2022-23
UNDERGRADUATE/GRADUATE CATALOG

WORLDWIDE CAMPUS

catalog.erau.edu/worldwide

EMBRY-RIDDLE
Aeronautical University

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Worldwide Campus Catalog

Your guide to planning your academic future

As you explore programs of study at Embry-Riddle Aeronautical University – Worldwide, you can use this online catalog to view degree requirements, program and course descriptions, transfer credit information, grading policies, and much more. Though you are bound to the catalog requirements of your program entry year, you still may want to refer to the catalog to track your progress.

The Embry-Riddle catalog is published annually. The online catalog is the official and most current version of the catalog. The printed or published PDF full/entire version of the catalog is not updated after the start of the academic year.

As updates to the catalog are made, it is important for you to remain aware of any changes that may affect you. Supplements to this catalog are listed in the Compliance and Supplements section of the catalog.

The **2022-2023** catalog is effective July 1, 2022 to June 30, 2023.

For access to previous catalogs, view the Catalog Archive.

The Worldwide Campus

Embry-Riddle Worldwide is known for more than just our highly regarded aviation and aerospace programs. We offer a range of associate, bachelor's and master's degrees, as well as Ph.D. and certificate programs in multiple sectors—from business to engineering to emergency services. Rigorous courses are taught by industry-leading experts who understand the demands of full-time work and military life because they have been there. Embry-Riddle Worldwide also offers flexible modes of learning that enable access to Embry-Riddle courses anytime, anywhere.

Led by a faculty comprised of industry professionals—many of whom come from military backgrounds—Embry-Riddle Worldwide's programs are designed specifically to suit demanding schedules. That is why we offer the ultimate experience in flexibility. Embry-Riddle Worldwide offers more than 125 campuses across the globe - more than 90 of which are located on military bases, 12 enrollment dates per year, five modes of learning and course work that can be completed as it fits into your busy life.

Chancellor's Welcome: A Message from Dr. John Watret

Worldwide Campus Mission Statement

The mission of Embry-Riddle Aeronautical University – Worldwide is to provide the highest quality education, training, and student services to aviation and aerospace professionals worldwide.

Accreditation, Associations, and State Authorizations

Embry-Riddle Aeronautical University, including the Daytona Beach Campus, the Prescott Campus, and the Worldwide Campus, is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award degrees at the associate, baccalaureate, master, and doctorate levels. Learn more about our Accreditation, Associations, and State Authorizations.

Visit Worldwide.erau.edu to learn more about the Worldwide Campus

- Find the latest news about the Worldwide Campus
- Find or learn more about a Worldwide Location near you
- Learn more about the technology and learning modalities used by the Worldwide Campus

Contact the Worldwide Campus

Visit us in person at one of our more than **125 locations**, call us at 800-522-6787, or **email** us.

- Visit our contact page for additional listings

Chancellor's Welcome

A Message from Dr. John Watret

To our students,

Please allow me to congratulate you on being part of Embry-Riddle Aeronautical University. Your decision to become a student here reflects your commitment and dedication to achieving success both academically and professionally.

Our Worldwide Campus is comprised of more than 125 locations in the United States, Canada, Asia, South America, and Europe, and as a student, you will have the opportunity to interact with and learn from faculty, staff and students from across the globe. Our commitment to you is to support, encourage and assist you as you work to reach your goals.

I believe our strengths are many, but the following stand out:

- **Our commitment to student service and success.** Embry-Riddle Worldwide continues to be a place where anyone interested in aviation/aerospace — regardless of age, geography, family responsibilities or other circumstances — can attend and thrive at a first-class university.
- **Our commitment to academic quality.** Embry-Riddle Worldwide is dedicated to academic quality, to providing an exemplary teaching and learning experience, and to preparing our students for professional careers in the aviation industry.
- **Our commitment to innovation.** As a leader in distance education, Embry-Riddle Worldwide continues to develop and deliver online courses, EagleVision courses, and online/classroom blended courses, making quality higher education available to anyone — anywhere.
- **Our commitment to the military community.** Embry-Riddle Worldwide has a long-standing commitment to our servicemen and servicewomen, both active-duty and veteran, and we take pride in our ability to offer high quality education that is flexible to meet their specific requirements.

Thanks to the work and support of our faculty and staff, our alumni and students, and so many people in the communities we serve, Embry-Riddle Worldwide stands ready to help you achieve your educational and career goals. We welcome you to share in the great Embry-Riddle tradition and be part of our promising future. And whether you are a new student, a continuing student, or one of our many alumni, let me offer you a warm welcome to Embry-Riddle Worldwide.

John R. Watret, Ph.D., FRAeS
Chancellor
Worldwide Campus

Accreditation, Associations, and State Authorizations

Institutional Accreditation

Embry-Riddle Aeronautical University, including the Daytona Beach Campus, the Prescott Campus, and the Worldwide Campus, is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) to award degrees at the associate, baccalaureate, master, and doctorate levels. The Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) is recognized by the United States Department of Education as an accrediting agency.

The following information is provided to enable interested constituents to:

1. Learn about the accreditation status of the institution
2. File a third-party comment about the institution's decennial review of accreditation
3. File a complaint against the institution for alleged non-compliance with a standard or requirement
4. Provide a note of exemplary service or quality standards related to the institution
   Contact information for SACSCOC:
   1866 Southern Lane
   Decatur, Georgia, 30033-4097
   (404) 679-4500

Normal inquiries, such as admissions requirements, financial aid, educational programs, etc., should be addressed directly to the Embry-Riddle Aeronautical University – Worldwide Campus by contacting (800) 522-6787 or worldwide@erau.edu.

Associations

Embry-Riddle Aeronautical University – Worldwide has developed creative, mutually beneficial partnerships and working relationships with numerous corporations, organizations, and government entities throughout the world. Relationship models include collaboration; sharing of vision, goals and resources; physical co-location arrangements; corporate training programs; research projects; and joint ventures, to name a few. Worldwide develops corporate and organization-specific relationships to meet the needs of aviation, aerospace, and related industries.

Embry-Riddle Aeronautical University – Worldwide offers two programs accredited by **ABET**. The A.S. in Engineering Fundamentals (ASEF) is accredited by the Applied and Natural Science Accreditation Commission of ABET, and the B.S. in Engineering Technology is accredited by the Engineering Technology Accreditation Commission of ABET.

Embry-Riddle Aeronautical University, Worldwide Campus, offers the B.S. in Aeronautics which is a program accredited through the Aviation Accreditation Board International (AABI), a nonprofit 501(c)(3) organization that sets standards for all aerospace programs taught in colleges and universities around the United States and around the world.

Developed by the Association of Unmanned Vehicle Systems International (AUVSI), the Trusted Operator Program* (TOP) provides an industry certification that demonstrates your knowledge, skills, and abilities as a professional unmanned aerial vehicle (UAV) pilot. Embry-Riddle Aeronautical University - Worldwide is certified to deliver all AUVSI TOP levels of certifications, as an approved training provider. The TOP program at ERAU Worldwide combines longstanding educational excellence with cutting-edge industry knowledge to provide unmanned aircraft systems (UAS) operators with unparalleled education and training.

The Bachelor of Science in Emergency Services program is Recognized by The National Fire Academy in accordance with the standards established by the Fire and Emergency Services Higher Education (FESHE) model core.

Worldwide's Bachelor of Science in Emergency Services has received accreditation from the International Fire Service Accreditation Congress (IFSAC). IFSAC accredited programs have been evaluated for their course offerings, institutional support and qualified faculty through a self-study and on-site review.

Embry-Riddle Aeronautical University is an approved Professional Development Provider (PDP) for the National Business Aviation Association (NBAA).

Embry-Riddle Aeronautical University – Worldwide has joined forces with the International Air Transport Association (IATA) to offer an online certificate in Supply Chain Management that leads to the Air Cargo Professional (ACP) designation from IATA and a Certificate in Aviation Management that leads to the Aviation Management Professional (AvMP) designation.

The Bachelor of Science in Project Management, Master of Science in Project Management, and Master of
Science in Engineering Management with a certificate in Project Management programs are accredited by the
PMI Global Accreditation Center for Project Management Education Programs (GAC). Degree programs that achieve GAC accreditation must demonstrate and meet the GAC's rigorous global standards of accreditation, which include an assessment of each program's objectives and outcomes, faculty and student evaluations, onsite and online resources, annual self-evaluation, and proof of continuous improvements in the area of project management education. GAC accreditation ensures the quality of academic degree programs and their graduates in order to meet the standards of the rapidly growing field of project management.

Embry-Riddle Aeronautical University – Worldwide offers several business programs accredited by the Accreditation Council for Business Schools & Programs (ACBSP). This achievement means that Embry-Riddles' accredited business programs have been peer-reviewed, scrutinized, and meet the stringent requirements set forth by the ACBSP.

Embry-Riddle Aeronautical University, Worldwide Campus, offers six academic programs recognized by the Royal Aeronautical Society (RAeS), a multi-disciplinary professional institution dedicated to the global aerospace community. Recognized degrees: BS in Aeronautics, BS Interdisciplinary Studies, BS Unmanned Systems Applications, MS Aeronautics, MS Human Factors, Master of Business Administration Aviation.

The Bachelor of Science in Safety Management (BSSM) is designated as a Graduate Safety Practitioner (GSP) program. A GSP is a designation available to safety degree graduates from degree programs that meet BCSP QAP standards. The GSP program is an alternate path to the Certified Safety Professional (CSP) and does not replace other paths. The GSP is not a certification.

Benefits of GSP designation are:

- Recognition for being in a path toward the CSP certification
- Recognition for the level of preparation for professional safety practice
- No GSP application fee
- A waiver of the ASP examination requirement for CSP eligibility
- A certificate awarding the GSP designation

The Bachelor of Science in Safety Management (BSSM) degree program is also an **Institute of Hazardous Materials Management** (IHMM) approved **Associate Safety and Health Manager** (ASHM) Program.

The ASHM designation is an important stepping stone to the accredited **Certified Safety and Health Manager** (CSHM) certification. Students achieving a degree from an approved ASHM institution only have to demonstrate two years of experience, instead of four, to sit for the CSHM exam. In addition to the Board of Certified Safety Professional's Graduate Safety Professional (GSP) designation, students can add the ASHM designation behind their name, signifying to employers their level of preparation for the safety and health profession they are on the path for full certification. Graduates from the BSSM program apply for the ASHM credential upon graduation.

State Authorization

It is the policy of Embry-Riddle Aeronautical University to administer its educational programs both on and off campus in a manner that is fair, equitable, academically sound, and in accordance with the regulations and criteria of its governing board, accrediting association, and federal and state laws and regulations.

Review specific state authorization information.

The University has no pending petition in bankruptcy, is not operating as a debtor in possession, has not filed a petition within the preceding five years, and has not had a petition in bankruptcy filed against it within the preceding five years that resulted in reorganization under Chapter 11 of the United States Bankruptcy Code (11 U.S.C. Sec. 1101 et seq.).

Arizona State Board for Private Postsecondary Education
1740 W. Adams, Suite 3008, Phoenix, AZ 85007

This Institution is certified to operate by the State Council of High Education for Virginia (SCHEV).

Virginia Locations:
Fort Eustis Center
1500 Madison Avenue
Fort Eustis, Virginia 23604-3910

Langley Air Force Base
450 Weyland Road, Suite 120
Hampton, Virginia 23665-2607

Norfolk
1680 Gilbert Street
Building IE, Room 11
Norfolk, Virginia 23511-2941

Naval Air Station Oceana
902 E Avenue
Building 531, Suite 103
Virginia Beach, Virginia 23460-2134

Quantico Voluntary Education Center
3089 Roan Street, Room 1B
Quantico, Virginia 22134-5127

Contact the Worldwide Campus

General Information
Phone: (800) 522-6787 –OR- (800) 359-3728
Email: worldwide@erau.edu
Contact us at one of our 125 locations

Worldwide Campus
Embry-Riddle Aeronautical University
1 Aerospace Boulevard
Daytona Beach, FL 32114-3900

Admissions
Phone: (800) 522-6787
Email: wwadmissions@erau.edu

Financial Aid
Phone: (866) 567-7202
Email: wwfinaid@erau.edu

Office of Registrar
(Log in to ERNIE)
Phone: (866) 393-9046
Email: worldwide.registrar@erau.edu **/** Transcript Team: wwtransc@erau.edu / Graduation Team: wwgrad@erau.edu

Disability Support Services
(Log in to ERNIE)
Phone: (386) 226-7334 or 1-888-292-5727
Email: wwdss@erau.edu

Office of Professional Education
Phone: (386) 481-9070, Toll free: (866) 574-9125
Email: training@erau.edu
website: Proed.erau.edu/enrole

Online Campus Advising
Phone: (800) 359-3728
Email: wwadvise@erau.edu

Student Account Services
(Log in to ERNIE)
Phone: (386) 226-6280

Dean of Students
(Log in to ERNIE)
Phone: (386) 323-8775
Email: wwdos@erau.edu

Worldwide Career Services
(Log in to ERNIE)
Phone: (386) 226-6092 or (386) 226-6191
Email: wwcarser@erau.edu, Website: http://worldwide.erau.edu/career-services/index.html

Campus Operations – Europe & Pacific
Embry-Riddle Aeronautical University
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Military and Veteran Student Services
Embry-Riddle Aeronautical University, Worldwide
1 Aerospace Boulevard
Daytona Beach, FL 32114-3900
Phone: 1-855-785-0001 **/** Fax: (386) 323-8816 **/** Email: wwva@erau.edu

About the University

Embry-Riddle Aeronautical University is the world's largest, fully accredited university specializing in aviation and aerospace. A truly international institution, we educate more than 33,500 undergraduate and graduate students at residential campuses in Daytona Beach, Florida, and Prescott, Arizona, at 116 Worldwide Campus locations, including campuses in Singapore and Brazil, and through online learning.

The university offers more than 100 associate, bachelor's, master's and Ph.D. degree programs through its colleges of Arts & Sciences, Aeronautics, Aviation, Business, Engineering, and Business, Security and Intelligence. Faculty members focus on research and consulting related to safety and security, unmanned and autonomous systems, air traffic and airport management, human factors, spaceflight operations and urban air mobility.

Committed to propelling the industry forward, Embry-Riddle offers Ph.D. degree programs in Aviation, Aerospace Engineering, Aviation Business Administration, Electrical Engineering and Computer Science, Engineering Physics, Human Factors, and Mechanical Engineering. These Ph.D. programs expand the applied research opportunities for our students and faculty to collaborate with industry, government agencies and other universities to deliver real-world solutions. Our research partners have included the U.S. military, NASA and the FAA, in additional to federally funded laboratories and industry research and development facilities.

This year, for the fourth time in the past six years, Embry-Riddle was named No. 1 for the Best Online Bachelor's Degree Programs by *U.S. News & World Report*, which has also ranked Embry-Riddle undergraduate programs as "bests" in aerospace engineering programs, engineering degrees and among top colleges for aerospace internships and co-op programs. Embry-Riddle also ranks among best colleges in Arizona and Florida and one of the best regional universities (South).

Embry-Riddle is recognized as a military-friendly school by *Military Times, Military Advanced Education & Transition, U.S. Veteran* and *Victory Media.* Embry-Riddle is No. 1 in the nation among 97 schools providing online undergraduate degree programs tailored for veterans according to *U.S News & World Report,* which has also ranked the Embry-Riddle Worldwide Campus degree program in the top five for veterans since 2014.

Among private colleges, Embry-Riddle has been listed in several "best" categories, including best value, best starting salary and best return on investment by the U.S. Department of Education, Affordable Colleges Online, College Choice, PayScale, Smart Asset and Value Colleges.

Student teams regularly take top honors in competitions hosted by NASA, the Society of Automotive Engineers and the Association for Unmanned Vehicle Systems International. Aeronautical Science students excel in annual flight competitions such as the women's Air Race Classic and the National Intercollegiate Flying Association's SAFECON regional and national events. Students have been commissioned to serve in the U.S. Space Force, landed in *Aviation Week's* "20 Twenties" leaders of tomorrow ranking, and earned prestigious awards including the Brooke Owens Fellowship, Patti Grace Smith Fellowship and the Goldwater Scholarship.

A dedicated faculty, administrators, alumni, trustees and advisory board members inspire and support our students and share their love of aviation and commitment to maintaining Embry-Riddle's preeminence as the global aerospace educator.

Daytona Beach

The university's 185-acre campus in Daytona Beach, Florida, is located next to Daytona Beach International Airport and Daytona International Speedway, only minutes from the Atlantic Ocean and only an hour's drive from Kennedy Space Center and Orlando.

The 177,000-square-foot Mori Hosseini Student Union is the heart of the campus. Another striking campus building is the observatory at the College of Arts & Sciences, which operates the largest university-owned research telescope in the Southeast.

Bachelor's degrees of note at the Daytona Beach Campus include Aerospace & Occupational Safety, Aerospace Physiology, Global Conflict Studies, Spaceflight Operations and Unmanned Aircraft Systems. Master's degrees include Aviation Finance, Data Science, Cybersecurity Engineering, Human Factors, and Unmanned & Autonomous Systems Engineering.

The John Mica Engineering & Aerospace Innovation Complex, located in Embry-Riddle's Daytona Beach Research Park, is a hybrid research center and business incubator that attracts scientists, entrepreneurs and venture capitalists. With direct access to the airport, the Applied Aviation and Engineering Research Hangar offers specialized resources to corporate and research partners.

Prescott Campus

The university's mile-high, 539-acre campus is located in Prescott, Arizona. The College of Aviation offers degrees for professional pilots with fixed-wing and rotary-wing options and the campus is home to the Robertson Aircraft Accident Investigation Lab, North America's only fully scenario-based training facility.

The nation's first College of Business, Security & Intelligence is also on this campus. This college offers undergraduate degrees in Aviation Business Administration, Business Administration, Cyber Intelligence and Security, Forensic Accounting and Fraud Examination, Global Business and Supply Chain Management, and Global Security and Intelligence Studies. Graduate degrees are awarded in Cyber Intelligence & Security and Security and Intelligence.

The STEM (Science, Technology, Engineering, and Math) Education Center houses 20 state-of-the-art labs dedicated to robotic systems, satellites, unmanned aerial systems, commercial aircraft, military aircraft, physics, chemistry, biology and more. The building also contains classrooms, a multimedia center, a supercomputer system and the Jim and Linda Lee Planetarium.

Additional noteworthy degree programs at the Prescott Campus include Forensic Biology, Industrial/Organizational Psychology, Simulation Science, Games and Animation.

Engineering students at Prescott have worked with industry partners to develop patentable technology and contributed to Nobel Prize-winning research. Student flight teams have won numerous national championships in NIFA SAFECON competitions and consistently earn high rankings in the Women's Air Race Classic.

Worldwide Campus

Embry-Riddle Worldwide has pioneered the delivery of outstanding educational opportunities for working professionals and students who choose online learning. Embry-Riddle Worldwide works collaboratively with industry to develop new talent and help reskill the workforce, with a focus on aerospace, business, science and engineering. Worldwide graduates become leaders and innovators in their fields and you will find them at the highest levels – from the U.S. military to C-suites around the globe.

This year, for the fourth time in the past six years, Embry-Riddle was named No. 1 for the Best Online Bachelors Degree Programs by *U.S. News & World Report*. For the sixth year, we were ranked the No. 1 school for bachelor degree programs for veterans. The College of Business was ranked in the top 10 nationally for Best Online Bachelor's Business Programs.

Embry-Riddle's Worldwide Campus, which includes fully online programs as well as approximately 125 locations in the United States, Europe and Asia, offers bachelor's, master's and doctoral degree programs for some 23,000 students. The most popular undergraduate majors include aeronautics, aviation business administration and communication. In

a recent alumni survey, 92.5 percent of graduates reported they are employed or in graduate school within a year of graduation.

Message from the President

Welcome,

Congratulations on joining the Embry-Riddle community, which extends to more than 150,000 alumni around the world. The contributions of students who have come before you have established our reputation as the premier university focused on aviation and aerospace. Our collaboration across government, industry and academia will expand with the creation through new centers of excellence, one focused on cyber resilience and one focused on aviation and aerospace safety.

The aerospace industry respects Embry-Riddle as a source for innovation and excellence in education and applied research. Our industry partners will value your talent and inspiration, which will advance space exploration and the future of commercial space.

You will not have to wait until after graduation to make meaningful contributions. Nearly 90 percent of our students work with faculty-mentors or industry partners on research, Capstone projects and internships with government organizations and private companies. The university continues to expand our research enterprise and host competitions to encourage creative problem solving and entrepreneurship. What you learn here will prepare you to turn your ideas into solutions throughout meaningful careers.

We are an inclusive institution that welcomes students and faculty from 111 countries and diverse cultures. Our commitment to a global perspective earned the Senator Paul Simon Award for Campus Internationalization. The range of perspectives and talents you contribute will help us deliver innovation, a core value.

Our 100-plus degree programs will ground you in the fundamentals and prepare you for emerging opportunities. To serve the industry, we continue to add new programs – many the first of their kind – such as our graduate engineering course in hybrid propulsion and urban air integrating business skillsets such as data analytics throughout the colleges to make our graduates the preferred, top-earning candidates in today's job market.

Whatever your field of study, you will benefit from discovery-driven education that challenges you to apply the skills you are building, in classrooms, labs and perhaps on the flight line.

Faculty and staff are here to support your success. So am I. During my open office hours on campus (or virtually), you will receive invitations to chat with me, one-on-one, throughout the year.

As an Embry-Riddle Eagle —now and forever— we expect great things from you. May you make lifelong friends, turn your talents into mastery and advance technology for the benefit of all.

P. Barry Butler, Ph.D.

President

Mission of the University

Our Mission: Who Is Embry-Riddle Aeronautical University?

Embry-Riddle Aeronautical University is the world leader in aviation and aerospace higher education. Our mission is to teach the science, practice and business necessary to prepare students for productive careers and leadership roles in business, government agencies and the military. Embry-Riddle's reputation as a leader in aviation and aerospace higher education is grounded in its aviation roots dating back to 1926.

Our Vision: What Is Our Future?

Embry-Riddle will be the source for innovation and excellence in aerospace education and research. We will be the unquestioned global leader in aviation and aerospace higher education, with a reputation for personal attention to the success of all students. Our Prescott campus will focus on undergraduate education that emphasizes problem-based discovery and become a top-ranked destination for its undergraduate STEM programs. Our Worldwide campus will be recognized as the best in online and distance education. And, our Daytona Beach campus will be recognized for leadership in select areas of research, aerospace innovation and attention to student success.

Our Values: What Do We Value?

Embry-Riddle provides a transformative educational experience through fostering collaboration and teamwork, ethical and responsible behavior, and a culture of research and discovery that mirrors the professions we serve. We focus on the development of the professional skills needed for success in global business. Embry-Riddle is committed to providing a climate that facilitates the highest standards of academic achievement, innovation and entrepreneurship in a culturally diverse community that supports the unique needs of each individual.

Embry-Riddle's History

Aviation and Embry-Riddle: Always Pioneering

Twenty-two years to the day of the historic flight of the Wright Flyer, barnstormer John Paul Riddle and entrepreneur T. Higbee Embry founded the Embry-Riddle Company at Lunken Airport in Cincinnati, Ohio on December 17, 1925. Just months later, they opened the Embry-Riddle School of Aviation, supporting the Air Commerce Act of 1926, which introduced certification and medical examination of pilots.

The school quickly gained a national reputation for excellence. The safety record of its pilots allowed Riddle and Embry to earn one of the first air mail routes in 1927.

Within three years, the school had become a subsidiary of AVCO, the parent of American Airlines. By the end of the decade, World War II created a demand for skilled aviators and mechanics intensified. Embry-Riddle's second life began.

In South Florida, Embry-Riddle opened flight-training centers and quickly became the world's largest aviation school. Allied nations sent thousands of fledgling airmen to the Embry-Riddle centers at Carlstrom, Dorr, and Chapman airfields to become pilots, mechanics and aviation technicians. Embry-Riddle trained more than 25,000 aviation professionals during the war years.

After the war, under the leadership of John and Isabel McKay, Embry-Riddle expanded its international outreach, establishing a school in Brazil, and strengthening its academic programs.

With Jack R. Hunt as president, Embry-Riddle moved its flight program, ground school and technical training programs in Daytona Beach, Florida in 1965. This relocation and consolidation, supported by Daytona Beach civic leaders, signaled the rebirth of Embry-Riddle. With accreditation, we became Embry-Riddle Aeronautical University in 1970. That year, the university also established centers at U.S. aviation bases to serve active-duty military personnel, planting the seeds for Embry-Riddle Worldwide.

In 1978, under President Hunt's leadership, Embry-Riddle opened a western campus in Prescott, Arizona, on the 511-acre site of a former college. With superb flying weather and expansive grounds, the Prescott Campus has earned prominence in aviation education and research.

After Hunt's presidency, Lt. Gen. Kenneth L. Tallman led the university for five years, drawing on his 35-year military career and service as superintendent of the U.S. Air Force Academy. Under Tallman's leadership, we added a school of graduate studies and degree programs in Electrical Engineering and Engineering Physics.

Dr. Steven M. Sliwa led the university from 1991 through 1998, focusing on strengthening the ties with industry. He developed a joint venture with FlightSafety International; a partnership with Cessna Aircraft Company; a technology alliance with IBM; and an exclusive educational

partnership with the Aircraft Owners and Pilots Association. He also spearheaded a $100+ million capital expansion program and an $11.5 million congressional line-item appropriation.

Dr. George H. Ebbs, led the university from 1998 through 2005. During his tenure, Embry-Riddle continued to expand its campuses and gain national prominence, earning the No. 1 Aerospace Engineering undergraduate program ranking from *U.S. News & World Report*. The Aerospace Engineering program also became the largest in the country. New programs in this era included Computer Science, Mechanical Engineering, Software Engineering, Space Physics, Safety Science, and Global Security and Intelligence Studies. The university won $57 million in military contracts to provide aviation degrees to U.S. military in Europe and provide training to the Air National Guard, international flight safety officers from the U.S. Air Force and support pilot training at the U.S. Air Force Academy.

Dr. John P. Johnson came to Embry-Riddle from Texas A&M University, where he was provost and vice president. He was also Dean at the Medical University of South Carolina and at Northern Kentucky University. Dr. Johnson expanded international and research initiatives and launched doctoral programs in Aerospace Engineering, Aviation, Aviation Business Administration, Electrical Engineering and Computer Science, Engineering Physics, Human Factors, and Mechanical Engineering. Working with the FAA and industry leaders, Dr. Johnson positioned the university to lead the development of next-generation air traffic management technology.

In 2017, P. Barry Butler came to Embry-Riddle Aeronautical University from the University of Iowa, where he served as executive vice president and provost. An aeronautical, astronautical and mechanical engineer and former dean of engineering, Dr. Butler now oversees a university that has become a collaborative workforce developer and a respected center for aviation research and development, including emerging areas such as cyber resilience.

Under his presidency, Embry-Riddle continues to expand discovery-driven degree programs and its research park is home to new aerospace patents, technology transfer and startups. Dr. Butler has prioritized collaboration with industry, resulting in new scholarships, mentorship programs and expedited hiring initiatives. He is expanding the university’s research, development and education in the areas of aviation cybersecurity, aviation data analytics and autonomous vehicles.

Worldwide Campus Admissions

Embry-Riddle considers all aspects of a student's qualifications and offers admission to the most competitive applicants, building a talented and diverse population of students motivated toward careers in aviation and aerospace. Applications for admission are valid for one year from date received. Admitted students must enroll and maintain enrollment beyond the add/drop period within one year of admission or must reapply. For the purpose of admission, transcripts are deemed official when issued directly from the issuing institution to Embry-Riddle. Upon acceptance, academic evaluators issue an official advising report to newly admitted degree and certificate seeking students, reflecting any transfer and/or advanced standing credit awarded.

To apply for admissions, go to https://worldwide.erau.edu/admissions/apply.

Current High School Students

The University defines a first-year applicant as one who is applying for degree status directly from high school. The University offers admission to applicants who present an academic record that demonstrates their ability to graduate. The following documentation is required for consideration of admission for all applicants currently enrolled in high school:

- Official high school transcript or equivalent (GED®, HiSET®, or TASC®)
  - Rigor of high school academic program and academic performance will be assessed at a 2.5 unweighted GPA or higher on a 4.0 scale
- Official transcripts from all postsecondary, accredited degree-granting institutions reflecting dual enrollment credit, if applicable
- Advanced Placement (AP) or International Baccalaureate (IB) scores, if applicable

The university expects all applicants to have completed by high school graduation the following course work, at a minimum:

- Four years of English
- Three years of mathematics, including Algebra I or Applied Math I & II, Formal Logic or Geometry
- Three years of history or social science
- Two years of science in at least two different areas, with at least one lab experience

ACT and/or SAT scores are optional, but strongly encouraged. While an essay, resume, and two letters of recommendation are not required for admission, they may help us to assess your qualifications. If submitting an essay, you're encouraged to submit 300-500 words outlining your career goals and how Embry-Riddle will assist in attaining those goals. Resumes can include your academic and extra-curricular activities, awards, honors, employment, etc. Letters of recommendation should be from a school counselor, teacher, or employer.

Admitted students will be permitted to enroll in Embry-Riddle Worldwide coursework no sooner than the July term of their graduation year. An official, final high school transcript with all grades posted demonstrating continued academic progress and graduation must be submitted to Embry-Riddle within the first term of enrollment. Students located in the state of California are required to submit an official, final high school transcript prior to enrolling in coursework.

* For both undergraduate and graduate applicants, additional documentation may be required for admission and consideration of credit from military, licensure, or other documented experiential learning. Applicants using Veteran's Administration benefits will be required to submit transcripts from all prior institutions attended (to include non-accredited and non-degree granting institutions) and all National Exam scores prior to admission. Admission into some degree programs may require an applicant to have a higher GPA, meet other special requirements, and/or submit additional documentation. Academic, judicial, and disciplinary notations on transcripts will be reviewed on a case by case basis and may impact admission.

** All applicants who have educational experience outside the United States are required to provide an official course-by-course evaluation in English, to include the cumulative grade-point average, unless specifically exempted through a qualifying ERAU program. Refer to the International Admissions section of the catalog for details on foreign credential evaluations.

High School Graduates

Applicants Under the Age of 20

The following documentation is required for consideration of admission for all applicants under the age of 20, who have not served in the United States military and are not a transfer student:

- Official high school transcript or equivalent (GED®, HiSET® or TASC®);
  - Rigor of high school academic program and academic performance will be assessed at a 2.5 unweighted GPA or higher on a 4.0 scale
- Official transcripts from all postsecondary, accredited degree-granting institutions, if applicable
- Advanced Placement (AP) or International Baccalaureate (IB) scores, if applicable

The university expects all applicants to have completed by high school graduation the following course work, at a minimum:

- Four years of English
- Three years of mathematics, including Algebra I or Applied Math I & II, Formal Logic or Geometry
- Three years of history or social science
- Two years of science in at least two different areas, with at least one lab experience

ACT and/or SAT scores are optional, but strongly encouraged. While an essay, resume, and two letters of recommendation are not required for admission, they may help us to assess your qualifications. If submitting an essay, you're encouraged to submit 300-500 words outlining your career goals and how Embry-Riddle will assist in attaining those goals. Resumes can include your academic and extra-curricular activities, awards, honors, employment, etc. Letters of recommendation should be from a school counselor, teacher, or employer.

Applicants Age 20 and Older

Applicants age 20 and older who are not classified as a transfer student or have not served in the US military must provide the following documentation:

- Official high school transcript or equivalent (GED®, HiSET® or TASC®) with a 2.5 unweighted GPA or higher assessed on a 4.0 scale;
- Official transcripts from all postsecondary, accredited degree-granting institutions attended, if applicable, with a minimum of a 2.0 CGPA on a 4.0 scale

Applicants with Military Experience

Applicants with United States military experience, but no college transfer credit must provide the following documentation:

- Official military transcripts showing documentation of service
- Additional documentation may be requested for advanced standing credit

* For both undergraduate and graduate applicants, additional documentation may be required for admission and consideration of credit from military, licensure, or other documented experiential learning. Applicants using Veteran's Administration benefits will be required to submit transcripts from all prior institutions attended (to include non-accredited and non-degree granting institutions) and all National Exam scores prior to admission. Admission into some degree programs may require an applicant to have a higher GPA, meet other special requirements, and/or submit additional documentation. Academic, judicial, and disciplinary notations on transcripts will be reviewed on a case by case basis and may impact admission.

