appropriate and flaps after clear of any obstacles or as recommended by manufacturer.
- Maintains takeoff power and V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Completes appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria.
- Discuss how to maintain directional control during ground roll.
- Discuss proper lift-off technique.
- Explain the difference between V_X and V_Y.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force aircraft off runway too early, causing it to settle back onto runway.
- Do not force aircraft to stay on the ground when it is ready to lift off, wheelbarrow.
- Back taxi to ensure use of entire runway length.
- Retraction of gear and flaps as recommended.

Common Errors:

- Failure to position the airplane for maximum utilization of available runway.
- Improper runway incursion avoidance procedures.
- Improper use of controls during a short-field takeoff.
- Inappropriate lift-off procedures.
- Improper initial climb attitude, power setting and airspeed to clear obstacle.
- Improper use of checklists.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Soft – Field Takeoff & Climb (C-172RG)

Objective:

To align the airplane with the takeoff path, become airborne as quickly as possible, and establish a positive climb to a safe maneuvering altitude.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll, when the airplane enters the runways with full up elevator deflection and accelerates to an airspeed at which the airplane will lift off.
2) The acceleration to 63 kts while remaining in ground effect.
3) The initial climb when the airplane establishes a pitch attitude is established to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) If no obstacle exists, set flaps to 10° if takeoff weight is 2550 lbs or less.
4) Use aircraft lighting as recommended by the current version of AC 91-73.
5) Ensure runway is clear, taxi onto runway with back elevator pressure and align nose with runway centerline, confirm DG is aligned with runway, without stopping or the use of brakes.
6) Smoothly advance throttle to takeoff power.
7) Ensure toes are resting on rudder pedals, not on brakes.
8) Check engine instruments during ground roll for normal indications.
9) Maintain directional control with rudder pedals and appropriate aileron deflection.
10) Use back elevator pressure to establish a positive pitch attitude and allow the aircraft to fly itself off the ground.
11) When the aircraft becomes airborne, reduce pitch slightly to maintain ground effect while accelerating to 63 kts then simultaneously climb and accelerate to 84 kts (V_Y).
12) Tap the brakes and retract landing gear when no more useable runway exists and a positive rate of climb is established.
13) Retract flaps after a safe altitude of at least 200 ft. and an airspeed of 84 kts are attained.
14) At 500 ft. or as workload permits:
    a. Set climb power, 25” manifold pressure and 2500 RPM
    b. Complete climb checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a soft-field takeoff and climb.
- Positions the flight controls for existing conditions and to maximize lift as quickly as possible.
- Clears the area; taxies onto takeoff surface at a speed consistent with safety without stopping while advancing the throttle smoothly to takeoff power.
- Establishes and maintains a pitch attitude that will transfer the weight of the airplane from the wheels to the wings as rapidly as possible.
- Lifts off at the lowest possible airspeed and remains in ground effect while accelerating to V_X.
- Establishes a pitch attitude for V_X or V_Y, as appropriate, and maintains selected airspeed ±5 kts, during the climb.
- Retracts the landing gear, if appropriate and flaps after clear of any obstacles or as recommended by the manufacturer.
- Maintains takeoff power and V_X or V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss proper soft-field takeoff technique.
- Explain runway selection criteria.
- Predict the height of ground effect and discuss its relevance.

- Discuss how to maintain directional control during ground roll.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- Do not force the aircraft off runway too quickly.
- Do not retract landing gear too soon.
- Do not allow the airplane to climb above ground effect too soon, causing it to settle back onto the runway.

Common Errors:

- Improper runway incursion avoidance procedures.
- Improper use of controls during a soft-field takeoff.
- Improper lift-off procedures.
- Improper climb attitude, power setting and airspeed.
- Improper use of checklist.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Traffic Pattern (C-172RG)

Objective:

To assure that air traffic flows into and out of an airport in an orderly manner.

Description:

The airplane is flown on a rectangular course around a runway at an altitude specified in the current Airport/Facility Directory or as outlined in the FAR/AIM.

Setup Procedure:

Departures

1) All departures:
    a. Fly the departure leg straight out until reaching traffic pattern altitude.
    b. Once reaching traffic pattern altitude, continue climbing and turn on course.

Arrivals

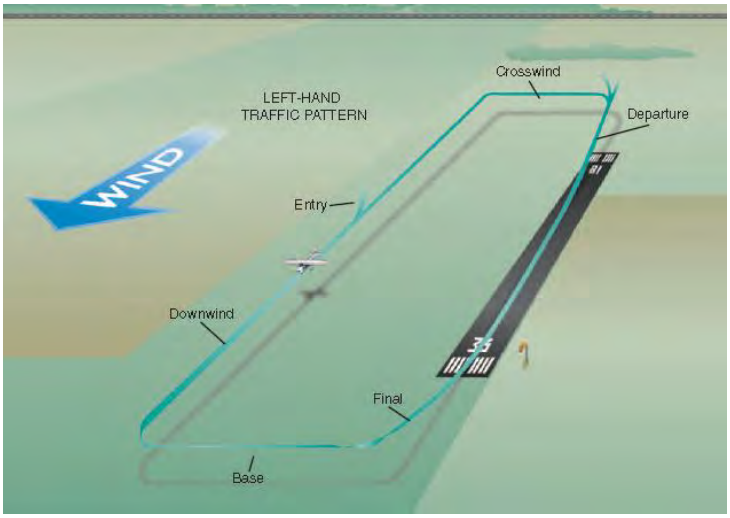
1) Prior to reaching 5 NM from the airfield, complete the following:
    a. Monitor local AWOS/ASOS/ATIS
    b. Ask “Is there any traffic between me and the airport?” and cancel flight following (if applicable)
    c. Complete the Before Landing checklist
2) Slow down below the approach flap airspeed prior to pattern entry.

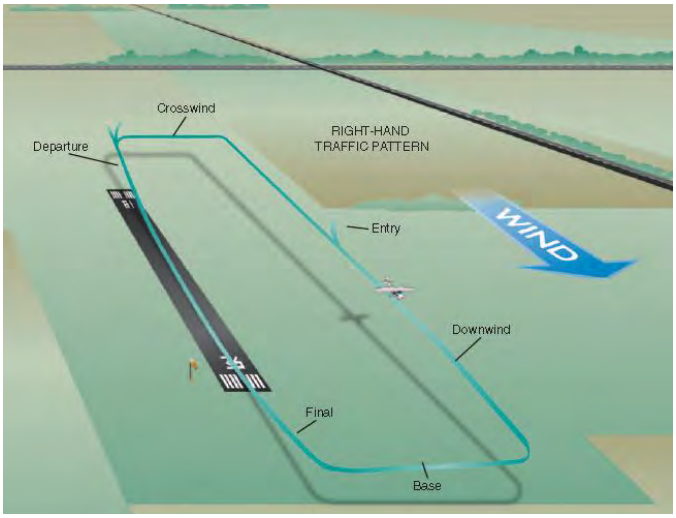
    If already established on the downwind side, skip to step 4.*

3) For a midfield entry:
    a. Cross midfield 500’ above traffic pattern altitude, observing traffic flow and wind direction.
    b. Fly 2-3 miles beyond the downwind leg, then descend to pattern altitude.
    c. Complete a tear-drop shaped turn to the right or left as necessary to position the aircraft at a 45 degree angle to the downwind leg.

    If less than two aircraft are currently in the pattern, the alternate method (cross midfield at traffic pattern altitude, enter directly into downwind leg) may be used.

4) Enter the traffic pattern at the designated traffic pattern altitude (normally 1,000’ AGL) at a 45 degree angle to the downwind leg at midfield.
5) Apply appropriate crosswind correction to allow for a parallel flight path approximately ½ mile from the runway
6) Allow for proper spacing from other aircraft in the pattern as to prevent runway incursions upon landing.
7) Maintain airspeed below the flap speed required for each configuration change.





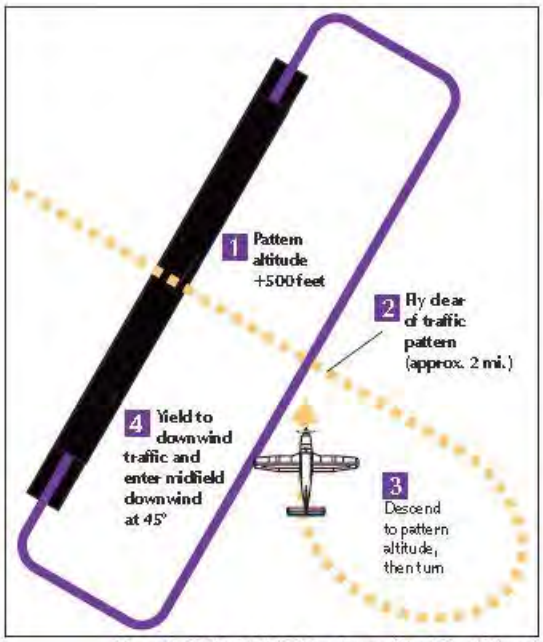


Figure 9. Preferred Entry from Upwind Leg Side of Airport

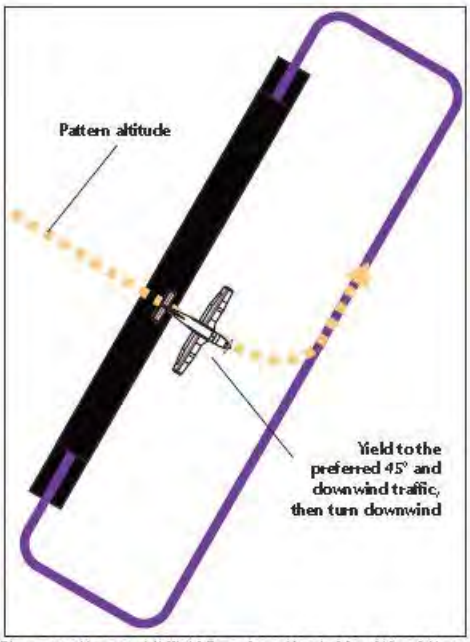


Figure 10. Alternate Midfield Entry from Upwind Leg Side of Airport

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to traffic patterns. This shall include procedures at airports with and without operating control towers, prevention of runway incursions, collision avoidance, wake turbulence avoidance, and wind shear.
- Complies with proper traffic pattern procedures.
- Maintains proper spacing from other aircraft.
- Corrects for wind drift to maintain the proper ground track.
- Maintains orientation with the runway/landing area in use.
- Maintains traffic pattern altitude, ±100 feet and the appropriate airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss traffic patterns at controlled and uncontrolled airports.
- Explain traffic pattern procedures.
- Explain how to maintain the proper ground track.

Safety Considerations:

- Maintain proper traffic pattern altitude.
- Maintain a distance from the runway that is within power-off gliding distance.
- Preferred bank of approximately 30 degrees (and not to exceed 30) while in pattern..
- Maneuver within 300 feet of traffic pattern altitude before turning crosswind to base.
- Maintain proper aircraft separation.
- Comply with standards traffic pattern procedures or ATC instructions.

Common Errors:

- Failure to comply with traffic pattern instructions, procedures, and rules.
- Improper correction for wind drift.
- Inadequate spacing from other traffic.
- Poor altitude or airspeed control.
- Flying too wide of a pattern.

References:

Airplane Flying Handbook; POH/AFM; Private Pilot ACS; CFI PTS

Normal & Crosswind Approach & Landing (C-172RG)

Objective:

To safely transition the aircraft from flight to ground operations during normal conditions.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) When abeam midfield, apply carburetor heat and extend landing gear below 140 kts.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 15".
    b. Set flaps to 10° below 130 kts.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    a. With wings level, set flaps to 20° as requried.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 65 kts, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    e. Complete the GUMPS check.
    f. **Ensure 3 down and locked.**
8) During the flare to land simultaneously reduce power to idle and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline.
9) Maintain positive pitch attitude for aerodynamic braking.
10) Exit runway and complete after landing checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to normal and crosswind approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point.
- Establishes the recommended approach and landing configuration and airspeed and adjust pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, nor more than 1.3 V_{S0} ±5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the round out and touchdown.
- Touches down smoothly at approximate stall speed.
- Touches down at or within 200 feet beyond a specified point, with no drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control through the approach and landing sequence.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain proper use of crosswind control inputs.

Safety Considerations:

- Observe flap extension speeds.
- Maintain proper airspeed at all times.
- Use proper crosswind correction to avoid drifting from runway centerline.
- Ensure landing gear is extended and locked.

Common Errors:

- Failure to establish proper crosswind correction.
- Improper use of landing performance data and limitations.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Failure to establish and maintain a stabilized approach.
- Improper technique during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Short – Field Approach & Landing (C-172RG)

Objective:

To safely transition the aircraft from flight to ground operations at an airport with a relatively short runway and/or where an approach is made over obstacles.

Description:

The airplane is configured for a stabilized approach over a 50 foot obstacle. There will be little or no float during the round out, allowing the airplane to touch down at a specified point, and be stopped in a shorter than normal distance.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) When abeam midfield, apply carburetor heat and extend landing gear below 140 kts.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 15".
    b. Set flaps to 10° below 130 kts.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    b. With wings level, set flaps to 20° as required.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 63 kts, to clear obstacles, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    e. Complete the GUMPS check.
    f. **Ensure 3 down and locked.**
8) During the flare to land simultaneously reduce power as required and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline.
9) Apply maximum braking to a complete stop without skidding the tires.
10) Maintain positive pitch attitude for aerodynamic braking.
11) Exit runway and complete after landing checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a short-field approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects the most suitable touchdown point.
- Establishes the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power.
- Maintains a stabilized approach and recommended approach airspeed, or in its absence, not more than 1.3 V_{SO} ±5 kts with wind gust factor applied.
- Makes smooth, timely, and correct control application during the round out and touchdown.
- Touches down smoothly at minimum control airspeed.
- Touches down at or within 100 feet beyond a specified point, with no side drift, minimum float and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Applies brakes, as necessary, to stop in the shortest distance consistent with safety.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on an approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain how to compensate for obstacles and shortened runway lengths.

Safety Considerations:

- Maintain proper airspeed at all times.
- Compensate for crosswind.
- Do not skid tires.
- Use of aerodynamic braking as available.
- Ensure landing gear is extended and locked.

Common Errors:

- Failure to establish and maintain a stabilized approach.
- Improper technique in use of power, wing flaps, and trim.
- Excessive airspeed on final approach.
- Failure to establish proper crosswind correction.
- Improper use of landing performance data and limitations.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Improper use of brakes.
- Poor directional control after touchdown.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Soft – Field Approach & Landing (C-172RG)

Objective:

To safely transition the aircraft from flight to ground operations rough or soft surface.

Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown on a field that is unimproved.

Setup Procedure:

1) Complete the before landing and normal landing checklist at least 3 nm before the airport.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) When abeam midfield, apply carburetor heat and extend landing gear below 140 kts.
5) When abeam the intended touchdown point:
    a. Reduce power to approximately 15".
    b. Set flaps to 10° below 130 kts.
    c. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 75 kts.
6) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. With wings level, set flaps to 20° as required.
    d. Adjust pitch and power to establish a descent of 400-500 fpm and an airspeed of 70 kts.
7) Turn on final as to align the aircraft with the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to 30° as required.
    c. Adjust pitch and power as required to maintain a stabilized approach, at 65 kts, toward the selected aiming point until flare to land.
    d. Add crosswind control by lowering the upwind wing and applying opposite rudder as appropriate to maintain longitudinal axis of aircraft with extended centerline of runway.
    e. Complete the GUMPS check.
    f. **Ensure 3 down and locked.**
8) During the flare to land simultaneously reduce power as required and maintain aircraft approximately one foot above runway until it slows to stall speed and touches down on the runway centerline as smoothly as possible.
9) Maintain back elevator pressure to keep nose wheel off the ground as long as possible.
10) Maintain directional control with rudder and aileron deflection.
11) Adjust power as necessary to maintain aircraft movement on soft surfaces.
12) Exit the runway with minimal braking and complete after landing checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a soft-field approach and landing.
- Considers the wind conditions, landing surface, and obstructions, and selects the most suitable touchdown area.
- Establishes the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{S0} ±5 kts, with wind gust factor applied.
- Makes smooth, timely, and correct control applications during the round out and touchdown.
- Touches down softly, with no drift, and with the airplane's longitudinal axis aligned with the runway/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Maintains proper position of the flight controls and sufficient speed to taxi on the soft surface.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss effect of flaps on an approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain how to touchdown and maneuver the aircraft on soft of unimproved surfaces.

Safety Considerations:

- Do not land on fields that exceed the capabilities of the aircraft or pilot.
- Fly over and visually check the field prior to landing.
- Check field length and density altitude.
- UCM retractable gear aircraft can only land on paved, public, published runways.
- Ensure landing gear is extended and locked.

Common Errors:

- Failure to maintain elevator back-pressure after touchdown.
- Improper use of brakes.
- Failure to consider effect of wind and landing surface.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Power – Off 180° Accuracy Landing (C-172RG)

Objective:

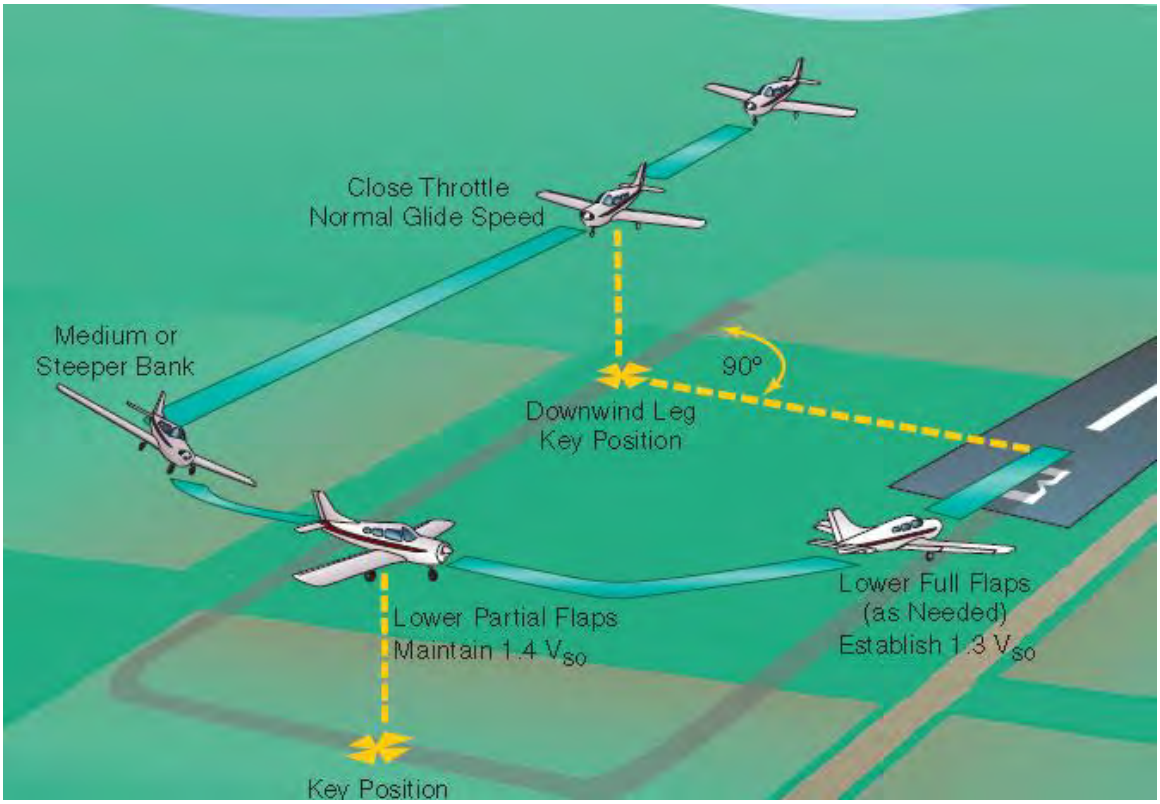
To instill in the pilot the judgment and procedures necessary for accurately flying the airplane, without power, to a safe landing.

Description:

Power-off accuracy approaches are approaches and landings made by gliding with the engine idling, through a specific pattern to a touchdown within 200 feet of a designated line or mark on the runway.

Setup Procedure:

1) Complete the before landing checklist.
2) Enter and fly the appropriate pattern.
3) Select touchdown and aiming points.
4) When abeam midfield apply carburetor heat.
5) When abeam the intended touchdown point:
    a. Extend landing gear.
    b. Close throttle.
    c. Set flaps 10°.
6) Maintain altitude while decelerating to the recommended glide speed 73 kts.
7) Base leg turn will be determined by the glide angle of the airplane, weight, and velocity of the wind.
8) Extend flaps as required.
9) Turn to final approach and extend flaps, as necessary.
10) Adjust trim and make slight adjustments in pitch attitude of flap setting to control glide angle and airspeed.
11) Complete the GUMPS check.
12) **Ensure 3 down and locked**.
13) Touch down at approximate stalling speed on the runway centerline at the designated point.
14) Exit the runway and complete after landing checklist.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a power-off 180° accuracy approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects an appropriate touchdown point.
- Positions airplane on downwind leg, parallel to landing runway, and not more than 1,000 feet AGL.
- Abeam the specified touchdown point closes throttle and establishes appropriate glide speed.
- Completes final airplane configuration.
- Touches down in a normal landing attitude, at or within 200 feet beyond the specified touchdown point.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the effect of wind velocity on required altitude and bank angle.
- Discuss the importance of controlling glide angle and airspeed on final approach.

Safety Consideration:

- Maintain coordinated flight throughout the maneuver.
- Be aware of the position of other traffic in the pattern.
- Maintain appropriate airspeed throughout the maneuver.

Common Errors:

- Failure to touchdown within 200 feet of the intended touchdown point.
- Failure to maintain constant airspeed and glide angle.
- Failure to accurately determine the wind direction and velocity.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Go-Around (C-172RG)

Objective:

To safely discontinue the landing approach when unsatisfactory conditions exist.

Description:

As full power is applied, the aircraft attitude is adjusted to accelerate to V_Y and climb. As a safe airspeed is attained, flaps are retracted 10° at a time allowing stabilization between each retraction. Landing gear is retracted after a positive rate of climb is attained and clear of any obstacles.

Setup Procedure:

1) Smoothly apply maximum allowable power.
2) Turn off carburetor heat.
3) Establish an attitude to accelerate to 55 kts.
4) Set flaps to 20° and stabilize in between configuration changes.
5) Allow the airplane to accelerate to V_X and climb.
6) Retract landing gear after a positive rate of climb is established and clear of any obstacles.
7) Set flaps to 10° and stabilize in between configuration changes.
8) Allow the aircraft to accelerate to V_Y.
9) Set flaps to 0° at a safe altitude above 200' AGL.
10) Open cowl flaps as required.
11) Verify the Go Around checklist is complete.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a go-around/rejected landing.
- Makes a timely decision to discontinue the approach to landing.
- Applies takeoff power immediately and transitions to climb pitch attitude for V_Y, and maintains V_Y ±5 kts.
- Retracts the flaps as appropriate.
- Retracts the landing gear, if appropriate, after a positive rate of climb is established and clear any obstacles.
- Maneuvers to the side of the runway/landing area to clear and avoid conflicting traffic.
- Maintains takeoff power V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the climb.
- Completes the appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss events that may require a go-around.
- Explain the importance of maintaining airspeed and coordination during the go-around procedure.
- Discuss the necessity for maneuvering to the side of the runway after making the decision to go-around.

Safety Considerations:

- Maneuver the airplane to the side of the runway.
- Do not establish a pitch up attitude too quickly.
- Maintain coordination.
- Timely decision making.
- Be watchful for situation which may require a go-around.

Common Errors:

- Delayed decision to make a go-around.
- Improper application of power.
- Failure to control pitch attitude.
- Improper trim technique.
- Failure to compensate for torque effect.
- Failure to maintain V_Y as appropriate.
- Improper wing flap retraction.
- Improper gear retraction.
- Failure to maintain well clear of obstructions and other traffic.
- Improper use of checklists.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Emergency Descent (C-172RG)

Objective:

To descend the airplane as soon and as rapidly as possible, within the structural limitations of the airplane.

Description:

The emergency descent is a maneuver for descending as rapidly as possible to a lower altitude or to the ground for an emergency landing.

Setup Procedure:

1) Perform clearing turns.
2) If utilizing flight following, contact ATC for traffic advisories below.
3) Apply carburetor heat.
4) Reduce power to idle.
5) Confirm flaps 0º.
6) Set mixture to rich.
7) Advance prop to high RPM.
8) Extend landing gear.
9) Roll into a 30º - 45 º bank to the left and pitch down to achieve 130 kts (If in turbulent air, maintain an airspeed below V_A)
10) Close cowl flaps as required.
11) Continue descent until instructed to recover or at assigned altitude.
12) Initiate recovery to level flight at least 300' prior to assigned altitude by:
    a. Rolling out the bank.
    b. Pitching up.
13) Return to cruise flight and complete the cruise checklist to include leaning procedures

Flight Proficiency Standards:

- Exhibit knowledge of the elements related to emergency descent.
- Recognizes situations, such as depressurization, cockpit smoke, and/or fire that require an emergency descent.
- Establish the appropriate airspeed and configuration for the emergency descent.
- Exhibit orientation, division of attention, and proper planning.
- Maintains positive load factors during the descent.
- Follow the appropriate checklist.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the purpose(s) of an emergency descent.
- Discuss engine cooling characteristics during an emergency descent.
- Discuss the importance of proper planning as it pertains to emergencies.

Safety Considerations:

- Maintain positive aircraft control.
- Clear the engine periodically
- Clear below then GO.
- Steep spiral over airport.
- Continue on to emergency approach and landing.

Common Errors:

- Failure to recognize the urgency of the emergency descent.
- Failure to use emergency checklist for situation.
- Failure to maintain appropriate configuration and airspeed.

- Poor orientation, planning, and division of attention.

Maneuvering During Slow Flight (C-172RG)

Objective:

To demonstrate the flight characteristics and controllability of an airplane at speeds lower than normal cruise and develop proficiency in performing maneuvers that require slow airspeeds.

Description:

Slow flight consists of slowing the aircraft to a minimum controllable airspeed in the landing configuration and maneuvering the aircraft while maintaining altitude and airspeed.

Setup Procedure:

1) Select an altitude which allows recovery by at least 1,500' AGL.
2) Perform clearing turns.
3) Open cowl flaps as required.
4) Extend landing gear.
5) Apply carburetor heat.
6) Reduce manifold pressure to 15" or less.
7) Advance propeller to high RPM once in white arc.
8) Set mixture rich.
9) Set 10° flaps below 130 kts.
10) Set 20° and 30° flaps below 100 kts allowing the aircraft to stabilize between each.
11) Adjust pitch and power as necessary to maintain altitude and airspeed.
12) Establish and maintain an airspeed at which any further increase in pitch or reduction of power would result in an immediate stall or a higher speed as specified by your instructor.
    a. Slow flight should be practiced at varying speeds and configurations above the 1G stall speed of the aircraft as specified by the instructor.
13) Maneuver as instructed.
14) Recover when instructed by adding full power.
15) Turn carburetor heat off.
16) Set flaps to 20° and allow the aircraft to stabilize.
17) Retract landing gear.
18) Then set flaps to 10° and 0° allowing the aircraft to stabilize between each setting.
19) Return to cruise flight and perform the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to maneuvering during slow flight.
- Selects an entry altitude that will allow the task to be completed no lower than 1,500' AGL.
- Establish and maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in a stall warning (e.g., airplane buffet, stall horn, etc.).
- Accomplishes coordinated straight and level flight, turns, climbs, and descents with landing gear and flap configurations specified by the instructor.
- Divides attention between airplane control and orientation.
- Maintains the specified altitude, ±50 feet; specified headings, ±10°; airspeed +5/-0 kts, and specified angle of bank, ±5°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the relationship between pitch and power in maintaining airspeed and altitude during slow flight.
- Discuss how flight at minimum airspeeds develops the ability to estimate the margin of safety above the stalling speed.
- Compare the practice of slow flight to various phases of flight such as; takeoffs, climbs, descents, go-around, and approaches to landing.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified gear and flap configuration.
- Improper entry technique.
- Failure to establish and maintain the specified airspeed.
- Excessive variations of altitude and heading when a constant altitude and heading are specified.
- Rough or uncoordinated control technique.
- Improper correction for left turning tendency.
- Improper trim technique.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Power – Off Stall (C-172RG)

Objective:

To familiarize the pilot with the conditions that produce stalls, assist in recognizing an approaching stall, and develop skills to prevent and recover from stalls in the landing configuration.

Description:

The aircraft is slowed down and placed in the landing configuration after which a stall is induced and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery by at least 1,500' AGL.
2) Perform clearing turns.
3) Close cowl flaps as required.
4) Extend landing gear.
5) Apply carburetor heat.
6) Reduce manifold pressure to 15" or less.
7) Advance propeller to high RPM once in white arc.
8) Set mixture rich.
9) Set 10° flaps below 130 kts.
10) Set 20° and 30° flaps below 100 kts allowing the aircraft to stabilize between each.
11) Establish a stabilized descent at 65 kts.
12) Increase angle of attack while maintaining altitude.
13) Reduce power to idle.
14) Recognize and recover from the impending stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, leveling the wings and adding full power.
15) Turn off carburetor heat.
16) Set flaps to 20° and stabilize in between configuration changes.
17) Retract landing gear after a positive rate of climb is established.
18) Set flaps to 10° and stabilize in between configuration changes.
19) Allow the aircraft to accelerate to V_Y.
20) Open cowl flaps as required.
21) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-off stalls.
- Selects an entry altitude that allows the task to be completed no lower than 1,500' AGL.
- Establishes a stabilized descent in the approach or landing configuration, as specified by the instructor.
- Transitions smoothly from the approach or landing attitude to a pitch attitude that will induce a stall.
- Maintains a specified heading, ±10° in straight flight; maintains a specified angle of bank, not to exceed 20°, ±5°, in turning flight while inducing the stall.
- Recognizes and recovers promptly as the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable and leveling the wings to return to a straight and level flight attitude with a minimum loss of altitude appropriate for the airplane.
- Retracts the flaps to the recommended setting, retracts the landing gear if retractable after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flap retraction.
- Returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Power – On Stall (C-172RG)

Objective:

To familiarize the pilot with the conditions that produce stalls, assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in the takeoff configuration.

Description:

The aircraft is slowed down and placed in the takeoff configuration after which a stall is induced and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery by at least 1,500' AGL.
2) Perform clearing turns.
3) Open cowl flaps as required.
4) Verify landing gear UP
5) Apply carburetor heat.
6) Reduce manifold pressure to 15" or less.
7) Advance propeller to high RPM once in white arc.
8) Set mixture rich.
9) Verify flaps 0°.
10) Increase power to 20" at 55 kts (V_R) or stall warning horn.
11) Turn carburetor heat off.
12) Transition smoothly to the pitch attitude that will induce a stall.
13) Recognize and recover from the impending stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, increasing power, and leveling the wings.
14) Accelerate the airplane to V_Y and climb.
15) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-on stalls.
- Selects an entry altitude that allows the task to be completed no lower than 1,500' AGL.
- Establishes the takeoff or departure configuration. Sets power to no less than 65 percent available power.
- Transitions smoothly from the takeoff or departure attitude to a pitch attitude that will induce a stall.
- Maintains a specified heading ±5°, in straight flight; maintains a specified angle of bank, not to exceed a 20°, ±10°, turning flight, while inducing the stall.
- Recognizes and recovers promptly as the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable and leveling the wings to return to a straight and level flight attitude, with a minimum loss of altitude appropriate for the airplane.
- Retracts flaps to the recommended setting and retracts the landing gear if retractable after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flaps retraction; returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Accelerated Stall (C-172RG)

Objective:

To familiarize the pilot with the conditions that produce accelerated stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in an accelerated configuration.

Description:

The aircraft is slowed down and placed in the clean configuration. After which a steep turn is applied with excessive back elevator pressure and therefore a stall is induced at a higher than normal stalling speed and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery by at least 3,000' AGL.
2) Perform clearing turns.
3) Reduce power to 15" and 2,300 RPM allowing the aircraft to slow below maneuvering speed while maintaining altitude.
4) Set mixture to rich.
5) Verify flaps up.
6) Upon reaching 75 kts, transition smoothly to an approximate 45 degree bank and apply back pressure to induce an accelerated stall.
7) Recognize and recover from the stall (aerodynamic buffeting) as the stall occurs by simultaneously leveling the wings, reducing the angle of attack, and increasing power.
8) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to accelerated stalls.
- Selects an entry altitude that allows the task to be completed no lower than 3,000' AGL.
- Establishes the configuration as specified by the instructor.
- Establish and maintain a coordinated turn in a 45° bank, increasing elevator back pressure smoothly and firmly until an impending stall is reached.
- Recognizes and recovers promptly at the first indication of an impending stall.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Cross-Control Stall (C-172RG)

Objective:

To familiarize the pilot with the conditions that produce cross-control stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in a cross-control configuration.

Description:

The aircraft is left in a clean configuration while power is reduced to simulate landing conditions after which a stall is initiated by using excessive rudder in the direction of the base-to-final turn and back elevator pressure is applied to keep the nose from lowering. Recovery procedures should be initiated at first indication of stall by applying full power and removing opposite aileron and rudder inputs simultaneously.

Setup Procedure:

1) Select an altitude which allows recovery by 3000' AGL.
2) Perform clearing turns.
3) Close cowl flaps as required.
4) Extend landing gear.
5) Apply carburetor heat.
6) Reduce manifold pressure to 15" or less.
7) Advance propeller to high RPM in white arc.
8) Set mixture to rich.
9) Verify flaps up.
10) Select a point on the ground to act as a runway and position aircraft on a base leg.
11) Upon reaching 65 kts begin a "base-to-final" turn that overshoots final approach and simultaneously:
    a. Correct for final approach path by smoothly applying excessive rudder in the direction of turn.
    b. Use opposite aileron to hold constant bank.
    c. Increase elevator back pressure to keep the nose from dropping below horizon.
12) Recognize and recover from the impending stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, removing opposite rudder and aileron inputs, and adding full power.
13) Turn off carburetor heat.
14) Retract landing gear after a positive rate of climb is established.
15) Open cowl flaps as required.
16) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards

- Exhibits knowledge of the elements of the elements of cross-controlled stalls, with the landing gear extended.
- Exhibits instructional knowledge of common errors related to cross-control stalls, with the landing gear extended.
- Demonstrates and simultaneously explains a cross-control stall, with landing gear extended, from an instructional standpoint.
- Analyzes and corrects simulated common errors related to a cross-control stall with the landing gear extended.