** All applicants who have educational experience outside the United States are required to provide an official course-by-course evaluation in English, to include the cumulative grade-point average, unless specifically exempted through a qualifying ERAU program. Refer to the International Admissions section of the catalog for details on foreign credential evaluations.

*** Embry-Riddle does not offer Career Pathway Programs therefore there are no Ability-to-Benefit testing options for students who do not currently have a high school diploma or GED.

Transfer Students

For the purposes of admission, a transfer student is defined as any student who has earned college-level credit from an accredited degree-granting institution after graduating from high school. Embry-Riddle considers each application for transfer admission individually, reviewing the student's academic record, grades received in all college-level courses and the rigor of the student's academic program. College courses completed as dual enrollment while concurrently enrolled in high school do not qualify applicants as transfer students.

To be considered for admission, a transfer applicant must have a minimum of a 2.0 cumulative grade point average (CGPA) on a 4.0 scale from an accredited degree-granting institution. When an applicant has attended more than one institution, a cumulative average for all previous college work attempted will be calculated to determine the overall CGPA.

Transfer students must submit the following documentation:

- Official transcripts from all accredited degree-granting colleges and universities (postsecondary institutions) attended
- Military transcripts and documents, if applicable
- Official high school transcript, or equivalent (GED®, HiSET®, or TASC®) with a 2.5 unweighted GPA or higher assessed on a 4.0 scale will be required of applicants who have not served in the United States military, if fewer than 12 semester hours of college level credit have been earned

* For both undergraduate and graduate applicants, additional documentation may be required for admission and consideration of credit from military, licensure, or other documented experiential learning. Applicants using Veteran's Administration benefits will be required to submit transcripts from all prior institutions attended (to include non-accredited and non-degree granting institutions) and all National Exam scores prior to admission. Admission into some degree programs may require an applicant to have a higher GPA, meet other special requirements, and/or submit additional documentation. Academic, judicial, and disciplinary notations on transcripts will be reviewed on a case by case basis and may impact admission.

** All applicants who have educational experience outside the United States are required to provide an official course-by-course evaluation in English, to include the cumulative grade-point average, unless specifically exempted through a qualifying ERAU program. Refer to the International Admissions section of the catalog for details on foreign credential evaluations.

Prior to application or admission, undergraduate students may utilize the transfer portal to obtain a free, unofficial estimate of credit of prior education and/or training to determine the amount of credit they are likely to be awarded. Graduate students may work directly with the office of admissions to request an unofficial estimate of prior credit. An official evaluation will be available to applicants following admission to the university and will be based on dates of attendance, grades earned, and catalog requirements in effect at the time of application submission..

Certificate Seeking Students (UG)

Undergraduate

Embry-Riddle recognizes that working adults may be interested in furthering their education for professional or self-enhancement purposes without pursuing a degree with Embry-Riddle. For these reasons, Embry-Riddle allows students who meet full admission requirements to be admitted to an undergraduate certificate program. Undergraduate certificate program students may only enroll in those courses outlined in the certificate program. The $50 application fee and official transcripts must be submitted to the University before the student is allowed to enroll in certificate courses. Certificate seeking students must meet the same academic standards as degree-seeking students. For students who subsequently apply for entry into a degree program, additional documentation may be required. Applicants who fail to meet full admission criteria may be considered for possible conditional admission on a case by case basis.

Undergraduate Conditional Admission

- Students who fail to satisfy the guidelines for full admission may be granted conditional admission under circumstances determined by the Admissions Office or Academic Standards and Admissions Committee (ASAC). A written petition for admission, current resume and other supporting documentation may be requested for consideration of admission.
- Students granted standard conditional admission due to academic deficiency should maintain a minimum of a 2.0 CGPA while in this status or risk being placed on warning, put on probation, or suspended, in compliance with university policy.
- Students granted custom conditional admission may have individual terms outlined in their letter of admission. Students will remain on conditional status until they have satisfied the terms of their conditional admission.
- Students with conditional admission questions should contact their academic advisor.

First Time and Transfer Students

All graduate applicants must have earned a baccalaureate degree from an accredited degree-granting institution, with a cumulative grade point average (CGPA) of 2.5 or higher on a 4.0 scale from their degree-granting institution. Graduate applicants who already possess a master's degree or have completed graduate coursework from an accredited degree-granting institution must also have a 3.0 CGPA or higher at the graduate level.

Applicants with an undergraduate degree and no graduate course work are required to submit the following:

- Official transcript(s) from the accredited degree-conferring institution(s)

- Official or unofficial transcripts from other institutions attended may be requested to verify prerequisite knowledge for certain academic programs

Applicants with an undergraduate degree and graduate-level course work are required to submit the following:

- Official transcript(s) from the accredited degree-conferring institution(s)
- Official transcripts from all accredited degree-granting institutions showing graduate-level course work
- Official or unofficial transcripts from other institutions attended may be requested to verify prerequisite knowledge for certain academic programs

Applicants with a master's degree are required to submit the following:

- Official transcripts from all accredited degree-granting institutions showing graduate-level course work
- Official or unofficial transcript(s) from the undergraduate degree-conferring institution(s). Additional transcripts from other institutions attended may be requested to verify prerequisite knowledge for certain academic programs

* For both undergraduate and graduate applicants, additional documentation may be required for admission and consideration of credit from military, licensure, or other documented experiential learning. Applicants using Veteran's Administration benefits will be required to submit transcripts from all prior institutions attended (to include non-accredited and non-degree granting institutions) and all National Exam scores prior to admission. Admission into some degree programs may require an applicant to have a higher GPA, meet other special requirements, and/or submit additional documentation. Academic, judicial, and disciplinary notations on transcripts will be reviewed on a case by case basis and may impact admission.

** All applicants who have educational experience outside the United States are required to provide an official course-by-course evaluation in English, to include the cumulative grade-point average, unless specifically exempted through a qualifying ERAU program. Refer to the International Admissions section of the catalog for details on foreign credential evaluations.

Certificate Seeking Students (GR)

Graduate

Embry-Riddle recognizes that working adults may be interested in furthering their education for professional or self-enhancement purposes without pursuing a degree with Embry-Riddle. For these reasons, Embry-Riddle allows students who meet full admission requirements to be admitted to a graduate certificate program. Graduate certificate program students may only enroll in those courses outlined in the certificate program. The $50 application fee and official transcripts must be submitted to the University before the student is allowed to enroll in certificate courses. Certificate seeking students must meet the same academic standards as degree-seeking students. For students who subsequently apply for entry into a degree program, additional documentation may be required. Applicants who fail to meet full admission criteria may be considered for possible conditional admission on a case by case basis.

Graduate Conditional Admission

- Students who fail to satisfy the guidelines for full admission may be granted conditional admission under circumstances determined by the Admissions Office or Academic Standards and Admissions Committee (ASAC). A written petition for admission, current resume and other supporting documentation may be requested for consideration of admission.
- Students granted standard conditional admission due to academic deficiency will remain on conditional status until they have completed nine hours of graduate coursework. Any course(s) taken in this initial nine hours may not be repeated while on conditional status. During the conditional period students must maintain a 3.0 CGPA or risk being placed on academic warning or being dismissed in compliance with University policy.
- Students granted custom conditional admission may have individual terms outlined in their letter of admission. Students will remain on conditional status until they have satisfied the terms of their conditional admission.
- Students with conditional admission questions should contact the academic advisor at their local campus.

Former Embry-Riddle Students

For Undergraduate Students: A new application will be required for students whose attendance at the University is interrupted for any of the following reasons:

- Enrollment at another institution without advanced, written approval
- A matriculated student fails to enroll within one year from the ending date of their last course
- A student fails to matriculate within one year of admission
- Academic suspension from the University

Prior students with an Embry-Riddle undergraduate cumulative grade point average (CGPA) below a 2.0 may be considered for readmission. Previously suspended students must satisfy the conditions for readmission as indicated in the letter of suspension before being considered for readmission. Files will be reviewed by the Admissions Office and/or Academic Standards and Admissions Committee (ASAC). A written petition for readmission, current resume, application fee, and other supporting documentation, if applicable, must accompany the application for consideration of readmission.

For Graduate Students: A new application will be required for students whose attendance at the University is interrupted for any of the following reasons:

- Enrollment at another institution
- A matriculated student fails to enroll within one year from the ending date of their last course
- A student fails to matriculate within one year of admission
- Academic dismissal from the University
- Student does not complete the degree requirements of a graduate program within seven years from the date of initial enrollment in the graduate program

Prior students with an Embry-Riddle graduate cumulative grade point average (CGPA) below a 3.0 may be considered for readmission. Previously dismissed students must satisfy the conditions for readmission as indicated in the letter of dismissal before being considered for readmission. Files will be reviewed by the Admissions Office and/or Academic Standards and Admissions Committee (ASAC). A written petition for readmission, current resume, application fee, and other supporting documentation, if applicable, must accompany the application for consideration of readmission.

Non-Degree Seeking and Transient Students

Undergraduate

Embry-Riddle recognizes that working adults may be interested in furthering their education for professional or self-enhancement purposes without pursuing a degree program. We also recognize that transient students and those pursuing a degree with another institution may wish to take a course or courses with Embry-Riddle. For these reasons, Embry-

Riddle allows students who meet full admission requirements to take up to 24 semester hours as a non-degree seeking or transient student. Official or unofficial transcripts must be submitted to the University before the student is allowed to enroll in courses. Non-degree seeking and transient students must meet the same academic standards as degree seeking students. Note: Engineering coursework is generally restricted to students admitted to engineering programs; however, a waiver may be requested for non-degree applicants. Non-degree seeking students are not subject to course prerequisites. For students who subsequently apply for entry into a degree program, additional documentation may be required.

Graduate

Embry-Riddle recognizes that working adults may be interested in furthering their education for professional or self-enhancement purposes without pursuing a degree program. We also recognize that transient students and those pursuing a degree with another institution may wish to take a course or courses with Embry-Riddle. For these reasons, Embry-Riddle allows students who meet full admission requirements to take up to 12 semester hours as a non-degree seeking or transient student. Official or unofficial transcripts must be submitted to the University before the student is allowed to enroll in courses. Note: Engineering coursework is generally restricted to students admitted to engineering programs; however, a waiver may be requested for non-degree applicants. Non-degree seeking and transient students must meet the same academic standards as degree seeking students. Non-degree seeking students are not subject to course prerequisites. For students who subsequently apply for entry into a degree program, additional documentation may be required.

Readmission of Service Members: Higher Education Opportunity Act of 2008

In accordance with the HEO Act of 2008, service members will be readmitted to the institution, without penalty for having left because of military service, in order to minimize disruption to the lives of those serving in the uniformed services.

In reference to the Department of Education: Statute and regulations require institutions of higher education that participate in Federal student financial aid programs to promptly readmit with the same academic status a qualifying service member who did not continue to attend because of service in the uniformed services. The readmission requirements apply to service members who perform service in the uniformed services, whether voluntary or involuntary, in the Armed Forces, including service as a member of the National Guard or Reserve, on active duty, active duty for training, or full-time National Guard duty under Federal authority (but not State authority).

International Admissions

An international student is defined as any non-United States citizen intending to study at campuses located outside the United States, students who live outside of the United States and are enrolled through the Embry-Riddle Worldwide Online Campus, as well as non-residents and non-immigrants planning to study in the United States. This school is authorized under federal law to enroll non-immigrant students.

International applicants must submit the application for admission 90 days prior to their intended term start date. The following items are also required.

Foreign Credential Evaluation

All undergraduate and graduate applicants who have educational experience outside the United States are required to provide an official course-by-course evaluation in English, that includes the cumulative grade-point average, unless specifically exempted through a qualifying ERAU program. A copy of the foreign transcript must accompany the official credit evaluation. The evaluation must be certified by one of the Foreign Credential Evaluation Services (FCE) approved by Embry-Riddle. A fee is charged for the translation service and must be paid by the applicant directly to the FCE.

If a student has graduate-level work (either transfer or advanced standing) that is indicated on the foreign credential evaluation as meeting the requirements for an undergraduate degree, it will not be reviewed for applicability toward an ERAU graduate degree.

Educational systems differ country by country. The following services are versed in providing a comparison of a country's education system to the system in the United States. This comparison includes education levels, credits, and grades.

The report is considered official only if mailed from the agency directly to ERAU. We prefer all applicants use the foreign credential evaluation services provided by IEE **(International Education Evaluation)**. We will also accept evaluations from the following agencies: ACEI, ECE, IERF, Josef Silny & Associates, SpanTran, and World Education Services.

Admissions also reserves the right to accept foreign credential evaluations from current members of the National Association of Credential Evaluation Services (NACES), or Association of International Credential Evaluators (AICE)

English Language Requirements

1. Applicants for whom English is not the primary language must:
   a. Attain a minimum score on the Test of English as a Foreign Language (TOEFL) of 550 (paper based) or 79 (Internet based) **–OR–**
   b. Attain a minimum score on the International English Language Testing System (IELTS) of 6.0 **–OR–**
   c. Attain a minimum score on the Duolingo English Test of 105 **–OR–**
   d. Attain a minimum score on the Cambridge English Language Assessment of 170 **–OR–**
   e. Successfully complete a college-level English Composition course with a grade of "C" or better from an accredited degree-granting institution**.**

2. TOEFL, Duolingo, IELTS, and Cambridge Exam scores must be sent directly to Embry-Riddle by the testing agency.
   For testing dates and locations, please use the contact information below:

   TOEFL Services
   School Code: 2860 (Worldwide Campus)
   Educational Testing Service
   P.O. Box 6151
   Princeton, NJ 08541-6151
   1-609-771-7100 (worldwide)
   1-877-0863-3546
   www.toefl.org

   Duolingo English Test
   Email: englishtest-support@duolingo.com
   https://englishtest.duolingo.com/

   IELTS International Services
   Account Name: Embry-Riddle Aeronautical University - Worldwide Campus
   825 Colorado Boulevard, Suite 201
   Los Angeles, CA 90041 USA
   Telephone: 323-255-2771
   Email: **ielts@ieltsintl.org**
   www.ielts.org

   Cambridge English Language Assessment
   1 Hills Road
   Cambridge
   CB1 2EU
   United Kingdom

Tel: +44 1223 553997
Email: helpdesk@cambridgeenglish.org
www.cambridgeenglish.org/helpdesk

Instruction of Embry-Riddle Aeronautical University Worldwide courses takes place in English. Applicants who successfully complete Embry-Riddle's Language Institute (ERLI) and receive a *Recommendation for Academic Study* from the ERLI Director may be exempt from the TOEFL, IELTS, Duolingo, or Cambridge exam.

Embry-Riddle Europe

International students interested in attending our Europe Campus may contact:

ERAU Europe
Suite 2-02.8
House of Logistics and Mobility (HOLM) GmbH
Bessie-Coleman-Straße 7
60549 Frankfurt am Main
Germany
Phone: +49 (0)152-06522400
Email: europe@erau.edu

Embry-Riddle Asia

International students interested in attending our Asia Campus may contact:

Embry-Riddle Aeronautical University
Asia Campus
75 Bukit Timah Road
#02-01/02 Boon Siew Building
Singapore 229833
Phone: +65 6933 9580
Email: asia@erau.edu

F-1 Student Visas

F-1 Student Visas

For international students intending to study in the U.S. on an F-1 student visa, an official bank letter, loan letter, or scholarship letter must be provided with an affidavit of financial support. Upon acceptance for admission and receipt of financial documentation, the Worldwide Principal Designated School Official (PDSO) will issue the Certificate of Eligibility form (I-20) allowing the student to apply for an F-1 visa. A Designated School Official (DSO) is located at each approved location to assist an F-1 student in maintaining immigration status.

F-1 Visa Process

1. Apply to an F-1 approved location and program at Embry-Riddle Worldwide.
2. Submit documentation for admission as outlined in the current catalog.
3. Receive admissions decision.
4. Sign the Form I-20 Certificate of Eligibility mailed to you by your International Student Counselor.
5. Submit the Form I-901 SEVIS fee at www.fmjfee.com. To obtain the I-901 receipt, you will need to pay the $350 SEVIS Fee (I-901).
6. Contact the nearest U.S. Embassy or U.S. Consulate in your country of residence to apply for an F-1 visa: http://travel.state.gov.
7. Attend your visa interview. The consular officer determines your eligibility for issuance of the F-1 visa.
8. Purchase health insurance to cover you during the duration of your stay in the United States before you arrive.
9. Review your International Student Guide on how to maintain your F-1 status and study at Embry-Riddle Aeronautical University Worldwide.
10. Email the F-1 student agreement to the DSO or PDSO at wwintstc@erau.edu.
11. Secure housing and transportation prior to arriving in the United States.
12. Arrive at the U.S. Port of Entry within 30 days of the term start date.

The PDSO serves as point of contact for all international students with the processing of forms and documentation of status required by foreign governments, sponsors, the U.S. Government, and the University. For further information, contact an International Student Counselor in the Admissions Office toll free at (800) 522-6787 Option 2, or by email at wwintstc@erau.edu.

Department of Homeland Security/Student Exchange Visitor Program

This school is authorized under Federal law to enroll nonimmigrant alien students. The following campuses are approved to enroll students who have obtained an F-1 student visa:

DFW Southlake, Texas

Ft. Lauderdale, Florida

Los Angeles, California

Miami, Florida

Oklahoma City, Oklahoma

Orlando, Florida

Phoenix-Mesa, Arizona

Portland, Oregon

San Diego, California

San Francisco Bay Area, California

Seattle, Washington

International Student Services

The Worldwide International Student Services Counselors serve as the central point of contact for issues concerning international students. The counselors provide services that include, but are not limited to, advising students on immigration regulations, as well as financial and personal matters.

The counselors also assist international students with the processing of forms and documentation of status required by foreign governments, sponsors, the U.S. government, and the University.

International students should contact the International Counselors toll free at (800) 522-6787 Option 2, or by email at wwintstc@erau.edu.

For additional information, visit the International Student Services website in ERNIE under Departments > Worldwide > Student Resources.

Computer Requirements and Email

Computer Use

Each student must have access to a computer, and any course offered may require computer-based work. Students are also required to have access to a webcam and a broadband Internet connection to access e-mail, online course materials, library databases, ERAU's Intranet, and the World Wide Web. In many courses, various types of software must be installed as a requirement to complete course work; therefore, students should have administrative rights on the computers they are using for class in order to install these programs. For certain online courses, students will be required to use a webcam to complete assignments and/or perform identity verification checks throughout the term.

Review the computer requirements for Worldwide students and faculty.

Some course software may not be compatible with Chromebooks and other mobile devices like iPads and mobile phones. Therefore, each

student must have access to a computer (for the best experience, we recommend using a computer no more than 5 years old).

It is the responsibility of each student to ensure he/she meets all of the technology requirements listed above and in the attached document prior to attending class.

ERAU Student Email Account

ERAU issues both an email and Embry-Riddle Network for Information Exchange (ERNIE) account to provide access to online services when an application for admission has been submitted. These accounts are made available to students via ERNIE at ernie.erau.edu. Please check your ERAU email frequently, as the University will use this account to send official notification on University matters after a student is admitted.

The University does not provide support for forwarding email from the erau.edu domain to an external service provider (e.g. Gmail, Yahoo!, Outlook.com, etc.), however doing so is not explicitly prohibited by policy. Additionally, employees and students should be cognizant of the security implications associated with submitting or forwarding any sensitive messages via a third-party email service provider. The security of those third-party solutions cannot be assessed, as they are not within the University's administrative control. Students may review ERAU's Email Policy at: https://myerauedu.sharepoint.com/teams/APPM/section-7/Pages/7-9-policy.aspx

Your ERAU email account will remain active for up to two years after your last ERAU course. If you have not registered for a course, your system access will be terminated one year from your date of admission or one year from your application date if you have not yet been admitted.

Financial Aid and Services

Embry-Riddle participates in a number of federal, state, and University-administered programs that help students and their families meet educational costs.

Embry-Riddle believes the primary responsibility for financing education lies with the student and the student's family. Therefore, the student should apply for financial aid early, save money, look for ways to reduce costs, and become aware of specific program requirements by reading all financial aid publications. Financial aid is meant to supplement what the student and family can contribute toward costs and rarely cover all educational expenses. All financial assistance will be limited to Embry-Riddle's established cost of attendance.

Eligibility and Application

Eligibility Requirements

To qualify for federal student aid, you must meet certain requirements. General eligibility requirements for most programs are as follows:

- Show you're qualified to obtain a college education by
  - having a high school diploma or a recognized equivalent such as a General Educational Development (GED) certificate; or
  - completing a high school education in a homeschool setting approved under state law (or—if state law does not require a homeschooled student to obtain a completion credential—completing a high school education in a homeschool setting that qualifies as an exemption from compulsory attendance requirements under state law);
- Have a valid Social Security number (with the exception of students from the Republic of the Marshall Islands, Federated States of Micronesia, or the Republic of Palau);
- Be a U.S. citizen or eligible noncitizen. ***PLEASE NOTE:*** *The citizenship status you report on your* Free Application for Federal Student Aid *(FAFSA) must match with the Social Security Administration (SSA). If your citizenship does not match with the Social Security Administration you will be required to update your information with the SSA and/or provide a copy of original documentation in person to the Financial Aid Office before Federal Aid can be disbursed.*
- Be accepted in an eligible degree program (Associate's, Bachelor's, Master's or Doctorate).
- Be enrolled or accepted for enrollment in an eligible degree program; be enrolled at least half-time to be eligible for Federal Direct Loans.
- Maintain satisfactory academic progress toward a degree.
- Be registered with Selective Service, if required to do so; if you're a male (you must register between the ages of 18 and 25);
- You have not been incarcerated, have a conviction for a drug offense, or are subject to an involuntary civil commitment after completing a period of incarceration for a sexual offense, if so your eligibility for federal student aid may be limited.
- Sign the certification statement on the *Free Application for Federal Student Aid* (FAFSA®) stating that
  - you are not in default on a federal student loan and do not owe money on a federal student grant and
  - you will use federal student aid only for educational purposes;

Additional information is available on the Federal Student Aid website.

The Application Process

After applying for admission to the University, students are encouraged to complete the Free Application for Federal Student Aid (FAFSA) at https://studentaid.gov/h/apply-for-aid/fafsa. The FAFSA must be completed annually to be considered for Federal Student Aid through the completion of a Free Application for Federal Student Aid (FAFSA) on the FAFSA website. When completing the FAFSA you will need to enter Embry-Riddle Aeronautical University school code **001479**. By listing ERAU (Title IV School Code: 001479) as one of your school choices, we will receive your information electronically for processing. The FAFSA application is available October 1st of every year. For more information on Federal Student Aid, please review How Financial Aid Works.

Academic Eligibility to Maintain Financial Aid Eligibility

In order to maintain Financial Aid eligibility, you must understand all policies pertaining to Federal Financial Aid. Please review the policies below to have a better understanding of the specific requirements to maintain financial aid eligibility.

Standards of Academic Progress

Federal regulations require Embry-Riddle to define minimum standards of satisfactory academic progress to determine your eligibility for financial aid. Embry-Riddle must set certain quantitative and qualitative standards to ensure you are progressing toward degree completion. If you do not meet the **Standards of Academic Progress**, you will not be able to receive financial aid.

- The qualitative standard is your grade point average (GPA).
- This requirement is explained in detail in the University catalog under the Academic Regulations and Procedures section.
- If you are suspended, dismissed, or not permitted to continue your enrollment, you will not be able to receive financial aid.
- There are two quantitative standards. First, you must successfully complete 67% of the courses you attempt. Grades A, B, C, D, and P are considered successfully completed. Second, the overall time it takes to complete your program is considered.
- You are allowed 150% of the length of your program to complete your degree. The maximum number of credits you could attempt depends on your degree program.
- These maximum credit hours may vary depending on your specific program. If you change degrees or are a transfer student, the maximum credit hours may be extended by the number of credit hours required to complete your degree.
- The Standards of Academic Progress is reviewed once each academic year and are updated at the end of the last term in academic year. For **Worldwide programs** the academic year ends with the last term of a track (see Financial Aid Tracks for terms associated with Tracks). The April and May Terms are optional terms and are not calculated until the following academic year. If you are failing the Standards of Academic Progress and have questions please contact a Financial Aid Counselor toll free 866-567-7202.

Consequences of Withdrawal

Students who withdraw, receive an "F" for *non-attendance or *non-participation from **all** of their classes are subject to the **Return of Title IV Federal Financial Aid Programs Policy**. Please review the **Return of Title IV Funds Policy** as it contains important information for students who withdraw or *ceases to attend all registered classes with in a term and receive Financial Aid. The Embry-Riddle **Return of Title IV Funds Policy** and **Standards of Academic Progress,** in accordance with federal regulations, will determine the amount of financial aid funds to be returned.

Scholarship funds will be reversed in their entirety for any student that drops/withdrawals/audits a course associated with a Worldwide Scholarship. Any balance created from the reversal will be the student's responsibility.

***If a student ceases to attend ALL registered classes and/or ceases to participate in an academically related activity at any point during their Term of enrollment the faculty will use their discretion to assign

an appropriate grade and supporting last date of attendance. For more information please review **Student Services & Academic Affairs** policies and procedures.

Repeated Courses and Financial Aid Eligibility

Federal regulation limits the number of times a student may repeat a course and receive financial aid for that course.

- A student may receive aid for repeating a previously passed course as long it is the **first** repeat of the course and is required in your program.
- A student may receive aid when repeating a course that was previously failed or withdrawn from regardless of the number of times the course was attempted and failed. (Satisfactory Academic Progress Policy still applies).
- A student may receive aid to repeat a previously passed course one additional time. If a student fails the second attempt, no more financial aid will be given to repeat the course a third time. If the second attempt is a withdrawal, then it is allowable for a third attempt.
- When a student has completed any course twice with a grade (A, B, C, or D); he or she is no longer eligible to receive aid for that course. If a student retakes a course that is not aid eligible, the credit hours will be excluded from the financial aid enrollment for that term.

Examples:

	1st Attempt	2nd Attempt/ 1st repeat	3rd Attempt/ 2nd repeat	4th Attempt/ 3rd repeat	Is class eligible for Financial Aid?
Course 1	F	D	Enrolled	----	Yes
Course 2	C	Enrolled	----	----	Yes
Course 3	D	C	Enrolled	----	No
Course 4	D	F	Enrolled	----	No
Course 5	W	F	F	Enrolled	Yes
Course 6	W	F	D	Enrolled	Yes

Explanation of the Above Examples:

Course 1: Yes, these credits are included in the financial aid enrollment because the student is allowed to repeat any failed or withdrawn course until a passing grade is received. Once a passing grade is received, financial aid can pay for the course one more time (one repeat). If a grade of A, B, C, or D is made on the third attempt; the course will not count again in the calculation for financial aid enrollment.

Course 2: Yes, these credits may be counted, even though it was previously passed, because it is the first time the class is being repeated.

Course 3: No, this course was previously passed twice and this is the third attempt. Two attempts are the maximum attempts these credits can count toward financial aid enrollment, because the course has been previously passed.

Course 4: No, the class credits are no longer considered for financial aid eligibility because it has been previously passed, and this is the second time it is being repeated.

Course 5: Yes, because this course has never been passed so it may still be counted toward financial aid enrollment.

Course 6: Yes, because this course has only been passed once and the 4th attempt will be considered the 2nd attempt if he passes the class.

Excess Credit and Financial Aid Eligibility

Federal Regulations limits Financial Aid to only courses that apply to your Program of Study. Your Academic Advisor will be notified to review courses and then notify the Financial Aid office for any student enrolled in courses that are not applicable to a student's Program of Study who may be eligible for Federal Aid. This will cause a reduction or cancellation of Financial Aid. Please check with your Advisors before enrolling in courses outside of your Program of Study.

Please Note: At any time if you become ineligible for financial aid or are reduced after a disbursement is made for financial aid, you will be financially responsible for all charges.

Financial Assistance: Grants, Loans, Scholarships

The major categories of financial assistance programs include grants, scholarships, and loans. Loans from federal or private lenders must be repaid; the interest rate, however, is usually low and the repayment period is extended. Grants and Scholarships are free money for school and are often based on financial need and/or merit. For more information visit the Worldwide Financial Aid Website.

A complete description of financial aid assistance and optional financing programs are available to students and their parents. Types of financial assistance are detailed online at https://worldwide.erau.edu/admissions/financial-aid/ this includes information about eligibility criteria, application procedures, deadline dates, and much more.

Federal and State Grants

- **Federal and State Grants** – These grants are available to U.S. citizens or permanent residents who are enrolled at least half-time in a degree program. To remain eligible, you must make satisfactory academic progress and not be in default or owe a return repayment on a grant or loan. Visit the Grants page to see if you qualify.
- **State Programs** – Each state offers its own range of scholarship and grant programs that you may qualify for through residency and meeting the outlined criteria. Visit our State Scholarships and Grants page https://worldwide.erau.edu/admissions/financial-aid/scholarships/state-scholarships-grants/ or check with your state to see what programs are available to you.

Scholarships

Embry-Riddle Worldwide recognizes the investment students and their families make when choosing a private college so providing financial assistance to aid students who have demonstrated academic achievement is important. By offering scholarship opportunities ERAU Worldwide would like to alleviate some of that burden. Students must be admitted into a degree-seeking program of study to receive any Worldwide scholarship opportunities. Scholarship awards are typically based on merit or a combination of merit and need, such as academic excellence, talent, affiliation with various groups, or career aspirations.

- Embry-Riddle Donor Scholarships are funds that are generously donated to help students pay for their education. If you are selected for a scholarship it will be paid in the Fall and Spring terms of the following academic year. Completing the application does not guarantee that you will receive a scholarship and you must reapply for these awards each year. The scholarship award amounts vary, ranging from $500 to $5,000, and scholarship criteria also vary. Some scholarships are specific whereas others are more general although most scholarships require a FAFSA application. Completing a FAFSA application does not require you to use Federal aid. Worldwide Students can apply during the months of January and May each year. The application will open in January and will remain open through 5 p.m. EST on May 31st. Recipients are chosen by the Worldwide Scholarship Committee during the months of June and July and notifications will be sent via ERAU email by the end of July for the academic year.
- **Worldwide Scholarship Opportunities** - Embry-Riddle Worldwide recognizes the investment students and their families make when choosing a private college, so providing financial assistance to aid students who have demonstrated academic achievement is important. By offering scholarship opportunities, Embry-Riddle Worldwide would like to alleviate some of that burden. Students must be admitted into a degree-seeking program of study to receive any Worldwide scholarship opportunities.

- **External and Private Scholarships** – Like grants, external and private scholarships do not have to be paid back. Visit our Scholarships page to learn more about the available types and whether you qualify for them.

Loans

If you apply for financial aid, you may be offered loans as part of your financial aid offer. A loan is money you borrow and must pay back with interest. If you decide to take out a loan, make sure you understand who is making the loan and the terms and conditions of the loan. Student loans can come from the federal government, from private sources such as a bank or financial institution, or from other organizations. Loans made by the federal government, called federal student loans, usually have more benefits than loans from banks or other private sources. Learn more about the differences between federal and private student loans.

- Federal Direct Loans
- Federal Direct Graduate Plus Loans
- Federal Parent Loan for Undergraduate Students
- Private Educational Loans

If a student obtains a loan to pay for an eligible educational program of study, the student will have the responsibility to repay the full amount of the loan, plus interest, less the amount of any refund (i.e. scholarships, state and federal grants). If the student has received federal student financial aid funds, the student is entitled to a refund of any remaining funds from the federal student aid programs after eligible university charges are paid. Students receiving federal financial aid have certain rights and responsibilities in accordance with the Borrower's Rights and Responsibilities Statement on the Master Promissory Note. Please contact the ERAU Worldwide Financial Aid Office for additional information or Student Financial Services about refunds.

Please Note: Washington State residents seeking information and resources about **student loan repayment** or seeking to submit a complaint relating to your student loans or student loan servicer, please visit www.wsac.wa.gov/loan-advocacy or contact the Student Loan Advocate at loanadvocate@wsac.wa.gov.

Payments

Payments

Payment for tuition charges and the SGA fee are expected no later than 7 days prior to the first day of the respective term. Payment or payment arrangements must be made no later than first day of the term, which can be accepted in the following manner:

- Electronic Check/ACH debit
- Credit Card: MasterCard, Visa, Discover, and American Express*
- Third-party Sponsorship
- Payment Plan
- A combination of any of the above payment methods is also acceptable

* A 2.85% service fee (minimum $3.00) will be assessed on all credit and debit card transactions.