Note: These are the PTS standards for the CFI certificate as these maneuvers are only to be demonstrated to commercial pilot students and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a cross-control stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a cross-control stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.

- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Spin entry due to stalling aircraft in uncoordinated condition.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; CFI PTS

Elevator Trim Stall (C-172RG)

Objective:

To familiarize the pilot with the conditions that produce elevator trim stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls with excessive elevator trim.

Description:

The aircraft is left in a clean configuration while power is reduced to simulate landing conditions and elevator trim is added to maintain a stable descent. After which a go-around is simulated with the excessive trim and therefore a stall attitude is reached rapidly and recovery is initiated returning the aircraft to normal cruise.

Setup Procedure:

1) Select an altitude which allows recovery by 3000' AGL.
2) Perform clearing turns.
3) Open cowl flaps as required.
4) Extend landing gear.
5) Apply carburetor heat.
6) Reduce manifold pressure to 15" or less.
7) Advance propeller to high RPM in white arc.
8) Set mixture to rich.
9) Below 130 kts, set flaps to 10°.
10) Set flaps to 20° and 30° below 100 kts allowing the aircraft to stabilize between each setting.
11) Apply nose up elevator trim to establish a descent at 65kts.
12) Once a 65 kt descent has been established simulate a go-around by applying full power.
13) Turn carburetor heat off.
14) Recognize and recover once an attitude has been reached that would result in an impending stall by:
    a. Reducing angle of attack.
    b. Hold forward elevator pressure while reducing nose up elevator trim.
    c. Set flaps to 20°.
15) Retract landing gear.
16) Set flaps to 10°.
17) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits instructional knowledge of the elements of elevator trim stalls, in selected landing gear and flap configurations.
- Exhibits instructional knowledge of common errors related to elevator trim stalls, in selected landing gear and flap configurations.
- Demonstrates and simultaneously explains elevator trim stalls, in selected landing gear and flap configurations, from an instructional standpoint.
- Analyzes and corrects simulated common errors related to elevator trim stalls in selected configurations.

Note: These are the PTS standards for the CFI certificate as these maneuvers are only to be demonstrated to commercial pilot students and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of an elevator trim stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from an elevator trim stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.

- Uncoordinated flight.
- Not clearing the area.
- Division of attention.
- Forward elevator pressure required in recovery.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Spin entry due to stalling aircraft in uncoordinated condition.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying Handbook; POH/AFM; CFI PTS

Secondary Stall (C-172RG)

Objective:

To familiarize the pilot with the conditions that produce secondary stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls that could occur due to improper recovery techniques.

Description:

The aircraft configured for and placed into a power off stall. During recovery a secondary stall is induced by abrupt control inputs, attempting to return to normal cruise to early, or by not adequately reducing angle of attack during initial stall recovery.

Setup Procedure:

1) Select an altitude which allows recovery by at least 3,000' AGL.
2) Perform clearing turns.
3) Close cowl flaps as required.
4) Extend landing gear.
5) Apply carburetor heat.
6) Reduce manifold pressure to 15" or less.
7) Advance propeller to high RPM once in white arc.
8) Set mixture rich.
9) Set 10° flaps below 130 kts.
10) Set 20° and 30° flaps below 100 kts allowing the aircraft to stabilize between each.
11) Establish a stabilized descent at 65 kts.
12) Reduce power to idle.
13) Maintain coordinated flight and altitude until recognition of the stall.
14) Induce secondary stall by:
    a. Allowing nose to pitch down, but immediately pitch the nose up excessively to maintain desired altitude.
    or
    b. Hold aircraft in stall by not reducing angle of attack.
15) Recover from the secondary stall (aerodynamic buffeting) by simultaneously reducing the angle of attack, leveling the wings, and adding full power.
16) Set flaps to 20°.
17) Retract landing gear after a positive rate of climb is established.
18) Set flaps to 10°.
19) Allow the aircraft to accelerate to V_Y.
20) Open cowl flaps as required.
21) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits instructional knowledge of the elements of secondary stalls, in selected configurations.
- Exhibits instructional knowledge of common errors related to secondary stalls, in selected configurations.
- Demonstrates and simultaneously explains secondary stalls, in selected landing gear and flap configurations, form an instructional standpoint.
- Analyzes and corrects simulated common errors related to secondary stalls in selected configurations.

Note: These are the PTS standards for the CFI certificate as these maneuvers are only to be demonstrated to commercial pilot students and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a secondary stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a secondary stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Spin entry due to stalling aircraft in uncoordinated condition.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.

References:

Airplane Flying Handbook; POH/AFM; CFI PTS

Steep Turns (C-172RG)

Objective:

To develop coordination, orientation, division of attention and smooth control techniques while executing high performance turns.

Description:

The maneuver consists of two 360° turns in opposite directions, using a bank angle of 50° while maintaining a constant airspeed and altitude.

Setup Procedure:

1) Select an altitude which allows performance of maneuver no lower than 1,500' AGL.
2) Perform clearing turns.
3) Reduce manifold pressure to establish airspeed below Va.
4) Enter a coordinated 50° banking turn to the left.
5) Increase power and adjust trim and pitch as required to maintain altitude and airspeed.
6) Begin rollout at ½ the bank angle prior to rollout heading.
7) Continue the maneuver to the other direction.
8) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to steep turns.
- Establishes the manufacturer's recommended airspeed or if one is not stated, a safe airspeed not to exceed Va.
- Rolls into a coordinated 360° steep turn with at least a 50° bank, followed by a 360° turn in the opposite direction.
- Divides attention between airplane control and orientation.
- Maintains the entry altitude, ±100 feet, airspeed, 10 kts, bank, ±5°, and rolls out on the entry heading, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain why load factor increases as bank angle increases.
- Discuss the relationship between load factor and stall speed.
- Discuss the principle of over-banking tendency.
- Explain how to maintain altitude and airspeed.
- Explain limit load factor and what happens if it's exceeded.

Safety Considerations:

- Do not exceed manufacturer's recommended airspeed or Va.
- Always clear the area before initiating the maneuver.
- The maneuver is to be completed no lower than 1,500' feet AGL.
- Division of attention between maneuver and scanning for traffic.

Common Errors:

- Improper pitch, bank, and power coordination during entry and rollout.
- Uncoordinated use of flight controls.
- Improper procedure in correcting altitude deviations.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Chandelle (C-172RG)

Objective:

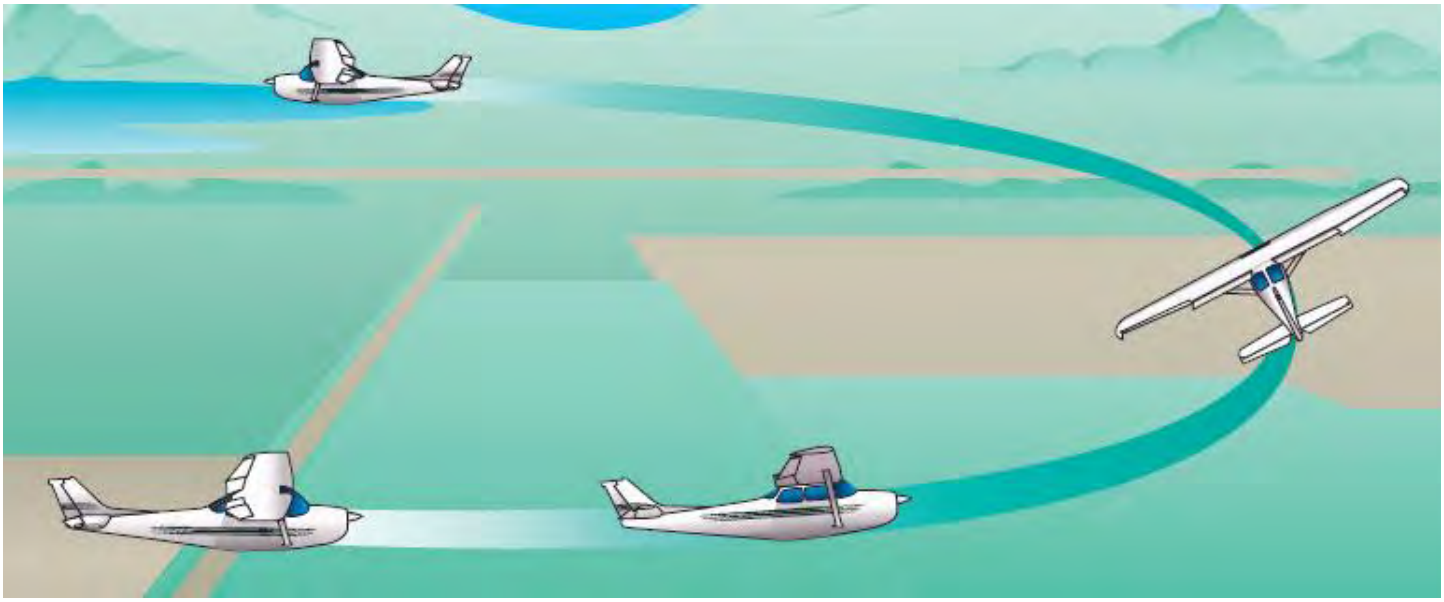
To develop the pilot's coordination, orientation, planning and accuracy of control during maximum performance flight.

Description:

A chandelle is a maximum performance climbing turn beginning from approximately straight and level flight, and ending at the completion of a 180° turn in a wings level, nose high attitude at the minimum controllable airspeed.

Setup Procedure:

1) Select an altitude to perform the maneuver no lower than 1,500' AGL.
2) Perform clearing turns.
3) Orient the airplane so that the turn is into the wind.
4) Establish an airspeed below Va.
5) Open cowl flaps as required.
6) Set propeller to high RPM.
7) Establish a 30° bank turn.
8) Apply full power
9) Increase pitch to reach maximum at the 90° point.
10) At the 90° point, gradually increase back pressure to maintain pitch attitude and begin a coordinated roll out to reach wings level at the 180° point.
11) At the 180° point, establish level flight within 50 feet of final altitude.
12) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to chandelles.
- Selects an altitude that will allow the maneuver to be performed no lower than 1,500’ AGL.
- Establishes the recommended entry configuration, power and airspeed.
- Establishes the angle of bank at approximately 30°.
- Simultaneously applies power and pitch to maintain a smooth, coordinated climbing turn to the 90° point, with a constant bank.
- Begins a coordinated constant rate rollout from the 90° point to the 180° point maintaining power and a constant pitch attitude.
- Completes rollout at the 180° point, ±10° just above a stall airspeed, and maintains that airspeed momentarily avoiding a stall.
- Resumes straight and level flight with minimum loss of altitude.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Coordination during high power settings and high angles of attack.
- Maneuvering the aircraft at high performance levels.

Safety Considerations:

- This maneuver should be performed no lower than 1,500’ AGL.
- Divide attention between flying the airplane and scanning for traffic.
- Maintain coordinated flight.

Common Errors:

- Improper pitch, bank, and power coordination during entry or completion.
- Uncoordinated use of flight controls.
- Improper planning and timing of pitch and bank attitude changes.
- Factors related to failure in achieving maximum performance.
- A stall during the maneuver.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Lazy Eights (C-172RG)

Objective:

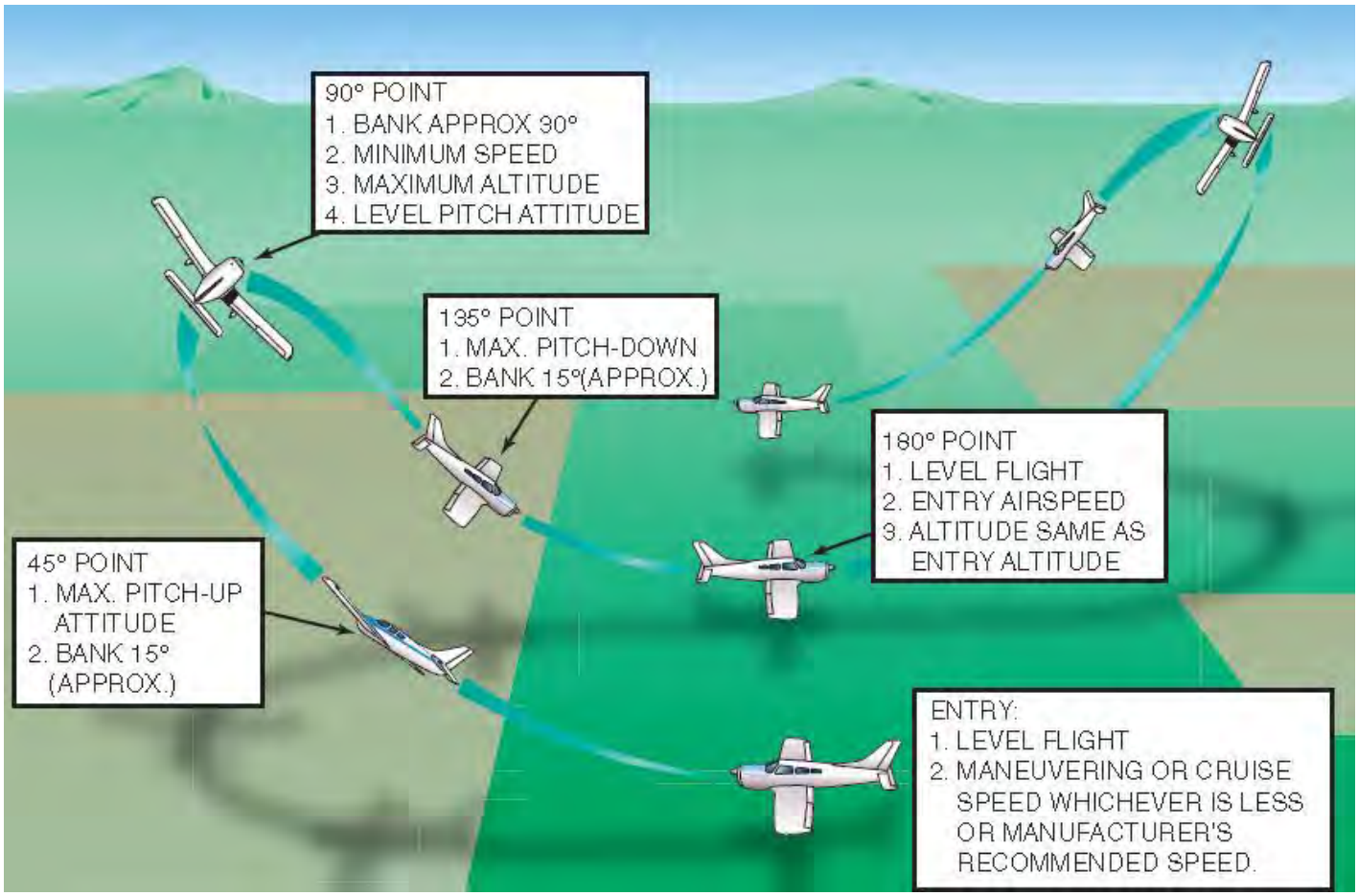
To develop coordination of controls through a wide range of airspeeds and altitudes so that certain accuracy points are reached with planned attitude and bank.

Description:

Two 180° turns, in opposite direction, while making a climb and a descent in a symmetrical pattern during each of the turns. At no time is the airplane flown straight and level.

Setup Procedure:

1) Select an altitude to perform the maneuver no lower than 1,500' AGL.
2) Perform clearing turns.
3) Orient the airplane so that the first turn is to the left and into the wind.
4) Maintain airspeed below Va.
5) Adjust cowl flaps as required.
6) Begin the maneuver by constantly changing pitch and bank maneuver:
    a. 45° point – 15° of bank and max pitch up.
    b. 90° point – 30° of bank, level pitch attitude, minimum controllable airspeed.
    c. 135° point – 15° of bank and max pitch down.
    d. 180° point – back to starting airspeed, altitude, and heading.
7) Repeat in opposite direction.
8) Return to cruise flight and complete cruise checklist to include leaning procedures.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to lazy eights.
- Selects an altitude that will allow the maneuver to be performed no lower than 1,500' AGL.
- Establishes the recommended entry configuration, power, and airspeed.
- Maintains coordinated flight throughout the maneuver.
- Achieves the following throughout the maneuver
    - Approximately 30° bank at the steepest point.
    - Constant change of pitch and roll rate.
    - Altitude tolerance at 180° points, ±100 feet from entry altitude.
    - Airspeed tolerance at the 180° point, ±10 kts from entry airspeed.
    - Heading tolerance at the 180° point ±10°.
- Continues the maneuver through the number of symmetrical loops specified and resumes straight and level flight.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance of proper power setting.
- Explain the need for differing amounts of rudder pressure between the left and right turn.
- Discuss the effects of torque at the top of the eight in both the right and left turns.

Safety Considerations:

- Always clear the area before beginning a maneuver.
- Maintain coordination at all times during the maneuver.
- Use proper division of attention to see and avoid traffic.

Common Errors:

- Uncoordinated use of flight controls.
- Inconsistent airspeed and altitude at key points in the maneuver.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Steep Spiral (C-172RG)

Objective:

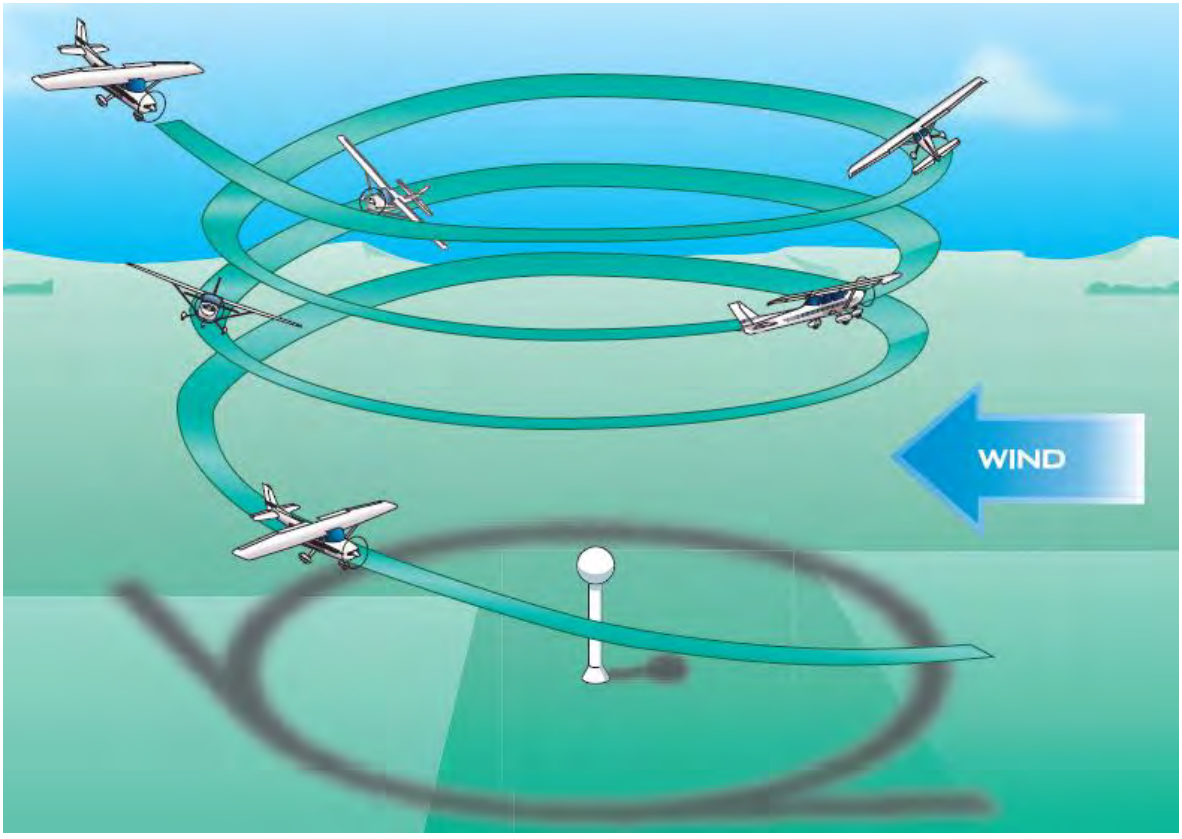
To improve pilot techniques for airspeed control, wind drift control, planning, orientation, and division of attention.

Description:

A steep spiral is a constant gliding turn, during which a constant radius around a point on the ground is maintained.

Setup Procedure:

1) Begin the maneuver with sufficient altitude to allow for three 360° degree turns without descending below 1,500' feet AGL.
2) Select a point to perform the maneuver.
3) Perform clearing turns and maneuver to enter on the downwind.
4) Close cowl flaps as required.
5) Extend the landing gear.
6) Apply carburetor heat.
7) Reduce power and slow to 83 kts.
8) Set prop to high RPM.
9) Set mixture rich.
10) Reduce the power to idle when abeam the point.
11) Maintain 83 kts ($V_{L/D}$ +10 kts).
12) Change bank angle as necessary to maintain an equal distance from the reference point 45-55° of bank, not to exceed 60°.
13) Clear the engine on each upwind leg.
14) Roll out on a specified heading.
15) Increase power to maintain level flight.



16) Turn carburetor heat off.

17) Retract landing gear below 140 kts.
18) Return to cruise flight and complete cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to a steep spiral.
- Selects an altitude sufficient to continue through a series of at least three 360° turns.
- Selects a suitable ground reference point.
- Applies wind-drift correction to track a constant radius circle around the selected reference point with bank not to exceed 60° at steepest point in turn.
- Divides attention between airplane control and ground track, while maintaining coordinated flight.
- Maintains the specified airspeed, ±10 kts, rolls out toward specified heading, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the effect of bank angle on ground track.
- Discuss the effect of ground speed on the radius of the turn.
- Recognize the importance of clearing the engine during extended periods of engine operations at low power settings.

Safety Considerations:

- Clear the area.
- Divide attention between aircraft control and orientation.
- Choose a reference point with emergency landing field within gliding distance.

Common Errors:

- Failure to maintain constant radius around reference point.
- Failure to maintain constant airspeed.
- Uncoordinated use of flight controls.
- Loss of orientation.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Eights On Pylons (C-172RG)

Objective:

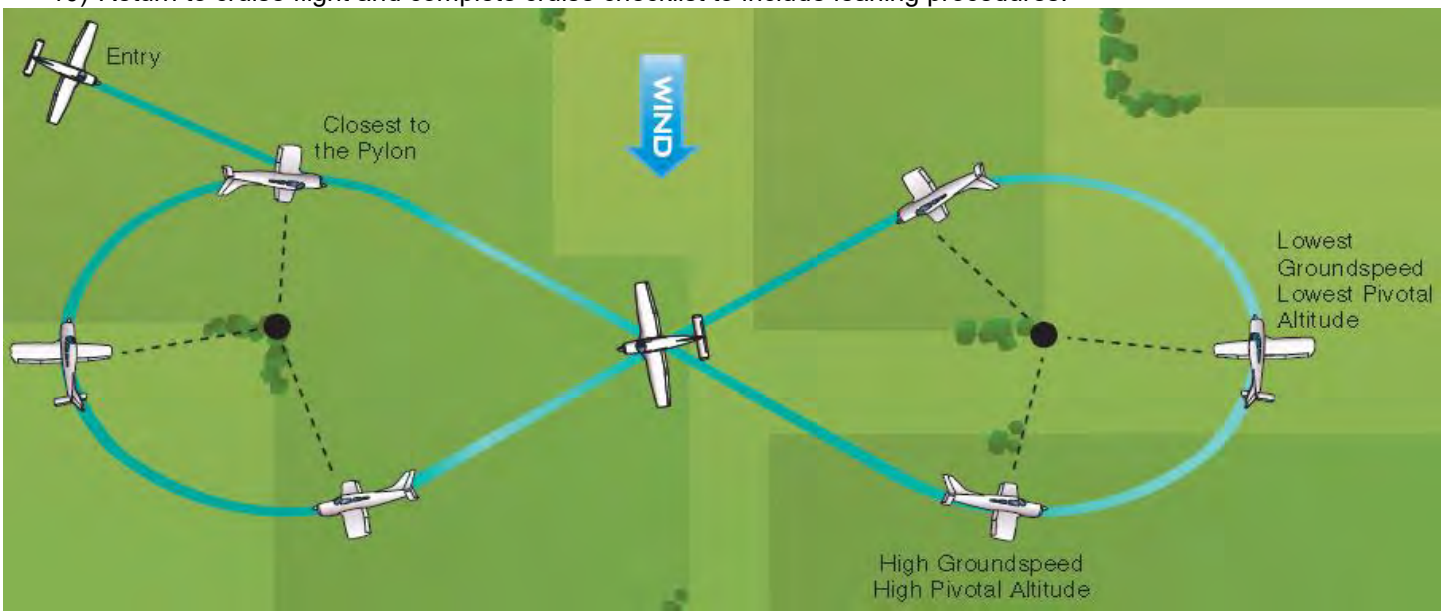
To develop a fine control touch, coordination, and the division of attention necessary for accurate and safe maneuvering of the airplane.

Description:

The airplane is flown in circular paths, alternately left and right, in the form of a figure 8 around two selected points on the ground at such a precise altitude and airspeed that a line parallel to the airplane's lateral axis appears to pivot on each of the pylons.

Setup Procedure:

1) Perform clearing turns.
2) Select two pylons perpendicular to the wind with suitable emergency landing area within gliding distance.
3) Select appropriate emergency landing field
4) Establish the appropriate pivotal altitude.
5) Establish airspeed below Va.
6) Enter the maneuver at a 45° to the downwind with the first turn to the left.
7) When abeam the pylon, begin your turn.
8) Maintain the point on your reference line by climbing or descending as the pivotal altitude changes.
9) Fly straight and level between pylons and repeat around the other pylon.
10) Return to cruise flight and complete cruise checklist to include leaning procedures.



Completion Standards:

- Exhibits knowledge of the elements related to eights on pylons.
- Determines the approximate pivotal altitude.
- Selects suitable pylons that will permit straight and level flight between the pylons.
- Enters the maneuver at the appropriate altitude and airspeed and at a bank angle of approximately 30° or 40° at the steepest point.
- Applies the necessary corrections so that the line of sight reference line remains on the pylon.
- Divides attention between accurate coordinated airplane control and outside visual references.
- Holds pylon using appropriate pivotal altitude avoiding slips and skids.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain how pivotal altitude is affected with changes in groundspeed.
- Compute pivotal altitude.
- Explain the relationship between pivotal altitude and angle of bank.

Safety Considerations:

- Clear the area of traffic and obstacles.
- Look for an emergency landing field nearby.
- Division of attention between maneuver and scanning for traffic.
- Maintain coordinated flight.

Common Errors:

- Faulty entry technique.
- Poor planning, orientation, and division of attention.
- Uncoordinated flight.
- Use of improper line of sight reference.
- Improper timing of turn entries and rollouts.
- Improper wind-drift correction between pylons.
- Selection of pylons where there is no suitable emergency landing area within gliding distance.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Section 7 – MULTI ENGINE RATING

The Multi-Engine Pilot rating is a flight course and an individualized ground school study. All degree seeking students will conduct training under CFR 14 Part 141 unless approved by the Chief Flight Instructor.

This section contains references to the BE-58.

BE-58

Taxiing (BE-58)

Objective:

To safely maneuver the airplane on the airport surface.

Description:

Taxiing is the controlled movement of the airplane under its own power while on the ground.

Setup Procedure:

1) After engine start, check for traffic in both directions, increase power and allow the airplane to roll slightly forward and apply brakes.
2) To turn right, use right rudder. To turn left, use left rudder. Differential power and braking can be used to make a sharper turn.
3) Taxi at a speed consistent with safety, but no faster than a brisk walk. Use power to control taxi speed before using brakes.
4) Apply proper crosswind taxi control deflections. Use upwind engine for additional crosswind taxi control during strong crosswinds.
5) To come to a stop, reduce power to idle and smoothly apply brakes.
6) Use aircraft lighting as recommended by AC 91-73.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to safe taxi procedures.
- Performs a brake check immediately after the airplane begins moving.
- Positions flight controls properly for the existing wind conditions.
- Controls direction and speed without excessive use of brakes.
- Complies with airport/taxiway markings, signals, ATC clearances, and instructions.
- Taxies so as to avoid other aircraft and hazards.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the importance of crosswind taxi techniques.
- Explain how to use differential power while taxiing.
- Explain the importance of using minimal power and braking.

Safety Considerations:

- Maintain taxiway centerline.
- Use aircraft lighting as recommended by AC 91-73.
- Use proper crosswind taxi techniques.
- Taxi at a speed consistent with safety.

Common Errors:

- Not performing a brake check.
- Improper crosswind taxi control deflections.
- Improper use of power and brakes.
- Taxiing at a speed not consistent with safety.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Normal & Crosswind Takeoff & Climb (BE-58)

Objective:

To move the airplane from its starting position on the runway, become airborne and establish a positive climb to a safe maneuvering altitude.

Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll: The airplane is accelerated to an airspeed of 85 kts that provides sufficient lift to become airborne.
2) The rotation, when the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb when the airplane leaves the ground and establishes a pitch attitude to climb away from the runway.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) Use aircraft lighting as recommended by the current version of AC 91-73.
4) Ensure runway is clear, align aircraft with runway centerline, confirm DG is aligned with runway, and ensure nose wheel is straight.
5) Apply brakes.
6) Advance throttles smoothly to 1700 RPM.
7) Check engine instruments for normal indications.
8) Release brakes.
9) Smoothly apply full power.
10) Maintain directional control with rudder pedals and crosswind control with appropriate aileron deflection.
11) Upon reaching rotation speed, 85 kts (V_R), increase back elevator pressure to establish the lift-off attitude and allow the aircraft to fly off the ground.
12) Accelerate to 105 knots (V_Y).
13) Apply brakes. Retract the landing gear when no more useable runway exists and a positive rate of climb is established.
14) At 500 ft. or as workload permits:
    a. Set climb power, full throttle and 2500 RPM.
    b. Complete cruise climb checklist.
    c. Accelerate to a cruise climb airspeed of 136 kts.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to normal and crosswind takeoff, climb operations, and rejected takeoff procedures.
- Positions the flight controls for the existing wind conditions.
- Clears the area, taxies onto the takeoff surface and aligns the airplane on the runway center/takeoff path.
- Establishes a pitch attitude that will maintain V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control, proper wind-drift correction throughout the takeoff and climb.
- Complies with noise abatement procedures.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria including performance charts.
- Discuss how to maintain directional control during the ground roll.
- Discuss proper lift-off technique.
- Explain the need for and how to correct for crosswinds.
- Discuss accelerate-stop distance and accelerate-go distance.
- Discuss the importance of and use of takeoff performance charts.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- If the airplane becomes airborne prior to V_{MC} +5 kts do not apply forward elevator pressure which results in wheel barrowing. Allow the airplane to become airborne, but only a few inches above the runway.
- Consider the effect of density altitude on performance.
- Do not retract landing gear too soon.
- Do not allow upwind wing to rise during takeoff.
- Do not exceed maximum demonstrated crosswind.

Common Errors:

- Improper runway incursion avoidance procedures.
- Inappropriate lift-off procedures.
- Improper climb attitude, power setting, and airspeed.
- Improper use of checklists.
- Improper positioning of the flight controls and wing flaps.
- Drift during climb.
- Failure to establish and maintain proper climb configuration and airspeeds.

References:

Airplane Flying handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Short-field & Crosswind Takeoff & Climb (BE-58)

Objective:

To move the airplane from its starting position on the runway, become airborne, and establish a positive climb to a safe maneuvering altitude in order to clear an obstacle on the departure end of the runway or to depart a short runway.

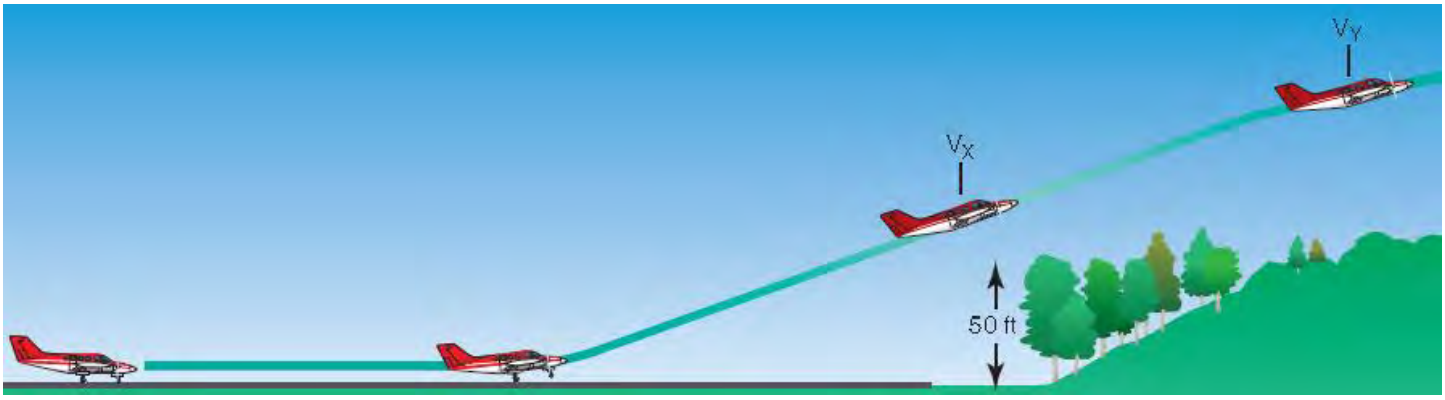
Description:

The takeoff can be separated into 3 steps:

1) The takeoff roll: The airplane is accelerated to an airspeed of 85 kts that provides sufficient lift to become airborne.
2) The rotation: When the pilot increases elevator back pressure, increasing the angle of attack to lift the nose wheel.
3) The initial climb: When the airplane leaves the ground and establishes a pitch attitude to climb away from the runway and clear an obstacle.