Third-Party Sponsorship

Students who have a third-party sponsor paying all or a portion of their University tuition charges must provide their campus or advisor sufficient proof of sponsorship prior to the first day of the respective term. Proof of sponsorship may include a military TA, VA documentation, or employer sponsorship documentation. Any portion not covered by a sponsor must also be paid in full by the student prior to the start of the term. All third-party invoices have a net 30 due date.

In the event a third-party sponsor denies payment or has not paid by the end of the term, the tuition balance becomes the responsibility of the student.

Payment Plan

Students who are requesting to defer payment have the option of signing up for a Tuition Payment Plan.

The plan offered requires a $20 set-up fee and one-third of the term's tuition at the time of enrollment. In 30 days, the next one-third payment will be automatically debited via the pay method the student chose at the time of enrollment. The final one-third payment will be automatically debited 30 days later.

Students may enroll in one payment plan at a time and the payment plan must be paid in full before the start of any subsequent semester/term. In the event of a late payment, a fee of $25 will be assessed to the student account. Repeated occurrences of late payments will result in the revocation of the use of a payment plan for one year.

The Payment Plan agreement can be accessed online by logging into ERNIE; and then click on Campus Solutions (under tools). Once on the student home page, click on Finances, My Student Account, then Make a Payment – Access Account. A new screen will populate and the student will select Enroll in Payment Plan; follow the prompts to complete enrollment.

The payment plan is intended for the deferment of the cost of tuition only. Payment for the cost of books, course materials, and shipping fees may not be deferred.

Delinquent Accounts

When a student's account is delinquent, registration for any subsequent semesters will be denied. A delinquent student account will result in suspension of all academic procession, and information on class performance, grades, transcripts and diplomas will be withheld.

If the delinquent status is not resolved, the University may place the account with a commercial collection agency for further collection and/or litigation action. The student is also subject to the costs of collection, which may be based on a percentage at a maximum of 33.3% of the debt, and all costs and expenses, including reasonable attorney's fees, we incur in such collection efforts.

Delinquent accounts may be reported to one or all three major credit bureaus.

Late Fees

Students enrolled in a University payment plan are subject to the payment plan fee and late fees as disclosed in their Payment Plan Agreement. Based on industry standards, and for more consistency across all student accounts, the University will charge late fees for students not enrolled in a University payment plan.

Please review the Required Financial Responsibility Agreement for late fee assessment criteria. The agreement can be found in ERNIE > Campus Solutions > Finances > Financial Disclosures.

You may log in at any time to view your billing statement or your current account balance in ERNIE. We encourage you to make payment in full by each published payment deadline to avoid late fees.

Tuition and Fees

Payment in full or payment arrangements are required on or before the session start date of each month.

Cost and Tuition

Detailed tuition rates are published on the web at https://worldwide.erau.edu/admissions/cost-tuition/.

User Fees

Application Fee (nonrefundable)	$50
Late Registration Fee	$25
Transcript Fee (includes service charge)**	$15
Undergraduate and Master's Graduation Fee (non-refundable)	$100
Doctoral Graduation Fee (non-refundable)	$150
Duplicate Diploma	$60
Previously Earned Diploma	$60
Credit Card/Online Debit Card Transaction Fee	2.85% or $3.00 minimum of Transaction
Student Government Association (SGA) Fee	$25 per year (Assessed during the first term of enrollment each Academic year.)

**Credit card/online debit card transaction fee does not apply to transcript orders.

Course Drop, Course Withdrawal, and Refund Schedule

Business Days 1-4 (drop)	100%*
Business Days 5 and beyond (withdrawal)	0%*

* Unless specified by Memorandum Of Understanding (MOU), contract, or state regulations.

Students who drop a course after the 4th business day “drop” period are responsible for their tuition/fees, and the action will be processed as a withdrawal. Request for drops/refunds due to circumstances beyond those permitted by the University, such as severe personal illness, required military deployment, etc., must be in writing and accompanied by third party documentation, such as a physician’s statement, military orders, etc.

University Policy for Add, Drops, and Withdrawals

For nonmilitary students enrolled in Alaska, Alabama, Arizona, California, Louisiana, Maryland, Nevada, New Mexico, North Dakota, and Oregon, refund tables are available at local Worldwide locations or on the State Authorization and Compliance site.

PhD in Aviation Cancellation and Refund Policy

PhD in Aviation Cancellation and Refund Policy	
First Week	100%*
Second Week	75%*
Third Week	50%*
Fourth Week	25%*
After Fourth Week	0%*

* Unless specified by Memorandum of Understanding (MOU), contract, or state regulations.

PhD in Aviation course terms are offered three times per year and are 12-weeks in length.

Arizona Students Cancellation and Refund Policy

An applicant rejected by the school is entitled to a refund of all monies paid.

An applicant who provides written notice of cancellation within three days (excluding Saturday, Sunday, and federal and state holidays) of signing an enrollment agreement is entitled to a refund of all monies paid. No later than 30 days after receiving the notice of cancellation, the school shall provide the 100% refund.

An applicant requesting cancellation more than three days after signing an enrollment agreement and making an initial payment, but prior to entering the school, is entitled to a refund of all monies paid (minus an administrative or registration fee, not to exceed $200, if applicable).

Nevada Students Cancellation and Refund Policy

2017/2018 Catalog Addendum, effective date July 1, 2017.

The minimum refund that shall be paid to a Nevada student who withdraws or is terminated after completing only a portion of a course, program, or term within the applicable billing period is a follows:

1. Each postsecondary educational institution shall have a policy for refunds which at least provides:

(a) That if the institution has substantially failed to furnish the training program agreed upon in the enrollment agreement, the institution shall refund to a student all the money the student has paid.

(b) That if a student cancels his or her enrollment before the start of the training program, the institution shall refund to the student all the money the student has paid, minus 10 percent of the tuition agreed upon in the enrollment agreement or $150, whichever is less, and that if the institution is accredited by a regional accrediting agency recognized by the United States Department of Education, the institution may also retain any amount paid as a nonrefundable deposit to secure a position in the program upon acceptance so long as the institution clearly disclosed to the applicant that the deposit was nonrefundable before the deposit was paid.

(c) That if a student withdraws or is expelled by the institution after the start of the training program and before the completion of more than 60 percent of the program, the institution shall refund to the student a pro rata amount of the tuition agreed upon in the enrollment agreement, minus 10 percent of the tuition agreed upon in the enrollment agreement or $150, whichever is less.

(d) That if a student withdraws or is expelled by the institution after completion of more than 60 percent of the training program, the institution is not required to refund the student any money and may charge the student the entire cost of the tuition agreed upon in the enrollment agreement.

2. If a refund is owed pursuant to subsection 1, the institution shall pay the refund to the person or entity who paid the tuition within 15 calendar days after the:

(a) Date of cancellation by a student of his or her enrollment;

(b) Date of termination by the institution of the enrollment of a student;

(c) Last day of an authorized leave of absence if a student fails to return after the period of authorized absence; or

(d) Last day of attendance of a student, whichever is applicable.

3. Books, educational supplies or equipment for individual use are not included in the policy for refund required by subsection 1, and a separate refund must be paid by the institution to the student if those items were not used by the student. Disputes must be resolved by the Administrator for refunds required by this subsection on a case-by-case basis.

4. For the purposes of this section:

(a) The period of a student’s attendance must be measured from the first day of instruction as set forth in the enrollment agreement through the student’s last day of actual attendance, regardless of absences.

(b) The period of time for a training program is the period set forth in the enrollment agreement.

(c) Tuition must be calculated using the tuition and fees set forth in the enrollment agreement and does not include books, educational supplies or equipment that is listed separately from the tuition and fees.

Oklahoma Students Cancellation and Refund Policy

If a student receiving Veterans Administration (VA) funds withdraws from a course, a debt between the student and VA may be created as a result. VA funds remaining in the student's account after a drop, late drop or withdrawal will be returned to the VA. Any credit created by a student payment, Title IV funds, or non-tuition specific scholarship after the VA portion of the student's tuition has been deferred will be refunded to the student after the drop period.

Virginia Relief, Refund, and Reinstatement Tuition Guidelines

Late Drop/Late Withdrawal Requests for Active Duty Military Students

Personnel covered under this section of the catalog are uniformed members of the U.S. Armed Forces who do not exercise a military withdrawal option through their military service, who are registered or enrolled in a class at Embry-Riddle Worldwide, and who must drop or withdraw from a class for reasons related to their military service. Drop or withdrawal requests will be reviewed and if approved, will be processed based on the type of request and the information submitted. The student submits the request for a late drop or late withdrawal within 30 days of receiving notification of the deployment or the start of service related travel which prevents continued enrollment in courses. All requests will be reviewed on a case by case basis.

Request for drops/refunds due to circumstances beyond those permitted by the University, such as, required military deployment, must be in writing and accompanied by third party documentation, such as military orders.

A late drop is defined as any drop after the completion of add/ drop period and prior to the mid-point of the course, and is reviewed as an exception to policy. Students petitioning for a late drop from a course must provide a written petition along with third-party documentation explaining their extenuating circumstances, such as military assignment. Each petition is considered individually.

A late withdrawal is defined as any withdrawal after the mid-point of a course, and is reviewed as an exception to policy. Students petitioning for a late drop or withdrawal from a course must provide a written petition along with third-party documentation explaining their extenuating circumstances, such as military assignment. Each petition is considered individually.

Request for drops/refunds after the 4th business day "drop" period due to circumstances beyond those permitted by the University, such as required military deployment, must be in writing and accompanied by third party documentation, such as military orders.

Students who are unable to complete course requirements due to extenuating circumstances may complete and submit a written request to their instructor for an incomplete grade. An incomplete grade must be completed no later than 30 days after the end of the term in which the course was taken. An incomplete grade does not extend the end date of a course. A student working to complete an incomplete grade is not granted continuing enrollment status for the period of time given to complete the course. The instructor may require a student to complete the course requirements earlier than 30 days following the end of the term. If the student fails to complete the course and government tuition assistance (TA) funding was used, the government will determine if the funds expended must be repaid by the student. If Department of Veterans Affairs (VA) funds were used, similar restitution of Veterans Educational Benefits may have to be made to the VA if a course is not completed. Students not completing their courses within the time limit will receive a failing grade (F) in the course.

Continuous Student Status For Active Duty Military Students Active-duty military students must maintain continuous student status as detailed above; however, active duty undergraduate military students may also maintain continuous student status by submitting National Exam results, or transcripts within a one-year period showing that the student has done one of the following to maintain continuous student status: 1. Passed a nationally recognized exam (ie. CLEP, DSST/DANTES) that can be applied toward degree completion 2. Completed any non-traditional education (military course or updated occupational skill as listed on the service transcript and reviewed by the American Council on Education) that can be applied toward degree completion 3. Completed a course at another institution to be used toward an ERAU degree after receiving prior written approval *Active duty military students may complete a waiver to establish continuous student status.

Undergraduate Degree Completion Time Limits An undergraduate student may graduate under the provisions of the ERAU-Worldwide catalog which were in effect when the student matriculated at the University, up to a maximum time limit of seven years, after which one must reapply for admission. All requirements for an Embry-Riddle associates degree, bachelor's degree, or combination therein, must be completed within seven years from the date of matriculation regardless of degree change, catalog change, or campus changes. Failure to complete an undergraduate program within the seven year limit will require students to reapply for admission.

Graduate students are expected to complete their ERAU program of study within seven years to assure course and program currency. All requirements for an Embry-Riddle master's degree must be completed within seven years from the date of initial course enrollment following admission to the University regardless of degree change, catalog change, or campus changes. If a student must reapply for admission, the seven years commences from the start date of the first course enrollment after the most recent admission to the University. A student who completes an ERAU master's degree and still maintains continuing student status may add another ERAU graduate degree program. The seven-year degree completion time limit for this student will begin with the start date of the first course enrollment after the add-a-program request date.

Exceptions to this policy are not permitted, other than those considered for military students readmitted under the provisions of the Higher Education Opportunity Act. The seven-year time limit will not be applied to advanced standing credit for academic work at eligible senior military service schools if the service member is on active duty when accepted for admission. The seven-year limit for such applicants commences on the date the service member separates from active military service.

All student drop requests require counseling with an academic advisor, in order to be processed. Advisors/campus staff will receive a notification email for students who are inactive in a course for ten (10) consecutive calendar days. Upon receipt of notification, advisor/campus staff will contact student within one business day of the notification. This policy shall provide for counseling for the student to determine the impact of absence from the program on the ability to resume study and to advise the student of his or her options when a program is no longer available or suitable.

If student intends to withdraw from a course, advisor/campus staff will assist student with appropriate documentation to submit this request. The student should submit the request for a late drop or late withdrawal within 30 days of receiving notification of the deployment or the start of service related travel which prevents continued enrollment in courses. Military deployment, must be in writing and accompanied by third party documentation, such as military orders.

Department of Education Withdrawal/Refunds Policy

Standards of Academic Progress for Federal Financial Aid

Federal regulations require ERAU to define minimum standards of satisfactory academic progress (SAP) to determine your eligibility

for financial aid. ERAU must set certain standards to ensure you are progressing toward degree completion. If you do not meet the standards, you will not be able to receive financial aid.

How is SAP measured?
The following measurements will be reviewed to determine good standing for continued financial aid eligibility:
Qualitative: College level grade point (Cumulative GPA)
Quantitative (Pace): College credits completed and time frame needed to complete the degree

What are the standard requirements?
Qualitative:
- Undergraduate students: Minimum cumulative GPA of 2.0
- Graduate students: Minimum cumulative GPA of 3.0

Quantitative /Pace:
- College credits hours completed: required to complete 67% of total credit hours attempted.

How to calculate PACE
Cumulative number of credit hours student successfully completed
Cumulative number of credit hours student attempted

Application of Grades and Credit Hours
Credit hours attempted are all course credit hours for which you are enrolled as of the end of add/drop period.
For calculating credit hours, grades of “F” (failure), “I” (incomplete), “IP” (in progress), “W” (withdrawn), “WP” (withdrawn passing), “WF” (withdrawn failing), “U” (unsatisfactory), AU (audited), FX (ceased attendance) and repeated courses, are counted as hours attempted but not as credit hours completed.

For example, a sophomore that has attempted 60 credit hours and has satisfactorily completed 48 of those credit hours would have completed 80% of attempted credits hours.

- Time frame needed to complete the degree: You are not allowed to attempt more than 1.5 times, or 150%, of the number of hours in your degree program of study.

A sample of the maximum allowable attempted hours is noted below:

No. Credit Hours in Degree Program		150% of Degree Program Credit Hours		Maximum Allowable Attempted
120	x	1.5 (150%)	=	180 hours
129	x	1.5 (150%)	=	194 hours

These maximum credit hours may vary depending on your specific program.

Repeat Courses
For courses repeated during your program of study, both the original and repeated credit hour will be counted as attempted hours in rate of progress calculations.

Transfer Credit Hours/Change of Degree Program
Transfer credits that are accepted toward your educational program count as both attempted and completed credits.

Withdrawing from courses
Withdrawing from courses may impact your financial aid awards. Before withdrawing from class, you should contact the Financial Aid Office to determine the consequences.
Withdrawing from the university or dropping all courses in a term
Students who totally withdraw or drop all courses in a term, and receive aid may owe the university money. Before withdrawing from the university, you should contact the Financial Aid Office to determine the consequences

When are these standards reviewed?
The standards are reviewed once each academic year at the end of the spring semester. Email notifications will be sent to your ERAU email account, if you fail to meet the SAP standards.

What happens if I’m not meeting the standards?

Financial Aid Suspension
Students who fail to meet satisfactory academic progress are placed on financial aid suspension. You will not receive federal or institutional aid during this suspension.

Can I appeal my suspension?
You have the option to appeal the suspension. An appeal must be based on extenuating circumstances that seriously affected academic performance such as student or parent injury or illness, death of a relative or other special circumstances.

The Appeal Process
Contact the Financial Aid Office to begin processing an appeal. We will supply you with the appeal form and required steps. You will need to explain what type of circumstances contributed to the academic problem and what plans you have to eliminate those problems in the future. We realize that sharing personal information can be difficult. Be assured that your statement will remain confidential. An academic plan approved by an academic advisor may be required.

Financial Aid Probation
For students who are successful in their appeal, aid will be reinstated; however, placed on probation for one payment period/term. At the conclusion of the probation term, you must be meeting the school’s SAP standard in order to qualify for further Federal Title IV Funding. If you are academically suspended, dismissed, or not permitted to continue your enrollment, you will not be eligible to receive financial aid.

Reinstatement
You may reestablish your eligibility for financial assistance by achieving the satisfactory academic progress standards. Keep in mind this will be **at your own expense as you are ineligible for aid**. Once you have earned the required grade point average or completed the required credit hours, **you must contact your Financial Aid Counselor at your Campus to request the reinstatement of your financial aid eligibility.**

Please note: For Worldwide Programs the academic year ends with the last term of a track (see Financial Aid Tracks for terms associated with Tracks). The April and May Terms are optional terms and are not calculated until the following academic year. If you are failing the Standards of Academic Progress and have questions please contact a Worldwide Financial Aid Counselor toll free 866-567-7202.

Do these standards apply to every financial aid program?
These standards are related directly to the Federal Financial Aid programs. However, state, institutional and private sources of aid have other standards that must be considered. Refer to your state web sites to review the specific criteria for each program. Contact the Financial Aid staff to determine the specific requirements of each type of aid that you receive.

Return of Federal Financial Aid Funds

Students who withdraw, receive an “F” for *non-attendance or *non-participation from all of their classes are subject to the Return of Title IV Federal Financial Aid Programs Policy.

*If a student ceases to attend ALL registered classes and/or ceases to participate in an academically related activity at any point during their Semester or Term of enrollment the faculty will use their discretion to assign an appropriate grade and supporting last date of attendance. For more information, please review your campus catalog for grading and academic policies.

How does ERAU determine the Return of Title IV Funds amount?

Students earn a percentage of their federal financial aid each day they are enrolled. When a student withdraws from all their courses or ceases attendance or non-participation in all courses in a semester/term, this percentage is calculated by the number of days attended divided by the number of days in the semester/term.

The amount of federal aid you received and your institutional charges will also be used to determine the amount of federal funds to be returned.

Students withdrawing beyond 60% of the semester/term will have 100% of Title IV programs funds earned.

Who is responsible for the Return of Funds?

Both the university and/or the student could be responsible for the return of funds. The financial responsibility is determined as part of the Return of Title IV funds calculations. If the university is responsible, the funds are returned to the appropriate program.

If the student is responsible, direct loans are returned according to the promissory note. If any portion of the return of funds is due to a grant program, the university will return the funds, on behalf of the student. In some cases, the student may have a balance owed to the university.

How will the money be returned?

The money will first be returned to the loan and/or grant programs that you received during the semester. ERAU must follow a specific order in returning the money. The order is:

1. Federal Unsubsidized Direct/Stafford Loan
2. Federal Subsidized Direct/Stafford Loan
3. Federal Parent PLUS Loan for Undergraduate Students
4. Federal Perkins Loan
5. Federal Pell Grant
6. Federal Supplemental Educational Opportunity Grant (SEOG)
7. Other Federal Programs

Is there anything else I should know if I withdraw from the university?

Yes, if you must withdraw from ERAU, you should contact your campus or online advisor who will guide you through the process.

In addition to the Return of Title IV Funds Policy, the Student Financial Services Department will apply an institutional Refund Policy as defined in the catalog, to determine if you are eligible for a tuition credit. For more information concerning the Institutional Refund Policy, contact the Student Financial Services Department.

***Circumstances may necessitate withdrawal from the University for a semester or term in which you are already registered. Withdrawal from all sites and locations impacts your financial aid differently depending on when the withdrawal is initiated and the type of financial aid you received. However, in all cases, your financial aid must be recalculated.

Student Services and Academic Affairs

Mission Statement

Our mission is to provide comprehensive student services that are coordinated and personalized for financial, academic, and career needs. These resources are geared toward addressing specific academic needs and contribute to the quality of each student's overall University experience. We strive for continuous improvement that extends through a culture of caring with the highest educational practices and professional standards. We are here to serve you.

Academic Advisement

A student's Academic Advisor is responsible for orientation to the University upon admission and academic guidance through the degree program, which includes advising students of University regulations and procedures. These responsibilities also include, but are not limited to:

- Discussing academic programs to ensure students understand what each program offers
- Discussing possible credit transferability for incoming students
- Understanding the assessment of required foundational knowledge (skills assessment for Undergraduate degree-seeking students)
- Providing information pertaining to course and program prerequisite requirements
- Supporting students with information related to enrollment, course materials, financial assistance, and payment requirements
- Discussing class attendance expectations
- General student support

A student's primary point of contact is the Campus Director at their Worldwide Campus home location. For Online students not associated with a Worldwide Campus location, their primary contact is their Online Academic Advisor at the Online Campus. Students can expect a response from their assigned campus advisor within 72 hours for all inquiries.

Books, Library and Supplies

Textbook Purchase

Students may search for textbook information on the Worldwide Master Textbook & Materials List. This list should be checked first when searching for any course materials. Online, EagleVision Home, and classroom books may be purchased through our Worldwide Bookstore operated through Follett Higher Education Group. Please consult your advisor, campus or Follett Higher Education group at 1596asm@follett.com for any course material questions. You may also contact Customer Service directly at 904-732-5010 for any order related questions. If you don't receive a response in 48 hours, please contact WWBookstore@erau.edu.

Identification Cards

Applying for a student identification card, known as the EAGLEcard, is done through your ERNIE login under Student Services. These identification cards may be required to use the library facilities of other universities and might be used for student discounts wherever a student identification card is honored.

Hunt Library: Bringing the Library to You

Hunt Library, located on the Daytona Beach Campus, is the library for all Worldwide students, faculty, and staff, regardless of location. The library's mission is to provide information resources and services to students, faculty, and staff in support of the University's commitment to excellence in teaching, learning, and research. Hunt Library's slogan, "Bringing the Library to You" defines our commitment to the Worldwide community.

The library's website is huntlibrary.erau.edu. Use EAGLEsearch to explore much of the library's electronic collection and print holdings simultaneously. You may even expand your EAGLEsearch results by checking the box "Add results beyond your library's collection". Researchers may also directly search subject-specific subscription databases (some of which are predominantly full-text). Library resources are in many formats: online journal articles, books and eBooks, government documents, conference proceedings, streaming videos, and more.

Research Help

Hunt Library is the first place to go for research. Members of Embry-Riddle's Worldwide community may receive librarian assistance, utilize electronic resources and self-help tools, and gain access to large portions of the print collection through the Scan & Deliver service. Print books may also be requested for shipment.

The highly rated *Ask a Librarian* service is staffed by professional librarians. Ask a Librarian can be reached by chat, by text (386-968-8843), by email (library@erau.edu), or by phone/voicemail (386-226-7656). Research Librarians will provide detailed advice on research strategies and help with navigating the library's databases. For in-depth assistance, students may schedule an online meeting with a librarian.
Hunt Library also offers a wide variety of tutorials and research guides designed to help you succeed.

How to Contact Hunt Library

Website
Hours
Email: library@erau.edu
Text: 386-968-8843
Phone: 386-226-7656 or 800-678-9428

Embry-Riddle Asia Students

Students participating in academic programs offered through Embry-Riddle Asia may be subject to variations in academic program content or University regulations, as appropriate to individual locations.

Please consult the Executive Director, Enrollment & Campus Operations for any specifics regarding ERAU Asia.

Visit the asia.erau.edu site and online catalog to learn more about the Embry-Riddle Asia Campus.

Student Responsibilities

All Embry-Riddle Aeronautical University students are responsible for knowing and abiding by the academic regulations and procedures required for continued attendance at the University.

Academic regulations and procedures are detailed in University publications. A student who requires clarification of any policy or regulation should seek help from his/her academic advisor at their local campus (local campuses can be found on the Worldwide Locations page) or their advisor in the Online Campus.

University regulations will not be waived because a student is unaware of established policies and procedures. The University reserves the right to change curricula, as well as academic regulations and procedures, without notice or obligation.

Registration

Students are responsible for initializing enrollment each term by contacting their home location/campus. For contact information, find your location on the Worldwide Locations page.

At all campus locations, students are allowed to register online if they meet the required criteria. Registration must be completed according to instructions published by the Office of Enrollment Management. Students may register for classes up to six months in advance of a term.

Payment in full or payment arrangements are required on or before the session date of each month. Students are not officially enrolled until they complete all phases of registration, including financial requirements.

Enrollment may be restricted by the Campus Director or designee; the Director, Online Operations or designee; the Executive Director, Online Advising or designee; or the Office of the Registrar or designee for reasons including, but not limited to, students on a conditional admission status, on an academic probationary status, or who have outstanding incompletes or a history of incompletes.

VECTOR

VECTOR

The mission of the Virtual Environment for Communication: Teaching, Outreach, and Research – **VECTOR** – is to support Embry-Riddle students and faculty in teaching, learning, and research related to written, spoken, visual, and digital communication. VECTOR supports all Worldwide students through its **Virtual Communication Lab** (VCL). The VCL offers **free tutoring, workshops, and online resources** to support student communicators. Our tutors can help with any communication-related project, and we can support you at any stage of the composing process – from brainstorming your speech topic, to revising a draft of an essay, to helping you design effective visuals for your personal website or e-portfolio. Students can schedule a tutoring appointment, access online resources, and view upcoming workshops through ERNIE .

Articulations & Educational Academic Agreements

Articulation and Educational Academic Agreements are two distinct types of cooperative agreements that facilitate the transfer of students from other institutions to Embry-Riddle Aeronautical University.

Articulation Agreements provide for formal evaluation and guaranteed acceptance of courses within specific degree programs from other institutions to ensure that their content and course objectives are equivalent to those at the University. The primary benefits of an Articulation Agreement for the student are guaranteed acceptance of courses completed at the other institution to satisfy specified degree requirements at the University, and locking students into curriculum requirements specified in the catalog at the time of enrollment. As long as the student has completed and signed the Articulation Agreement Enrollment Form, he/she is assured that the courses taken will apply, even though the curriculum may have undergone significant change before the student has transferred to the University (subject to matriculation and continuous enrollment requirements).

Educational Academic Agreements seek to link specific programs for transfer into the University, but without the same level of evaluation and guaranteed, program-specific, credit acceptance under a determined catalog year.

For more information regarding either of these types of curricular agreements, please contact the Worldwide Campus location that you plan to attend. For online students, contact the Director, Online Operations; Executive Director, Online Advising; or designee.

Credit: Transfer, Military, Time Limits, and Advanced Standing

Unit of Credit

Semester credits are used throughout the University system.

Transferred quarter hours will be converted to semester credit hours on the following basis: A quarter hour equals two-thirds of a semester hour. Converted credit totals are not rounded to the nearest whole credit.

Release of Student Transcripts From Previous Institutions

Student transcripts from previous institutions that were provided for consideration become the property of ERAU. ERAU does not re-release copies of transcripts from other institutions that are part of a student's education record. A student must contact the originating school for a copy of any transcript.

Transferability of ERAU Credit to Other Institutions

NOTICE CONCERNING TRANSFERABILITY OF CREDITS AND CREDENTIALS EARNED AT OUR INSTITUTION
The transferability of credits earned at Embry-Riddle Aeronautical University is at the complete discretion of an institution to which you may seek to transfer. Acceptance of the degree, diploma, or certificate you earn in the educational program is also at the complete discretion of the institution to which you may seek to transfer. If the credits, degree, diploma, or certificate that you earn at this institution are not accepted at the institution to which you seek to transfer, you may be required to repeat some or all of your coursework at that institution. For this reason you should make certain that your attendance at this institution will meet your educational goals. This may include contacting an institution to which you may seek to transfer after attending Embry-Riddle Aeronautical University to determine if your credits, degree, diploma or certificate will transfer.

Washington Students Transferability of Credits Statement

The transferability of credits earned at Embry-Riddle Aeronautical University is at the discretion of the receiving college, university, or other educational institution. Students considering transferring to any institution should not assume that credits earned in any program of study at Embry-Riddle Aeronautical University will be accepted by the receiving institution. Similarly, the ability of a degree, certificate, diploma, or other academic credential earned at Embry-Riddle Aeronautical University to satisfy an admission requirement of another institution is at the discretion of the receiving institution. Accreditation does not guarantee credentials or credits earned at Embry-Riddle Aeronautical University will be accepted by or transferred to another institution. To minimize the risk of having to repeat coursework, students should contact the receiving institution in advance for evaluation and determination of transferability of credits and/or acceptability of degrees, diplomas, or certificates earned.

Veterans Transfer Credit

Applicants using VA benefits must provide transcripts of all previous education and training prior to admission. Prior academic work and courses taken at other institutions by veteran students and/or eligible students receiving Veterans Education Benefits will be evaluated and credit granted as appropriate and reported to the U.S. Department of Veterans Affairs (VA) as required by law.

Transcribing Transfer and Advanced Standing Credit

Students are eligible for an Embry-Riddle transcript showing credit awarded from other sources toward their degree after they have matriculated.

Matriculation occurs when an applicant has been officially accepted for admission, has enrolled in an Embry-Riddle course within one year of the date of admission, and has maintained that enrollment beyond the drop period. If an applicant fails to maintain enrollment beyond the drop period, he/she will need to reapply for admission.

Continuing-student status is maintained through enrollment beyond the drop period in at least one course within a one-year period. If a

student fails to maintain enrollment beyond the drop period, he/she will forfeit active-student status, will need to reapply for admission, and the matriculation process will begin again.

Courses previously taken with ERAU will not immediately matriculate a returning student.

Undergraduate Students:

Once admitted to the University as degree candidates, students are expected to complete all work to be applied toward their degrees with the University unless advance written authorization is granted.

After initial matriculation, students may not earn more than a total of 18 semester credit hours, or that equivalent, at other institutions. It is required that the last 30 credits of a bachelor's degree, or the last 15 credits of an associate degree, be completed in residence with ERAU.

Active-duty undergraduate military students may transfer more than 18 credits after matriculation and can complete academic residency requirements at any time, to include the last 15 credits of an associate degree and last 30 credits of a bachelor's degree.

Embry-Riddle Aeronautical University limits academic residency to no more than 25 percent of the degree requirements for all undergraduate degrees for active-duty service members (no more than 30 percent for completely online delivery). Per state regulations, for undergrad degree completion, all Virginia Campus students are required to complete a minimum of 30% coursework at Embry-Riddle Aeronautical University in order to achieve residency.

Academic residency can be completed at any time while active-duty service members are enrolled. Reservists and National Guardsmen on active duty are covered in the same manner.

Students applying prior academic work toward their Embry-Riddle degree program requirements must submit appropriate documentation for such credit as part of the admission process.

Previous academic credit is evaluated on a course-by-course basis. Acceptable transfer work will be recorded on the Embry-Riddle transcript. Embry-Riddle does not accept life-experience credit as transferrable credits towards degree completion.

If courses are not applicable to the student's degree program at Embry-Riddle, they will be considered as electives in excess of minimum degree requirements. The level of credit (upper- or lower-division) is determined by evaluation of the course at Embry-Riddle.

It is the student's responsibility to have official transcripts sent to Embry-Riddle Aeronautical University. Transcripts that have been in the possession of a student are not considered official.

Transfer credit may be granted under the following conditions:

1. Appropriate coursework completed with a grade of A, B, C, pass, satisfactory (or equivalent) will be accepted.
2. Credits earned at institutions listed as degree-granting institutions in the Accredited Institutions of Postsecondary Education (AIPE) as recognized by the Council for Higher Education Accreditation (CHEA) will be considered for transfer credit. Undergraduate academic credit is generally accepted without regard to the date the course was completed. Embry-Riddle has sole discretion in determining which and how many transfer credit hours will be accepted toward degree requirements.

Consideration for transfer credit is available to degree-seeking and certificate students. Non-degree-seeking students are not eligible for transfer credit. The only exception to this policy is for specific established corporate agreements. Transfer credit is not included in GPA/CGPA calculation for any purpose.

Embry-Riddle may, at its discretion, require an evaluation examination for any course submitted for transfer credit if there is doubt concerning the equivalency of the transfer course with a similar course offered at Embry-Riddle.

Embry-Riddle cannot guarantee that courses are transferable unless otherwise established by any contract or memorandum of understanding/agreement currently in effect. Courses are accepted at the discretion of the University.