Setup Procedure:

1) Position aircraft to view traffic.
2) Complete Short-Field takeoff checklist and takeoff briefing.
3) Use aircraft lighting as recommended by AC 91-73.
4) Back taxi and align aircraft with runway centerline and ensure nose wheel is straight.
5) Apply brakes.
6) Advance throttles smoothly to full power.
7) Check engine instruments for normal indications.
8) Release brakes.
9) Maintain directional control with rudder pedals and crosswind control with appropriate aileron deflection.
10) Upon reaching rotation speed, 85 kts(V_R), increase back elevator pressure to establish the lift-off attitude and allow the aircraft to fly off the ground.
11) Apply brakes. Retract the landing gear when a positive rate of climb is established.
12) Accelerate the aircraft to cross the 50ft obstacle at 100 kts.
13) Accelerate to 105 knots (V_Y).
14) At 500 ft. or as workload permits:
    a. Set climb power, full throttle and 2500 RPM.
    b. Complete cruise climb checklist.
    c. Accelerate to a cruise climb airspeed of 136 kts.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to normal and crosswind takeoff, climb operations, and rejected takeoff procedures.
- Positions the flight controls for the existing wind conditions.
- Clears the area, taxies onto the takeoff surface, and aligns the airplane on the runway center/takeoff path.

- Establishes a pitch attitude that will maintain V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control, proper wind-drift correction throughout the takeoff and climb.
- Complies with noise abatement procedures.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain runway selection criteria including performance charts.
- Discuss how to maintain directional control during the ground roll.
- Discuss proper lift-off technique.
- Explain the need for and how to correct for crosswinds.
- Discuss accelerate-stop distance and accelerate-go distance.
- Discuss the importance of and use of takeoff performance charts.

Safety Considerations:

- Maintain runway centerline.
- Select appropriate runway based on conditions.
- Clear final approach path prior to entering runway.
- If the airplane becomes airborne prior to V_{MC} +5 kts do not apply forward elevator pressure which results in wheel barrowing. Allow the airplane to become airborne, but only a few inches above the runway.
- Consider the effect of density altitude on performance.
- Do not retract landing gear too soon.
- Do not allow upwind wing to rise during takeoff.
- Do not exceed maximum demonstrated crosswind.

Common Errors:

- Improper runway incursion avoidance procedures.
- Inappropriate lift-off procedures.
- Improper climb attitude, power setting, and airspeed.
- Improper use of checklists.
- Improper positioning of the flight controls and wing flaps.
- Drift during climb.
- Failure to establish and maintain proper climb configuration and airspeeds.

References:

Airplane Flying handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Traffic Pattern (BE-58)

Objective:

To ensure that air traffic flows into and out of an airport in an orderly manner.

Description:

The airplane is flown on a rectangular course around a runway at an altitude specified in the current Airport/Facility Directory or as outlined in the FAR/AIM.

Setup Procedure:

Departures

1) All departures:
    a. Fly the departure leg straight out until reaching traffic pattern altitude.
    b. Once reaching traffic pattern altitude, continue climbing and turn on course.

Arrivals

1) Prior to reaching 5 NM from the airfield, complete the following:
    a. Monitor local AWOS/ASOS/ATIS
    b. Ask “Is there any traffic between me and the airport?” and cancel flight following (if applicable)
    c. Complete the Before Landing checklist
2) Slow down below the approach flap airspeed prior to pattern entry.

    If already established on the downwind side, skip to step 4.

3) For a midfield entry:
    a. Cross midfield 500’ above traffic pattern altitude, observing traffic flow and wind direction.
    b. Fly 3-5 miles beyond the downwind leg, then descend to traffic pattern altitude.
    c. Complete a tear-drop shaped turn to the right or left as necessary to position the aircraft at a 45 degree angle to the downwind leg.

    If less than two aircraft are currently in the pattern, the alternate method (cross midfield at traffic pattern altitude, enter directly into downwind leg) may be used.

4) Enter the traffic pattern at the designated traffic pattern altitude (normally 1,000’ AGL) at a 45 degree angle to the downwind leg at midfield.
5) Apply appropriate crab to ensure a parallel flight path approximately ½ to ¾ mile from the runway.
6) Allow for proper spacing from other aircraft in the pattern as to prevent runway incursions upon landing.
7) Maintain airspeed below the flap speed required for each configuration change.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to traffic patterns. This shall include procedures at airports with and without operating control towers, prevention of runway incursions, collision avoidance, wake turbulence avoidance, and wind shear.
- Complies with proper traffic pattern procedures.
- Maintains proper spacing from other aircraft.
- Corrects for wind drift to maintain the proper ground track.
- Maintains orientation with the runway/landing area in use.
- Maintains traffic pattern altitude, ±100 feet and the appropriate airspeed, ±10 kts.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss traffic patterns at controlled and uncontrolled airports.
- Explain traffic pattern procedures.

- Explain how to maintain the proper ground track.

Safety Considerations:

- Maintain proper traffic pattern altitude.
- Maintain a distance from the runway that is within power-off gliding distance.
- Preferred bank of 30 degrees while in pattern.
- Maneuver within 300 feet of traffic pattern altitude before turning crosswind to base.
- Maintain proper aircraft separation.
- Comply with standard traffic pattern procedures or ATC instructions.

Common Errors:

- Failure to comply with traffic pattern instructions, procedures, and rules.
- Improper correction for wind drift.
- Inadequate spacing from other traffic.
- Poor altitude or airspeed control.
- Flying too wide of a pattern.

References:

Airplane Flying handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Normal & Crosswind Approach & Landing (BE-58)

Objective:

To safely transition from flight to ground operations during normal conditions.

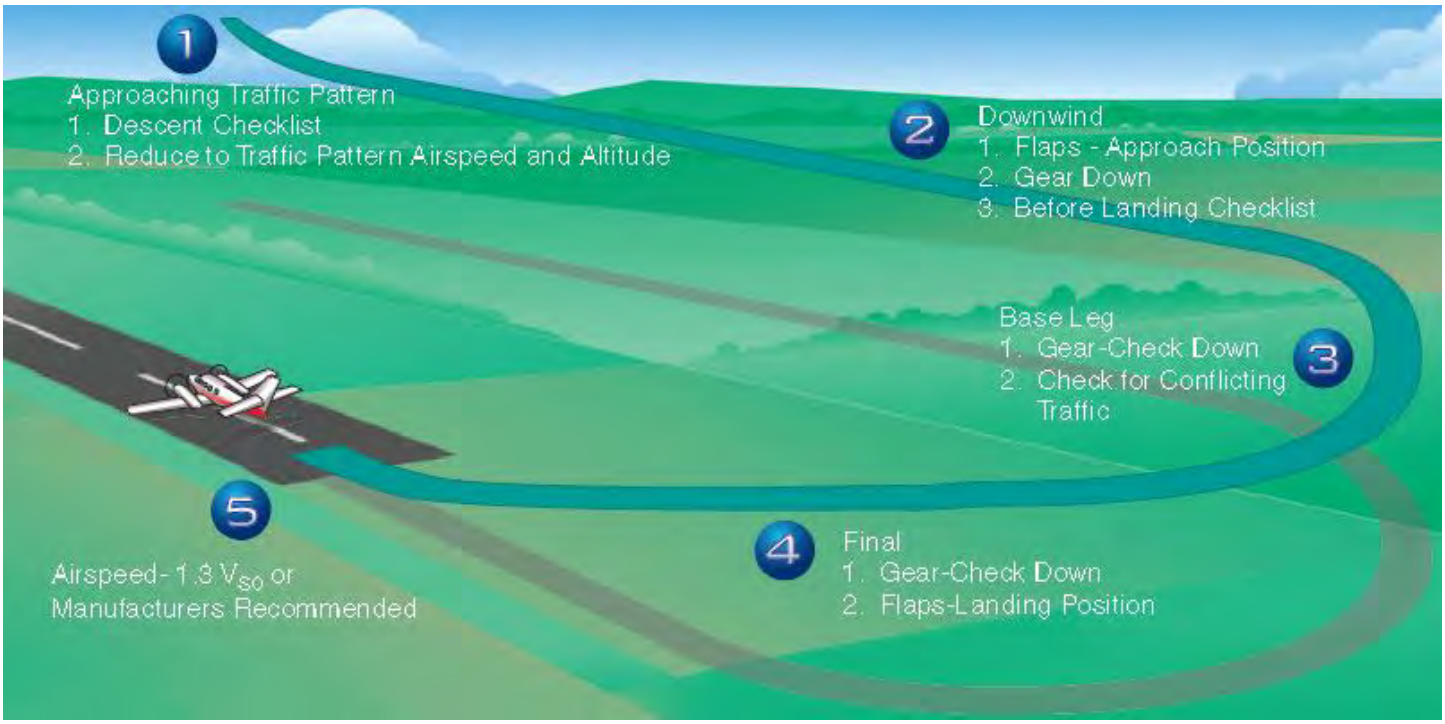
Description:

The aircraft is configured for a stabilized approach in the landing configuration and transitioned from the descent to touchdown.

Setup Procedure:

1) Complete before landing checklist.
2) Confirm approach flaps (15º) below 152 kts.
3) Enter and fly the appropriate pattern at or below 130 kts.
4) Select touchdown and aiming points.
5) When abeam midfield, confirm below Vle and extend landing gear.
6) When abeam the intended touchdown point:
    a. Reduce power to approximately 15” manifold pressure.
    b. Adjust pitch and power to establish a descent of 400-700 fpm and an airspeed of 110 kts.
7) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. Adjust pitch and power to establish a descent of 400-700 fpm and an airspeed of 110 kts.
8) Turn final on the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to DN (30º) below 122 kts.
    c. Adjust pitch and power to establish a stabilized descent of 400-700 fpm and an airspeed of 100 kts.
    d. Perform GUMPS check.
9) On short final:
    a. Ensure 3 down and locked.
    b. Establish a pitch attitude and power setting for 95 kts.
    c. Maintain a stabilized descent to the selected aiming point.
    d. Round out and establish the landing attitude.
    e. Smoothly reduce power to idle while maintaining the landing attitude until touchdown.

10) Exit the runway, complete after landing flow, and confirm with the checklist.



Flight Proficiency Standards:

- Exhibits knowledge of the elements related to normal and crosswind approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point.
- Establishes the recommended approach and landing configuration and airspeed and adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{SO}, ±5 kts with wind gust factor applied.
- Makes smooth, timely, and correct control application during the round out and touchdown.
- Touches down smoothly at approximate stalling speed.
- Touches down at or within 200 feet beyond a specified point, with no drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain proper use of crosswind control inputs.
- Discuss the importance of and use of landing performance charts.

Safety Considerations:

- Observe flap and gear extension speeds.
- On final approach and within 500 feet AGL, the airplane should be on speed, in trim, configured for landing, and tracking extended centerline in a constant descent angle towards an aiming point in the touchdown zone.
- Use proper crosswind correction to avoid drifting from runway centerline.
- Ensure landing gear is extended and locked.

Common Errors:

- Improper use of landing performance data and limitations.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Failure to establish and maintain a stabilized approach.
- Improper technique during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.

References:

Airplane Flying handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Short-field & Crosswind Approach & Landing (BE-58)

Objective:

To safely transition from flight to ground operations while landing on a short runway with a 50ft obstacle and/or land on a specified touchdown spot.

Description:

The aircraft is configured for a stabilized approach in the landing configuration to clear a 50ft obstacle and transitioned from the descent to touchdown to a specified touchdown point.

Setup Procedure:

1) Complete before landing checklist.
2) Confirm approach flaps (15°) below 152 kts.
3) Enter and fly the appropriate pattern at or below 130 kts.
4) Select touchdown and aiming points.
5) When abeam midfield, confirm below Vle and extend landing gear.
6) When abeam the intended touchdown point:
    a. Reduce power to approximately 15" manifold pressure.
    b. Adjust pitch and power to establish a descent of 400-700 fpm and an airspeed of 110 kts.
7) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. Adjust pitch and power to establish a descent of 400-700 fpm and an airspeed of 110 kts.
8) Turn final on the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Set flaps to DN (30°) below 122 kts.
    c. Adjust pitch and power to establish a stabilized descent of 400-700 fpm and an airspeed of 100 kts.
    d. Perform GUMPS check.
9) On short final:
    a. Ensure 3 down and locked.
    b. Establish a pitch attitude and power setting for recommended approach speed based on weight.
        i. 5400 lbs 95 kts
        ii. 5000 lbs 91 kts
        iii. 4600 lbs 87 kts
        iv. 4000 lbs 81 kts
    c. Maintain a stabilized descent above the 50 ft obstacle to the selected aiming point.
    d. Round out and establish the landing attitude.
    e. Smoothly reduce power as required while maintaining the landing attitude until touchdown.
10) Apply maximum braking to a complete stop without skidding the tires.
11) Exit the runway, complete after landing flow, and confirm with the checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to normal and crosswind approach and landing.
- Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point.
- Establishes the recommended approach and landing configuration and airspeed and adjusts pitch attitude and power as required.
- Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{S0}, ±5 kts with wind gust factor applied.
- Clears the 50ft obstacle (if applicable).
- Makes smooth, timely, and correct control application during the round out and touchdown.
- Touches down smoothly at approximate stalling speed.
- Touches down at or within 100 feet beyond a specified point, with no drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.

- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain importance of airspeed management.
- Discuss effect of flaps on approach to landing.
- Describe effect of descent angle on a stabilized approach.
- Discuss proper selection and use of aiming point.
- Explain proper use of crosswind control inputs.
- Discuss the importance of and use of landing performance charts.

Safety Considerations:

- Observe flap and gear extension speeds.
- On final approach and within 500 feet AGL, the airplane should be on speed, in trim, configured for landing and tracking extended centerline in a constant descent angle towards an aiming point in the touchdown zone.
- Use proper crosswind correction to avoid drifting from runway centerline.
- Ensure landing gear is extended and locked.

Common Errors:

- Improper use of landing performance data and limitations.
- Failure to establish approach and landing configuration at appropriate time or in proper sequence.
- Failure to establish and maintain a stabilized approach.
- Improper technique during round out and touchdown.
- Improper use of brakes.
- Poor directional control after touchdown.
- Failure to clear an obstacle.
- Failure to touch down within the specified touchdown point parameters.

References:

Airplane Flying handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Go-Around (BE-58)

Objective:

To safely discontinue the landing approach when unsatisfactory conditions exist.

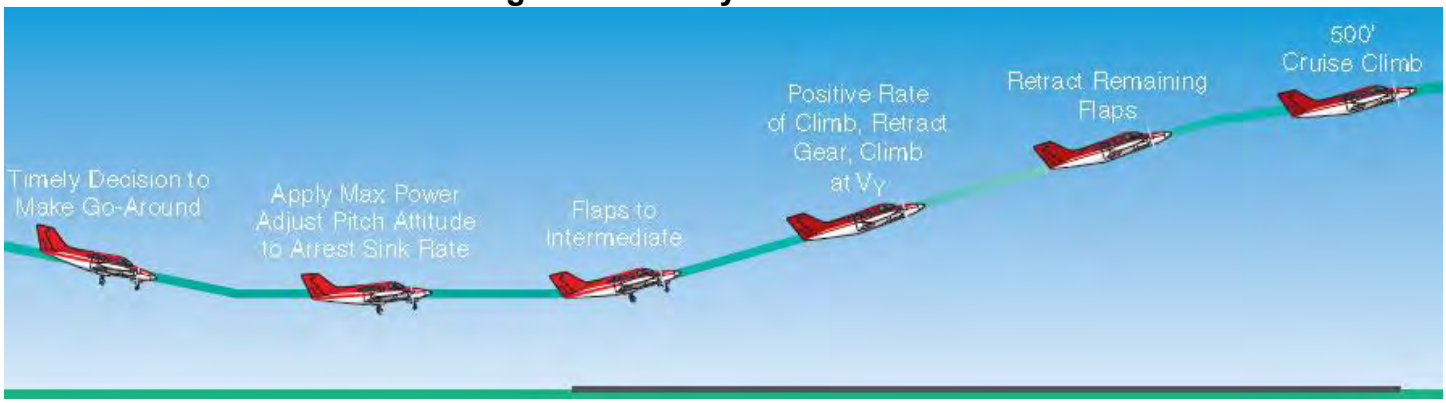
Description:

As full power is applied, the aircraft attitude is adjusted to accelerate to V_Y and climb. As a safe airspeed is attained, flaps are retracted incrementally, allowing stabilization between each retraction. Landing gear is retracted after a positive rate of climb is attained.

Setup Procedure:

8) Simultaneously apply maximum power, establish a go-around pitch attitude, and press the GA button.
9) Retract flaps to APH (15°).
10) Accelerate to 95 kts and simultaneously climb.
11) Retract landing gear after a positive rate of climb is established.
12) Retract flaps to 0°.
13) Open cowl flaps, as necessary, as workload permits.
14) Verify Go Around checklist is complete.

Flight Proficiency Standards:



- Exhibits knowledge of the elements related to a go-around/rejected landing.
- Makes a timely decision to discontinue the approach to landing.
- Applies takeoff power immediately and transitions to climb pitch attitude for V_Y, and maintains V_Y ±5 kts.
- Retracts the flaps as appropriate.
- Retracts the landing gear, if appropriate, after a positive rate of climb is established.
- Maneuvers to the side of the runway/landing area to clear and avoid conflicting traffic.
- Maintains takeoff power V_Y ±5 kts to a safe maneuvering altitude.
- Maintains directional control and proper wind-drift correction throughout the climb.
- Completes the appropriate checklists.

Note: These are the ACS standards and the CFI will refer Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss events that may require a go-around.
- Explain the importance of maintaining airspeed and coordination during the go-around procedure.
- Discuss the necessity for maneuvering to the side of the runway after making the decision to go-around.

Safety Considerations:

- Maneuver the airplane to the side of the runway.
- Do not establish a pitch up attitude too quickly.
- Maintain coordination.