The transfer student's records (transcripts, etc.) will be evaluated according to the rules and regulations as described in the catalog and in accordance with University policies in effect at the time of the student's admission to a degree program.

After evaluation, the student will be notified that an official evaluation has been completed, which details all applicable transfer credit that has been accepted by the University.

Advanced Standing Credit

Advanced standing credit for prior learning may be awarded for postsecondary education, work and/or training experience, or from programs completed before enrollment at Embry-Riddle. Embry-Riddle does not accept life-experience or experiential credit as transferrable credits towards degree completion.

It is the student's responsibility to ensure that all documentation of previous course work, military learning experiences, credit by examination, and all FAA certificates are submitted for evaluation, along with the formal application for admission as a degree-seeking student.

Just as official transcripts are required to transfer credit from one university to another, documentation of prior learning through professional training and experience must be official.

1. Embry-Riddle will accept the minimum scores recommended by the American Council on Education (ACE) on all exams offered by CLEP, DSST/DANTES, and Excelsior College Examinations-ECE (formerly REC or ACT-PEP) for the award of undergraduate academic credit. In addition, the amount of academic credit and the academic level (upper- or lower-level) designation recommended by ACE for a passing score on each of the exams will be accepted by the University. As per University policy, credit earned by examination (including CLEP, DSST/DANTES, etc.) must be completed prior to the time the student reaches the last 30 credits of a bachelor's degree, or the last 15 credits of an associate degree. The number of credits accepted via exam (including CLEP, DLPT, DSST/DANTES, etc.) is limited by ERAU to 15 credit hours. Active-duty undergraduate military student exceptions are noted below. University issued challenge exams (not including CLEP, DSST/DANTES, etc.) were discontinued at ERAU-Worldwide as of June 30, 2013.
2. Embry-Riddle will generally follow the recommendations of ACE for courses listed in the National Guide to Educational Credit for Training Programs and the Guide to the Evaluation of Educational Experiences in the Armed Forces.
3. Credit may be granted on the basis of certain FAA licenses with appropriate rating.
4. Advanced placement may be granted, based upon the existence of earned credit at a postsecondary institution that is determined by the University to demonstrate a higher level of competency than a particular English, math, or accounting course requirement. Under the advanced placement ruling, a course may be waived and considered for the purpose of student advisement to be "met"; however, the student must make up the credit deficit. The deficit may be made up in electives unless otherwise specified by the Department Chair. An advisement report will be maintained in the student information system.

Course Equivalency Exams

As per University policy, exams (including CLEP, DSST/DANTES, etc.) must be completed prior to the time the student reaches the last 30 credits of a bachelor's degree, or the last 15 credits of an associate degree. National exams may not be used to subsequently satisfy a pre-requisite

requirement when a student has taken an ERAU course and failed to earn a sufficient final grade to satisfy that pre-requisite requirement. In this circumstance, the ERAU course must be repeated to satisfy the pre-requisite requirement.

Active-duty undergraduate military students may complete national exams (CLEP, DSST/DANTES, etc.) at any time while pursuing their undergraduate degree and are not restricted to applying exam credits within their last 15 credits for associate degrees or 30 credits for bachelor's degrees.

Undergraduate Degree Completion Time Limits

An undergraduate student may graduate under the provisions of the ERAU-Worldwide catalog which were in effect when the student matriculated at the University, up to a maximum time limit of seven years. All requirements for an Embry-Riddle associates degree, bachelor's degree, or combination therein, must be completed within seven years from the date of matriculation regardless of degree change, catalog change, or campus changes.

Graduate Students:

Once admitted to the University as degree candidates, students are expected to complete all work to be applied toward their degrees with the University unless advance written authorization is granted.

Credits earned at institutions listed as degree-granting institutions in the Accredited Institutions of Postsecondary Education (AIPE) as published by the Council for Higher Education Accreditation (CHEA) will be considered.

Credit may be received for certain graduate courses taken as non-degree graduate work or as part of another (completed or incomplete) Embry-Riddle graduate degree program. Only relevant coursework will be applied to an applicant's graduate degree program at Embry-Riddle. Transfer credit is not included in GPA/CGPA calculation for any purpose.

The content of the applicable course or other program will be used to determine the nature of the credit to be applied to the student's degree requirement. The appropriate department chair and program chair will make these determinations.

When transferring from one Embry-Riddle graduate program to another, this credit may include prior work on a Graduate Capstone Project (GCP). The combined total credit applied to an Embry-Riddle graduate degree is 12 credit hours.

Specifics regarding transferring from a completed Embry-Riddle master's program to the MBAA program are detailed in the Graduate Academic Programs section of the catalog.

Transfer credit will be granted only if the student demonstrates academic performance expected of a graduate student at Embry-Riddle, meaning that the course was completed with a "B" or better (3.0 on a 4.0 system). Credit for academic work used to satisfy the requirements of an ERAU undergraduate degree will not be accepted toward the requirements of a graduate degree, unless in a program designed to facilitate shared credit.

Seven Year Degree Completion Time Limit

Graduate students are expected to complete their ERAU program of study within seven years to assure course and program currency. All requirements for an Embry-Riddle master's degree must be completed within seven years from the date of initial course enrollment following admission to the University regardless of degree change, catalog change, or campus changes. If a student must reapply for admission, the seven years commences from the start date of the first course enrollment after the most recent admission to the University. A student who completes an ERAU master's degree and still maintains continuing student status may add another ERAU graduate degree program. The seven-year degree completion time limit for this student will begin with the start date of the first course enrollment after the add-a-program request date.

Exceptions to this policy are not permitted, other than those considered for military students readmitted under the provisions of the Higher Education Opportunity Act. The seven-year time limit will not be applied to advanced standing credit for academic work at eligible senior military service schools if the service member is on active duty when accepted for admission. The seven-year limit for such applicants commences on the date the service member separates from active military service.

Seven Year Graduate Course Currency

Prior graduate credit earned with ERAU, as well as any transfer credit, is permitted to satisfy program requirements only if courses were completed within the seven-year period immediately preceding the date the most recent application for admission is received at Worldwide Headquarters. Credit awarded on the initial evaluation after admission is generally applied to a new program or catalog curriculum version when students request a change of program/catalog, however, courses over seven years old at the time of the request are generally ineligible to satisfy degree programs requirements.

Validated Advanced Placement (VAP)

Graduate students who believe their knowledge and prior learning experience qualify them for master's level credit for a specific Embry-Riddle graduate course may submit the Petition for Award of Validated Advanced Placement (VAP).

To be eligible for an award of VAP credit, students must be admitted to an ERAU graduate degree completion program and have received the completed evaluation of previous credit. Students may petition for VAP credit only once, and this must be done within one year of the first term of enrollment.

The student must submit a VAP petition form, a detailed comparison of the training to the learning outcomes in the outline of the course(s) in question, and creditable supporting documentation to substantiate the petition, which is then retained by the University in the student's academic file.

ERAU academic chairpersons will review the petition and make the determination of credit.

There are eligibility maximums established for VAP credit awards. Credits awarded through the VAP process are generally minimal.

Contact the Office of the Registrar at worldwide.registrar@erau.edu or (866) 393-9046 to request additional information regarding the Validated Advanced Placement process.

Courses: Add/Drop, Load, Classification, Withdrawal, GPA

Course Load

Undergraduate Students: Due to compressed term length at the Worldwide Campus, six semester hours constitute the minimum load for full-time student status. Students carrying less than the minimum full-time load are classified as part-time students.

The maximum load for students is 12 hours per term. A student whose cumulative GPA is 3.00 or higher may enroll for an overload of three credit hours with advance approval from the Campus Director or Director of Undergraduate Advising for Worldwide Online students. Requests for overloads in excess of three credits must be approved by the College Dean or designee.

Graduate Students: The maximum course load for graduate students is nine credit hours per term. Three semester credit hours constitute a full-time load for courses of nine weeks or less; six semester credit hours constitute a full-time load in courses of 10-15 weeks. If a student demonstrates exceptional academic performance, a maximum of a one-course overload may be approved by the Campus Director or Director of Graduate Advising for Worldwide Online students.

A student's enrollment may be restricted when deemed in the best interest of the student.

Classification of Undergraduate Students

Students are classified at the end of each term based on the number of credit hours earned in accordance with the following schedule:

Freshman	fewer than 28 hours
Sophomore	28-57 hours
Junior	58-87 hours
Senior	88 hours or more

Repeating a Course

Undergraduate Students: With the exception of flight courses, which may be repeated only once, a student may attempt a course three times, including the initial grade, and repeat grades. Students who fail to successfully complete a course on a third attempt are subject to suspension from the University.

In determining both the Cumulative Grade Point Average (CGPA) and course completion requirements, the grade for a second course attempt replaces the first, and the grade for a third course attempt replaces the second. (For example, a student retaking a course in which a grade of "D" is earned on the first attempt, who then earns a grade of "F" on the second attempt will have the "F" grade utilized for both CGPA calculation, and course completion requirements.)

All course attempts are recorded on the University transcript.

Graduate Students: A graduate student may repeat any University course without limit, subject to the standards for continuing academic eligibility at the graduate level.

All course attempts are included in the computation of the Cumulative Grade Point Average (CGPA), with one exception. Graduate students may petition to repeat one course in which a grade of less than "B" was earned for the purpose of maintaining academic standards. Both grades earned are recorded on the University transcript, but, in this instance, only the replacement grade is included in the calculation of the grade point average.

Additional repeated coursework beyond that approved petition will not be used to revise the student CGPA.

All course attempts are recorded on the University transcript.

Dropping a Course

Students may drop a course through their academic advisor with no notation of course enrollment on their transcripts or financial penalty during the drop period only. All student drop requests must be submitted in writing, and require counseling with an academic advisor, in order to be processed. Due to the compressed term schedules at Worldwide locations, the drop period extends through the first four class days of each term, ending at 11:59pm EST on that final day. Deadlines are enforced using Eastern Standard Time (EST), in keeping with the location of ERAU Worldwide' s headquarters. Tuition is not refunded after the conclusion of the drop period, unless required by state law or via an approved exception.

A late drop is defined as any drop after the completion of add/drop period and prior to the mid-point of the course, and is reviewed as an exception to policy. Students petitioning for a late drop from a course must provide a written petition along with third-party documentation explaining their extenuating circumstances, such as military assignment, medical emergency, etc. Each petition is considered individually; not all petitions are approved, nor all waivers granted.

Students are not permitted to drop a course while an academic integrity violation is pending.

Withdrawal from a Course (W) / Failure to Withdraw from a Course (FX)

The authorized withdrawal period extends to the middle of the term, unless otherwise established by any contract or memorandum of understanding/agreement currently in effect. Students may withdraw and receive a "W" grade up to the midpoint of the term, ending at 11:59pm EST on that final day. Deadlines are enforced using Eastern Standard Time (EST), in keeping with the location of ERAU Worldwide' s headquarters. Tuition is not refunded for course withdrawals, as they occur after the conclusion of the drop period, unless required by state law or via an approved exception.

A late withdrawal is defined as any withdrawal after the mid-point of a course, and is reviewed as an exception to policy. Students petitioning for a late drop or withdrawal from a course must provide a written petition along with third-party documentation explaining their extenuating circumstances, such as military assignment, medical emergency, etc. Each petition is considered individually; not all petitions are approved, nor all waivers granted.

If a student fails to complete the formal withdrawal process during the allowed withdrawal period (after the add/drop period concludes up to the course mid-point), a grade of "F" will be assigned for the course.

Students who do not participate in a course, but do not drop or withdraw from the course will be issued a grade of "FX" by their instructor, which designates failure due to non-attendance. Students who initially participate in a course, but who then cease to participate and do not withdraw from the course will be issued a grade of "FX" by their instructor, which designates failure due to non-attendance. Students are charged for courses in which they earn an "FX" grade, as they have not fulfilled their obligation to either complete the course, or complete the necessary steps to drop/withdraw from the course. "FX" grades are noted on the official transcript as "F" grades.

Students are not permitted to withdraw from a course while an academic integrity violation is pending.

Late Drop/Late Withdrawal Requests for Active Duty Military Students

Personnel covered under this section of the catalog are uniformed members of the U.S. Armed Forces who do not exercise a military withdrawal option through their military service, who are registered or enrolled in a class at Embry-Riddle Worldwide, and who must drop or withdraw from a class for reasons related to their military service.

Drop or withdrawal requests will be reviewed and if approved, will be processed based on the type of request and the information submitted.

The student submits the request for a late drop or late withdrawal **within 30 days of receiving notification of the deployment or the start of service related travel** which prevents continued enrollment in courses. Changes in military work schedule or assignment are generally not considered sufficient grounds to justify a late drop request.

All requests will be reviewed on a case by case basis.

Auditing a Course (AU)

Academic credit is not granted toward degree requirements for audited courses.

Students may change their registration from audit to credit during the "add" period only. They may change from credit to audit until the last day of the withdrawal period.

When a student auditing a course fails to maintain satisfactory attendance, as determined by the instructor, a grade of "W" will be assigned.

All audited courses are added to courses taken for credit in determining the student's course load for a term.

Incomplete Grades (I)

Students who are unable to complete course requirements due to extenuating circumstances may complete and submit a written request to their instructor for an incomplete grade. An incomplete grade must be completed no later than 30 days after the end of the term in which the course was taken. An incomplete grade does not extend the end date of a

course. A student working to complete an incomplete grade is not granted continuing enrollment status for the period of time given to complete the course.

The instructor may require a student to complete the course requirements earlier than 30 days following the end of the term.

If the student fails to complete the course and government tuition assistance (TA) funding was used, the government will determine if the funds expended must be repaid by the student. If Department of Veterans Affairs (VA) funds were used, similar restitution of Veterans Educational Benefits may have to be made to the VA if a course is not completed.

Students not completing their courses within the time limit will receive a failing grade (F) in the course.

Grade Point Averages (GPA, CGPA)

Undergraduate Students: A term grade point average (GPA) and cumulative grade point average (CGPA) are computed for each student after every term.

The GPA is calculated by dividing the number of grade points earned during the term by the number of credit hours attempted in that term. The CGPA is determined by dividing the total number of grade points by the total number of hours attempted at the University.

For undergraduate students, grade points and hours attempted are accrued in courses graded A, B, C, D, F and WF.

Graduate Students: A term grade point average (GPA) and cumulative grade point average (CGPA) are computed for each student after every term.

The GPA is calculated by dividing the number of grade points earned during the term by the number of credit hours attempted in that term. The CGPA is determined by dividing the total number of grade points by the total number of hours attempted at the University.

For graduate students, grade points and hours attempted are accrued in courses graded A, B, C, F, and WF. For graduate students, the following grades are issued by the graduate faculty: A, B, C, F, and Incomplete.

The GPA is computed each semester on the 4-point scale: A = 4.00, B = 3.00, etc. The Graduate Capstone Course is given a letter grade and is calculated into the GPA.

A graduate student must maintain a 3.00 GPA to graduate.

Dean's List, Honor Roll, Warning, Probation, Suspension, and Dismissal

Dean's List and Honor Roll

For Undergraduate Students: Any full-time student who demonstrates academic excellence is recognized by being named to the Dean's List or Honor Roll and is notified in writing by the Office of the Registrar, via ERAU email.

Students who are enrolled at a full-time status and earn a GPA of 3.500-4.00 for a term and maintain a minimum 2.0 cumulative GPA will be named to the Dean's List. Students who are enrolled at a full-time status and earn a GPA of 3.200-3.499 for a term and maintain a minimum 2.0 cumulative GPA will be named to the Honor Roll.

Academic Warning, Probation, Undergraduate Suspension, and Graduate Dismissal

Undergraduate Students:

Warning: A Worldwide Campus student whose cumulative or term GPA falls below 2.0 will be placed on academic warning for up to two consecutive terms.

Probation: After a second consecutive term on academic warning, a student whose cumulative or term GPA remains below 2.0 will be placed on academic probation for up to two consecutive terms.

Suspension: After a second consecutive term on academic probation, a student whose cumulative or term GPA remains below 2.0 for an additional term will be suspended from the University.

When a change of grade or the conversion of the grade "I" changes a student's academic status, the previous academic status of warning, probation, or suspension is removed and does not become part of the student's permanent record.

All ERAU coursework taken at the undergraduate level applies to a student's CGPA, whether applicable to the current degree plan or not.

For students who have been academically suspended from the University, a written petition for readmission detailing the existence of any exceptional mitigating circumstances must accompany the application for readmission and fees. Suspended students are eligible to reapply for admission **after** completing a minimum of 15 semester hours of academic credit with a CGPA of 2.500 on a 4.00 scale or higher from an accredited degree-granting institution. A suspended student who wishes to be readmitted to another ERAU campus should apply for readmission to that campus through its Office of the Registrar or the equivalent office. Unless readmitted to the University, suspended students will not be permitted to take any further courses with the University. Questions regarding undergraduate suspension procedure should be directed to the Office of the Registrar, at worldwide.registrar@erau.edu. Student questions regarding next steps and/or reinstatement after a suspension should be directed to the campus or online advisor.

Undergraduate students returning to the University on conditional-admission status who are placed on warning, probation, or suspension should speak with their academic advisor, who will work with the Office of the Registrar if status adjustments are necessary. A student on conditional-admission status who fails to satisfy the conditions of his/her admission will be suspended.

Undergraduate students on conditional-admission status should refer to the Undergraduate Conditional Admission section of the catalog for further information.

Graduate Students:

Warning: Students with full graduate status whose cumulative or term (GPA) falls below 3.00 are placed on academic warning. Students on academic warning must raise their cumulative grade point average (CGPA) to 3.00 within the next term of graduate work.

Dismissal: Students will be dismissed from their graduate program whenever any of the following conditions occur:

1. Student is on conditional status and fails to satisfy the conditions of his/her admission.
2. Student earns a final grade of less than a "B" in three graduate courses.
3. Student earns a final grade of "F" in any two graduate courses.
4. Student earns a final grade of "F" in any course worth 6 credit hours or more.
5. Student is on academic warning and fails to earn a 3.00 CGPA within the next term of graduate work.

All ERAU coursework taken at the graduate level applies to a student's CGPA, whether applicable to the current degree plan or not.

Students may appeal their academic dismissal from the University by submitting a petition in writing, via their academic advisor, detailing the existence of any exceptional mitigating circumstances to the Office of the Registrar within 30 days of receipt of the dismissal notice. A dismissed student who wishes to be readmitted to another ERAU campus should apply for readmission to that campus through its Office of the Registrar or the equivalent office. Unless readmitted to the University, dismissed students will not be permitted to take any further courses with the

University. Questions regarding graduate dismissal procedure should be directed to the Office of the Registrar, at worldwide.registrar@erau.edu. Student questions regarding next steps and/or reinstatement after a suspension should be directed to the campus or online advisor.

Graduate students hoping to return to the University on conditional-admission status who are on warning or dismissal should speak with their academic advisor, who will work with the Office of the Registrar if status adjustments are necessary. A student on conditional-admission status who fails to satisfy the conditions of his/her admission may be dismissed.

Graduate students on conditional-admission status should refer to the Graduate Conditional Admission section of the catalog for further information.

Suspension and Dismissal for Cause

The University reserves the right to suspend or dismiss a student at any time and without further reason if the student exhibits the following undesirable conduct:

1. Actions that pose a risk to the health, safety, or property of members of the University community, including, but not limited to, other students, faculty, staff, administrative officers, or the student himself/herself.
2. Conduct that disrupts the educational process of the University.
3. Any other just cause.

Academic Integrity

Embry-Riddle is committed to maintaining and upholding intellectual integrity.

All students, faculty, and staff have obligations to prevent violations of academic integrity and take corrective action when they occur. The adjudication process will involve imposing sanctions that may include, but are not limited to, a failing grade on the assignment, a failing grade in a course, suspension, or dismissal from the University, upon students who commit the following academic violations:

1. Plagiarism: Presenting the ideas, words, or products of another as one's own. Plagiarism includes use of any source to complete academic assignments without proper acknowledgement of the source. Reuse or resubmission of a student's own coursework, if previously used or submitted in another course, is considered self-plagiarism and is also not allowed under University policy.

Examples include, but are not limited to:

- the use of any source to complete academic assignments without proper acknowledgement of the source;
- submission of work without appropriate documentation or quotation marks;
- the use of part or all of written or spoken statements derived from sources, such as textbooks, the Internet, magazines, pamphlets, speeches, or oral statements;
- the use of part or all of written or spoken statements derived from files maintained by individuals, groups or campus organizations;
- resubmission of previously submitted work without formal quotation;
- the use of a sequence of ideas, arrangement of material, or pattern of thought of someone else, even though you express such processes in your own words.

Cheating: A broad term that includes, but is not limited to, the following:

1. Giving or receiving help from unauthorized persons or materials during examinations.
2. The unauthorized communication of examination questions prior to, during, or following administration of the examination.
3. Collaboration on examinations or assignments expected to be, or presented as, individual work.
4. Fraud and deceit that include knowingly furnishing false or misleading information or failing to furnish appropriate information when requested, such as when applying for admission to the University.

Electronic Plagiarism Tool: Instructors reserve the right to use any form of digital method for checking plagiarism. Several electronic systems are available and other methods may be used at the Instructor's discretion. All student work may be submitted to any electronic plagiarism detection system database.

All student work submitted to any electronic plagiarism system by the instructor will remain in the ERAU plagiarism system database. Students are not able to request the removal of the content submitted to any plagiarism system used by ERAU.

Review the ERAU Worldwide Campus Honor Code.

Transfer or Change in Degree Program

Change of Degree or Certificate Program

Students may apply to change their degree program if they meet academic qualifications.

When a student elects to change a program, certificate, or minor, the requirements of the catalog in effect at the time the request was initiated apply. When a student elects to change a specialization/concentration or undergraduate level (AS to BS or BS to AS) within a degree program, the catalog year remains the same.

Students considering such changes should contact the Campus Director at their campus location (campuses can be found on the Worldwide Locations page), or for online students, Online Advising, to determine how they will be affected.

Transfer Between Graduate Degree Programs

Only relevant coursework will be applied to an applicant's graduate degree program at Embry-Riddle. The content of the applicable course or other program will be used to determine the nature of the credit to be applied to the student's degree requirement. The appropriate department chair and program chair will make these determinations.

When transferring from one Embry-Riddle graduate program to another, this credit may include prior work on a Graduate Capstone Project (GCP). The combined total credit applied to an Embry-Riddle graduate degree for most programs is 12 credit hours.

Intra-University Transfer

Students wishing to transfer among the Daytona Beach, Prescott, and Worldwide Campuses must meet eligibility criteria and requirements as defined by the University academic policy. Residential campus and Online students should contact their Academic Advisors, and Worldwide campus students should meet with their Campus Director or designee, to ensure the desired courses are available at the receiving campus in the desired modality and can meet the requirements of the student's current or intended degree program. Transfers may not be permitted if the student is on academic probation/warning, AND/OR the student is not in good financial standing, has an account balance or financial hold, AND/OR the receiving campus does not offer the degree program which the student wishes to pursue, in the modality desired.

Earning Multiple Degrees and Minors

Two Degrees of the Same Rank

To earn a second baccalaureate degree, students must complete a minimum of 30 non-duplicating, degree applicable credit hours of course work over and above that required for the declared primary degree. At least 60 credit hours must be completed in residence at the University, and at least 20 of the 30 additional credit hours must be courses at the 300-400 level.

To earn a second associate degree, students must complete a minimum of 15 non-duplicating, degree applicable credit hours of course work over and above that required for the primary degree. At least 30 credit hours must be completed in residence.

Students may not simultaneously pursue degrees of different levels (such as a bachelor's and master's) at ERAU Worldwide.

Declaration of a Concurrent Second Undergraduate Degree or Minor

Students must declare their intention to seek an associate's degree concurrently with a bachelor's degree as early as possible, preferably at the time of admission.

Students may declare their intention to seek an associate's degree later in their baccalaureate studies with ERAU, but not after the date on which their application for graduation in the bachelor's degree program is received by the Office of the Registrar.

For university policy regarding earning a second degree at the same academic level, please refer to the catalog section titled: "Two Degrees of the Same Rank".

Students must declare their intention to seek a minor(s) as early as possible, preferably at the time of admission.

Students may declare their intention to seek a minor later in their academic career with ERAU, but not after the date on which their application for graduation is received by the Office of the Registrar.

The student is subject to the requirements of a second degree track or minor as stated in the catalog in effect at the time the request is made. Students must complete each degree or minor with a 2.0 GPA or higher.

Both degree programs will be reflected on the student transcript, and each will generate an individual diploma. A minor is reflected on the student transcript but is not noted on the diploma.

At least six hours in each minor must be completed with ERAU courses. Of the six hours completed at ERAU, three hours must be from an upper-level course.

Students may request a substitution of one course for another in the minor, however; the maximum number of course substitutions allowed in minors is two, regardless of the number of minors pursued.

When a student is pursuing multiple minors and the same course is required in both or all, the course may apply to all, and the student does not have to make up additional hours for the shared course.

Additional Graduate Degrees

A graduate student is allowed to apply up to 12 applicable credit hours from one graduate degree program to meet the requirements of another graduate degree program. In order to pursue a second graduate degree, the student must satisfy all the requirements of the first degree sought.

Matriculation, Continuous Student Status, Catalog Applicability

Matriculation

Matriculation is the process by which an applicant becomes an Embry-Riddle student. This occurs when an applicant has been officially accepted for admission, has enrolled in an Embry-Riddle course within one year of the date of admission, and has maintained that enrollment beyond the drop period.

If an applicant fails to maintain enrollment beyond the drop period within that year, he/she will need to reapply for admission. Students are eligible for an Embry-Riddle transcript showing credit awarded from other sources toward their degree after they have matriculated.

Undergraduate Students: Upon matriculation, students are expected to maintain degree-progression throughout their academic careers at Embry-Riddle Aeronautical University – Worldwide (see "Undergraduate Degree Completion Time Limits" for more information). Students shall successfully complete 18 UG credit hours per year. The 18 credit hour calculation will be measured on each annual anniversary of a student's matriculation and will include all activity in the previous 365 days. Students receiving federal financial aid should speak to their financial aid advisor about any unique applicable requirements.

Graduate Students: Upon matriculation, students are expected to maintain degree-progression throughout their academic careers at Embry-Riddle Aeronautical University – Worldwide. Students shall successfully complete 15 GR credit hours per year. The 15 credit hour calculation will be measured on each annual anniversary of a student's matriculation and will include all activity in the previous 365 days.

Continuous Student Status

Continuous student status is maintained through enrollment beyond the drop period in at least one course within a one-year period. If a student fails to maintain enrollment beyond the drop period, he/she will forfeit active-student status, will need to reapply for admission, and the matriculation process will begin again. Courses previously taken with ERAU will not immediately matriculate a returning student.

Students remain in continuous student status unless they:

1. Enroll at another institution without advance written approval. Once admitted to Embry-Riddle as degree candidates, students are expected to complete all work with the University unless advance written authorization is granted. If applicants fail to disclose on their applications for admission that they are currently attending another school, or if they decide to take courses outside of Embry-Riddle after they have applied and been admitted, that credit won't be considered for transfer unless they have obtained prior written authorization from Embry-Riddle.
2. Fail to enroll and maintain enrollment beyond the add/drop period, in at least one course at Embry-Riddle in any one-year period from the end date of last course.
3. Have been suspended or dismissed from the University.
4. Have completed an Embry-Riddle bachelor's, master's, or Ph.D. degree. Students who pursue an additional degree of the same rank (undergraduate/graduate) may be permitted to do so without reapplying.
5. Are students who do not complete the degree requirements of their program within seven years from the date of admission or seven years from the date of readmission.

Students failing to maintain continuous enrollment for any reason are required to reapply for admission under the catalog in effect at the time of their readmission. An exception to this policy may apply to active duty servicemembers. These exceptions will be considered on a case-by-case basis.

Continuous Student Status For Active Duty Military Students

Active-duty military students must maintain continuous student status as detailed above; however, active duty undergraduate military students may also maintain continuous student status by submitting National Exam results, or transcripts within a one-year period showing that the student has done one of the following to maintain continuous student status:

1. Passed a nationally recognized exam (ie. CLEP, DSST/DANTES) that can be applied toward degree completion
2. Completed any non-traditional education (military course or updated occupational skill as listed on the service transcript and reviewed by the American Council on Education) that can be applied toward degree completion
3. Completed a course at another institution to be used toward an ERAU degree after receiving prior written approval

*Active duty military students may complete a waiver to establish continuous student status.

Catalog Applicability

The academic provisions of the catalog in effect at the time of a student's initial academic evaluation remain applicable as long as the student remains in the original degree program, major, or area of concentration and maintains continuous enrollment status. Revisions to university policies, rules, and regulations are in immediate effect for all students with the publication or revision of each new catalog.

If a student does not maintain continuous enrollment at the University, the student must apply for readmission. The provisions of the catalog in effect at the time of readmission then become applicable to the student.

Course prerequisites are catalog-year specific from the implementation date forward.

Curricular requirements stated in the applicable catalog will not be affected by subsequently published addenda to that catalog or by later catalogs unless the student elects to graduate under the provisions of a later catalog. Students electing to graduate under the provisions of a later catalog must meet all requirements (admission, transfer, graduation, etc.) contained in that catalog.

Transcript Requests

Embry-Riddle transcripts are provided through the Parchment Digital Credential Service.

- Current students may request an official transcript via the ERAU Online Student Services Portal at ERNIE. To access portal services, a student will need a current username and password. As logging into ERNIE satisfies federal requirements for establishing identity, students may then complete the Parchment Digital Credential Service online request form; there is no need to submit an additional signed request. Unofficial transcripts are available to current students only and may be obtained directly through ERNIE at no cost.
- Prior students and alumni may request an official transcript by visiting the Parchment Digital Credential Service website and completing the consent form that will allow its release. The consent form must be completed only the first time the service is used; it will be maintained by Parchment Digital Credential Service for future requests. Unofficial transcripts are not available to prior students and alumni who no longer have a current username and password for ERNIE.

Transcripts are available for delivery either in traditional paper form or electronically. The format must be selected by the student during the ordering process.

Transcripts issued by the University will reflect the academic record of the student in its entirety, including all undergraduate and graduate coursework. Student may not select, or suppress, specific terms of attendance or levels of study from their record when ordering transcripts.

There is a fee for either official paper or electronic transcripts. The fee is the same regardless of the format in which the transcript is issued.

The Office of the Registrar does not provide unofficial transcripts. Electronic transcripts may be obtained through the Parchment Digital Credential Service only. Transcripts are not available via fax.

Student transcripts and records are maintained in perpetuity.

Skills Assessments

The purpose of the English and Mathematics Skills Assessments is to ensure that students are initially enrolled in English and Mathematics courses where they can successfully learn required concepts while simultaneously preparing for subsequent courses.

There is no pass or fail on these assessments, only proper placement in the appropriate English or Mathematics course. Additionally, completion of a skills assessment does not guarantee admission to the university.

To be admitted, students must meet the full terms of admission which include submitting all required documentation needed to render an official decision.

Students may access pre-assessment refresher tools located in ERNIE on the Worldwide Skills Assessments site.

ERAU Worldwide English and Mathematics Skills Assessment policies are as follows:

All undergraduate students seeking to register for Worldwide courses starting with any of the following prefixes will need to complete the indicated skills assessment prior to registering for those courses.

- ENGL courses require the English Skills Assessment.
- ENGR and ESCI courses require both the English Skills Assessment and the Mathematics Skills Assessment.
- PHYS 150/160/250/253 (Engineering Physics) and MATH and STAT courses require the Mathematics Skills Assessment.

English

The English Skills Assessment may be taken one time only; there will be no opportunity to retake an examination after the first time it is completed and scored.

After completing the English Skills Assessment, the course(s) for which a student should register will be displayed in their Campus Solutions Student Center To-Do list.

1. For students who do not possess transfer credit equivalent to ENGL 106 or more advanced ENGL courses, the following placement criteria apply:
   a. Students who score 70% or above on the Skills Assessment may enroll in ENGL 123.
   b. Students who score at least 50% but less than 70% on the Skills Assessment must take ENGL 106.
   c. Students who score less than 50% on the Skills Assessment must take both GNED 104 and ENGL 106.
2. Students who possess transfer credit equivalent to ENGL 106 or above and score less than 70% on the Skills Assessment *should* take ENGL 106. Likewise, students who score less than 50% on the Skills Assessment *should* take both GNED 104 and ENGL 106.
3. ENGL 106 cannot be used to satisfy General Education Communication Theory and Skills requirements.

English is the language of instruction for all courses at Embry-Riddle Aeronautical University – Worldwide. ERAU does not offer English language services.

Mathematics

After completing the Mathematics Skills Assessment, the course(s) for which a student should register will be displayed in their Campus Solutions Student Center To-Do list. Visit the Math Skills Assessment site in ERNIE to learn how you can self-remediate and repeat the mathematics skills assessment.

1. Students who do not possess transfer credit equivalent to GNED 103, MATH 106 or 100 to 200-level courses with a MATH prefix are required to complete the recommended courses listed in the Student Center To-Do list.
   a. Topics included in the Mathematics Skills Assessment range from arithmetic to algebra through trigonometry and pre-calculus.
   b. Course recommendations combine the results of the assessment with the student's degree program listed in Campus Solutions at the time of the assessment.
2. Students who place into GNED 103, MATH 106 or above and yet possess transfer credit equivalent to GNED 103, MATH 106 or above *should* take the recommended course(s) listed in the Student Center To-Do list.

3. MATH 106 cannot be used to satisfy General Education Mathematics requirements.

Privacy of Student Records (FERPA)

The University respects the rights and privacy of students in accordance with the Family Educational Rights and Privacy Act (FERPA). The University may disclose certain items of directory information without the consent of the student, unless the student submits a written non-disclosure request, verified by University personnel or a notary.

Students are required to file requests for non-disclosure with the Office of the Registrar. Non-disclosure requests remain in place permanently, unless the office is notified otherwise. Students may grant online access to select individuals via the student information system (auxiliary access); requests to grant online access cannot be processed by the Office of the Registrar.

Directory information consists of:

- Student name
- Permanent or local mailing addresses and telephone numbers*
- ERAU e-mail or box address
- Non-ERAU email addresses or account information*
- Date of birth*
- Major courses of study and areas of specialization
- Dates admitted, attended, and graduated
- Enrollment and class status
- Campus, school, or college attended
- Degrees sought or earned, and dates received or anticipated
- Awards, honors, and special programs or recognitions
- Most recent previous school attended
- For student-athletes and scholarship recipients, the ERAU ID and photograph
- Information from public sources

* Though directory information may be released without student consent, information of this nature is only released for compelling reasons.

The University shall obtain written consent from students before disclosing any personally identifiable information from their education records with the exception of the directory information.

The receipt of a written request to release an education record electronically satisfies this requirement. Such written consent must specify:

1. The records to be released
2. The purpose of the disclosure
3. Identify the party or class of parties to whom disclosure may be made and their address
4. Do not designate a recipient fax number for requests, including academic transcripts; transcripts are not available via fax. If urgency exists, students are advised to request the delivery of an electronic transcript, via Transcripts on Demand® (TOD) from Credentials eScrip-Safe
5. Must be signed and dated by the student or former student

An institution may release personally identifiable information from a student's educational record without the student's written consent as required under federal law if the disclosure meets one or more of the conditions as defined under the *Exceptions to Written Consent Requirement (*§99.31).

The law authorizes students and former students the right to inspect and review information contained in their education records.

Students can submit written requests to the Office of the Registrar. Once a request is received, The Office of the Registrar is required to make the records available for inspection and review within 45 days.

FERPA allows disclosure of educational records or components thereof under certain conditions. Students desiring additional information regarding FERPA may review the ERAU Worldwide FERPA Notification in ERNIE or contact the Registrar's Office.

Grades

Grading System

Undergraduate indicators below are used on grade reports and transcripts.

Letter Grade	Student Performance	Grade Points Per Credit Hour
A	Superior	4
B	Above Average	3
C	Average	2
D	Below Average	1
F	Failure	0
FX	Failure due to non-attendance (notated on official transcript as "F" grade)	0
WF	Withdrawal from the University Failing	0
W	Withdrawal from a course	N/A
AU	Audit	N/A
I	Passing but incomplete	N/A
P	Passing grade (credit)	N/A
S	Satisfactory (noncredit)	N/A
T	Transfer credit	N/A
N	No grade submitted by instructor/No grade required	N/A
X	Credit by means other than course equivalency exam	N/A
XP	Credit by course equivalency exam	N/A

Graduate indicators below are used on grade reports and transcripts.

Letter Grade	Student Performance	Grade Points Per Credit Hour
A	Excellent	4
B	Satisfactory	3
C	Passing	2
F	Failure	0
FX	Failure due to non-attendance (notated on official transcript as "F" grade)	0
WF	Withdrawal from the University Failing	0
W	Withdrawal from a course	N/A
AU	Audit	N/A
I	Passing but incomplete	N/A
N	No grade submitted by instructor/No grade required	N/A
X	Credit by means other than course equivalency exam	N/A
P	Passing grade (credit)	N/A
IP	In Progress	N/A
S	Satisfactory (noncredit)	N/A
T	Transfer credit	N/A

Faculty will post grades within one week of assignment due date, test/quiz date, etc. unless otherwise disclosed by the faculty member prior to the stated grading period lapsing. Timelines for Doctoral dissertations can be found of the applicable degree program page.

Grades

Final grades are issued at the end of each term. Students can access their grades immediately after they are posted by the faculty, via ERAU Online Services (Log in to ERNIE, click on the Services link in the upper right, click on Campus Solutions in left menu, then Campus Solutions Student Center.)

The University is prohibited by federal law (FERPA) from releasing grade information without the express written authorization of the student. Students may grant online auxiliary access to any designated individuals via the student information system.

Grade Appeals

Students who wish to appeal the final course grade must first communicate with the instructor to discuss and attempt to resolve the issue. The meeting must be arranged as soon as possible after final course grades have been issued.

The grounds for appeal may include suspected mathematical errors in computing the final grade or interpretation of the weighing of course performance elements. Except for the most unusual of circumstances, appeals challenging the academic judgment of the faculty are not acceptable.

If the dispute cannot be resolved within 30 days between the student and instructor, the student may initiate a written appeal to the designee of the appropriate academic college. Review and final ruling for unresolved grade appeal cases resides in the office of the College Dean, who will communicate the final decision to the Office of the Registrar.

The campus to which the petitioning student is assigned is notified of final grade appeal rulings at the conclusion of the process, who will advise the student as to next steps.

Late grade change requests are only considered for up to one year after the conclusion of the class in question, via petition with supporting documentation. Military exception requests with cause, such as active duty deployment, may be reviewed via petition with supporting documentation. Students must be in active status with ERAU to have cases considered. Students who have graduated, enrolled in other institutions, been suspended or dismissed, or otherwise broken their continuing student status, are not eligible for late grade change consideration.

Graduation

Graduation Requirements

Undergraduate students are required to complete at least 25% of semester credit hours through ERAU instruction to achieve residency. Per state regulations, for undergrad degree completion, all Virginia Campus students are required to complete a minimum of 30% coursework at Embry-Riddle Aeronautical University in order to achieve residency. Students pursuing any undergraduate degree must earn a minimum cumulative grade point average (CGPA) of 2.00 for all courses completed at the undergraduate level at the University. Certificate of completion seeking students must complete program requirements as specified.

Graduate students are required to complete all graduate course work with Embry-Riddle with a maximum of 12 credit hours of transfer work permitted for most programs. Students pursuing any graduate degree must earn a minimum cumulative grade point average (CGPA) of 3.00 for all courses completed at the graduate level at the University.

All students must complete the general graduation requirements as prescribed by the University, as well as all degree requirements specified in the degree program being pursued. Graduation requirements are not subject to petition or waiver.

Students must initiate an application for graduation online by accessing Campus Solutions, selecting "Academic Advising," and then “Apply for Graduation” from the column of choices. A qualified student will not be graduated by ERAU until a graduation application has been received and processed by the University, and the graduation fee has been remitted. Undergraduate students must be within 12 credit hours of program completion before submitting a graduation application; masters students must be within 6 credit hours of program completion before submitting a graduation application. Graduation applications are canceled after one year if all program requirements are not met. Graduation application fees are non-refundable.

Graduation Honors

Undergraduate Students:

Graduation honors status recognizes degree-seeking students who have demonstrated excellent performance throughout their academic careers. Statuses are only awarded to students who complete bachelor’s degree programs. In order to be eligible, the student must have completed at least 45 credit hours in residence at ERAU. The level of graduation honors will be based on the cumulative grade point average for all undergraduate courses taken at Embry-Riddle at the time the degree is conferred. The honors level will appear on the student’s diploma and academic transcript with the degree information.

Graduation honors (baccalaureate only) will be awarded in accordance with the following criteria:

Honors Level	CGPA
Summa cum laude	3.900-4.000
Magna cum laude	3.700-3.899
Cum laude	3.500-3.699

Graduate Students:

Graduate students are recognized through inclusion of the notation “With Distinction” on diplomas and transcripts. To be eligible, students must have completed their graduate studies with a CGPA of 4.0, based on grades received in **all** ERAU graduate coursework.

Diplomas

Diplomas are issued upon successful fulfillment of all academic and financial requirements. Diplomas will be mailed to the student at the address specified on the graduation application. Diplomas will not be forwarded if the address is incorrect but will be returned to the Office of the Registrar.

Diplomas are mailed weekly from the Office of the Registrar, and are not distributed at the graduation ceremony.

Reprint Diplomas: Both paper and digital diplomas reprint requests, for degrees conferred in prior years, will bear the signatures of the current University Administration, and may not match the signatures on the original diploma.

Graduation Ceremony

Any eligible student may participate in any of Worldwide’s global graduation ceremonies held annually in: Daytona Beach and Pensacola, Florida; Germany; Japan; San Diego, California; Seattle, Washington; Dallas, Texas; and DC Metro Area.

Eligible students may also choose to attend the formal graduation ceremony held at the residential campus in Prescott, AZ. Worldwide students are generally not permitted to participate in the Daytona Beach residential campus student ceremony.

Undergraduate students must be within 12 credit hours of degree completion to participate. Graduate students must be degree complete to participate. Any applicable honors status will not be awarded or recognized in a program or ceremony unless the candidate is degree

complete. Students who petition to participate in a graduation ceremony prior to degree completion are not permitted to wear honor cords/ distinction medallions, regardless of their in-progress GPA. Honor cords/ distinction medallions are awarded to graduation ceremony participants at the time of the ceremony.

Students must apply for graduation and place a regalia order prior to the deadlines listed on the Project Graduation website. The cost of regalia for any Worldwide student who attends a Worldwide graduation ceremony in Daytona Beach, Prescott, or at a recognized regional ceremony is paid by the student. Regalia is shipped to the address specified by the student. The cap and gown fee is in addition to the graduation fee. Students who wish to participate in the Prescott ceremony must notify the Worldwide Office of the Registrar of their intent via the graduation application and must work with the Prescott campus bookstore to obtain appropriate graduation regalia. Students may be subject to additional graduation fees for participation in the Prescott ceremony.

The Worldwide student ceremony, held in Daytona Beach, is generally prior to the Daytona Beach residential campus student ceremony. Please consult ERNIE for graduation ceremony schedules.

Graduation ceremony application deadline dates, subject to change, are:

Ceremony	Location	Deadline
Spring	Worldwide @ Daytona Beach	February 28
Spring	Prescott	March 01
Winter	Prescott	November 01

Classroom Rules and Regulations

Classroom Facilities

Classes are held at a variety of locations on military installations and at civilian sites. You should confirm where your class will be held and ensure there are no access restrictions when registering for a course.

Class Attendance

Regular attendance and punctuality are expected in all classes. ERAU does not dictate an institutional attendance policy. Worldwide faculty members determine the attendance policy that is appropriate for their individual class, and must share the criteria for attendance/participation with their students. Student physical attendance is required for classroom based face-to-face instruction, EagleVision Classroom, and/or any modality that has a classroom element with specific meeting days and times. Real-time, virtual attendance is required in EagleVision Home courses. Watching playbacks is not considered class attendance. Students enrolled in an EagleVision Home course must complete the EagleVision Home Technology Compliance Agreement prior to the start of the term. Failure to complete this form may result in a student being administratively dropped. For students taking classes via online or asynchronous modalities, attendance may include criteria such as class participation, postings in discussion threads and responses to classmate postings in discussion threads. Faculty may weigh these elements as they deem appropriate to calculate final grades. Faculty will record the last date of attendance for each student in each class.

- **Academic Calendar** (Holidays that Embry-Riddle Aeronautical University – Worldwide is Closed, no classes will be held)

Christmas Eve/Christmas Day/New Year's
Martin Luther King Day
President's Day
Memorial Day
Juneteenth
Independence Day
Labor Day
Veterans Day
Thanksgiving

Student Class Participation

Students enrolled in any class modality are expected to log in to their courses through the Worldwide Learning Management System (LMS) beginning the first day of the term and frequently throughout the term, up to and including the last day of the term.

On the first day of the term, students are expected to log in to review course materials, including the syllabus, as well as any announcements from the instructors. Instructors may post updates during the term. Posting on discussion threads, responding to other students' posts, and other criteria may be counted for participation in any or all modalities. Logging-in on the last day of the term for review of final assignments, and to review any final changes/announcements from the instructor is also expected. Individual state regulation requires specific campus locations to document student class activity, independent of any attendance criteria determined by course instructional staff. Activity reporting in response to individual state regulations is not considered in grade calculations for any course.

Flexible Classroom Instruction

Class times vary according to local students' needs. At many teaching locations, classes meet once a week in the evenings; however, other scheduling arrangements, such as meeting weekends or twice a week, are not uncommon.

To enhance learning in the regular classroom, some courses are offered through a blend of classroom and online delivery. While the majority of the instruction occurs in the classroom, a portion of the course takes place online through activities such as guided discussion, group projects, and online assignments. Students have expressed high praise for the flexibility, reflection, and interaction that this instruction affords.

Classroom Rules

For classes held on military installations and at most civilian sites, the general rule is no eating, drinking, or tobacco use in the classroom. Please abide by rules posted in the classroom, conveyed by the instructor, or communicated by your local campus staff. Students are expected to follow all appropriately issued directives from administration in the case of a health safety emergency (e.g.: face covering requirements, other personal protective equipment requirements, required procedures intended to avoid close contact between individuals, required temperature or other wellness check procedures, required enhanced ID checks and procedures, etc.).

Bringing children or guests to class is not permitted. Specific questions related to service animals on campus can be directed to the Worldwide Disability Support Services Office at wwdss@erau.edu or 386-226-7334..

Classroom Security

Because classroom security conditions vary from location to location, students should be aware of their surroundings at all times. Please check with your local campus staff for any known security issues in the area. All security or safety issues and/or incidents should be reported immediately to your instructor or the campus location staff. Worldwide Emergency Preparedness Plans are posted in ERNIE. Information pertaining to the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics may be found on the ERAU-Worldwide website.

Late Policy

Each instructor is entitled to post and enforce their own late policy.

Leave of Absence Policy

Embry-Riddle Aeronautical University does not have a leave of absence policy.

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Dean of Students

The Worldwide Dean of Students Office advocates and provides oversight of student development and services. In addition to the adjudication of non-academic student conduct violations, the Dean of Students Office also listens to student concerns, clarifies policies and procedures and strives to resolve student issues.

The Dean of Students Office is comprised of the following student services: Management and oversight of Student Grievances, Career Services, Coop/Internship (COIN) Program, Alpha Sigma Lambda National Honor Society, Disability Support Services, Counseling Support, Ombudsman, Study Abroad, Student Conduct, Students of Concern and Students Rights and Responsibilities.

Additional information can be found on the Worldwide Dean of Students website in ERNIE at http://ernie.erau.edu.

Dean of Students Contact Information:
Email: wwdos@erau.edu
Phone: 386-323-8775 or 888-292-5727

- Alumni Engagement
- Surveys
- Veteran Student Services

Orientation

Orientation is recommended for all students that are newly admitted (both non-degree seeking and degree seeking), returning students who have not previously completed the orientation and permanent IntraUniversity Transfer (IUT) students.

Students are encouraged to complete Orientation in advance of enrolling in their first course upon admission, readmission or permanently transferring to the Worldwide Campus. The Orientation provides students with exposure to and the opportunity to navigate the Learning Management System (Canvas) used to support courses. Students will learn tips for success, expectations, available resources and points of contact for assistance.

Honor Society, Social Networking, and Study Abroad

Alpha Sigma Lambda National Honor Society

We highly recommend that qualified students apply to become a member of the Alpha Sigma Lambda National Honor Society (ASL) Nu Kappa Chapter. Alpha Sigma Lambda's purpose is to recognize the achievements of adults who accomplish academic excellence while facing the competing interests of home and work. Alpha Sigma Lambda is the premier National Honor Society created exclusively for non-traditional, degree-seeking undergraduate students. To learn more about the benefits of Alpha Sigma Lambda, other Honor Societies, and scholarship opportunities, visit the website via ERNIE and the National Honor Society website.

eUnion and Social Networking

The Dean of Students Office provides Worldwide students with the opportunity to enhance their academic learning experiences through development of, exposure to, and participation in social, cultural, and intellectual programs. Students are encouraged to connect and discover the Worldwide Virtual Community-eUnion, follow the Worldwide Campus's social media pages, Facebook, Twitter and Instagram and join the ERAU Worldwide Career Services LinkedIn and Facebook, which connects students, faculty, and staff.

Study Abroad

Study Abroad is an academic program which embraces and provides the unquestionable benefits of cultural exposure through international travel in today's increasing globalization. Embry-Riddle offers its students a wealth of opportunities to study abroad with unique experiences which enhance their academic, professional, and personal lives. Students who meet the qualification criteria have unique opportunities to take a variety of two-to-six week summer programs throughout the world. In addition, students may be able to participate in a semester or year-long student exchange program through partner schools that will be directly applicable to their degree programs at Embry-Riddle. Additional information can be found in ERNIE at ernie.erau.edu and the Study Abroad and Global Engagement website.

Disability Support Services

Embry-Riddle Aeronautical University recognizes its responsibility under the mandates of Section 504 of the Rehabilitation Act of 1973 and Title III of the Americans with Disabilities Act of 1990 to provide equal access to its programs and services for students with a documented disability. To assure nondiscrimination, the University is prepared to make reasonable accommodations to promote students' effective participation in their academic and co-curricular objectives.

Disability support services for Worldwide students are coordinated through the Worldwide Dean of Students Office and needs are addressed on an individual basis. The Worldwide Disability Support Services Office will identify resources, examine and clarify academic issues, and develop a strategy to deliver optimum student service. All information is confidential and not for inclusion in the students' University records.

Students interested in learning more about our Disability Support Services are encouraged to visit the Disability Support Services website via ERNIE at ernie.erau.edu.

In order to register or request accommodations, students should contact the Worldwide Disability Support Services Coordinator either by telephone (386-226-7334) or by e-mail (wwdss@erau.edu).

Student Grievance

Student Grievance

It is the policy of Embry-Riddle Aeronautical University to administer its educational programs both on and off campus in a manner that is fair, equitable, academically sound and in accordance with the appropriate regulations and criteria of its governing board, accrediting association, and federal and state laws and regulations. To this end, Worldwide students are provided an opportunity to express any complaints, grievances, or disputes.

Students are encouraged to first address any issues with the faculty or staff member for which the grievance is based. If unresolved, the student should complete the Grievance (Complaint) form. The Dean of Students Office is the senior-most authority concerning student grievances; they will review the grievance and ensure that it is forwarded to the appropriate department or college if necessary for their review and action. The department or college will communicate back to the Dean of Students Office their decision, or recommended action. The Dean of Students Office will communicate with the student and provide further guidance, if appropriate.

A student may register a grievance, however, no official actions will be considered beyond the statute of limitations, which is 30 days after the incident. A timely resolution of student grievances is a top priority of ERAU-Worldwide. The Dean of Students Office will strive for a resolution to a student grievance within 30 days of receipt.

The institution does not offer an appeal on a final outcome from the institutions formal grievance process. If a satisfactory resolution cannot be reached through the Institution, please see the State Authorization page for your State's specific process for filing a grievance. Students attending

on-site courses at an ERAU location in the State of Florida, please contact the below office for assistance.

Office of Articulation
Department of Education
articulation@fldoe.org
850-245-0427

Students will not be subject to adverse action by the Institution as a result of filing a grievance.

At any time, students may contact the Student Ombudsman to gain advice and specific direction in seeking a resolution.

Distance Education Student Grievance Process

Out-of-state distance education students participating under the National Council for State Authorization Reciprocity Agreements (NC-SARA) (http://nc-sara.org/), who have completed the internal institutional grievance process and the applicable state grievance process, may appeal non-instructional complaints to the FL#SARA PRDEC Council. For additional information on the complaint process, please visit the FL-SARA Complaint Process page http://www.fldoe.org/sara/complaint-process.stml.

The State of California is not a member of NC-SARA. AS such, residents of this state may not appeal through these means and should consult their home state grievance process.

State of Georgia Grievance Process

If you have a home address in the State of Georgia and a satisfactory resolution cannot be reached through the institution, you may contact NPEC for further assistance. To file a complaint with the state, contact the Georgia Nonpublic Postsecondary Education Commission.

Georgia Nonpublic Postsecondary Education Commission
2082 East Exchange Place, Suite 220
Tucker, GA 30084
Phone :(770) 414-3300
Fax: (770) 414-3309

Student Ombudsman

The Worldwide Student Ombudsman is available to listen to concerns, clarify issues and offer assistance in defining options by referring students to the appropriate services within the Worldwide Campus. The Ombudsman is a confidential source of information and assistance to students concerning university policies and procedures. The Ombudsman may also make recommendations to the appropriate authorities about changes to University policy and procedures.

How the Ombudsman can help you

The Ombudsman provides confidential and informal assistance to the student body and is responsible to:

- Discuss any university-related issue
- Determine what attempts have already been made to resolve the issue
- Listen, clarify issues and offer assistance in defining options
- Define university policies and procedures.
- Refer students to the appropriate student services within the campus such as:
  - Local campus staff
  - Colleges
  - Admissions
  - Financial Aid
  - Veterans' Affairs
  - Student Affairs
  - Career Services
- Define and offer options for resolution; it is the student's responsibility to take action.
- Identify and report trends, while maintaining the confidentiality of individual communications.
- Communication with the Ombudsman is confidential unless permission is granted from the student or the Ombudsman feels there appears to be imminent risk of serious harm to self or others.

When the Ombudsman does not get involved

- When you want legal advice or legal representation. The Ombudsman can advise you of your rights within the University, but will not provide legal advice or represent you in a legal matter.
- When you have a disagreement or problem not related to the University.
- When you want someone to represent you in a University grievance procedure. The Ombudsman will discuss the process and clarify the options available before and after the proceedings.

Additional Information

For additional information regarding the Worldwide Student Ombudsman, and up to date contact information, please visit the Worldwide Student Ombudsman website in ERNIE.

Student Conduct

Preamble- Embry-Riddle Aeronautical University-Worldwide is resolute in supporting and successfully executing the university's values. The Student Code of Conduct ensures all people behave and are treated in a manner which is ethical, respectful, responsible and professional. Additionally, it safeguards a culturally diverse, inclusive, and supportive environment for all.

Introduction- The Dean of Students Office is dedicated to uphold the Student Code of Conduct and will hold applicants, enrolled or continuing students responsible and accountable for an infraction of any of the following concepts, values or behaviors.

> **Applicants**: May be denied admissions or have their application administratively cancelled
> **Enrolled or Continuing Students**: Subject to disciplinary action processed through the Dean of Students Office

Note: Discontinued students with an unresolved alleged violation will not be allowed to register for a future semester until the matter has been adjudicated through the disciplinary process. This defines those students who have a pending alleged violation and failed to enroll within one year of their last class and desire to reapply to the university.

1. **Abusive, Threatening or Bullying Behavior** - Any conduct that threatens or endangers the health and/or safety of a member of the University community (including oneself) on or off University property; any place that the University conducts business, or at a University sponsored or supervised activity. Behavior including but not limited to threats, intimidation, defiance, profanity, discrimination, harassment, coercion, bullying, cyberbullying, blackmail, sexual misconduct, and/or stalking.
   a. **Verbal:** Includes, but not limited to communications made in person, over the phone, voicemail, or other auditory means.
   b. **Physical:** Includes but not limited to assault, battery, fighting, alcohol poisoning, false imprisonment, prohibiting a person from freely entering or departing a room, car, event through physical force or presence or otherwise confining a person and any unwanted physical contact between individuals or attempts of physical threat.
   c. **Written:** Includes but not limited to instant messaging, internet usage, email, cell phone (texting, etc.), social networking sites (all including the Virtual Community), letters, signs, chalkboards, whiteboards, discussion boards, memes and videos.

   d. **Retaliation:** Action taken against another member of the community who has been identified as a reporter (complainant), victim or University representative alleging misconduct.
   e. **Implied:** Includes but not limited to gestures, taunting comments, intimidation, or any behaviors that are deemed to create a threatening or uncomfortable environment.
   f. **Harrassment:** Harassment also includes willful, intentional or a persistent act that knowingly and maliciously harms or annoys another individual. **Bullying**, **intimidating** and **stalking** will be considered forms of harassment and an Abusive/Threatening Behavior violation. Note that actions that are unwanted or unwelcomed can be considered a form of harassment.
   g. **Sexual Misconduct:** Includes but is not limited to, sexual harassment, sexual discrimination, non-consensual sexual contact, nonconsensual sexual intercourse, sexual exploitation, stalking, dating violence, domestic violence, intimate partner violence

2. **Improper Language:** Any language deemed disrespectful, unprofessional, aggressive or inappropriate in the learning environment.
3. **Alcohol/Drugs/Tobacco Use:** Use and/or possession of alcohol or tobacco on University owned property is prohibited, with the exception of approved designated areas or events. Policies may differ regarding tobacco usage on military installations and on property that ERAU leases. It is advisable to check directly with those facilities. Illegal drugs are prohibited at all university owned or leased properties. Disruptive or destructive behavior associated with, or as a consequence of, drinking or the use of drugs is not an acceptable form of conduct. Being under the influence of alcohol or drugs does not excuse students from negative behaviors and/or violations of the code of conduct, policies, state and federal laws. Students should review the Alcohol and Drug Policy.
4. **Computer Use & Security Violations (including attempted violations):** Any misuse of computing facilities, software, hardware; unauthorized use of another individual's computer account; misuse of one's own computer account; or any violation of the policies for using University computers, equipment or computing network resources at ERAU or through the ERAU system.
5. **Criminal Violation:** Violation of any State or Federal Criminal Code while on or off University owned or leased property. A student accused, arrested or convicted of any misdemeanor, felony or sexual offense must notify the Dean of Students Office within 24 hours after their release from jail and/or a judgement..
6. **Disorderly Conduct:** Include but not limited to excessively loud, lewd, indecent, obscene, disruptive or disrespectful conduct on University property or in connection with any and all University activity. Inciting others to be disruptive or disrespectful constitutes disorderly conduct.
7. **False Information:** Knowingly providing false information or withholding information.
8. **False Representation & Forgery:** Includes but is not limited to students sharing log in information with another individual (someone logging into another students account that does not belong to them). Additionally includes, students and student organizations forging, altering, falsifying, destroying, misuse, or unauthorized use of reproduction of a University document, the signature or computer login of university personnel, record or identification; or using Embry-Riddle stationary, business cards, or logo.
9. **Military Installations**: Students must adhere to the Department of Defense and base regulations and requirements, as applicable, concerning standards of conduct on the installation and access to the base. The university must report all disruptive behavior to the United States Government, and students may be barred from access to a military installation. .
10. **Theft:** Theft or attempted theft, unauthorized possession, misuse or wrongful appropriation of property, vandalism or malicious destruction, or sale of property not belonging to oneself.
11. **Unauthorized Entry or Use:** Unauthorized entry or attempted entry or use of University facilities and/or equipment, including unauthorized possession, duplication, or use of University keys, access codes, or unauthorized access to information, property, or person.
12. **Vandalism:** Includes but not limited to the misuse, attempted or destruction of University owned or leased equipment, building, or emergency equipment.
13. **Weapons Possession:** The possession of weapons or weapon replicas on or in proximity to a University property or activity is strictly prohibited. This includes but is not limited to firearms, BB guns, air guns, knives, swords, machetes, blow darts, spears, compound bows/arrows, tasers, brass knuckles, sling shots, martial arts devices, dangerous chemicals, incendiary devices or other explosive substances, including fireworks, or any device capable of firing or launching a projectile or other objects classified or used as weapons with potential for danger or harm
14. **Other:** Any other just cause, including behavior deemed inappropriate, unethical, or not conducive to the learning environment.

Important Notes

* Because the safety of our students and employees is paramount, all employees and students have an affirmative duty to immediately report to local or military police agencies should a student or other employee exhibit behavior at any University-sponsored activity that is deemed to threaten or endanger the health or safety of others.

** All employees and students have an affirmative duty to immediately report to local or military police agencies the presence of dangerous weapons on any premises owned or controlled by ERAU.

Sanctions

A student found responsible for violations under the Student Code of Conduct will be subject to disciplinary action. The sanctions are not imposed sequentially and relate to the severity of the violation.

Disciplinary sanctions may be imposed for violations under the Student Code of Conduct. All disciplinary sanctions are noted in the student's non-academic student file and may be kept indefinitely, including those of suspended or dismissed students.

1. **Warning:** A disciplinary warning is a verbal or written notice given to a student whose behavior is in violation of University policy.
2. **Probation:** University Conduct Probation is an intermediate sanction imposed for a specific period. The probationary period allows a student to demonstrate acceptable behavior in order to continue enrollment at Embry-Riddle. Guidelines for a student's behavior may be included as conditions of the probation. If an offense is committed during the probation period, actions may be instituted that result in suspension or dismissal.
3. **Suspension:** Suspension is an involuntary separation of the student from the University for a specific period. Readmission to the University may be granted after the suspension period or after conditions have been satisfactorily met.
4. **Dismissal:** Dismissal is the involuntary and permanent separation of the student from the University.

California Student Information

The information below is provided for ERAU students assigned to a Worldwide campus in the state of California:

- California Campus Locations
- Facility and Equipment Information
- Housing Information
- Articulation and Transfer Agreements

- Estimated Cost of Attendance
- Student Tuition Recovery Fund Disclosures

Embry-Riddle Aeronautical University is a private institution that is approved to operate by the California Bureau for Private Postsecondary Education. This approval to operate means that our institution is in compliance with all state standards set forth in the CEC and 5, CCR. This approval does not imply that the Bureau endorse any of our Institutions programs nor means that our Institution exceeds the minimum state standards set forth.

As a prospective student, you are encouraged to review the catalog prior to signing an enrollment agreement. You are also encouraged to review the School Performance Fact Sheet, which must be provided to you prior to signing an enrollment agreement.

Any questions a student may have regarding this institution that have not been satisfactorily answered may be directed to the Bureau for Private Postsecondary Education:

Bureau for Private Postsecondary Education
1747 North Market, Suite 225, Sacramento, CA 95833
Phone: (916) 574-8900
Toll Free: (888) 370-7589
Fax: (916) 263-1897
https://www.bppe.ca.gov/

A student or any member of the public may file a complaint about this institution with the Bureau for Private Postsecondary Education by calling (916) 574-8900 or (888) 370-7589 (toll free) or by completing a complaint form, which can be obtained on the bureau's website https://www.bppe.ca.gov/enforcement/complaint.shtml.

SCHOOL PERFORMANCE FACT SHEETS

Embry-Riddle Aeronautical University provides School Performance Fact Sheets to prospective students on each of its degree and certificate offerings in accordance with regulations established by the California Bureau for Private Postsecondary Education. These Fact Sheets provide specific information for each of the degree programs offered to campus-based students at their respective locations. This information includes the number of students enrolled, number of degree completions, students' performance with respect to relevant, job placements within the career fields for which the program was designed, and wage and salary information that has been provided by local graduates.

Current and prospective students can access these Fact Sheets on https://worldwide.erau.edu/locations/state-authorization/california-disclosures at any time to see the most up-to-date information.

STUDENT RECORDS

Student transcripts and records are maintained indefinitely.

STUDENT'S RIGHT TO CANCEL

A student who withdraws from a course either before the term begins or within the seven day add/drop period once the term begins will receive a refund of all money paid to the university, less the $50.00 application fee. If a student withdraws from a course after the seven day add/drop period had ended, the institution shall provide a pro rata refund of nonfederal student financial aid program moneys paid for institutional charges to students who have completed 60 percent or less of the period of attendance. If a student wishes to withdraw from a course they need to contact their academic advisor in writing to initiate this process.