- Timely decision making.
- Be watchful for situations which may require a go-around.

Common Errors:

- Delayed decision to make a go-around.
- Improper application of power.
- Failure to control pitch attitude.
- Improper trim technique.
- Failure to compensate for torque effect.
- Failure to maintain V_Y as appropriate.
- Improper wing flap retraction.
- Improper gear retraction.
- Failure to maintain well clear of obstructions and other traffic.
- Improper use of checklists.

References:

Airplane Flying handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Maneuvering During Slow Flight (BE-58)

Objective:

To demonstrate the flight characteristics and controllability of an airplane at speeds lower than normal cruise and develop proficiency in performing maneuvers that require slow airspeeds.

Description:

Slow flight consists of slowing the aircraft to a minimum controllable airspeed in the landing configuration and maneuvering the aircraft while maintaining altitude and airspeed.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 3,000' AGL.
2) Perform clearing turns.
3) Reduce manifold pressure to 15" or less.
4) Extend flaps to APH (15°) below 152 kts.
5) Extend landing gear below 152 kts.
6) Advance propeller to high RPM once airspeed is in the white arc.
7) Set mixture to rich.
8) Extend flaps to DN (30°) below 122 kts.
9) Open cowl flaps as required.
10) Adjust pitch and power as necessary to maintain altitude.
11) Establish and maintain an airspeed at which any further increase in pitch or reduction of power would result in an immediate stall or a higher speed as specified by your instructor.
12) Maneuver as instructed.
13) Recover when instructed by:
    a. Adding full power.
    b. Retract flaps to APH (15°).
    c. Retract landing gear.
    d. Retract flaps to 0°.
14) Return to cruise flight and perform the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to maneuvering during slow flight.
- Selects an entry altitude that will allow the task to be completed no lower than 3,000' AGL.
- Establish and maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in a stall warning (e.g., airplane buffet, stall horn, etc.).
- Accomplishes coordinated straight and level flight, turns, climbs, and descents with landing gear and flap configurations specified by the instructor.
- Divides attention between airplane control and orientation.
- Maintains the specified altitude, ±50 feet; specified headings, ±10°; airspeed +5/-0 kts, and specified angle of bank, ±5°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the relationship between pitch and power in maintaining airspeed and altitude during slow flight.
- Discuss how flight at minimum airspeeds develops the ability to estimate the margin of safety above the stalling speed.
- Compare the practice of slow flight to various phases of flight such as takeoffs, climbs, descents, go-arounds, and approaches to landing.
- Discuss stall speed vs. bank angle.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.

- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified gear and flap configuration.
- Improper entry technique.
- Failure to establish and maintain the specified airspeed.
- Excessive variations of altitude and heading when a constant altitude and heading are specified.
- Rough or uncoordinated control technique.
- Improper trim technique.
- Bank angle too high during turns.

References:

Airplane Flying handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Power-Off Stall (BE-58)

Objective:

To familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in the landing configuration.

Description:

The aircraft is slowed down and placed in the landing configuration; after which, a stall is induced and recovery initiated, returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 3,000' AGL.
2) Perform clearing turns.
3) Reduce manifold pressure to 15" or less.
4) Extend flaps to APR (15°) below 152 kts.
5) Extend landing gear below 152 kts.
6) Establish and maintain a pitch attitude to maintain altitude.
7) Advance propeller to high RPM once airspeed is in the white arc.
8) Set mixture to rich.
9) Extend flaps to DN (30°) below 122 kts.
10) Close cowl flaps as required.
11) Establish a stabilized descent at 95 kts.
12) Reduce power to idle.
13) Maintain coordinated flight and altitude until recognition of the stall. As the stall occurs, recover from the stall by simultaneously reducing the angle of attack, adding full power, and leveling the wings.
14) Retract flaps to APH (15°).
15) Retract the landing gear after positive rate of climb.
16) Retract flaps to 0°.
17) Open the cowl flaps as required.
18) Accelerate the airplane to 105 kts (V_Y) and climb.
19) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-off stalls.
- Selects an entry altitude that allows the task to be completed no lower than 3,000' AGL.
- Establishes a stabilized descent in the approach or landing configuration, as specified by the instructor.
- Transitions smoothly from the approach or landing attitude to a pitch attitude that will induce a stall.
- Maintains a specified heading, ±10° in straight flight; maintains a specified angle of bank, not to exceed 20°, ±5°, in turning flight while inducing the stall.
- Recognizes and recovers promptly as the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable, and leveling the wings to return to a straight and level flight attitude with a minimum loss of altitude appropriate for the airplane.
- Retracts the flaps to the recommended setting, retracts the landing gear, if retractable, after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flap retraction.
- Returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.

- Discuss stall speeds vs. bank angles.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Power-On Stall (BE-58)

Objective:

To familiarize the pilot with the conditions that produce stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in the takeoff configuration.

Description:

The aircraft is slowed down and placed in the takeoff configuration; after which, a stall is induced and recovery initiated, returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 3,000' AGL.
2) Perform clearing turns.
3) Verify gear retracted.
4) Reduce power to 12" manifold, allowing the aircraft to slow to takeoff speed while maintaining altitude.
5) Advance propeller to high RPM when airspeed is in the white arc.
6) Set mixture to rich.
7) Verify flaps retracted.
8) Open cowl flaps as required.
9) Increase power to 17-20" at 85 kts (V_R).
10) Transition smoothly to the pitch attitude that will induce a stall.
11) Recognize and recover from the stall as the stall occurs by simultaneously reducing the angle of attack, adding full power, and leveling the wings.
12) Accelerate the airplane to 105 kts (V_Y) and climb.
13) Verify clean configuration.
14) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to power-on stalls.
- Selects an entry altitude that allows the task to be completed no lower than 3,000' AGL.
- Establishes the takeoff or departure configuration.
- Sets power to no less than 65 percent available power (except where permitted in PTS).
- Transitions smoothly from the takeoff or departure attitude to a pitch attitude that will induce a stall.
- Maintains a specified heading ±5°, in straight flight; maintains a specified angle of bank, not to exceed a 20°, ±10°, in turning flight, while inducing the stall.
- Recognizes and recovers promptly as the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable, and leveling the wings to return to a straight and level flight attitude, with a minimum loss of altitude appropriate for the airplane.
- Retracts flaps to the recommended setting, retracts the landing gear, if retractable, after a positive rate of climb is established.
- Accelerates to V_X or V_Y speed before the final flaps retraction and returns to the altitude, heading, and airspeed specified by the instructor.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.
- Discuss stall speeds vs. bank angles.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.

Common Errors:

- Failure to establish specified configuration.
- Improper pitch, heading, and bank control.
- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Improper torque correction.
- Poor stall recognition and delayed recovery.
- Excessive altitude loss or excessive airspeed during recovery.
- Secondary stall during recovery.

References:

Airplane Flying handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Accelerated Stall (BE-58)

Objective:

To familiarize the pilot with the conditions that produce accelerated stalls, to assist in recognizing an approaching stall, and to develop skills to prevent and recover from stalls in an accelerated configuration.

Description:

The aircraft is slowed down and placed in the clean configuration. After which a steep turn is applied with excessive back elevator pressure and therefore a stall is induced at a higher than normal stalling speed and recovery initiated returning the aircraft to normal cruise flight.

Setup Procedure:

1) Select an altitude which allows recovery by at least 3,000' AGL.
2) Perform clearing turns.
3) Verify gear up.
4) Reduce power to 15" allowing the aircraft to slow below maneuvering speed while maintaining altitude.
5) Advance propeller to high RPM smoothly.
6) Set mixture to rich.
7) Verify flaps up.
8) At 110-120kts transition smoothly to a 45 degree bank and apply back pressure to induce an accelerated stall.
9) Recognize and recover from the stall as the stall occurs by simultaneously leveling the wings, reducing the angle of attack, and increasing power.
10) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to accelerated stalls.
- Selects an entry altitude that allows the task to be completed no lower than 3,000' AGL.
- Establishes a clean configuration.
- Transitions smoothly from straight and level flight to a steep turn configuration and applies enough back pressure that will induce an accelerated stall.
- Recognizes and recovers promptly as the stall occurs by simultaneously reducing the bank angle of the wings to return to a straight and level flight attitude, decreasing the angle of attack, and increasing power to maximum allowable, with a minimum loss of altitude appropriate for the airplane.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the aerodynamics of a stall.
- Describe the indications of an impending stall and how to prevent a stall from occurring.
- Describe the steps in recovering from a stall.
- Discuss the factors that affect the stalling characteristics of the airplane.
- Explain how to avoid a spin.
- Discuss stall speed vs. bank angle.

Safety Considerations:

- Altitude selection too low.
- Uncoordinated flight.
- Not clearing the area.
- Division of attention.
- Adding back pressure to induce an accelerated stall at an airspeed more than 20 kts over 83 kts (V_{S1}).

Common Errors:

- Failure to establish specified configuration.
- Improper pitch and bank control.

- Rough or uncoordinated control technique.
- Failure to recognize indications of a stall.
- Failure to achieve a stall.
- Poor stall recognition and delayed recovery.
- Excessive airspeed during recovery.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Steep Turns (BE-58)

Objective:

To develop coordination, orientation, division of attention, and smooth control techniques while executing high performance turns.

Description:

The maneuver consists of two 360° turns in opposite directions, using a bank angle of 50° while maintaining a constant airspeed and altitude.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 3,000' AGL.
2) Perform clearing turns.
3) Adjust the mixture in accordance with the POH.
4) Verify gear and flaps retracted.
5) Reduce manifold pressure to establish airspeed below V_A (recommended 135kts).
6) Close cowl flaps as required.
7) Enter a coordinated 50° banking turn to the left.
8) Increase power and adjust pitch and trim as required to maintain altitude and airspeed.
9) Begin rollout at ½ the bank angle prior to rollout heading.
10) Continue the maneuver in the opposite direction.
11) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to steep turns.
- Establishes the manufacturer's recommended airspeed or if one is not stated, a safe airspeed not to exceed V_A.
- Rolls into a coordinated 360° steep turn with at least a 50° bank, followed by a 360° turn in the opposite direction.
- Divides attention between airplane control and orientation.
- Maintains the entry altitude, ±100 feet; airspeed, ±10 kts; bank, ±5°; and rolls out on the entry heading, ±10°.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain why load factor increases as bank angle increases.
- Discuss the relationship between load factor and stall speed.
- Discuss the principle of over banking tendency.
- Explain how to maintain altitude and airspeed.
- Explain limit load factor and what happens if it's exceeded.
- Calculating V_A: $VA = VA\ Max\ * \sqrt{Actual Weight}\ \div Max\ Gross\ Weight$

Safety Considerations:

- Do not exceed manufacturer's recommended airspeed or V_A.
- Always clear the area before initiating the maneuver.
- The maneuver is to be completed no lower than 3,000' AGL.
- Division of attention between maneuvering and scanning for traffic.

Common Errors:

- Improper pitch, bank, and power coordination during entry and rollout.
- Uncoordinated use of flight controls.
- Improper procedure in correcting altitude deviations.
- Loss of orientation.
- Wrong speed used for V_A.

References:

Airplane Flying handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Emergency Descent (BE-58)

Objective:

To descend the airplane as rapidly as possible, within the structural limitations of the airplane.

Description:

The emergency descent is a maneuver for descending as rapidly as possible to a lower altitude or to the ground for an emergency landing.

Setup Procedure:

1) Perform clearing turns.
2) If utilizing flight following, contact ATC for traffic advisories below.
3) Reduce power to idle.
4) Advance props to high RPM.
5) Set mixture to rich.
6) Roll into a 30° bank to the left and pitch down to achieve 142 kts (*Note*: this is a 10 knot buffer to prevent exceeding V_{LE}; in a real emergency use 152 kts).
7) Extend flaps to APH (15°) below 152 kts.
8) Extend landing gear below 152 kts.
9) Confirm cowl flaps closed as required.
10) Initiate recovery to level flight at least 300' prior to assigned altitude by:
    a. Rolling out the bank.
    b. Pitching up.
11) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to an emergency descent.
- Recognizes situations, such as depressurization, cockpit smoke and/or fire that require an emergency descent.
- Establishes the appropriate airspeed and configuration for the emergency descent.
- Exhibits orientation, division of attention, and proper planning.
- Maintains positive load factors during the descent.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss the situations in which an emergency descent would be used.
- Explain the airplane configuration of an emergency descent.
- Discuss gear extension and retraction speeds.

Safety Considerations:

- Clear the area, including below, before initiating the maneuver.
- Divide attention between aircraft control and outside reference.
- Maintain positive aircraft control.

Common Errors:

- Slow response to the emergency.
- Failure to establish the specified configuration.
- Failure to establish and maintain the prescribed airspeed for the configuration.
- Incorrect engine settings.
- Failure to maintain positive load factor in the descent.
- Uncoordinated use of controls.

References:

Airplane Flying handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Engine Failure During Takeoff Before V_{MC} (BE-58)

Objective:

To maintain control of the aircraft and bring it to a stop after engine failure prior to V_{MC}.

Description:

Once the decision to reject a takeoff is made, the pilot should promptly close both throttles and maintain directional control with the rudder, nose wheel steering, and brakes.

Setup Procedure:

1) Taxi onto the runway and align the aircraft on the centerline.
2) Perform a normal or short field takeoff as specified.
3) The instructor or examiner will fail an engine before ½ V_{MC}.
4) When the engine fails, an unexpected yaw will occur, immediately reduce power on both engines to idle and maintain directional control.
5) Apply brakes as necessary.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to the procedure used for engine failure during takeoff prior to reaching V_{MC}.
- Closes the throttles smoothly and promptly when simulated engine failure occurs.
- Maintains directional control and applies brakes, as necessary.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Describe how to recognize an engine failure during takeoff.
- Explain the procedures for an engine failure during takeoff.

Safety Considerations:

- Prompt reaction of student and instructor to prevent inadvertent runway exit.
- Maintain positive aircraft control.
- Failure of the engine prior to 50% of 74 kts (V_{MC}).

Common Errors:

- Failure to follow the prescribed emergency procedure.
- Failure to promptly recognize an engine failure.
- Failure to promptly close throttles of both engines following engine failure.
- Faulty directional control and use of brakes.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Engine Failure After Takeoff (BE-58)

Objective:

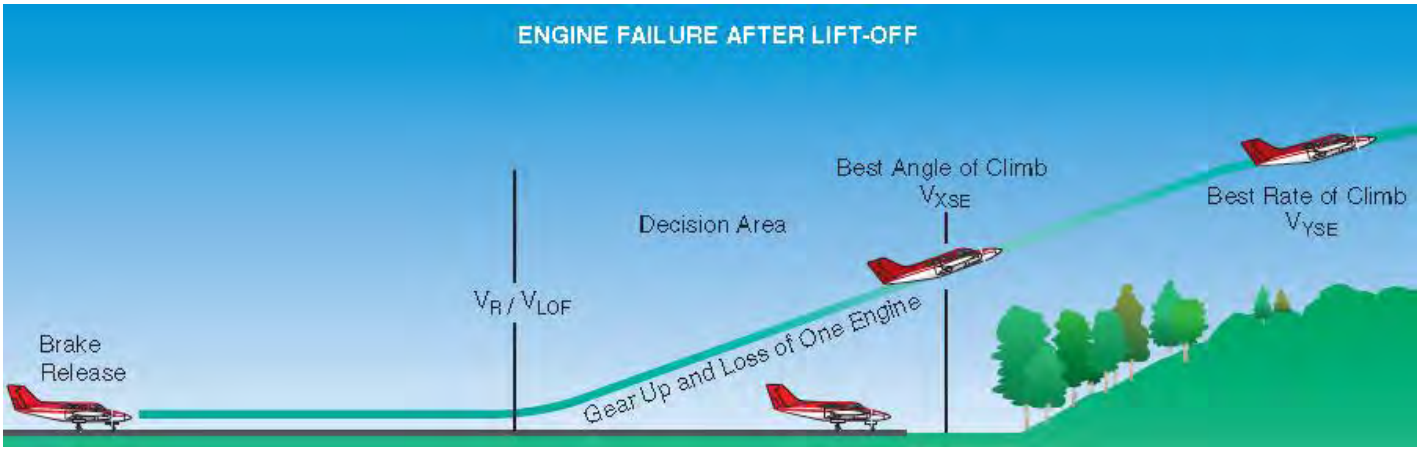
To maintain control of the aircraft after a simulated engine failure following takeoff and return to the airport for a safe landing.

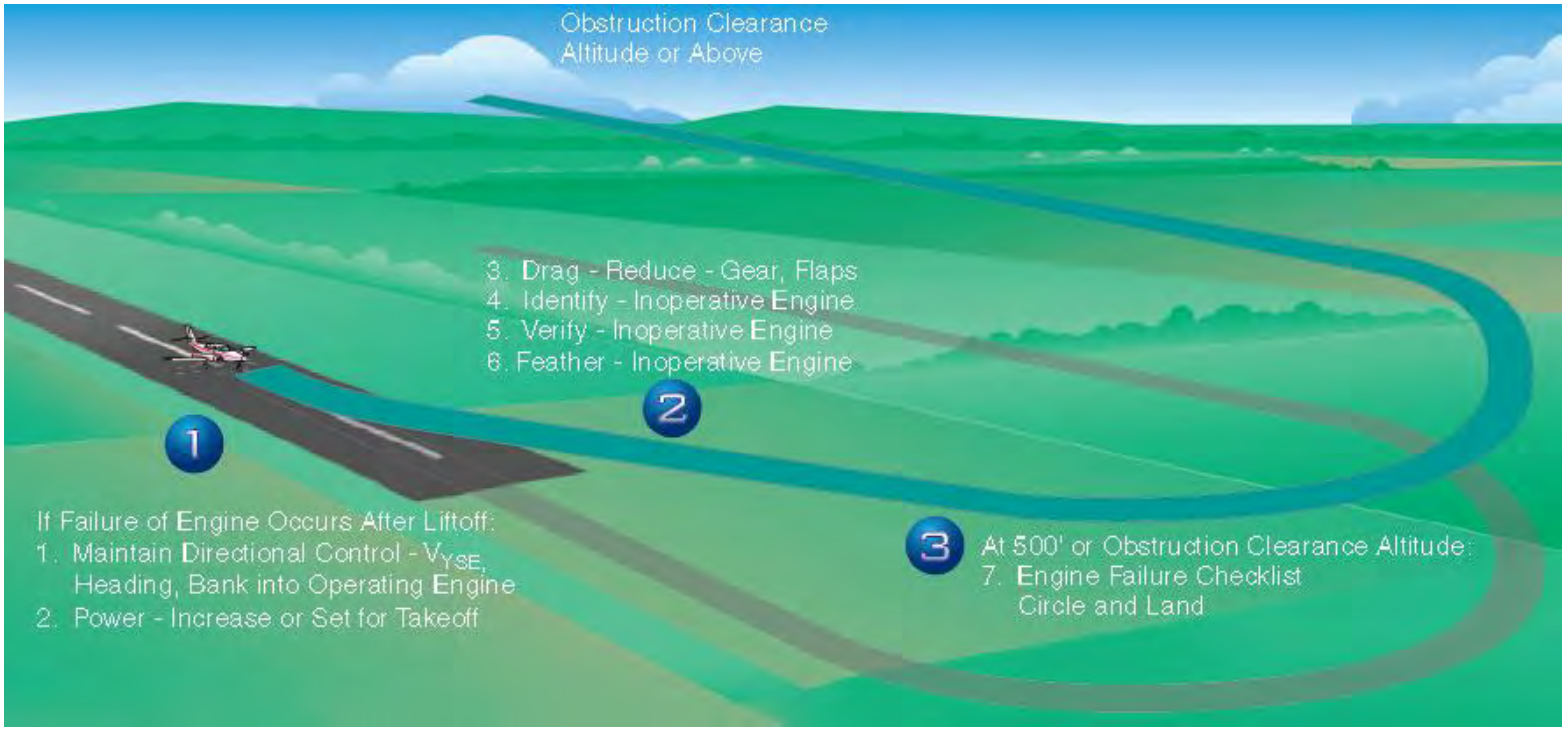
Description:

A simulated engine failure is given no lower than 500' AGL. Maintain directional control and comply with the manufacturer's recommended emergency procedures while returning to the airport for a landing.

Setup Procedure:

1) Maintain positive aircraft control and pitch for 100 (V_{YSE}); blue line.
2) Power up:
    a. Mixture full rich
    b. Propellers full forward
    c. Throttles full power
3) Clean up:
    a. Retract flaps
    b. Retract landing gear
4) Identify: Dead foot, dead engine.
5) Verify: Reduce power on suspected inoperative engine. If there are no changes then continue to reduce power to idle.
6) Feather the propeller of the inoperative engine.
7) Climb at 100 kts (V_{YSE}) and zero sideslip (bank angle approximately 2-5° and ⅓ to ½ ball deflection toward the operative engine).
8) Climb straight ahead, or with shallow turns to avoid obstacles.
9) Complete the Engine Failure After Lift-Off Checklist. Aircraft control should never be sacrificed to execute a checklist.
10) Return for landing. If not able to maintain altitude, land straight ahead.





Flight Proficiency Standards:

- Exhibits knowledge of the elements related to the procedure used for engine failure after lift-off.
- Recognizes a simulated engine failure promptly, maintains control, and utilizes appropriate emergency procedures.
- Reduces drag, identifies and verifies the inoperative engine after simulated engine failure.
- Simulates feathering the propeller on the inoperative engine. Instructor shall then establish zero-thrust on the inoperative engine.
- Establishes V_{YSE}; if obstructions are present, establishes V_{XSE} or V_{MC} +5 kts, whichever is greater, until obstructions are cleared. Then transitions to V_{YSE}.
- Banks toward the operating engine as required for best performance.
- Monitors operating engine and makes adjustments, as necessary.
- Recognizes the airplane's performance capabilities. If a climb is not possible at V_{YSE}, maintain V_{YSE} and return to the departure airport for landing, or initiates an approach to the most suitable landing area available.
- Secures the (simulated) inoperative engine.
- Maintains heading, ±10°, and airspeed, ±5 kts.
- Completes appropriate emergency checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the procedures and aircraft configuration during an engine failure after takeoff.
- Discuss the aircraft's handling characteristics during an engine failure after takeoff.
- Discuss zero sideslip.
- Discuss the three major accident factors: Loss of directional control, loss of performance, and loss of flying speed.

Safety Considerations:

- Divide attention between aircraft control and outside reference.
- Maintain positive aircraft control.
- Simulate the engine failure above 88 kts (V_{SSE}) after reaching a safe altitude (at least 500' AGL).

Common Errors:

- Failure to follow prescribed emergency checklists.
- Failure to properly identify and verify the inoperative engine.
- Failure to properly adjust engine controls and reduce drag.
- Failure to maintain directional control.
- Failure to establish and maintain a pitch attitude that will result in best engine inoperative airspeed, considering the height of obstructions.
- Failure to establish and maintain proper bank for best performance.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Approach & Landing Engine Inoperative (BE-58)

Objective:

To maintain aircraft control during approach and landing with one engine simulated inoperative.

Description:

The approach and landing with one engine inoperative is essentially the same as a two engine approach and landing. The traffic pattern should be flown at similar altitudes, airspeeds, and key positions as a two engine approach. The differences will be the power available and that the thrust is asymmetrical. A higher than normal power setting will be necessary to maintain airspeed.

Setup Procedure:

1) Complete before landing and one engine inoperative landing checklists (if time and safety permit).
2) Set flaps, as required, to APH (15°).
3) Enter and fly the appropriate pattern.
4) Select touchdown and aiming points.
5) When abeam midfield, confirm below V_{LE} and extend landing gear.
6) When abeam the intended touchdown point:
    a. Reduce power to approximately 17" manifold pressure (as required).
    b. Adjust pitch and power to establish a descent of 400-700 fpm and an airspeed at 100 kts (V_{YSE}).
7) Turn on the base leg when 45° from the touchdown point:
    a. Apply appropriate crosswind correction to fly perpendicular to the extended runway centerline.
    b. At key position, assess approach position.
    c. Maintain stabilized descent at 100 kts (V_{YSE}).
8) Turn final on the extended runway center line:
    a. Apply appropriate crosswind correction to maintain the extended runway centerline.
    b. Adjust pitch and power to establish a stabilized descent of 400-700 fpm and an airspeed of 100 kts(V_{YSE}).
    c. Perform GUMPS check.
9) On short final:
    a. Ensure 3 down and locked.
    b. Establish a pitch attitude and power setting for 95 kts.
    c. Maintain a stabilized descent to the selected aiming point.
    d. Round out and establish the landing attitude.
    e. Smoothly reduce power to idle while maintaining the landing attitude until touchdown.
10) Exit the runway, complete after landing flow, and confirm with the checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to an approach and landing with an engine inoperative to include engine failure on final approach.
- Recognizes engine failure and takes appropriate action, maintains control, and utilizes recommended emergency procedures.
- Banks toward the operating engine, as required, for best performance.
- Monitors the operating engine and makes adjustments as necessary.
- Maintains the recommended approach airspeed ±5 kts, and landing configuration with a stabilized approach, until landing is assured.
- Makes smooth, timely and correct control applications during round out and touchdown.
- Touches down on the first one third of available runway, with no drift and the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Maintains crosswind correction and directional control throughout the approach and landing sequence.
- Completes appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Discuss how to perform an engine out simulated landing.
- Explain why the pattern is fairly similar to a normal landing.
- Discuss why a single engine go around is not desired.

Safety Considerations:

- Divide attention between aircraft control and outside reference.
- Maintain positive aircraft control.
- Use of rudder trim.

Common Errors:

- Slow response to the emergency situation.
- Failure to establish the prescribed configuration.
- Failure to establish and maintain the desired airspeed.
- Incorrect engine control settings.
- Flying an unusually large traffic pattern.
- Over adjusting the traffic pattern for the loss of an engine.
- Uncoordinated use of controls.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

V_{MC} Demonstration (BE-58)

Objective:

To familiarize the student with the flight characteristics of an impending V_{MC} situation and how to recover from such if it should occur.

Description:

With the critical engine simulate inoperative, airspeed will be reduced until the first indication of either a stall, or a loss of directional control.

Setup Procedure:

1) Select an altitude which allows recovery to be completed no lower than 5,000' AGL.
2) Perform clearing turns.
3) Ensure the landing gear is retracted.
4) Reduce manifold pressure to 12".
5) Advance propellers full forward once airspeed is in the white arc.
6) Set mixtures rich.
7) Confirm flaps are retracted.
8) Open cowl flaps as required.
9) Adjust pitch to maintain altitude as the airplane slows to an airspeed of 100 kts.
10) Reduce power to idle on left engine.
11) Increase power to the takeoff (full throttle) setting on right engine.
12) Maintain entry heading.
13) Establish a zero side slip by banking toward the operative engine.
14) Slowly increase pitch attitude to achieve a deceleration rate of 1 knot per second. Apply rudder and aileron to maintain directional control.
15) Recover at loss of directional control or first indication of a stall (stall horn or aerodynamic buffeting) by simultaneously reducing power on the operative engine to idle and decreasing the angle of attack to regain airspeed and directional control.
16) At 74 kts (V_{MC}) confirm mixture rich, propellers high RPM and then advance power smoothly on the operative engine and accelerate to and maintain 100 kts (V_{YSE}).
17) Recover when instructed.
18) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to V_{MC} by explaining the causes of loss of directional control at airspeeds less than V_{MC}, the factors affecting V_{MC}, and safe recovery procedures.
- Configures the airplane at V_{SSE}/V_{YSE}, as appropriate –
  - Landing gear retracted.
  - Flaps set for takeoff.
  - Cowl flaps set for takeoff.
  - Trim set for takeoff.
  - Propellers set for high RPM.
  - Power of critical engine reduced to idle.
  - Power on operating engine set to takeoff or maximum available power.
- Establishes a single engine climb attitude with the airspeed at approximately 10 kts above V_{SSE} or V_{YSE}, as appropriate.
- Establishes a bank toward the operating engine, as required for best performance and controllability.
- Increases the pitch attitude slowly to reduce the airspeed at approximately 1 knot per second while applying rudder pressure to maintain directional control until full rudder is applied.
- Recognizes indications of loss of directional control, stall warning, or aerodynamic buffet.
- Recover promptly by simultaneously reducing power sufficiently on the operating engine while decreasing the angle of attack as necessary to regain airspeed and directional control. Recovery SHOULD NOT be attempted by increasing the power on the simulated failed engine.

- Recovers within 20° of the entry heading.
- Advances power smoothly on operating engine and accelerates to V_{XSE}/V_{YSE}, as appropriate, ±5 kts, during the recovery.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain recovery procedures for a V_{MC} demonstration.
- Explain the factors which affect V_{MC}.
- Explain how the aircraft manufacturer calculates V_{MC}.

Safety Considerations:

- Divide attention between aircraft control and outside reference.
- Maintain positive aircraft control.
- Complete the maneuver no lower than 5,000' AGL.
- Recovery from V_{MC} will be initiated at the first indications of a stall or loss of directional control.
- A stalled condition should never be allowed to develop. Stalls should never be performed with asymmetrical thrust.
- V_{MC} demonstrations should never be performed from a high pitch attitude with both engines operating and then reducing power on one engine.

Common Errors:

- Inadequate knowledge of the causes of loss of directional control at speeds less than V_{MC}, factors affecting V_{MC}, and safe recovery procedures.
- Improper entry procedures, including pitch attitude, bank angle, and airspeed.
- Failure to recognize imminent loss of directional control.
- Failure to use proper recovery technique.
- Rough and/or uncoordinated control technique.

References:

Airplane Flying handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Maneuvering With One Engine Inoperative (BE-58)

Objective:

To familiarize the student with the flight characteristics of maneuvering with one engine inoperative and the actual shut down, feathering, and restart of an engine.

Description:

The instructor will fail one engine. The student will maintain directional control & determine which engine is affected. The student will then follow the appropriate checklists for a shutdown, feathering, and restart of affected engine while maneuvering as instructed.

Setup Procedure:

1) Maintain positive aircraft control and pitch for 100 (V_{YSE}); blue line.
2) Power up:
    a. Mixture full rich
    b. Propellers full forward
    c. Throttles full power
3) Clean up:
    a. Retract flaps
    b. Retract landing gear
4) Identify: Dead foot, dead engine.
5) Verify: Reduce power on suspected inoperative engine. If there are no changes then continue to reduce power to idle.
6) If altitude allows attempt to identify and fix the problem.
7) If altitude does not allow to identity and fix the problem or if attempts to do so were unsuccessful feather the propeller of the inoperative engine.
8) Maintain 100 kts (V_{YSE}), altitude, and zero sideslip (bank angle approximately 2-5° and ⅓ to ½ ball deflection toward the operative engine).
9) Monitor electrical load – max of 100% on good engine.
10) Save the good engine – reduce operating power on the good engine if possible to maintain 100 (V_{YSE}).
11) Secure inoperative engine.
12) Complete the Engine Failure After Lift-Off Checklist. Aircraft control should never be sacrificed to execute a checklist.
13) Maneuver as directed.
14) Air start (with unfeathering accumulators & airspeed above 100 kts).
    a. If the aircraft is not equipped with unfeathering accumulators follow the Air Start Checklist to start the engine with use of the starter.
15) Return to cruise flight and complete the cruise checklist to include leaning procedures.

Flight Proficiency Standards:

- Exhibits knowledge of the elements related to maneuvering with one engine inoperative.
- Recognizes engine failure and maintains control.
- Set engine controls, reduces drag, identifies and verifies the inoperative engine, and feathers appropriate propeller.
- Establishes and maintains a bank toward the operating engine as required for best performance in straight and level flight.
- Follows the prescribed checklists to verify procedures for securing the inoperative engine.
- Monitors the operating engine and makes necessary adjustments.
- Demonstrates coordinated flight with one engine inoperative (propeller feathered).
- Restarts the inoperative engine using appropriate restart procedures.
- Maintains altitude ±100 feet or minimum sink as appropriate and heading ±10°.
- Completes the appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the procedures and aircraft configurations during an engine failure after takeoff.
- Discuss the aircraft's maneuvering characteristics with an engine shut down.

Safety Considerations:

- Divide attention between aircraft control and outside reference.
- Maintain positive aircraft control.
- Fail the engine above 82 kts (V_{SSE}) after reaching a safe altitude.

Common Errors:

- Failure to follow prescribed emergency checklists.
- Failure to properly identify and verify the inoperative engine.
- Failure to properly adjust engine controls and reduce drag.
- Failure to maintain positive control while maneuvering.
- Failure to establish and maintain the best engine inoperative speed.
- Improper trim technique.
- Failure to establish and maintain proper bank for best performance.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Non-Precision Approach (BE-58)

Objective:

To fly a published instrument approach by reference to instruments.

Description:

The student will learn how to manage a high performance multi-engine aircraft while flying an instrument approach.

Setup Procedure:

1) Monitor local AWOS/ASOS/ATIS.
2) Tune and identify NAVAIDS required for the approach.
3) Brief the instrument approach plate.
4) Check HSI against magnetic compass.
5) Prior to reaching the IAF, complete the Before Initial Approach Fix (IAF) checklist.
6) Prior to reaching the FAF, complete the Final Approach Fix (FAF) checklist.
7) At FAF:
    a. Extend landing gear below 152 kts.
    b. Adjust pitch and power to maintain a stabilized approach at 700-1,000 FPM and 110 kts (approximately 13” manifold pressure).
8) Prior to MDA, complete the GUMPS check.
9) Fly the aircraft at MDA until the missed approach point or until the runway is in sight,
    a. If the required visibility is ensured and the runway is in sight, a normal descent to a landing can be made.
        i. Set flaps to DN (30º) below 122 kts.
        ii. Maneuver to land.
    b. If not, execute a missed approach and complete the missed approach checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements by explaining the procedures used during a published instrument approach.
- Requests and receives an actual or a simulated ATC clearance for an instrument approach.
- Follow the actual or simulated ATC clearance for an instrument approach.
- Establishes a rate of descent that will ensure arrival at the MDA or DH, with the airplane in a position from which a descent to a landing, on the intended runway can be made, either straight in or circling as appropriate.
- On the final approach segment, no more than ¾ scale deflection of the CDI/glide slope indicator. For RMI or ADF indicators, within 10° of the course.
- Complies with the published criteria for the aircraft approach category when circling.
- Completes landing and appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the aircraft’s approach configuration.
- Explain how to safely perform a missed approach.