A student has the right to cancel the enrollment agreement and obtain a refund of charges paid through attendance at the first class session, or the seventh day after enrollment, whichever is later.

DISTANCE EDUCATION CANCELLATION POLICY

A student who withdraws from a course either before the term begins or within the add/drop period once the term begins will receive a refund of all money paid to the university, less the $50.00 application fee. If a student withdraws from a course after the add/drop period had ended, the institution shall provide a pro rata refund of nonfederal student financial aid program moneys paid for institutional charges to students who have completed 60 percent or less of the period of attendance. If a student wishes to withdraw from a course they need to contact their academic advisor in writing to initiate this process.

For distance education students, cancellation is effective on the date written notice of the cancellation is sent. The Institution shall make the refund pursuant to section 71750. If the Institution sent the first lesson and materials before an effective cancellation notice was received, the Institution shall make a refund within 45 days after the student's return of the materials. A student shall have the right to cancel the agreement and receive a full refund pursuant to section 71750 before the first lesson and materials are received.

California Campus Locations

The campus addresses listed below are where both administrative processes are handled, as well as, where classes are held:

Beale

9th FSS/FSDE, 17849 16th Street, Beale AFB, CA 95903
Tel: 530-788-0900
http://worldwide.erau.edu/locations/beale/

Camp Pendleton

Office Address: Camp Pendleton Campus, Bldg 1331 Joint Education Center, Room 106; Camp Pendleton, CA 92055
Classroom Address: Building 23195, MCAS Camp Pendleton, CA 92055
Tel: 760-385-4423/760-385-0152
http://worldwide.erau.edu/locations/camp-pendleton/

China Lake

610 Blandy Avenue, NAWS China Lake, Building 02308, Room A, NAWS China Lake, Ridgecrest, CA 93555
Tel: 760-560-3386
http://worldwide.erau.edu/locations/china-lake/

Edwards AFB

140 Methusa Road, Building 2453, Edwards AFB, CA 93524-1400
Tel: 661-258-1264
http://worldwide.erau.edu/locations/high-desert-edwards/

Inland Empire (March AFB)

1351 Graeber Street, Building 2313, March AFB, CA, 92518
Tel:951-653-4074
http://worldwide.erau.edu/locations/inland-empire/

Inland Empire – Riverside Airport

6951 Flight Road, Suite 214, Riverside, CA 92518
Tel:951-653-4074
http://worldwide.erau.edu/locations/inland-empire-riverside-airport/

Los Angeles

5001 Airport Plaza Drive, Suite 150, Long Beach, CA 90815
Tel:562-627-5870
http://worldwide.erau.edu/locations/los-angeles/

Oceanside

3609 Ocean Ranch Boulevard, Suite 200, Oceanside, CA 92056
Tel:760-385-4423/760-385-0152
http://worldwide.erau.edu/locations/oceanside/

Palmdale

40015 Sierra Highway, Suite B-110, Palmdale, CA 93550
Tel:661-947-4025
http://worldwide.erau.edu/locations/high-desert-palmdale/

San Diego

8799 Balboa Avenue, Suite 125, San Diego, CA 92123
Tel:858-576-4375
http://worldwide.erau.edu/locations/san-diego/

San Francisco Bay Area

7677 Oakport Street, Suite 820, Oakland, CA 94621
Tel:510-636-2424
http://worldwide.erau.edu/locations/san-francisco/

Travis

530 Hickam Avenue, Building 249, Suite 30, Travis AFB, CA 94535
Tel:707-437-5465
http://worldwide.erau.edu/locations/travis/

Facility and Equipment Information

Resources and Equipment available to all California students:

Online academic resources include full access to the Hunt Library, with 125 research databases, 136 research guides, and tens of thousands of online journals; as well as online resources available through the ERAU-Prescott Hazy Library. Online Training resources are also included in complimentary ERAU-affiliated access to LinkedIn Learning seminars; an EAGLET Communication Lab; and individual online tutoring through Tutor.com, for 40 undergraduate and 12 graduate ERAU – Worldwide courses; the Khan Academy through khanacademy.org which includes a library of free courses and study resources so students can take to brush up their skills; and the use of ERAU-licensed MATLAB Mathematics and Engineering Matrix Laboratory.

Beale Campus

9th FSS/FSDE
17849 16th Street
Beale AFB, CA 95903

The Beale Campus has one standard classroom which seats 24 students, and a secondary classroom equipped with a computer lab of 12 computers, or can seat 20 traditional students. Both classrooms are equipped with our EagleVision web-based, audio-visual conferencing technologies, supported by Business Class internet services, with unlimited data transfer. There is one administrative office, with two staff workstations, and a student workstation with printer, copier, and facsimile access.

Public amenities include the 7500 square-foot, Hub Zemke Library, open 9:00 AM – 7:00 PM, Monday – Thursday, and 9:00 AM – 4:00 PM on Fridays. Library resources include a quiet room for reading & study, 14 public access computers, seating for 54, and open-source Wi-Fi: Check-out of materials is restricted to DoD-affiliated patrons, while on-site use of resources is open to the public. Additionally, public access is also available to the Beale AFB, College Level Examination Program (CLEP/DANTES) testing center which is operated by the Yuba College – Beale Center.

The education building also has a large shared lobby area, with vending machines, television and a shaded patio. There is on-site parking for 76 cars, six motorcycles, and two handicap-licensed vehicles. Across from the shaded patio, the Beale AFB bowling alley has a snack bar with grill.

Camp Pendleton Campus

Office: Bldg 1331 Joint Education Center, Room 106
Camp Pendleton, CA 92055
Classroom:
Building 23195 MCAS
Camp Pendleton, CA 92055

The Camp Pendleton Campus is located in the Marine Corps Base Pendleton Education Center. This campus has one dedicated classroom that holds up to 25 students, as well as one shared classroom which is available during the day, and is equipped with 25 laptops and monitors. There are two administrative offices, and a covered, outdoor break area with vending machines. There is adequate on-site parking.

China Lake Campus

610 Blandy Avenue
NAWS China Lake
Building 02308, Room A
NAWS China Lake
Ridgecrest, CA 93555

The China Lake campus is located on Naval Air Weapons Station China Lake in the Fleet and Family Support Center. This campus has one dedicated classroom that seats up to 22 students can be used as well as two shared classrooms that seat between 14 and 24 students. The dedicated classroom is equipped with EagleVision web-based, audio-visual conferencing technologies

Campus has one office that holds two employees and allows space for up to 5 students. There is a student workstation each equipped with a desktop computer for students to utilize during office hours. There is an additional workspace available for proctored exams if needed. Facility has a breakroom available to students that the students, equipped with two refrigerators, stove, coffee maker, toaster, and microwave.

Parking is ample and free of charge with overflow parking located directly across the street.

Edwards AFB Campus

140 Methusa Road Building 2453
Edwards AFB, CA 93524-1400

The Edwards AFB Campus is located on Edwards Air Force Base in the Education Center. Campus is equipped with 3 classrooms that seat between 14 and 20 students each. A shared computer lab (20 seats) is available if reserved in advance through Base Education Office. This campus has one office, with three divided workspaces. There is a shared breakroom with a sink, refrigerator, microwave, and vending machines. Shared parking lots are available on either side of the building.

Inland Empire (March AFB) Campus

1351 Graeber Street
Building 2313
March AFB, CA 92518

The Inland Empire (March AFB) Campus is located on March Air Force Base, and is equipped with one standard classroom that seats 16, and is being upgraded to include EagleVision capabilities. There are two offices and a dedicated student computer workstation as well as a common/lounge space. There is shared parking with approximately 50 parking spaces.

Inland Empire – Riverside Airport Campus

6951 Flight Road
Suite 214
Riverside, CA 92518

The Inland Empire - Riverside Airport Campus is equipped with one standard classroom that seats 25, and is equipped with EagleVision web-based, audio-visual conferencing technologies. There is one administrative office. There is shared parking with approximately 50 parking spaces.

Los Angeles Campus

5001 Airport Plaza Drive
Suite 150
Long Beach, CA 90815

The Los Angeles Campus has seven fully equipped classrooms, each with instructor podiums, projectors/screens, web conferencing technology and seat between 20 and 30 students. This campus also has one computer lab with 24 computer workstations as well as two additional

student workstations in the office area. There is a well-furnished student lounge, complete with couches, tables, and standard kitchen amenities. There are three administrative offices and two cubicles, as well as a conference room. This location has a spacious lobby/reception area and approximately 50 parking spaces, as well as a parking garage.

Oceanside Campus

3609 Ocean Ranch Boulevard
Suite 200
Oceanside, CA 92056

The Oceanside Campus has three dedicated classrooms that holds up to 30 students each. The computer lab is equipped with 22 computer workstations, and the Microsoft classroom is equipped with 28 Microsoft Surface computers and monitors. There is one administrative office, and a student lounge with several vending machines. There is adequate on-site parking.

Palmdale

40015 Sierra Highway
Suite B-110
Palmdale, CA 93550

The Palmdale Campus is equipped with two classrooms that seat between 10 and 20 students. Additionally, the campus has one computer lab with 18 computer workstations. This location has two offices and a designated reception area with seating, and a breakroom with sink, refrigerator, microwave, restrooms, and utility closet for storage and cable equipment. Shared parking lot with other tenants in front of suite.

San Diego Campus

8799 Balboa Avenue
Suite 125
San Diego, CA 92123

The San Diego Campus has 6 classrooms, holding anywhere from 18-39 students. Classrooms are equipped with EagleVision web-based, audio-visual conferencing technologies. This campus is also equipped with a 20-seat computer lab available to students. There are three administrative offices on site, along with a lobby, separate student and staff break rooms, and a common area student workstation. There is a shared parking structure located behind the building.

San Francisco Bay Area Campus

7677 Oakport Street
Suite 820
Oakland, CA 94621

The San Francisco Bay Area Campus has 3 classrooms that seat between 12 and 16 students. There are two administrative offices, as well as a lobby/lounge area. The Campus is located on the 8th floor of a high-rise building in a business park close to the Oakland Airport. The building has ample free secured parking for any University guests, students and staff.

Travis Campus

530 Hickam Avenue
Building 249, Suite 30
Travis AFB, CA 94535

The Travis Campus has three standard classrooms which can seat 30 students each, with two of those classrooms fully equipped with EagleVision web-based, audio-visual conferencing technologies, supported by Business Class 150 internet services, with unlimited data transfer. There is also one government computer lab, seating 24, available with authorization from Educational Services Officer.

Classrooms are also offered to students who wish to take their placement exams/skills assessments here at the campus or would like a quiet place to study. Food and beverages are allowed in the classrooms and are provided by the campus for special occasions like webinars, campus events, etc.

Public access is also available to the Travis AFB, College Level Examination Program (CLEP/DANTES) testing center which is operated by the University of Maryland University College – Travis Center.

Next to the office, there is a public, 24/7 lounge that is shared amongst the Education center for students with vending machines, TV, reading materials, outlets, and free Wi-Fi from the Education Office. There is also a large open grassy, courtyard-common area in front of the Travis Campus and Education Building with various park benches and trees, for use by all. Public parking is available in two locations – a larger parking lot is located beyond the courtyard area and a smaller, but significant number of angled spaces are available along Hickam Avenue.

Housing Information

Embry-Riddle Aeronautical University – Worldwide does not offer any form of student housing at its locations. The University has no dormitory facilities under its control; specific housing cost information for the counties in which ERAU California Campuses reside, is available via the U.S. Housing and Urban Development (HUD) department's Fair Market Rents (FMR) program. As per the site, the following information by county show the estimated range for housing expenses for a one-bedroom to a four-bedroom home as follows:

Embry-Riddle Aeronautical University does not have any formal program in place or responsibility to find or assist students in finding housing.

Fair Market Rent

Area Name	Range
Beale (Yuba County)	$926 - $2,008
Camp Pendleton (San Diego County)	$1,394 - $3,365
China Lake (Kern County)	$772 - $1,734
Edwards AFB (Kern County)	$772 - $1,734
Palmdale (Los Angeles County)	$1,604 - $2,933
Inland Empire-March AFB (Riverside County)	$1,202 - $2,542
Los Angeles (Los Angeles County)	$1,604 - $2,933
San Francisco Bay Area (Alameda County)	$1,854- $3,578
Oceanside (San Diego County)	$1,542 - $3,365
Inland Empire-Riverside Airport (Riverside County)	$1,202 - $2,542
San Diego (San Diego County)	$1,542 - $3,365
Travis (Solano County)	$1,408 - $2,870

Articulation and Transfer Agreements

View the ERAU-Worldwide Articulations & Educational Academic Agreement page for additional information.

Academic Partnership Schools

Institution	Location
Allan Hancock College	Santa Maria, CA
Amarillo College	Amarillo, TX
Big Bend Community College	Moses Lake, WA
Bossier Parish Community College	Bossier City, LA
British Columbia Institute of Technology	Burnaby, BC
Broward College	Davie, FL
Butler Community College	El Dorado, KS
Central Maine Community College	Auburn, ME
Central New Mexico Community College	Albuquerque, NM
Central Oregon Community College	Bend, OR
Cerro Coso Community College	Ridgecrest, CA

Cisco College	Cisco, TX
Clover Park Technical College	Lakewood, WA
Cogswell Polytechnical College	Sunnyvale, CA
College of Southern Maryland	La Plata, MD
Columbia Gorge Community College	The Dalles, OR
Community College of Baltimore County	Baltimore, MD
Defense Acquisition University	Fort Belvoir, VA
Eastern Florida State College	Cocoa, FL
Eastern New Mexico University	Portales, NM
Everett Community College	Everett, WA
Georgia Military College	Milledgeville, GA
Georgian College	Barrie, ON
Green River Community College	Auburn, WA
Greenville Technical College	Greenville, SC
Guilford Technical Community College	Greensboro, NC
Gulf Coast State College	Panama City, FL
Haney Technical Center	Panama City, FL
Hazard Community and Technical College	Hazard, KY
Metro Technology Center	Oklahoma City, OK
Miami-Dade College	Miami, FL
Mohave Community College	Kingman, AZ
Mount Royal University	Calgary, AB
New Mexico Military Institute	Roswell, NM
New Mexico State University-Alamogordo	Alamogordo, NM
Northwest Florida State College	Niceville, FL
Pittsburgh Institute of Aeronautics	Pittsburgh, PA
Plattsburgh Aeronautical Institute	Plattsburgh, NY
Polk State College	Winter Haven, FL
Portland Community College	Portland, OR
Saint Petersburg College	St Petersburg, FL
SAIT Polytechnic	Calgary, AB
Salt Lake Community College	Salt Lake City, UT
San Diego-Miramar College	San Diego, CA
Sinclair Community College	Dayton, OH
South Seattle College	Seattle, WA
Southwest Tennessee Community College	Memphis, TN
Tallahassee Community College	Tallahassee, FL
Tarrant County College	Fort Worth, TX
Technical College System of Georgia	Statewide GA (25 institutions)
Utah Valley University	Orem, UT
Valencia College	Orlando, FL
Vincennes University	Vincennes, IN
WSU Tech	Wichita, KS

ROTC Crosstown Partnership Schools

Institution	Location
Arizona State University	Tempe, AZ
CSU-Sacramento	Sacramento, CA
CSU-San Bernardino	San Bernardino, CA
Loyola Marymount University	Los Angeles, CA
North Carolina A&T State University	Greensboro, NC
Rutgers University	New Brunswick, NJ
San Diego State University	San Diego, CA
University of Alaska-Anchorage	Anchorage, AK
University of California-Berkeley	Berkeley, CA
University of Hawaii	Honolulu, HI
University of Houston	Houston, TX
University of Louisville	Louisville, KY
University of Maryland	College Park, MD
University of Miami	Coral Gables, FL
University of New Mexico	Albuquerque, NM
University of Portland	Portland, OR
University of South Florida	Tampa, FL
University of Southern Mississippi	Hattiesburg, MS
University of Utah	Salt Lake City, UT
University of Washington	Seattle, WA
Valdosta State University	Valdosta, GA
Wright State University	Dayton, OH

Estimated Cost of Attendance

Estimated Schedule of Charges

Embry-Riddle Aeronautical University collects tuition on a per-class basis. Courses are generally 9 weeks long. Your tuition must be paid in full, or arrangements must be made and approved by the University, before each class. The charges for your next scheduled course will constitute total charges for the current period of enrollment, and will include the appropriate rate for the course based on the rates and fees listed. That cost will consist of the tuition rate, multiplied by the number of credits for the course, plus any fees. The charges for each of those rates and fees are listed below.

Associate of Science Programs

Program Name	Schedule of Total Charges for a Period of Attendance (1 Course)*	Schedule of Total Charges for a Period of Attendance (2 Courses)*	CIVILIAN Estimated Schedule of Total Charges for the Entire Educational Program**	MILITARY Estimated Schedule of Total Charges for the Entire Educational Program**
AS Aeronautics AS Aviation Business Administrati AS Aviation Maintenanc AS Technical Manageme	Civilian: $1,470.00, Military: $825.00	Civilian: $2,865.00, Military: $1,575.00	Est. Tuition: $27,900.00 Est. Textbooks: $3,230.00 Est. SGA Fee: $50.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $31,330.00	Est. Tuition: $15,000.00 Est. Textbooks: $3,230.00 Est. SGA Fee: $50.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $18,430.00
AS Engineering Fundamentals	Civilian: $1,470.00, Military: $825.00	Civilian: $2,865.00, Military: $1,575.00	Est. Tuition: $31,185.00 Est. Textbooks: $3,392.00 Est. SGA Fee: $50.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $34,777.00	Est. Tuition: $15,750.00 Est. Textbooks: $3,392.00 Est. SGA Fee: $50.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $19,342.00

Bachelor of Science Programs

Program Name	Schedule of Total Charges for a Period of Attendance (1 Course)*	Schedule of Total Charges for a Period of Attendance (2 Courses)*	CIVILIAN Estimated Schedule of Total Charges for the Entire Educational Program**	MILITARY Estimated Schedule of Total Charges for the Entire Educational Program**
BS Aeronautics BS Aviation Business Administrati BS Aviation Maintenanc BS Business Analytics, BS Communica BS Emergency Services, BS Interdisciplii Studies, BS Leadership, BS Logistics & Supply Chain Manageme BS Project Manageme BS Technical Manageme BS Unmanned Systems Applications	Civilian: $1,470.00, Military: $825.00	Civilian: $2,865.00, Military: $1,575.00	Est. Tuition: $55,800.00 Est. Textbooks: $6,460.00 Est. SGA Fee: $100.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $62,510.00	Est. Tuition: $30,000 Est. Textbooks: $6,460.00 Est. SGA Fee: $100.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $36,710.00
BS Engineering BS Homeland Security	Civilian: $1,470.00, Military: $825.00	Civilian: $2,865.00, Military: $1,575.00	Est. Tuition: $57,195.00 Est. Textbooks: $6,622.00 Est. SGA Fee: $100.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $64,067.00	Est. Tuition: $30,750.00 $6,622.00 Est. SGA Fee: $100.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $37,622.00
BS Engineering Technology	Civilian: $1,470.00, Military: $825.00	Civilian: $2,865.00, Military: $1,575.00	Est. Tuition: $56,730.00 Est. Textbooks: $6,640.00 Est. SGA Fee: $100.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $63,620.00	Est. Tuition: $30,500.00 Est. Textbooks: $6,640.00 Est. SGA Fee: $100.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $37,390.00
BS Safety Managemen	Civilian: $1,470.00, Military: $825.00	Civilian: $2,865.00, Military: $1,575.00	Est. Tuition: $56,265.00 Est. Textbooks: $6,460.00 Est. SGA Fee: $100.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $62,975.00	Est. Tuition: $30,250.00 Est. Textbooks: $6,460.00 Est. SGA Fee: $100.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $36,960.00

Master and Master of Science Programs

Program Name	Schedule of Total Charges for a Period of Attendance (1 Course)*	Schedule of Total Charges for a Period of Attendance (2 Courses)*	CIVILIAN Estimated Schedule of Total Charges for the Entire Educational Program**	MILITARY Estimated Schedule of Total Charges for the Entire Educational Program**
M Aviation Cybersecur M Aviation Maintenanc MS Aeronautics MS Aviation and Aerospace Sustainabili MS Human Security & Resilience, MS Leadership, MS Logistics and Supply Chain Manageme MS Occupation Safety Manageme MS Project Manageme MS Unmanned Systems	Civilian: $2,394.00, Military: $2,019.00	Civilian: $4,713.00, Military: $3,963.00	Est. Tuition: $23,190.00 Est. Textbooks: $1,615.00 Est. SGA Fee: $50.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $25,005.00	Est. Tuition: $19,440.00 Est. Textbooks: $1,615.00 Est. SGA Fee: $50.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $21,255.00

MS Emergency Services, MS Information Security & Assurance	Civilian: $2,394.00, Military: $2,019.00	Civilian: $4,713.00, Military: $3,963.00	Est. Tuition: $25,509.00 Est. Textbooks: $1,777.00 Est. SGA Fee: $50.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $27,486.00	Est. Tuition: $21,384.00 Est. Textbooks: $1,777.00 Est. SGA Fee: $50.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $23,361.00
M Business Administrati in Aviation, MS Engineering Manageme MS Manageme	Civilian: $2,394.00, Military: $2,019.00	Civilian: $4,713.00, Military: $3,963.00	Est. Tuition: $27,828.00 Est. Textbooks: $1,938.00 Est. SGA Fee: $50.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $29,966.00	Est. Tuition: $23,328.00 Est. Textbooks: $1,938.00 Est. SGA Fee: $50.00 App Fee: $50.00 Grad Fee: $100.00 ***CA STRF: $0.00 Est. Total: $25,466.00
M Space Operations, M Systems Engineering MS Aerospace Engineering, MS Airworthiness Engineering, MS Unmanned and Autonomous Systems Engineering	Civilian: $2,394.00, Military: $2,394.00	Civilian: $4,713.00, Military: $4,713.00	Est. Tuition: $23,190.00 Est. Textbooks: $1,615.00 Est. SGA Fee: $50.00 App Fee: $50.00 Grad Fee: $100.00 Est. Total: $25,005.00	Est. Tuition: $23,190.00 Est. Textbooks: $1,615.00 Est. SGA Fee: $50.00 App Fee: $50.00 Grad Fee: $100.00 Est. Total: $25,005.00
MS Human Factors, MS Manageme Information Systems	Civilian: $2,394.00, Military: $2,019.00	Civilian: $4,713.00, Military: $3,963.00	Est. Tuition: $23,190.00/ $25,509.00 Est. Textbooks: $1,615.00/ $1,777.00 Est. SGA Fee: $50.00 App Fee: $50.00 Grad Fee: $100.00 Est. Total: $25,005.00/ $27,486.00	Est. Tuition: $19,440.00/ $21,384.00 Est. Textbooks: $1,615/ $1,777.00 Est. SGA Fee: $50.00 App Fee: $50.00 Grad Fee: $100.00 Est. Total: $21,291.00/ $23,361.00

Certificate Programs

Program Name	Schedule of Total Charges for a Period of Attendance (1 Course)*	Schedule of Total Charges for a Period of Attendance (2 Courses)*	CIVILIAN Estimated Schedule of Total Charges for the Entire Educational Program**	MILITARY Estimated Schedule of Total Charges for the Entire Educational Program**
Undergradu Certificate: Aviation Maintenanc Technology Part 65	Civilian: $1,470.00, Military: $825.00	Civilian: $2,865.00.00, Military: $1,575.00	Est. Tuition: $8,370.00 Est. Textbooks: $970.00 Est. SGA Fee: $25.00 App Fee: $50.00 ***CA STRF: $0.00 Est. Total: $9,415.00	Est. Tuition: $4,500.00 Est. Textbooks: $970.00 Est. SGA Fee: $25.00 App Fee: $50.00 ***CA STRF: $0.00 Est. Total: $5,545.00
Partnership Graduate Certificate: International Society of Transport Aircraft Trading	Civilian & Military: $4,284.00	Civilian & Military: $4,284.00	Est. Tuition: $4,284 Est. Textbooks: N/ A Est. SGA Fee: $25.00 $App Fee: $50.00 ***CA STRF: $0.00 Est. Total: $4,359.00	Est. Tuition: $4,284 Est. Textbooks: N/ A Est. SGA Fee: $25.00 $App Fee: $50.00 ***CA STRF: $0.00 Est. Total: $4,359.00

Graduate Certificates: Aeronautics Airworthines Engineering Aviation and Aerospace Sustainabili Aviation Cybersecur Manageme & Policy, Aviation Maintenanc Aviation Safety, Business Intelligence and Analytics, Finance, Human Factors, Human Resources, Information Systems Security, Information Technology Manageme Internationa Business, Leadership, Marketing, Occupation Safety Manageme Project Manageme Small Unmanned Aircraft Systems Operations, Space Operations, Systems Engineering Unmanned Systems	Civilian: $2,394.00, Military: $2,019.00	Civilian: $4,713.00, Military: $3,963.00	Est. Tuition: $9,276.00 Est. Textbooks: $969.00 Est. SGA Fee: $25.00 App Fee: $50.00 ***CA STRF: $0.00 Est. Total: $10,320.00	Est. Tuition: $7,776.00 Est. Textbooks: $969.00 Est. SGA Fee: $25.00 App Fee: $50.00 ***CA STRF: $0.00 Est. Total: $8,820.00

*The Schedule of Charges for a Period of Attendance includes the nonrefundable $50.00 admissions application fee, a $25.00 per enrolled year Student Government Associate (SGA) fee and is based off of the current tuition rates. This information is subject to change with annual tuition rate increases.

**The Estimated Schedule Total Charges for the Entire Educational Program includes the nonrefundable $50.00 application fee, $100.00 graduation fee, an estimated cost of textbooks, and a $25.00 per enrolled year SGA fee, and is based off the current tuition rates. The total SGA fees assessed are estimated for a full time student who completes on time, this fee may be higher if a program is not completed on time. The tuition and textbook rates are subject to change with standard textbook and tuition pricing increases.

*** California Student Tuition Recovery Fund (STRF). This assessment is based on the amount of institutional charges charged to the student and is an estimate. Currently The final amount will be based on the actual amount charged to the student. The amount of the STRF assessment is set by California regulation 5 CCR § 76120. STRF fees are nonrefundable. Currently the assessment is based on $2.50 per $1,000.00 of institutional charges rounded to the nearest $1,000.00, ERAU does not charge students this fee which is why it is list as $0.00 on the above tables.

NON-MANDATORY FEES AND CHARGES THAT MAY BE APPLIED BASED ON THE SERVICES REQUESTED BY THE STUDENT

- Payment Plan Fee $20.00 Nonrefundable
- Late Payment Fee $25.00 Nonrefundable
- Transcript Fee $15.00 Nonrefundable
- Duplicate Diploma Fee $60.00 Nonrefundable
- Previously Earned Diploma Fee $60.00 Nonrefundable

Student Tuition Recovery Fund Disclosures

The State of California established the Student Tuition Recovery Fund (STRF) to relieve or mitigate economic loss suffered by a student in an educational program at a qualifying institution, who is or was a California resident while enrolled, or was enrolled in a residency program, if the student enrolled in the institution, prepaid tuition, and suffered an economic loss. Unless relieved of the obligation to do so, you must pay the state-imposed assessment for the STRF, or it must be paid on your behalf, if you are a student in an educational program, who is a California resident, or are enrolled in a residency program, and prepay all or part of your tuition.

Students are not eligible for protection from the STRF and not required to pay the STRF assessment, if you are not a California resident, or not enrolled in a residency program.

It is important that you keep copies of your enrollment agreement, financial aid documents, receipts, or any other information that documents the amount paid to the school. Questions regarding the STRF may be directed to the Bureau for Private Postsecondary Education, 1747 North Market Blvd., Suite 225, Sacramento, CA 95834, (916) 431-6959 or (888) 370-7589.

To be eligible for STRF, you must be a California resident or are enrolled in a residency program, prepaid tuition, paid or deemed to have paid the STRF assessment, and suffered an economic loss as a result of any of the following:

1. The institution, a location of the institution, or an educational program offered by the institution was closed or discontinued, and you did not choose to participate in a teach-out plan approved by the Bureau or did not complete a chosen teach-out plan approved by the Bureau.
2. You were enrolled at an institution or a location of the institution within the 120 day period before the closure of the institution or location of the institution, or were enrolled in an educational program within the 120 day period before the program was discontinued.
3. You were enrolled at an institution or a location of the institution more than 120 days before the closure of the institution or location of the institution, in an educational program offered by the institution as to which the Bureau determined there was a significant decline in the quality or value of the program more than 120 days before closure.
4. The institution has been ordered to pay a refund by the Bureau but has failed to do so.
5. The institution has failed to pay or reimburse loan proceeds under a federal student loan program as required by law, or has failed to pay or reimburse proceeds received by the institution in excess of tuition and other costs.
6. You have been awarded restitution, a refund, or other monetary award by an arbitrator or court, based on a violation of this chapter by an institution or representative of an institution, but have been unable to collect the award from the institution.

7. You sought legal counsel that resulted in the cancellation of one or more of your student loans and have an invoice for services rendered and evidence of the cancellation of the student loan or loans.

To qualify for STRF reimbursement, the application must be received within four (4) years from the date of the action or event that made the student eligible for recovery from STRF. A student whose loan is revived by a loan holder or debt collector after a period of noncollection may, at any time, file a written application for recovery from STRF for the debt that would have otherwise been eligible for recovery. If it has been more than four (4) years since the action or event that made the student eligible, the student must have filed a written application for recovery within the original four (4) year period, unless the period has been extended by another act of law.

No claim can be paid to any student without a social security number or a taxpayer identification number.

Alumni Engagement

As a student at Embry-Riddle, you now belong to a group known as Future Alumni. The Office of Alumni Engagement serves both alumni and current students to provide valuable opportunities for networking, programming, events, and access to the experience and knowledge offered by fellow Eagles. As Future Alumni, you are encouraged to take part in these opportunities and connect with alumni.

Benefits:

Alumni Events – The Office of Alumni Engagement offers a full calendar of virtual events that you are invited to attend. These events are geared towards different regions, networks and affinity groups, which allow students and alumni to interact and connect. To see a complete list, go to the Upcoming Events page.

Career Services – Career Services is a resource for students and alumni as you navigate establishing your career. They host multiple career fairs for students to participate in as well as webinars that cover topics such as networking, LinkedIn tips and tricks and the internship experience. They also utilize Handshake, an online career management tool, where alumni and employers post job and internship opportunities.

Mentorship – Connect with an alumni mentor that can help you throughout your time on campus and assist with the transition from student to alumnus. Mentors can provide information about your career field, internships, job opportunities and networking advice.

Talon Talks (Podcasts, Videos & Lectures) – Tune in and listen to alumni subject-matter experts as they share industry tips and their personal stories of success during our monthly Talon Talks podcast

Scholarships - Embry-Riddle endowed and term scholarships are funds that are generously donated to help students pay for their education. Completing the application does not guarantee you will receive a scholarship. If you are selected for a scholarship, it will be paid in the Fall and Spring semesters of the following academic year.

Eagle Entrepreneurs Business Directory – If you are looking for a certain type of business or service, use the business directory to find what you need while supporting an Eagle-owned business at the same time.

To learn more about the Office of Alumni Engagement visit our website.

Career Services and Co-op/Internship (COIN) Program

Career Services

Embry-Riddle Worldwide Career Services provides students and alumni around the globe with access to career resources as well as career assistance through phone or Skype appointments with career advisers. From free resume reviews to the coordination of various industry/career networking events, Career Services connects current students and recent graduates as well as alumni and military veterans with quality employers.

Students are highly encouraged to connect with the Worldwide Career Services Office immediately upon enrollment to: 1) develop a strategic career plan with a career adviser; 2) activate their Handshake profile; 3) explore co-op/internship opportunities to increase industry experience and maximize hiring and salary potential; and 4) network with industry-leading employers at Embry-Riddle Industry/Career Expo events and national industry conferences. Contact WW Career Services to learn about resources including CareerShift, Big Interview and GoinGlobal in preparation for U.S. and international career opportunities.

Regardless of ERAU campus affiliation, Embry-Riddle students and alumni are eligible to attend all Embry-Riddle Industry/Career Expo events to network face-to-face with top industry employers. Business professional dress (suit/skirt/dress slacks) is highly recommended. Contact your local ERAU campus or Worldwide Career Services Office for additional information at wwcarser@erau.edu or visit the ERAU Worldwide Career Services website.

Embry-Riddle does not offer placement services nor guarantees job placement, instead offers lifetime support in advanced career development and career preparation resources for students and alumni.

Co-op/Internship (COIN) Program

Embry-Riddle's Cooperative Education (COIN) Program bridges the gap between academic theory learned in the classroom and its practical application in a real-world environment within various industries. Co-op/Internship experiences are only available to degree-seeking students and must be relevant to the student's academic degree program to receive University credit. A student's current employment is not eligible for co-op/internship credit and all degree programs may not be eligible to apply open electives gained from the COIN program. However, if a co-op/internship is assessed and approved by the appropriate College authority to be in alignment with the degree program curriculum and meets the requirements of a specific course, a course substitution may be possible. All course substitutions must be approved prior to the start of a qualifying Co-op/Internship. Students may also receive University credit in excess of degree requirements if a co-op/internship meets the standards for credit, but is not degree applicable of the acquired knowledge and skill in industry.

Undergraduate students must be current or active full-time students with a cumulative GPA of 2.5+ and the completion of 30 college credit hours. Transfer students must complete 30 college credit hours, with at least 12 credit hours with Embry-Riddle. Undergraduate students may earn a maximum of 12 semester credit hours toward their degree program through the COIN Program (if applicable), although no more than three (3) consecutive terms of co-op/internship experience will be considered.

Graduate students must be current, active full-time students with a cumulative GPA of 3.0+ and the completion of nine (9) credit hours with Embry-Riddle. Students may receive academic credit for a maximum of three (3) semester credit hours at the graduate level.

*Due to state authorization requirements, co-op/Internships must be conducted in approved states only.

International Students

International students studying on an F1 visa must be enrolled as a full-time student and meet the above requirements plus the following: International students studying on an F1 visa must have the approval of the Principal Designated School Official (PDSO). If approved, the PDSO will update the student's I-20 with the start/end dates of the training experience and the number of hours allowed each week (part or full-time). The I-20 will reflect Curricular Practical Training (CPT). Co-op/internships must be an integral part of the student's field of study and must be completed for academic credit only, not for "experience only" purposes. According to the Student and Exchange Visitor Program (SEVP) "There is no set limit to the amount of time a student may engage in CPT. However, if a student engages in full-time CPT for 12 months or more, the student becomes ineligible for post-completion Optional Practice

Training (OPT). Engaging in part-time CPT (20 hours or less) does not affect eligibility for post-completion OPT."

Criminal Convictions and Violations

Unless specifically exempted from disclosure by law or order of court, students and applicants have an affirmative duty to immediately disclose any criminal convictions or charges against them for violent offenses, offenses against minors, and/or offenses that are punishable as a felony, as well as any drug related convictions, or any arrests.

The presence on campus or on any property where Embry-Riddle Aeronautical University conducts business (to include parking lots associated with doing business at ERAU), of students or applicants who commit serious violations of University rules, regulations, and procedures, or have unacceptable character, academic or behavioral record, criminal record, or other aspects may be inconsistent with the safety and other business and academic interests of the University.

Accordingly, the University may, in the University's sole discretion, deny an applicant admission, temporarily or permanently bar an applicant or student from all or any part of University-owned or University-controlled property (to include parking lots at our WW campuses). The University may also impose reasonable conditions upon any student or applicant who violates University rules, regulations, and procedures, or whose character, academic or behavioral record, or criminal record is determined by the University to pose an unreasonable risk to the interests of the University, its students, employees, or visitors.

No adverse action based on conduct shall under normal circumstances be taken against admitted students until the student has been afforded due process consistent with applicable policies and procedures. Nonetheless, the University reserves the right to take immediate reasonable action to protect the health or safety of people or property.

The applicable rules and regulations may be modified or updated from time to time, and shall be binding as of the date published. Students and applicants are bound by the terms in effect at the time of any event or occurrence. The electronic version of applicable rules, regulations, and procedures shall be the official current version.

Applicants and students should report information directly to Student Affairs at wwstuaff@erau.edu and to their home campus location.

Veteran Student Services

Embry-Riddle degree programs are approved by the appropriate State Approving Agency for enrollment of persons eligible to receive education benefits from the Department of Veterans Affairs (VA).

Students must be admitted into an approved degree or certificate program to be eligible to receive benefits. Admission procedures for veterans and other eligible persons are the same as those for other students.

The VA will be appropriately notified of the unsatisfactory progress. The student must submit a written request to reinstate education benefits. The request must include proof of academic counseling and the conditions for continued enrollment or re-entrance. The VA will determine eligibility for reinstatement of benefits, based in part on the school's recommendations.

Veterans' progress will be measured according to University standards as published in the catalog, and the rules and regulations of the VA apply. The criteria used to evaluate progress are subject to change. Application and interpretation of the criteria are solely at the discretion of Embry-Riddle. Students using VA Education Benefits to pursue a certificate program who do not maintain a minimum GPA of 2.0 are permitted one probationary term to raise their GPA before VA benefits are terminated.

Students are responsible for notifying the Veterans Certifying Official of any change in their enrollment or change in personal information affecting their eligibility. Students also must remain in compliance with University and Department of Veterans Affairs requirements.

Students may receive education benefits only for courses that are required for their designated degree or certificate program. Students who receive VA benefits are subject to strict academic regulations and should be aware of how auditing courses, repeating a course, changing degree programs or enrollment status, and other actions may affect their eligibility to receive benefits.

Air University Associate-to-Baccalaureate Cooperative (AU-ABC)

Embry-Riddle Aeronautical University, Worldwide has partnered with the Community College of the Air Force (CCAF) to offer active duty Air Force, Space Force, Air Force Reserve, and Air National Guard members who have completed an AAS degree in specified, approved CCAF degree programs which map to specified, approved ERAU-WW degree programs which are eligible for participation in AU-ABC. Please see our AU-ABC landing page for more information.

General Education Mobile (GEM)

Embry-Riddle Aeronautical University, Worldwide has partnered with the Community College of the Air Force (CCAF) to provide online general education courses for active duty Air Force, Space Force, Air Force Reserve, and Air National Guard members who want to complete the CCAF Associate in Applied Science (AAS) degree requirements through the General Education Mobile (GEM) Program. As a GEM partner, we offer online courses to meet all five general education disciplines required in a nine week format to complete CCAF's 15 semester hours of general education — Oral Communication, Written Communication, Mathematics, Social Science, and Humanities. Please see our GEM landing page for more information.

Complaint Policy for Students Receiving VA Education Benefits

Any complaint against the school should be routed through the VA GI Bill® Feedback System by going to the following link: http://www.benefits.va.gov/GIBILL/Feedback.asp. The VA will then follow up through the appropriate channels to investigate the complaint and resolve it satisfactorily.

GI Bill® is a registered trademark of the U.S. Department of Veterans Affairs (VA). More information about education benefits offered by VA is available at the official U.S. government Web site at http://www.benefits.va.gov/gibill.

Mississippi State Grievance Policy

The Mississippi State Approving Agency (SAA), is the approving authority of education and training programs for Mississippi. Our office investigates complaints of GI Bill® beneficiaries. While most complaints should initially follow the school grievance policy, if the situation cannot be resolved at the school, the beneficiary should contact our office via email at saa@msva.ms.gov.

Virginia State Grievance Policy

The Virginia State Approving Agency (SAA), is the approving authority of education and training programs for Virginia. Our Office investigates complaints of GI Bill® Beneficiaries. While most complaints should follow the school grievance policy, if the situation cannot be resolved at the school, the beneficiary should contact our office via email saa@dvs.virignia.gov.

Standards of Progress Policy

A veteran and/or eligible person must make satisfactory progress toward an approved educational objective leading to employment. Veteran and/or eligible person Standard of Progress will be determined utilizing the Satisfactory Academic Progress policy as listed in the college school consisting of overall grade point average, pace, program length, maximum time for completion, attendance and/or conduct.

Veterans Pending Payment Compliance

In accordance with Title 38 US Code 3679 subsection (e), this school adopts the following additional provisions for any students using U.S. Department of Veterans Affairs (VA) Post 9/11 G.I. Bill® (Ch. 33), Veteran Readiness and Employment (Ch. 31), or Dependents' Educational Assistance Program (Ch. 35) benefits while payment to the institution is pending from the VA. This school will not:

- Prevent the student's enrollment;
- Assess a late penalty fee to the student;
- Require the student to secure alternative or additional funding;
- Deny the student access to any resources (access to classes, libraries, or other institutional facilities) available to other students who have satisfied their tuition and fee bills to the institution.

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

- Provide the enrolling institution with a copy of his/her VA Certification of Eligibility (COE) - A "certificate of eligibility" can also include a "Statement of Benefits" obtained from the U.S. Department of Veterans Affairs' (VA) website; eBenefits; or a VAF 28-1905 form, for chapter 31 authorization purposes.

Alabama Campuses Program Offerings:

Programs offered at Fort Rucker, AL, Redstone Arsenal, AL, and Mobile, AL: AS Aeronautics, AS Aviation Business Administration, AS Aviation Maintenance, AS Engineering Fundamentals, AS Technical Management, BS Aeronautics, BS Aviation Business Administration, BS Aviation Maintenance, BS Business Analytics, BS Communication, BS Emergency Services, BS Engineering, BS Engineering Technology, BS Homeland Security, BS interdisciplinary Studies, BS Logistics and Supply Chain Management, BS Project Management, BS Safety Management, BS Technical Management, BS Unmanned Systems Applications, MS Aeronautics, MS Aerospace Engineering, MS Aviation and Aerospace Engineering, MS Aviation and Aerospace Sustainability, Master of Aviation Maintenance, Master of Business Administration in Aviation, MS cybersecurity Management & Security, MS Engineering Management, MS Human Factors, MS Human Security & Resilience, MS Information Security and Assurance, MS Leadership, MS Logistics and Supply Chain Management, MS Management, MS Management Information Systems, MS Occupational Safety Management, MS Project Management, Master of Systems Engineering, MS Unmanned Systems, Certificate Aviation Maintenance Technology Part 65.

Programs Offered at Mobile-Brookley, AL: Certificate Aviation Maintenance Technology Part 65, AS Aeronautics, AS Aviation Business Administration, AS Aviation Maintenance, AS Engineering Fundamentals, AS Technical Management, BS Aeronautics, BS Aviation Business Administration, BS Communication, BS Emergency Services, BS Engineering, BS Engineering Technology, BS Homeland Security, BS Interdisciplinary Studies, BS Logistics and Supply Chain Management, BS Project Management, BS Safety Management, BS Technical Management, BS Unmanned Systems Applications, MS Aeronautics, MS Aerospace Engineering, MS Aviation and Aerospace Sustainability, Master of Aviation Maintenance, Master of Business Administration in Aviation, MS Cybersecurity Management & Policy, MS Engineering Management, MS Human Factors, MS Human Security & Resilience, MS Information Security & Assurance, MS Leadership, MS Logistics and Supply Chain Management, MS Management, MS Management Information Systems, MS Occupational Safety Management, MS Project Management, Master of Systems Engineering, MS Unmanned Systems.

Contact

For further information concerning approved programs of study and the application process, eligible persons should contact the Worldwide Military & Veteran Student Services Office in Daytona Beach, Florida.

Worldwide Military & Veteran Student Services
Embry-Riddle Aeronautical University
1 Aerospace Blvd.
Daytona Beach, FL 32114-3900
Telephone: 1-855-785-0001
Fax: 386-323-8816
Email: wwva@erau.edu

For additional information concerning Veterans Education Benefits administered by the Department of Veterans Affairs, go to www.gibill.va.gov.

Colorado Campus Locations:

- **Colorado Main campus:** Embry-Riddle Aeronautical University, 1661 O'Connell Blvd. Building 1012, Room 237-238, Fort Carson, CO 80913
- **Other ERAU Worldwide Locations:** http://worldwide.erau.edu/locations

Surveys

Student surveys provide essential information the University needs for maintaining accreditation, ensure compliance with federal and state regulations and to assess the effectiveness of Embry-Riddle academic programs and services. Three basic types of student surveys are administered to most or all students: end-of-course evaluations, alumni surveys, and student satisfaction surveys which are typically administered as part of the University's participation in national surveys. Your participation in such surveys is strongly encouraged.

The end-of-course evaluations are completed at or near the end of each course, an alumni survey called the Career Destination Survey is sent to all graduates the month after a degree is conferred. Additionally, we survey graduates approximately one year and 3-4 years after graduation. Student satisfaction surveys are conducted annually in conjunction with our participation in national student surveys such as: the Student Satisfaction Inventory, the Adult Student Priorities Survey, the Priorities Survey for Online Learners among others.

Additionally, some degree programs or departments will survey certain students periodically for the purposes of planning and assessment. The survey information you provide is essential for continuous quality improvement and increased institutional effectiveness.

Title IX

Title IX of the Education Amendments of 1972 ("Title IX")

The U.S. Department of Education's Office for Civil Rights (OCR) enforces, among other statutes, Title IX of the Education Amendments of 1972. Title IX protects people from discrimination based on sex in education programs or activities that receive Federal financial assistance. Title IX states that:

- "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance."

Visit this link https://www2.ed.gov/about/offices/list/ocr/docs/titleix-summary.pdf to learn more about the Major Provisions of the Department of Education's Title IX Final Rule.

The University follows either its Title IX Sexual Harassment policy or its Sexual Misconduct policy based on jurisdictional requirements for any known or suspected violations. To access the University's Title IX and Sexual Misconduct policies, please visit our website at: https://erau.edu/leadership/title-ix.

Questions, concerns, known, or suspected violations of either policy, should be directed to the Title IX Coordinator, Autumn Meyers-Parker, at wwtitle9@erau.edu, meyerspa@erau.edu, or (386) 226-6677. Reports or complaints can also be submitted online at: https://cm.maxient.com/reportingform.php?EmbryRiddleWorldwide&layout_id=4.

Degrees & Programs

Associates Degrees

A.S. in Aeronautics
A.S. in Aviation Business Administration
A.S. in Aviation Maintenance
Associate of Science in Engineering Fundamentals
A.S. in Technical Management

Bachelor's Degrees

B.S. in Aeronautics
B.S. in Aviation Business Administration
B.S. in Aviation Maintenance
B.S. in Business Analytics
B.S. in Communication
B.S. in Engineering
B.S. in Engineering Technology
B.S. in Emergency Services
B.S. in Homeland Security
B.S. in Interdisciplinary Studies
B.S. in Leadership
B.S. in Logistics and Supply Chain Management
B.S. in Project Management
B.S. in Safety Management
B.S. in Technical Management
B.S. in Unmanned Systems Applications

Master's Degrees

M.S. in Aeronautics
M.S. in Aerospace Engineering
M.S. in Airworthiness Engineering
Master of Aviation Cybersecurity
Master of Aviation Maintenance
Master of Space Operations
Master of Systems Engineering
M.B.A. in Aviation
M.S. in Aviation and Aerospace Sustainability
M.S. in Engineering Management
M.S. in Aviation Safety
M.S. in Human Factors
M.S. in Emergency Services
M.S. in Human Security and Resilience
M.S. in Information Security and Assurance
M.S. in Leadership
M.S. in Logistics and Supply Chain Management
M.S. in Management
M.S. in Management Information Systems
M.S. in Occupational Safety Management
M.S. in Project Management
M.S. in Unmanned and Autonomous Systems Engineering
M.S. in Unmanned Systems

Certificates

Undergraduate

Aviation Maintenance Technology Part 65
Applied Information Technology (AIT) Certificate

Graduate

Aeronautics
Airworthiness Engineering
Aviation Aerospace Sustainability
Aviation Maintenance
Aviation Safety
Business Intelligence and Analytics
Finance
Human Factors
Human Resources
Information Systems Security
Information Technology Management
International Business
Leadership
Marketing
Occupational Safety Management
Project Management
Small Unmanned Aircraft Systems (sUAS) Operations
Space Operations
Systems Engineering
Unmanned Systems

Partnership Certificate

Airline Management
International Society of Transport Aircraft Trading (ISTAT)

* None of the degree or certificate programs offered by Embry-Riddle are subject to mandatory professional licensure.

College of Aeronautics

The mission of the College of Aeronautics is to develop and provide graduate and undergraduate academic programs that enable students to excel in the multi-disciplinary field of aerospace; in the aeronautics industry, in the military, and in the local, state and federal government organizations connected to aerospace programs.

The mission also includes assessing program outcomes and using these assessments to update courses and programs.

For Faculty lists and other information view the College of Aeronautics website.

Certificates

Undergraduate

Aviation Maintenance Technology Part 65

Graduate

Aeronautics
Airworthiness Engineering
Aviation Aerospace Sustainability
Aviation Maintenance
Aviation Safety
Occupational Safety Management
Small Unmanned Aircraft Systems (sUAS) Operations
Space Operations
Systems Engineering
Unmanned Systems

A.S. in Aeronautics

Take your future to new heights!

Whether you want to break into an aeronautical career, break away from the competition, or advance your current position and earnings potential, the Associate in Science in Aeronautics degree opens the door to new opportunities in the dynamic aviation/aerospace industry.

Aeronautics curriculum is closely mapped to the needs and demands of the aviation/aerospace industry and to general education guidelines.

You will be exposed to a multidisciplinary program with courses of study in human factors, security, aviation safety, occupational safety and health, air traffic control, aircraft maintenance, and aeronautical science. Within that broad base, electives and minors allow you to tailor your degree to your particular interests and career goals.

Aviation Area of Concentration

The Aviation Area of Concentration is the degree area where credit for prior aviation learning is noted or where students can take courses to learn about aviation. Many students bring in all or part of this credit based on prior aviation training or experience. However, shortages in the minimum credit required can be made up by taking courses in the following aviation-related disciplines: Aeronautical Science, Aviation Maintenance, Aviation History, and aviation/aerospace related coursework in Safety, Security, Transportation, Engineering, and Unmanned Systems.

Sources of prior learning credit include:

1. Transfer credit earned at accredited degree-granting colleges and universities.
2. The recommendations published by the American Council on Education for U.S. Military training and experience, as well as training conducted by other government agencies and private organizations.
3. Prior-learning credit established by the University for certain aviation licenses and ratings as they relate to this degree.

Duplicate Credit

Many Embry-Riddle courses are designed to teach the same skills and knowledge that Aeronautics students have acquired through experience and training. Students who complete courses in the same aviation specialty for which they were granted Aviation Area of Concentration credit would be duplicating coverage of the same subject matter. Credit for completion of such courses will not be applied to degree requirements.

Take your future to new heights!

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education	
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, Social Sciences, Physical and Life Science, Mathematics, and Computer Science may be chosen from as listed, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.	
Communication Theory and Skills	
Any Communication Theory and Skills above ENGL 106	9
Humanities	
Lower-Level Humanities (Any Lower or Upper Level Humanities)	3
Upper-Level Humanities (Any Upper Level Humanities)	3
Social Sciences	
Any Social Science	6
Physical and Life Science	
Any Physical Science/Physics	6
Mathematics	
Any College Algebra or Higher Math Series	6
Computer Science	
Any Computer Science	3
Total Credits	**36**

Core/Major

Aviation Area of Concentration		**9**
Make up shortages with non-duplicating courses from the following disciplines: Aeronautical Science, Aviation Maintenance, and related aviation/aerospace coursework in Transportation, Safety, Security, History, Engineering, and Unmanned Systems.		
Program Support		**9**
ASCI 202	Introduction to Aeronautical Science	3
ASCI 254	Aviation Legislation	3
STAT 211	Statistics with Aviation Applications	3

Electives

Open Electives (Upper or Lower Level)	**6**
Total Degree Requirements	**60**

A.S. in Aviation Maintenance

Education is the key to getting more out of life — whether you're looking for a higher salary, greater job satisfaction, or a soaring sense of personal pride. If you work in the aircraft maintenance field and are ready for advancement, Embry-Riddle can help. Our Associate in Science in Aviation Maintenance degree lets you build on the skills you already possess while laying the foundation for greater accomplishments.

If you hold an FAA Airframe & Powerplant Maintenance Certificate, you may be awarded up to 18 credit hours toward the associate degree or up

to 30 credit hours toward the bachelor's degree. Students may also earn maintenance credit as part of the overall curriculum.

Plus, you'll gain a solid core of courses in general education, which prepares graduates for success in any industry, not just aviation.

In the aviation industry, the most crucial task is to keep the planes flying safely. That's why people with aircraft maintenance skills and knowledge will continue to be in high demand by aviation and aeronautical employers.

In today's competitive workforce, however, it takes something extra to move up the career ladder. Aviation professionals can get that edge with an Associate in Science in Aviation Maintenance degree from Embry-Riddle Aeronautical University — Worldwide.

Upon successful completion of all six Aviation Maintenance Technology Part 65 core courses the student may apply for the Embry Riddle Aviation Maintenance Technology (AMT) Part 65 Certification.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education	
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, Social Sciences, Physical and Life Science, Mathematics, and Computer Science may be chosen from as listed, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.	
Communication Theory and Skills	
Any Communication Theory and Skills above ENGL 106	9
Humanities	
Lower-Level Humanities (Any Lower or Upper Level Humanities)	3
Upper-Level Humanities (Any Upper Level Humanities)	3
Social Sciences	
Any Social Science	6
Physical and Life Science	
Any Physical Science/Physics	6
Mathematics	
Any College Algebra or Higher Math Series	6
Computer Science	
Any Computer Science	3
Total Credits	**36**

Core/Major

Aviation Maintenance Core Courses		
AMNT 240	General Aeronautics and Applications	3
AMNT 260	Aircraft Electrical Systems Theory	3
AMNT 270	Airframe Structures and Applications	3
AMNT 271	Airframe Systems and Applications	3
AMNT 280	Reciprocating Engine Theory and Applications	3
AMNT 281	Turbine Engine Theory and Applications	3
Total Credits		**18**

Program Support		
ASCI 202	Introduction to Aeronautical Science	3
STAT 211	Statistics with Aviation Applications	3
Total Credits		**6**

Total Degree Requirements	**60**

Associate of Science in Engineering Fundamentals

The Associate of Science in Engineering Fundamentals (ASEF) program is Embry-Riddle Aeronautical University's latest offering for aspiring engineering students who want world-class educational opportunities that meet their needs in new and innovative ways.

Through this program, you can complete your associate's degree online with an opportunity to apply to an Embry-Riddle residential campus in Florida or Arizona to continue your studies and earn your bachelor's degree. Embry-Riddle professors and program development experts carefully researched every aspect of this offering, creating a curriculum that features short nine-week terms which ultimately result in the 63 credit hours necessary to obtain your degree.

Program-Specific Criteria

Admissions Criteria

In addition to meeting the Worldwide Campus admissions requirements, applicants for admission into the AS in Engineering Fundamentals degree program must:

- Complete the English and Math Skills Assessments prior to admission to determine academic preparedness for entry into ENGL123 English Composition and MATH 241 Calculus I.
- Current high school students and recent graduates under the age of 20 must meet established admissions requirements and demonstrate a 3.0 high school CGPA, with coursework that reflects 4 years of college preparatory mathematics and 2 years of college preparatory science, including a laboratory science.
- Transfer applicants must meet established admissions requirements and demonstrate a 2.5 cumulative grade point average (CGPA); transfer credit deemed equivalent to demonstrate academic preparedness for immediate entry into ENGL 123 English Composition and MATH 241 Calculus I, will be considered for admission into the program. Skills Assessment scores will be used for advising purposes if English and Math transfer credit demonstrates academic preparedness for admission into the program.

Students who fail to satisfy the guidelines for full admission may be considered for conditional admission under circumstances determined by the Admissions Office. A written petition for admission, current resume and other supporting documentation may be requested for consideration of admission. Exceptions will be reviewed on a case by case basis.

Current Worldwide students requesting a change of program to the AS in Engineering Fundamentals must complete the English and Math Skills Assessments and demonstrate successful completion of at least 12 credit hours of Embry-Riddle coursework, achieving a minimum of a 2.5 cumulative grade point average (CGPA). Exceptions will be reviewed on a case by case basis.

The ASEF program is accredited by the Applied and Natural Science Accreditation Commission of ABET, https://abet.org.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education		
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, and Social Sciences may be chosen from those listed below, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.		
Communication Theory and Skills		
ENGL 123	English Composition	3

SPCH 219	Speech	3
ENGL 221	Technical Report Writing	3
Humanities elective (HUMN 140 Series)		3
ECON 225	Engineering Economics	3
Mathematics		
MATH 241	Calculus and Analytical Geometry I	4
Total Credits		**19**

Core/Major

ENGR 101	Introduction to Engineering	3
ENGR 115	Introduction to Computing for Engineers	3
ENGR 120	Graphical Communications	3
ESCI 201	Statics	3
ESCI 202	Solid Mechanics	3
ESCI 204	Dynamics	3
ESCI 206	Fluid Mechanics	3
MATH 242	Calculus and Analytical Geometry II	4
MATH 243	Calculus and Analytical Geometry III	4
MATH 345	Differential Equations and Matrix Methods	4
PHYS 150	Physics I for Engineers	3
PHYS 160	Physics II for Engineers	3
PHYS 250	Physics III for Engineers	3
PHYS 253	Physics Laboratory for Engineers	2
Total Credits		**44**

Total Degree Requirements	**63**

Suggested Plan of Study (ASEF)

Freshman Year

Term 1		**Credits**
ENGR 101	Introduction to Engineering	3
ENGL 123	English Composition	3
	Credits Subtotal	**6.0**
Term 2		
MATH 241	Calculus and Analytical Geometry I	4
ENGR 115	Introduction to Computing for Engineers	3
	Humanities (HUMN) Lower Level	3
	Credits Subtotal	**10.0**
Term 3		
MATH 242	Calculus and Analytical Geometry II	4
PHYS 150	Physics I for Engineers	3
	Credits Subtotal	**7.0**
Term 4		
PHYS 160	Physics II for Engineers	3
SPCH 219	Speech	3
ECON 225	Engineering Economics	3
	Credits Subtotal	**9.0**
	Credits Total:	**32.0**

Sophomore Year

Term 1		**Credits**
ESCI 201	Statics	3
MATH 243	Calculus and Analytical Geometry III	4
ENGL 221	Technical Report Writing	3
	Credits Subtotal	**10.0**
Term 2		
ENGR 120	Graphical Communications	3
ESCI 202	Solid Mechanics	3
ESCI 204	Dynamics	3
	Credits Subtotal	**9.0**
Term 3		
ESCI 206	Fluid Mechanics	3
MATH 345	Differential Equations and Matrix Methods	4
	Credits Subtotal	**7.0**
Term 4		
PHYS 250	Physics III for Engineers	3
PHYS 253	Physics Laboratory for Engineers	2
	Credits Subtotal	**5.0**
	Credits Total:	**31.0**

Total Credits	**63**

B.S. in Aeronautics

Take your future to new heights!

Whether you want to launch into an aviation career, break away from the competition, or advance your current position and earnings potential, the Bachelor of Science in Aeronautics (BSA) opens the door to new opportunities in the dynamic aviation/aerospace industry.

Aeronautics curriculum is closely mapped to the needs and demands of the aviation/aerospace industry and to general education guidelines. The BSA is a multidisciplinary program with courses of study in human factors, security, aviation safety, occupational safety and health, air traffic control, aircraft maintenance, and aeronautical science. Within that broad base, electives and minors allow you to tailor your degree to your particular interests and career goals.

It does not have to take long, either. You can receive transfer credit, advance standing, and Federal Aviation Administration (FAA) or military ratings and certifications, which may lead to receiving your degree in a shorter time.

Students are also eligible to engage in cooperative study/internships and may elect to seek out those enriching opportunities.

The Bachelor of Science in Aeronautics is accredited by the Aviation Accreditation Board International (AABI)

Graduates from the Worldwide BSA degree program are not eligible to apply for an airline transport pilot (ATP)-Restricted privileges certificate under Title 14 part 61.160.

Minor Courses of Study

One key and essential element of this degree is the ability to enhance and strengthen your academic program by adding any Minor Course of Study. Students may use courses from a minor and place them into Aviation Area of Concentration, Professional Development Electives and/or Open Electives (all as appropriate). Students are strongly encouraged to add a Minor to their degree.

Available Minors

Aviation Area of Concentration

The Aviation Area of Concentration is the degree area where credit for prior aviation learning is housed or where students can take aeronautical science courses. Many students bring in all or part of this credit based on prior aviation training or experience or add a Minor Course of Study. However, shortages in the minimum credit required can be made up by taking courses in the following aviation-related disciplines: Aeronautical Science, Aviation Maintenance, Aviation History, and aviation/aerospace related coursework in Safety, Security, Transportation, Engineering, and Unmanned Systems.

Sources of prior learning credit include the following:

1. Transfer credit earned at accredited degree-granting colleges and universities.
2. The recommendations published by the American Council on Education for U.S. Military training and experience, as well as training conducted by other government agencies and private organizations.
3. Prior-learning credit established by the University for certain aviation licenses and ratings as they relate to this degree.

Duplicate Credit

Many Embry-Riddle courses are designed to teach the same skills and knowledge that Aeronautics students have acquired through experience and training. Students who complete courses in the same aviation specialty for which they were granted Aviation Area of Concentration credit would be duplicating coverage of the same subject matter. Credit for completion of such courses will not be applied to degree requirements.

B.S. in Aeronautics students who wish to continue on to a master's degree may enroll in the BSA-MSA **4+1 program as outlined in this program.**

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education	
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, Social Sciences, Physical and Life Science, Mathematics, and Computer Science may be chosen from as listed, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.	
Communication Theory and Skills	
Any Communication Theory and Skills above ENGL 106	9
Humanities	
Lower-Level Humanities (Any Lower or Upper Level Humanities)	3
Upper-Level Humanities (Any Upper Level Humanities)	3
Social Sciences	
Any Social Science	6
Physical and Life Science	
Any Physical Science/Physics	6
Mathematics	
Any College Algebra or Higher Math Series	6
Computer Science	
Any Computer Science	3
Total Credits	**36**

Core/Major

Aviation Area of Concentration		**18**
Make up shortages with non-duplicating courses from the following disciplines: Aeronautical Science, Aviation Maintenance, and related aviation/aerospace coursework in Transportation, Safety, Security, History, Engineering, and Unmanned Systems.		
Program Support		**24**
ASCI 202	Introduction to Aeronautical Science	3
ASCI 254	Aviation Legislation	3
ASCI 404	Applications in Aviation & Aerospace Law	3
STAT 211	Statistics with Aviation Applications	3
MGMT 201	Principles of Management	3
ACCT 210	Financial Accounting	3
MMIS 221	Introduction to Management Information Systems	3
RSCH 202	Introduction to Research Methods	3
Professional Development Core		**12**
ASCI 309	Aerodynamics	3
ASCI 491	Operational Applications in Aeronautics	3
LGMT 420	Management of Production and Operations	3
SFTY 409	Aviation Safety	3

Electives

Professional Development Electives (Upper Level)	**21**
Select from courses in available Minor Courses of Study or as accepted in these related disciplines, and Technology.	
Open Electives (Upper or Lower Level)	**9**
Total Degree Requirements	**120**

Footnotes*

Minnesota student residents refer to State of Minnesota Course Requirement statement for Humanities requirements.