Safety Considerations:

- Divide attention between aircraft control and instrument reference.
- Maintain positive aircraft control.
- Follow the published instrument approach procedures.

Common Errors:

- Lack of instrument procedure skills.
- Failure to use proper communication procedures.
- Noncompliance with ATC clearances.
- Incorrect use of navigation equipment.
- Inappropriate descent below the MDA or DH.

References:

Airplane Flying handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Precision Approach (and LPV) (BE-58)

Objective:

To fly a published instrument approach by reference to instruments.

Description:

The student will learn how to manage a high performance multi-engine aircraft while flying an instrument approach

Setup Procedure:

1) Monitor local AWOS/ASOS/ATIS.
2) Tune and identify NAVAIDS required for the approach.
3) Brief the instrument approach plate.
4) Check HSI against magnetic compass.
5) Prior to reaching the IAF, complete the Before Initial Approach Fix (IAF) checklist.
6) Stay high to intercept the glideslope.
7) Prior to glideslope intercept, complete the Final Approach Fix (FAF) checklist.
8) At glideslope interception:
    a. Extend landing gear below 152 kts.
    b. Adjust pitch and power to establish a stabilized approach on the glideslope/path at 110 kts (approximately 14" – 16" manifold pressure).
9) 500' above DA/DH, complete the GUMPS check.
10) Fly the aircraft on the glideslope/path until the DA/DH:
    a. If the required visibility is ensured and the runway is in sight, a normal descent to a landing can be made.
        i. Set flaps to DN (30°) below 122 kts.
        ii. Maneuver to land.
    b. If not, execute a missed approach and complete the missed approach checklist.

Flight Proficiency Standards:

- Exhibits knowledge of the elements by explaining the procedures used during a published instrument approach.
- Requests and receives an actual or a simulated ATC clearance for an instrument approach.
- Follow the actual or a simulated ATC clearance for an instrument approach.
- Establishes a rate of descent that will ensure arrival at the MDA or DH, with the airplane in a position from which a descent to a landing, on the intended runway can be made, either straight in or circling as appropriate.
- On final approach segment, no more than ¾ scale deflection of the CDI/glide slope indicator. For RMI or ADF indicators, within 10° of the course.
- Complies with the published criteria for the aircraft approach category when circling.
- Completes landing and appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the aircraft's approach configuration.
- Explain how to safely perform a missed approach.

Safety Considerations:

- Divide attention between aircraft control and instrument reference.
- Maintain positive aircraft control.
- Follow the published instrument approach procedures.

Common Errors:

- Lack of instrument procedure skills.
- Failure to use proper communication procedures.
- Noncompliance with ATC clearances.
- Incorrect use of navigation equipment.
- Inappropriate descent below the MDA of DH.

References:

Airplane Flying handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Non-Precision Approach – One Engine Inoperative (BE-58)

Objective:

To fly a published instrument approach, by reference to instruments, with one engine inoperative.

Description:

Prior to the final approach fix (FAF), the instructor will simulate a failed engine. The student will maintain directional control, secure the engine, and continue the approach.

Setup Procedure:

1) Monitor local AWOS/ASOS/ATIS.
2) Tune and identify NAVAIDS required for the approach.
3) Brief the instrument approach plate.
4) Check HSI against magnetic compass.
5) Prior to reaching the IAF, complete the Before Initial Approach Fix (IAF) checklist.
6) When engine failure occurs, perform the engine failure procedures (power up, clean up, identify, verify, feather, secure) and continue with the approach as appropriate.
7) If workload permits, advise ATC of engine failure.
8) Prior to reaching the FAF, complete the Final Approach Fix (FAF) checklist.
9) At FAF
   a. Extend landing gear below 152 kts (V_{LE}).
   b. Adjust pitch and power to maintain a stabilized approach at 700-1000 FPM and 100 kts (approximately 18" manifold pressure and 2,500 RPM).
10) At FAF lower landing gear, reduce power as appropriate, and start descent at approximately 600-1,000 FPM while maintaining approach airspeed of 100 kts (V_{YSE}).
11) Prior to MDA complete the GUMPS check.
12) Perform "Level Off Check":
    a. At MDA + 100 feet determine if altitude can be maintained with gear and flaps extended.
       i. If yes, leave gear and flaps extended and continue descent to MDA.
       ii. If no, retract gear and flaps as necessary.
13) Fly the aircraft at MDA until the missed approach point or until the runway is in sight,
    a. If the required visibility is ensured and the runway is in sight, a normal descent to a landing can be made.
       i. If gear was retracted during "Level Off Check" and landing is assured, extend gear abeam touchdown point when circling or on final on a straight in landing.
       ii. Set flaps to DN (30°), as required, below 122 kts (V_{FE}).
       iii. Maneuver to land.
    b. If not, execute a missed approach and complete the missed approach checklist.
       i. Do not attempt a missed approach if flaps have been fully extended.

Flight Proficiency Standards:

- Exhibits knowledge of the elements by explaining the procedures used during a published instrument approach with one engine inoperative.
- Recognizes engine failure, sets the engine controls, reduces drag, identifies and verifies the inoperative engine, and simulates feathering appropriate engine propeller.
- Establishes and maintains a bank toward the operating engine, as required, for best performance in straight and level flight.
- Follows the prescribed checklists to verify procedures for securing the inoperative engine.
- Monitors the operating engine and makes necessary adjustments.
- Requests and receives an actual or a simulated ATC clearance for an instrument approach.
- Follows the actual or a simulated ATC clearance for an instrument approach.
- Maintains altitude within 100 feet, the airspeed within ±10 kts if within the aircraft's capability, and heading ±10°.
- Establishes a rate of descent that will ensure arrival at the MDA or DH, with the airplane in a position from which a descent to a landing, on the intended runway can be made, either straight in or circling as appropriate.

- On final approach segment, no more than ¾ scale deflection of the CDI/glide slop indicator. For RMI or ADF indicators, within 10° of the course.
- Avoids loss of aircraft control, or attempted flight contrary to the engine inoperative operating limitations of the aircraft.
- Complies with the published criteria for the aircraft approach category when circling.
- Completes landing and appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the changes in the aircraft's approach configuration when flying a single engine instrument approach.
- Explain the importance of avoiding a single engine missed approach.
- Explain how to identify the inoperative engine with reference to instruments.

Safety Considerations:

- Divide attention between aircraft control and instrument reference.
- Maintain positive aircraft control.
- Follow the published instrument approach procedures.

Common Errors:

- Lack of instrument procedure skills.
- Failure to use proper communications procedures.
- Noncompliance with ATC clearances.
- Incorrect use of navigation equipment.
- Failure to identify and verify the inoperative engine and to follow the emergency checklists.
- Inappropriate procedure in the adjustment of engine controls and reduction of drag.
- Inappropriate procedure in the establishment and maintenance of the best engine inoperative airspeed.
- Failure to establish and maintain proper flight attitude for best performance.
- Failure to maintain positive aircraft control.
- Inappropriate descent below the MDA of DH.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

Precision Approach (and LPV) – One Engine Inoperative (BE-58)

Objective:

To fly a published instrument approach, by reference to instruments, with one engine inoperative.

Description:

Prior to the final approach fix (FAF), the instructor will simulate a failed engine. The student will maintain directional control, secure the engine, and continue the approach.

Setup Procedure:

1) Monitor local AWOS/ASOS/ATIS.
2) Tune and identify NAVAIDS required for the approach.
3) Brief the instrument approach plate.
4) Check HSI against magnetic compass.
5) Prior to reaching the IAF, complete the Before Initial Approach Fix (IAF) checklist.
6) When engine failure occurs, perform the engine failure procedures (power up, clean up, identify, verify, feather, secure) and continue with the approach as appropriate.
7) If workload permits, advise ATC of engine failure.
8) Stay high to intercept the glideslope.
9) Prior to intercepting the glideslope, complete the Final Approach Fix (FAF) checklist.
10) At glideslope interception:
    a. Extend landing gear below 152 kts(V_{LE}).
    b. Adjust pitch and power to maintain a stabilized approach on the glideslope and 100 kts (approximately 20" manifold pressure and 2,500 RPM).
11) 500' above DA/DH, complete the GUMPS check.
12) Fly the aircraft on the glideslope/path until the DA/DH:
    a. If the required visibility is ensured and the runway is in sight, a normal descent to a landing can be made.
        i. Set flaps to DN (30°), as required, below 122 kts (V_{FE}).
        ii. Maneuver to land.
    b. If not, execute a missed approach and complete the missed approach checklist.
        i. Do not attempt a missed approach if flaps have been fully extended.

Flight Proficiency Standards:

- Exhibits knowledge of the elements by explaining the procedures used during a published instrument approach with one engine inoperative.
- Recognizes engine failure, sets the engine controls, reduces drag, identifies and verifies the inoperative engine, and simulates feathering appropriate engine propeller.
- Establishes and maintains a bank toward the operating engine, as required, for best performance in straight and level flight.
- Follows the prescribed checklists to verify procedures for securing the inoperative engine.
- Monitors the operating engine and makes necessary adjustments.
- Requests and receives an actual or a simulated ATC clearance for an instrument approach.
- Follows the actual or a simulated ATC clearance for an instrument approach.
- Maintains altitude within 100 feet, the airspeed within ±10 kts if within the aircraft's capability, and heading ±10°.
- Establishes a rate of descent that will ensure arrival at the MDA or DH, with the airplane in a position from which a descent to a landing, on the intended runway can be made, either straight in or circling as appropriate.
- On final approach segment, no more than ¾ scale deflection of the CDI/glide slop indicator. For RMI or ADF indicators, within 10° of the course.
- Avoids loss of aircraft control, or attempted flight contrary to the engine inoperative operating limitations of the aircraft.
- Complies with the published criteria for the aircraft approach category when circling.
- Completes landing and appropriate checklists.

Note: These are the ACS standards and the CFI will refer to the syllabus for specific lesson completion standards, as they may be different.

Learning Outcomes:

- Explain the changes in the aircraft's approach configuration when flying a single engine instrument approach.
- Explain the importance of avoiding a single engine missed approach.
- Explain how to identify the inoperative engine with reference to instruments.

Safety Considerations:

- Divide attention between aircraft control and instrument reference.
- Maintain positive aircraft control.
- Follow the published instrument approach procedures.

Common Errors:

- Lack of instrument procedure skills.
- Failure to use proper communications procedures.
- Noncompliance with ATC clearances.
- Incorrect use of navigation equipment.
- Failure to identify and verify the inoperative engine and to follow the emergency checklists.
- Inappropriate procedure in the adjustment of engine controls and reduction of drag.
- Inappropriate procedure in the establishment and maintenance of the best engine inoperative airspeed.
- Failure to establish and maintain proper flight attitude for best performance.
- Failure to maintain positive aircraft control.
- Inappropriate descent below the MDA of DH.

References:

Airplane Flying Handbook; POH/AFM; Commercial Pilot ACS; CFI PTS

BE-58 Configurations

1” = 5 kts or 100 fpm	Gear	Flaps	Power	Airspeed	VSI
Cruise Climb	Up	0°	Full”/2,500	136	1000
Cruise	Up	0°	20”/2,300	150	0
Cruise Descent	Up	0°	20”/2,300	165	500
Pre-Approach Level	Up	15°	17”/2,300	135	0
ILS Approach	Down	15°	15”/2,300	110	500
Non-Precision	Down	15°	13”/2,300	110	700
Missed Approach	Up	0°	Full/2700	105	1,200
Single-Engine Pre-Approach Level	Up	15°	25”/2,500	100	0
Single-Engine ILS	Down	15°	20”/2,500	100	500
Single Engine Non-Precision	Down	15°	18”/2,500	100	750
Single-Engine Missed Approach	Up	0°	Full/2700	100	Depends on density altitude

Note: These are approximate settings and are for reference only. Adjust your power settings and configurations as required to achieve the level of performance needed.

Jeppesen SyllabusFlight Hours FALL 2024 (fuel surcharge eff. 8/19/2024)						
Course	**Description**	**Lesson Breakdown**	**BOG Approved Course Hours**	**BOG Approved Course Fees**	**BOG Approved Fuel Surcharge ($1.00/gallon)**	**Course Fee Includes**
Private Pilot Training						
FLYA 1320	Private Flight A	Lessons 1 - 8, Stage 1 OR 10 & Stage 1 FL 10, then lessons 9-13	29	$ 6,712.00	$ 250.00	Pre-Post/Ground (8.5 hrs), Dual Flight (22.5 hrs in C172R/S), Solo Flight (2.5 hrs in C172R/S), Dual AATD (4 hrs in RB)
FLYA 1321	Private Flight B	Lessons 14-19, Stage 2 Or 20 & Stage 2 FL 20, then lessons 21-25 Review, Stage 3 Ground, Final Exam Or & Final Exam FL	38	$ 8,554.00	$ 350.00	Pre-Post/Ground (6 hrs), Dual Flight (26 hrs in C172R/S), Solo Flight (9 hrs in C172R/S), Dual AATD (3 hrs in RB)
	Private Pilot Total		**67**	**$ 15,266.00**		**60 hrs C172R/S, 7 hrs AATD, 70 hrs Instructor time**
Instrument Rating Training						
FLYA 2313	Instrument Flight A	Lessons 1 - 12 (then Stage 1 OR-13 & Stage 1 FL-13)	15	$ 2,967.00	$ 70.00	Pre-Post/Ground (7 hrs), Dual Flight (7 hrs in C172R/S), Dual AATD (8 hrs in Frasca)
FLYA 2314	Instrument Flight B	Lessons 14 - 22, then Stage 2 OR-23 & Stage2 FL-23, lessons 24 - 28 Review, EOC Oral & EOC Flight	31	$ 7,266.00	$ 250.00	Pre-Post/Ground (10 hrs), Dual Flight (25 hrs in C172R/S), Dual AATD (6 hrs in Frasca)
	Instrument Rating Total		**46**	**$ 10,233.00**		**32 hrs C172S, 14 hrs AATD, 63 hrs Instructor time**
Commercial Rating Training						
FLYA 3310	Commercial Flight A	Lessons 30 - 36 (then Com A Oral & Com A Flight)	20	$ 4,510.00	$ 200.00	Dual Flight (14 hrs in C172R/S), Solo Flight (6 hrs in C172R/S)
FLYA 3311	Commercial Flight B	Lessons 37 - 40 (then Com B Oral & Com B Flight)	20	$ 4,510.00	$ 200.00	Pre-Post/Ground (4 hrs), Dual Flight (10 hrs in C172R/S), Solo Flight (10 hrs in C172R/S)
FLYA 3312	Commercial Flight C	Lessons 41 - 51, 43 is Com C Oral & Com C Flight), 51 is the last lesson	23	$ 5,071.00	$ 230.00	Pre-Post/Ground (0.5 hrs), Dual Flight (13.5 hrs in C172R/S), Solo Flight (9.5 hrs in C172R/S)
FLYA 3315	Commercial Flight D - ASEL	Lessons 52 - 66 (then Com D Oral & Com D Flight)	21	$ 5,129.00	$ 180.00	Pre-Post/Ground (16 hrs), Dual Flight (10 hrs in C172R/S), Solo Flight (8 hrs in C172R/S), Dual AATD (3 hrs in Frasca)
FLYA 3316	Commercial Flight E - ASEL	Lessons 68 - 75 (then Com E Oral & Com E Flight)	19	$ 4,852.00	$ 180.00	Pre-Post/Ground (17 hrs), Dual Flight (8 hrs in C172R/S), Solo Flight (10 hrs in C172R/S), Dual AATD (1 hr in Frasca)
FLYA 3317	Commercial Flight F - ASEL	Lessons 77 - 86 (then Com F EOC Oral & Com F EOC Flight)	19	$ 4,721.00	$ 170.00	Pre-Post/Ground (12 hrs), Dual Flight (12 hrs in C172R/S), Solo Flight (5 hrs in C172R/S), Dual AATD (2 hrs in Frasca)
FLYA 3330	Multi-Engine Add-on	Briefings 1-5, Flight Lessons 1-10, EOC Oral & EOC Flight	20	$ 10,845.00	$ 600.00	Pre-Post/Ground (15 hrs), Dual Flight (20 hrs in Baron)
Certified Flight Instructor - Multi-Engine Instructor (CFI-MEI)						
FLYA 3360	Certified Flight Instructor	1-7, Stage 1 Ground, then Lesson 8 Oral & Lesson 8 Flight, 9-16, Pilot Briefings 1&2, Stage 2 Ground, then EOC Oral & EOC Flight	20	$ 5,940.00	$ 200.00	Pre-Post/Ground (20 hrs), Dual Flight (20 hrs in C172R/S)
FLYA 3362 (opt.)	CFI-Instrument Instructor	CFII-328-G - CFII-439-G and CFII-318-D-D-L-A - CFII-428-D-D-L-A, then CFII-429 Oral & Flight and CFII-430 Oral and Flight	15	$ 3,250.00	$ 100.00	Pre-Post/Ground (5 hrs), Dual Flight (10 hrs in C172S), Dual AATD (5 hrs in Frasca)
FLYA 3364 (opt.)	Multi-Engine Instructor	MEI-540-G - MEI-649-G and MEI-531 - MEI-643, then MEI-644 Oral & Flight and MEI-645 Oral and Flight	15	$ 5,700.00	$ 300.00	Pre-Post/Ground (5 hrs), Dual Flight (10 hrs in Baron), Dual AATD (5 hrs in RB)