Suggested Plan of Study (BSA)

Freshman Year

Term 1		**Credits**
ENGL 123	English Composition	3
MATH 111	Pre-calculus for Aviation	3
	Credits Subtotal	**6.0**
Term 2		
MATH 112	Applied Calculus for Aviation	3
STAT 211	Statistics with Aviation Applications	3
	Credits Subtotal	**6.0**
Term 3		
RSCH 202	Introduction to Research Methods	3
WEAX 201	Meteorology I	3
	Credits Subtotal	**6.0**
Term 4		
ECON 210	Microeconomics	3
or ECON 211	Macroeconomics	
ASCI 202	Introduction to Aeronautical Science	3
	Credits Subtotal	**6.0**
Term 5		
	Any Computer Science	3
PHYS 102	Explorations in Physics	3
	Credits Subtotal	**6.0**
	Credits Total:	**30.0**

Sophomore Year

Term 1		**Credits**
ASCI 254	Aviation Legislation	3
	Speech/English Elective	3
	Credits Subtotal	**6.0**
Term 2		
MGMT 201	Principles of Management	3
	Social Science Elective	3
	Credits Subtotal	**6.0**
Term 3		
ACCT 210	Financial Accounting	3

	Speech/English Elective	3
	Credits Subtotal	**6.0**
Term 4		
	Open Elective (Upper or Lower-level)	3
	Humanities Elective	3
	Credits Subtotal	**6.0**
Term 5		
	Open Elective (Upper or Lower-level)	3
	Open Elective (Upper or Lower-level)	3
	Credits Subtotal	**6.0**
	Credits Total:	**30.0**

Junior Year

Term 1		**Credits**
MMIS 221	Introduction to Management Information Systems	3
ASCI 309	Aerodynamics	3
	Credits Subtotal	**6.0**
Term 2		
	Aviation Area of Concentration	3
HUMN 330	Values and Ethics	3
	Credits Subtotal	**6.0**
Term 3		
	Aviation Area of Concentration	3
LGMT 420	Management of Production and Operations	3
	Credits Subtotal	**6.0**
Term 4		
	Aviation Area of Concentration	3
	Open Elective (Minor/Upper-level Elective)	3
	Credits Subtotal	**6.0**
Term 5		
	Open Elective (Minor/Upper-level Elective)	3
	Open Elective (Minor/Upper-level Elective)	3
	Credits Subtotal	**6.0**
	Credits Total:	**30.0**

Senior Year

Term 1		**Credits**
SFTY 409	Aviation Safety	3
ASCI 404	Applications in Aviation & Aerospace Law	3
	Credits Subtotal	**6.0**
Term 2		
	Aviation Aera of Concentration	3
	Open Elective (Minor/Upper-level Elective)	3
	Credits Subtotal	**6.0**
Term 3		
	Aviation Area of Concentration	3
	Open Elective (Minor/Upper-level Elective)	3
	Credits Subtotal	**6.0**
Term 4		
	Aviation Area of Concentration	3
	Open Elective (Minor/Upper-level Elective)	3
	Credits Subtotal	**6.0**
Term 5		
	Open Elective (Minor/Upper-level Elective)	3
ASCI 491	Operational Applications in Aeronautics	3
	Credits Subtotal	**6.0**
	Credits Total:	**30.0**

Total Credits	**120**

BSA-MSA 4+1 Combined Pathway Program: Accelerated opportunity to earn an MSA

This program is for students who are committed to continuing their education through the Master's degree. This fast-paced program allows qualifying students the opportunity to complete both the Bachelor of Science in Aeronautics (BSA) and the Master of Science in Aeronautics (MSA) in five academic years.

Students who are accepted in the BSA-MSA 4+1 combined pathway program, will spend three academic years in undergraduate-level study and then, during their senior year, will be allowed to take up to three graduate-level courses from the MSA to replace an equal number of elective courses in the BSA degree. Before selecting the three courses to be taken, students must confer with an advisor to ensure that the courses selected are suitable (a grade of B or better must be achieved). Upon completion of the BSA requirements, students will be enrolled in the MSA and can complete their degree in one year. In any graduate course taken by an undergraduate student, a grade of B or better must be earned. If a grade of C or F is earned in any of the courses taken in lieu of the elective courses in the BSA degree, the student will be removed from the program, have credit awarded to the BSA degree only, and may continue to complete the BSA degree.

As a minimum, the applicant must have at least a 3.00 GPA. Students initiate program acceptance through their Academic Advisor or Campus Advisor; to help ensure program criteria are met. Student Advisor will complete the request for processing into the 4+1 program.

B.S. in Aviation Maintenance

Education is the key to getting more out of life — whether you're looking for a higher salary, greater job satisfaction, or a soaring sense of personal pride. If you work in the aircraft maintenance field and are ready for advancement, Embry-Riddle can help. Our Bachelor of Science in Aviation Maintenance degree lets you build on the skills you already possess while laying the foundation for greater accomplishments.

If you hold an FAA Airframe & Powerplant Maintenance Certificate, you may be awarded up to 18 credit hours toward the associate degree or up to 30 credit hours toward the bachelor's degree. Students may also earn maintenance credit as part of the overall curriculum.

Students are also eligible to engage in cooperative study/internships and may elect to seek out those enriching opportunities.

In addition to gaining critical skills needed to succeed in an aviation maintenance career, students will specialize in one of two maintenance functions: Management or Safety. Plus, students gain a solid core of courses in general education, which prepares graduates for success in any industry, not just aviation.

In the aviation industry, the most crucial task is to keep the planes flying safely. That's why people with aircraft maintenance skills and knowledge will continue to be in high demand by aviation and aeronautical employers. In today's competitive workforce, however, it takes something extra to move up the career ladder. Aviation professionals can get that edge with a Bachelor of Science in Aviation Maintenance from Embry-Riddle Aeronautical University — Worldwide.

Although the program is geared toward aviation and aerospace, its curriculum prepares graduates for success with companies in any industry. The total degree requirements are 120 credit hours.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education	
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, Social Sciences, Physical and Life Science, Mathematics, and Computer Science may be chosen from as listed, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.	
Communication Theory and Skills	
Any Communication Theory and Skills above ENGL 106	9
Humanities	
Lower-Level Humanities (Any Lower or Upper Level Humanities)	3
Upper-Level Humanities (Any Upper Level Humanities)	3
Social Sciences	
Any Social Science	6
Physical and Life Science	
Any Physical Science/Physics	6
Mathematics	
Any College Algebra or Higher Math Series	6
Computer Science	
Any Computer Science	3
Total Credits	**36**

Core/Major

Aviation Maintenance Courses		
AMNT 240	General Aeronautics and Applications	3
AMNT 260	Aircraft Electrical Systems Theory	3
AMNT 270	Airframe Structures and Applications	3
AMNT 271	Airframe Systems and Applications	3
AMNT 280	Reciprocating Engine Theory and Applications	3
AMNT 281	Turbine Engine Theory and Applications	3
Total Credits		**18**

Program Support		
ASCI 202	Introduction to Aeronautical Science	3
MGMT 201	Principles of Management	3
STAT 211	Statistics with Aviation Applications	3
RSCH 202	Introduction to Research Methods	3
Total Credits		**12**

Program Core		
AMNT 265	Aeronautical Electronics for Aviation Maintenance Technicians	3
ASCI 404	Applications in Aviation & Aerospace Law	3
AMNT 416	Aviation Maintenance Management: A Global Perspective	3
AMNT 429	Advanced Technologies in Design and Production of Aircraft Structures and Systems	3
ASCI 309	Aerodynamics	3
AMNT 424	Maintenance Repair and Overhaul in Aviation	3
AMNT 290	Introduction to Aerospace Composites	3
AMNT 272	Fundamentals of Aircraft Avionics	3
AMNT 491	Operational Applications in Aviation Maintenance	3
Total Credits		**27**

Program Specialization	18
Choose one specialization	

Electives

Aviation Maintenance Electives	9
Aviation Maintenance, Aeronautical Science, Management, Computer Science, and Engineering Technology.	
Total Degree Requirements	**120**

Specializations:

Management

In aviation maintenance, there is a continual need for the comprehensive management of maintenance programs. The Management specialization provides students of Aviation Maintenance an integrated understanding of the theories, concepts, and practical applications of logistics, procurement, production, life cycle analysis, and project management.

UNSY 316	Operational and Business Aspects of Unmanned Aircraft Systems	3
AMNT 322	Aircraft Inspection and Scheduled Maintenance Programs	3
BUSW 324	Aviation Labor Relations	3
MGMT 411	Logistics Management for Aviation/Aerospace	3
PMGT 325	Concepts and Practices of Project Management	3
Upper-Level Management Electives		3
Total Credits		**18**

-OR-

Safety

In aviation maintenance, there is a recognized need for safety professionals. The Safety specialization provides students of Aviation Maintenance an opportunity to complement their practical experience with a study of aviation safety, focusing on the theories and concepts of human factors, mechanical and structural factors, system safety, and maintenance-related safety practices.

SFTY 320	Human Factors in Aviation Safety	3
SFTY 335	Mechanical and Structural Factors in Aviation Safety	3
SFTY 341	Occupational Safety and Health Program Management	3
SFTY 409	Aviation Safety	3
SFTY 440	System Safety Management	3
Upper-Level Safety Electives		3
Total Credits		**18**

* Minnesota student residents refer to State of Minnesota Course Requirement statement for Humanities requirements.

Suggested Plan of Study (BSAVM)

Freshman Year

Year One		
Term 1		**Credits**
ENGL 123	English Composition	3
MATH 111	Pre-calculus for Aviation	3
	Credits Subtotal	**6.0**
Term 2		
MATH 112	Applied Calculus for Aviation	3
	Speech/English Elective	3
	Credits Subtotal	**6.0**
Term 3		
	Speech/English Elective	3

	Humanities Elective	3
	Credits Subtotal	**6.0**
Term 4		
ECON 210	Microeconomics	3
or ECON 211	Macroeconomics	
HUMN 330	Values and Ethics	3
	Credits Subtotal	**6.0**
Term 5		
	Any Computer Science	3
	Credits Subtotal	**3.0**
	Credits Total:	**27.0**

Sophomore Year

Year Two

Term 1		**Credits**
ASCI 202	Introduction to Aeronautical Science	3
STAT 211	Statistics with Aviation Applications	3
	Credits Subtotal	**6.0**
Term 2		
AMNT 240	General Aeronautics and Applications	3
AMNT 260	Aircraft Electrical Systems Theory	3
	Credits Subtotal	**6.0**
Term 3		
AMNT 270	Airframe Structures and Applications	3
AMNT 271	Airframe Systems and Applications	3
	Credits Subtotal	**6.0**
Term 4		
AMNT 280	Reciprocating Engine Theory and Applications	3
AMNT 281	Turbine Engine Theory and Applications	3
	Credits Subtotal	**6.0**
Term 5		
RSCH 202	Introduction to Research Methods	3
MGMT 201	Principles of Management	3
	Credits Subtotal	**6.0**
	Credits Total:	**30.0**

Junior Year

Year Three

Term 1		**Credits**
OBLD 427	Management of the Multicultural Workforce	3
ASCI 404	Applications in Aviation & Aerospace Law	3
	Credits Subtotal	**6.0**
Term 2		
AMNT 416	Aviation Maintenance Management: A Global Perspective	3
ACCT 210	Financial Accounting	3
	Credits Subtotal	**6.0**
Term 3		
MMIS 221	Introduction to Management Information Systems	3
OBLD 317	Organizational Behavior	3
	Credits Subtotal	**6.0**
Term 4		
MGMT 325	Social Responsibility and Ethics in Management	3
	Social Science Elective	3
	Credits Subtotal	**6.0**
Term 5		
	Physical/Life Science Elective	3
	Aviation Maintenance Elective: [Aviation Maintenance (AMNT) , Aeronautical Science (ASCI), Management (MGMT), Computer Science (CSCI) and Engineering Technology (ETEC)]	3
	Credits Subtotal	**6.0**
	Credits Total:	**30.0**

Senior Year *(with Management Specialization)*

Year Four

Term 1		**Credits**
	Aviation Maintenance Elective: [Aviation Maintenance (AMNT) , Aeronautical Science (ASCI), Management (MGMT), Computer Science (CSCI) and Engineering Technology (ETEC)]	3
	Aviation Maintenance Elective: [Aviation Maintenance (AMNT) , Aeronautical Science (ASCI), Management (MGMT), Computer Science (CSCI) and Engineering Technology (ETEC)]	3
	Credits Subtotal	**6.0**
Term 2		
	- - Management Specialization - -	
UNSY 315	Unmanned Aircraft Systems and Operations	3
AMNT 322	Aircraft Inspection and Scheduled Maintenance Programs	3
	Credits Subtotal	**6.0**
Term 3		
AMNT 424	Maintenance Repair and Overhaul in Aviation	3
MGMT 411	Logistics Management for Aviation/Aerospace	3
	Credits Subtotal	**6.0**
Term 4		
PMGT 325	Concepts and Practices of Project Management	3
	Aviation Maintenance Elective: [Aviation Maintenance (AMNT) , Aeronautical Science (ASCI), Management (MGMT), Computer Science (CSCI) and Engineering Technology (ETEC)]	3
	Credits Subtotal	**6.0**
Term 5		
	(MGMT) Upper Level Elective	3
AMNT 491	Operational Applications in Aviation Maintenance	3
	Credits Subtotal	**6.0**
	Credits Total:	**30.0**
Total Credits (w/ Management Specialization)		**120**

Senior Year *(with Safety Specialization)*

Year Four

Term 1		**Credits**
	Aviation Maintenance Elective: [Aviation Maintenance (AMNT) , Aeronautical Science (ASCI), Management (MGMT), Computer Science (CSCI) and Engineering Technology (ETEC)]	3

	Aviation Maintenance Elective: [Aviation Maintenance (AMNT) , Aeronautical Science (ASCI), Management (MGMT), Computer Science (CSCI) and Engineering Technology (ETEC)]	3
	Credits Subtotal	**6.0**
Term 2		
	- - Safety Specialization - -	
SFTY 320	Human Factors in Aviation Safety	3
SFTY 335	Mechanical and Structural Factors in Aviation Safety	3
	Credits Subtotal	**6.0**
Term 3		
SFTY 341	Occupational Safety and Health Program Management	3
SFTY 409	Aviation Safety	3
	Credits Subtotal	**6.0**
Term 4		
SFTY 440	System Safety Management	3
	Aviation Maintenance Elective: [Aviation Maintenance (AMNT) , Aeronautical Science (ASCI), Management (MGMT), Computer Science (CSCI) and Engineering Technology (ETEC)]	3
	Credits Subtotal	**6.0**
Term 5		
	Upper Level Safety Elective	3
AMNT 491	Operational Applications in Aviation Maintenance	3
	Credits Subtotal	**6.0**
	Credits Total:	**30.0**
Total Credits (w/ Safety Specialization)		**120**

B.S. in Engineering

The Bachelor of Science in Engineering (BSE) degree is designed from a multidisciplinary perspective with subject matter from mechanical engineering, electrical engineering, aeronautical, and systems engineering. The educational focus is anticipated to support the growth and innovative development of aerospace technologies and systems and address current industry challenges. The program educational objective is to graduate engineers that can enter into research, development, and design positions, function effectively on multidisciplinary teams, and contribute to the advancement in engineering-related projects upon graduation.

The BSE targets the high-school graduate, in addition to non-traditional and transfer students, to provide knowledge, skills, and abilities (KSAs) correlating to comprehension and application of essential engineering concepts. The curriculum features: 19 hours of mathematics, 11 hours of calculus-based physics, 66 hours of engineering, 6 hours of a senior level design project, and 21 hours of economics, communications, social sciences, and humanities.

Program-Specific Criteria

Admissions Criteria

In addition to meeting the Worldwide Campus admissions requirements, applicants for admission into the BS in Engineering and BS in Engineering Technology degree programs must:

- Complete the English and Math Skills Assessments prior to admission to determine academic preparedness for entry into ENGL 123 English Composition and MATH 241 Calculus I.
- Current high school students and recent graduates under the age of 20 must meet established admissions requirements and demonstrate a 3.0 high school CGPA, with coursework that reflects 4 years of college preparatory mathematics and 2 years of college preparatory science, including a laboratory science.
- Transfer applicants must meet established admissions requirements and demonstrate a 2.5 cumulative grade point average (CGPA); transfer credit deemed equivalent to demonstrate academic preparedness for immediate entry into ENGL 123 English Composition and MATH 241 Calculus I, will be considered for admission into the program. Skills Assessment scores will be used for advising purposes if English and Math transfer credit demonstrates academic preparedness for admission into the program.

Students who fail to satisfy the guidelines for full admission may be considered for conditional admission under circumstances determined by the Admissions Office OR may be considered for admission into an alternate program. A written petition for admission, current resume and other supporting documentation may be requested for consideration of admission. Exceptions will be reviewed on a case by case basis.

Current Worldwide students requesting a change of program to the BS in Engineering or BS in Engineering Technology degree programs must demonstrate successful completion of the first year of the suggested plan of study in the AS in Engineering Fundamentals degree plan with a 2.5 GPA. Students may then work with their campus advisor to determine eligibility to add or change to the BS in Engineering or BS in Engineering Technology degree programs. Exceptions will be reviewed on a case by case basis.

Capstone Requirements:

1. Senior status is defined as having completed all Freshmen, Sophomore, and Junior year courses of the BSE program as published in the Suggested Plan of Study.

2. All courses **must** be completed prior to enrolling in ENGR 490 with the exception of those identified in Terms 3 and 4 of the Senior year as published in the BSE Suggested Plan of Study.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education		
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, Social Sciences, Physical and Life Science, Mathematics, and Computer Science are given in the list below, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.		
Communication Theory and Skills		
ENGL 123	English Composition	3
ENGL 221	Technical Report Writing	3
SPCH 219	Speech	3
Mathematics		
MATH 241	Calculus and Analytical Geometry I	4
MATH 242	Calculus and Analytical Geometry II	4
Computer Science/Information		
ENGR 115	Introduction to Computing for Engineers	3
Physical and Life Sciences		
PHYS 150	Physics I for Engineers	3
PHYS 160	Physics II for Engineers	3
Humanities/Social Sciences**		
Humanities Lower Level		3
Humanities Upper Level		3
Social Sciences Upper Level		3
ECON 225	Engineering Economics	3
Total Credits		**38**

Core

Aeronautical Engineering		
AERO 309	Aerodynamic Performance of Flight Vehicles	3
ENGR 350	Project Management for Engineered Systems	3
Total Credits		**6**
Engineering		
ENGR 101	Introduction to Engineering	3
ENGR 120	Graphical Communications	3
ENGR 330	Signals & Systems	3
ENGR 331	Signals & Systems Laboratory	1
ENGR 400	Fundamentals of Energy Systems	3
ENGR 450	Systems and Controls	3
Total Credits		**16**
Engineering Science		
ESCI 201	Statics	3
ESCI 202	Solid Mechanics	3
ESCI 204	Dynamics	3
ESCI 325	Engineering Materials and Structures	3
Total Credits		**12**
Computer Engineering		
CESC 220	Digital Circuit Design	3
CESC 222	Digital Circuit Design Laboratory	1
Total Credits		**4**
Electrical Engineering		
ELEC 220	Circuits	3
ELEC 221	Circuits Laboratory	1
ELEC 230	Electronics	3
ELEC 231	Electronics Laboratory	1
Total Credits		**8**
Physical Science		
PHYS 250	Physics III for Engineers	3
PHYS 253	Physics Laboratory for Engineers	2
ESCI 206	Fluid Mechanics	3
ESCI 305	Thermodynamics	3
Total Credits		**11**
Mechanical Engineering		
MECH 302	Introduction to Robotics	3
MECH 303	Robotics Laboratory	1
MECH 313	Instrumentation and Data Acquisition	2
MECH 314	Instrumentation and Data Acquisition Laboratory	1
ENGR 404	Mechatronics	3
ENGR 405	Mechatronics Laboratory	1
Total Credits		**11**
Mathematics		
MATH 243	Calculus and Analytical Geometry III	4
MATH 345	Differential Equations and Matrix Methods	4
STAT 412	Probability and Statistics	3
Total Credits		**11**
Capstone		
ENGR 490	Capstone Design Project I	3
ENGR 491	Capstone Design Project II	3
Total Credits		**6**
Total Degree Requirements		123

** Minnesota student residents refer to State of Minnesota Course Requirement statement for Humanities requirements.

Suggested Plan of Study (BSE)

Planning Your Course Progression

Engineering courses (ENGR, ESCI, ELEC, AERO, MECH, CESC) are offered four times a year. Other supporting courses (i.e., Calculus, Physics, English, etc.) are offered more frequently. The suggested Plan of Study shows a sequence of courses for a typical four- year program. There are four terms a year. In a given year there are four tracks that these terms are offered. For example, the first track starts with term 1 in August and then progresses with term 2 in October, term 3 in January and then term 4 in March. The other three tracks follow the same progression but with different start dates for the first term as indicated in the figure. BSE students should follow this approach when planning their course progression.

Freshman Year

Term 1		**Credits**
ENGR 101	Introduction to Engineering	3
ENGL 123	English Composition	3
	Credits Subtotal	**6.0**
Term 2		
MATH 241	Calculus and Analytical Geometry I	4
ENGR 115	Introduction to Computing for Engineers	3
	Humanities Lower-Level (HUMN)	3
	Credits Subtotal	**10.0**
Term 3		
MATH 242	Calculus and Analytical Geometry II	4
PHYS 150	Physics I for Engineers	3
	Credits Subtotal	**7.0**
Term 4		
PHYS 160	Physics II for Engineers	3
SPCH 219	Speech	3
	Credits Subtotal	**6.0**
	Credits Total:	**29.0**

Sophomore Year

Term 1		**Credits**
ENGR 120	Graphical Communications	3
MATH 243	Calculus and Analytical Geometry III	4
ENGL 221	Technical Report Writing	3
	Credits Subtotal	**10.0**
Term 2		
MATH 345	Differential Equations and Matrix Methods	4
ESCI 201	Statics	3
	Credits Subtotal	**7.0**
Term 3		
ESCI 202	Solid Mechanics	3
ESCI 206	Fluid Mechanics	3
ECON 225	Engineering Economics	3
	Credits Subtotal	**9.0**
Term 4		
ESCI 204	Dynamics	3
PHYS 250	Physics III for Engineers	3

PHYS 253	Physics Laboratory for Engineers	2
	Credits Subtotal	**8.0**
	Credits Total:	**34.0**

Junior Year

Term 1		**Credits**
ESCI 305	Thermodynamics	3
ELEC 220	Circuits	3
ELEC 221	Circuits Laboratory	1
	Credits Subtotal	**7.0**
Term 2		
ELEC 230	Electronics	3
ELEC 231	Electronics Laboratory	1
CESC 220	Digital Circuit Design	3
CESC 222	Digital Circuit Design Laboratory	1
	Credits Subtotal	**8.0**
Term 3		
MECH 302	Introduction to Robotics	3
MECH 303	Robotics Laboratory	1
MECH 313	Instrumentation and Data Acquisition	2
MECH 314	Instrumentation and Data Acquisition Laboratory	1
	Credits Subtotal	**7.0**
Term 4		
AERO 309	Aerodynamic Performance of Flight Vehicles	3
ESCI 325	Engineering Materials and Structures	3
	Credits Subtotal	**6.0**
	Credits Total:	**28.0**

Senior Year

Term 1		**Credits**
ENGR 330	Signals & Systems	3
ENGR 331	Signals & Systems Laboratory	1
ENGR 404	Mechatronics	3
ENGR 405	Mechatronics Laboratory	1
	Credits Subtotal	**8.0**
Term 2		
ENGR 450	Systems and Controls	3
STAT 412	Probability and Statistics	3
ENGR 350	Project Management for Engineered Systems	3
	Credits Subtotal	**9.0**
Term 3		
ENGR 490	Capstone Design Project I	3
	Humanities Upper-Level (HUMN)	3
ENGR 400	Fundamentals of Energy Systems	3
	Credits Subtotal	**9.0**
Term 4		
ENGR 491	Capstone Design Project II	3
	Social Science Upper-Level (SOCI)	3
	Credits Subtotal	**6.0**
	Credits Total:	**32.0**
Total Credits		**123**

B.S. in Engineering Technology

With the rapid advancement of science and technology in today's world, every industry needs highly qualified engineers who can keep innovation moving forward. Offered entirely online through Embry-Riddle Aeronautical University Worldwide, this Bachelor of Science in Engineering Technology (BSET) specialized degree program will prepare you to put your engineering skills to work in a variety of industries.

Through the use of cutting-edge virtual labs and simulation methods, students will develop the skills to design, refine and apply engineering technologies across a range of industries. You can also choose to target your studies with a particular concentration including Aeronautical Science, Aviation Safety, Helicopter Operations and Safety, Logistics Management, Management Information Systems, Occupational Safety and Health, Project Management, Security and Intelligence, and Unmanned Aerial Systems.

Students are also eligible to engage in cooperative study/internships and may elect to seek out those enriching opportunities.

Program-Specific Criteria

Admissions Criteria

In addition to meeting the Worldwide Campus admissions requirements, applicants for admission into the BS in Engineering and BS in Engineering Technology degree programs must:

- Complete the English and Math Skills Assessments prior to admission to determine academic preparedness for entry into ENGL 123 English Composition and MATH 241 Calculus I.
- Current high school students and recent graduates under the age of 20 must meet established admissions requirements and demonstrate a 3.0 high school CGPA, with coursework that reflects 4 years of college preparatory mathematics and 2 years of college preparatory science, including a laboratory science.
- Transfer applicants must meet established admissions requirements and demonstrate a 2.5 cumulative grade point average (CGPA); transfer credit deemed equivalent to demonstrate academic preparedness for immediate entry into ENGL123 English Composition and MATH 241 Calculus I, will be considered for admission into the program. Skills Assessment scores will be used for advising purposes if English and Math transfer credit demonstrates academic preparedness for admission into the program.

Students who fail to satisfy the guidelines for full admission may be considered for conditional admission under circumstances determined by the Admissions Office OR may be considered for admission into an alternate program. A written petition for admission, current resume and other supporting documentation may be requested for consideration of admission. Exceptions will be reviewed on a case by case basis.

Current Worldwide students requesting a change of program to the BS in Engineering or BS in Engineering Technology degree programs must demonstrate successful completion of the first year of the suggested plan of study in the AS in Engineering Fundamentals degree plan with a 2.5 GPA. Students may then work with their campus advisor to determine eligibility to add or change to the BS in Engineering or BS in Engineering Technology degree programs. Exceptions will be reviewed on a case by case basis.

Engineering Technology Area of Concentration

The Engineering Technology Area of Concentration is the degree area where credit for prior engineering technology learning is housed or where students can take courses to learn about engineering technology. Many students bring in all or part of this credit based on prior engineering or engineering technology training or experience. However, shortages in the minimum credit required can be made up by taking courses in the following related disciplines: Aeronautical Science, Aviation Safety, Helicopter Operations and Safety, Unmanned Aerial Systems, Logistics Management, Management Information Systems, Occupational Safety and Health, Project Management, Security and Intelligence.

Sources of Prior Learning Credit include the following:

1. Transfer credit earned at accredited degree-granting colleges and universities.

2. The recommendations published by the American Council on Education for U.S. Military training and experience, as well as training conducted by other government agencies and private organizations.
3. Prior-learning credit established by the University for certain engineering and aviation licenses and ratings as they relate to this degree.

Duplicate Credit

Many Embry-Riddle courses are designed to teach the same skills and knowledge that engineering technology students have acquired through experience and training. Students who complete courses in the same engineering specialty for which they were granted credit would be duplicating coverage of the same subject matter. Credit for completion of such courses will not be applied to degree requirements.

The BSET program is accredited by the Engineering Technology Accreditation Commission of ABET, https://abet.org.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education		
Embry-Riddle courses in the general education categories of Communication Theory and Skills, and Humanities and Social Sciences may be chosen from those listed below, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.		
Communication Theory and Skills		
ENGL 123	English Composition	3
English/Speech electives		6
Mathematics		
MATH 241	Calculus and Analytical Geometry I	4
MATH 242	Calculus and Analytical Geometry II	4
Computer Science / Information		
ENGR 115	Introduction to Computing for Engineers	3
Physical and Life Sciences		
CHEM 110	General Chemistry I	3
CHEM 110L	General Chemistry I Laboratory	1
PHYS 150	Physics I for Engineers	3
PHYS 160	Physics II for Engineers	3
Humanities		
HUMN 330	Values and Ethics	3
Humanities lower level elective		3
Social Sciences		
ECON 210	Microeconomics	3
ECON 211	Macroeconomics	3
General Electives		
General Open Electives		9
Total Credits		**51**

Core/Major

Business		
STAT 222	Business Statistics	3
Total Credits		**3**

Leadership and Management		
MGMT 201	Principles of Management	3
MGMT 203	Management for Aeronautical Science	3
Total Credits		**6**

Technical Core		
ENGR 101	Introduction to Engineering	3
ENGR 120	Graphical Communications	3
ESCI 201	Statics	3
CESC 220	Digital Circuit Design	3
CESC 222	Digital Circuit Design Laboratory	1
ESCI 204	Dynamics	3
ESCI 202	Solid Mechanics	3
ESCI 206	Fluid Mechanics	3
RSCH 202	Introduction to Research Methods	3
ETEC 310	Material Science for Engineering Technology	3
ETEC 315	Circuits for Engineering Technology	3
ETEC 316	Circuits Laboratory for Engineering Technology	1
ETEC 410	Thermodynamics for Engineering Technology	3
ETEC 415	Control Systems	3
ETEC 490	Engineering Technology Capstone I	3
ETEC 491	Engineering Technology Capstone II	3
Total Credits		**44**

Electives/Concentration

Concentrations	**18**
Following concentration areas are available to BSET students. Students may choose at least 3 courses each from two concentration areas.	

Total Degree Requirements	**122**

Concentrations:

Aeronautical Science

Aeronautical Science Concentration		
ASCI 309	Aerodynamics	3
AMNT 429	Advanced Technologies in Design and Production of Aircraft Structures and Systems	3
ETEC 409	Applied Aeronautics	3

Aviation Safety

Aviation Safety Concentration		
SFTY 320	Human Factors in Aviation Safety	3
SFTY 330	Aircraft Accident Investigation	3
SFTY 409	Aviation Safety	3

Helicopter Operations and Safety

Helicopter Operations and Safety Concentration		
ASCI 317	Rotorcraft	3
ASCI 378	Helicopter Flight Environments	3
ASCI 388	Helicopter Flight Planning	3

Unmanned Aerial Systems

Unmanned Aerial Systems Concentration		
UNSY 315	Unmanned Aircraft Systems and Operations	3
UNSY 318	Unmanned Aircraft Systems Robotics	3
UNSY 410	Unmanned Systems Sensing Technology	3

Logistics Management

Logistics Management Concentration		
LGMT 331	Transportation Principles	3
BSAB 410	Management of Air Cargo	3
MGMT 411	Logistics Management for Aviation/Aerospace	3

Management Information Systems

Management Information Systems Concentration		
MMIS 221	Introduction to Management Information Systems	3
MMIS 392	Database Management	3
MMIS 494	Aviation Information Systems	3

Occupational Safety & Health

Occupational Safety & Health Concentration		
SFTY 311	Fundamentals of Occupational Safety and Health	3
SFTY 321	Ergonomics	3
SFTY 355	Industrial Hygiene and Toxicology	3

Project Management

Project Management Concentration		
PMGT 391	Project Planning 1	3
PMGT 394	Project Planning 2	3
PMGT 400	Project Risk and Control	3

Security and Intelligence

Security and Intelligence Concentration		
SCTY 315	Studies in Intelligence I	3
SCTY 385	Intelligence Collection and Analysis	3
SCTY 488	National Security Issues and Terrorism	3

Suggested Plan of Study (BSET)

Freshman Year

Term 1		Credits
ENGR 101	Introduction to Engineering	3
ENGL 123	English Composition	3
	Credits Subtotal	**6.0**
Term 2		
MATH 241	Calculus and Analytical Geometry I	4
ENGR 115	Introduction to Computing for Engineers	3
	Humanities Lower-Level (HUMN)	3
	Credits Subtotal	**10.0**
Term 3		
MATH 242	Calculus and Analytical Geometry II	4
PHYS 150	Physics I for Engineers	3
	Credits Subtotal	**7.0**
Term 4		
PHYS 160	Physics II for Engineers	3
	English/Speech (ENGL/SPCH)	3
ECON 210	Microeconomics	3
	Credits Subtotal	**9.0**
	Credits Total:	**32.0**

Sophomore Year

Term 1		Credits
ENGR 120	Graphical Communications	3
CHEM 110	General Chemistry I	3
CHEM 110L	General Chemistry I Laboratory	1
	English/Speech (ENGL/SPCH)	3
	Credits Subtotal	**10.0**
Term 2		
ESCI 201	Statics	3
CESC 220	Digital Circuit Design	3
CESC 222	Digital Circuit Design Laboratory	1
	Credits Subtotal	**7.0**
Term 3		
ESCI 202	Solid Mechanics	3
ESCI 206	Fluid Mechanics	3
ECON 211	Macroeconomics	3
	Credits Subtotal	**9.0**
Term 4		
ESCI 204	Dynamics	3
STAT 222	Business Statistics	3
	Credits Subtotal	**6.0**
	Credits Total:	**32.0**

Junior Year

Term 1		Credits
ETEC 310	Material Science for Engineering Technology	3
RSCH 202	Introduction to Research Methods	3
	Credits Subtotal	**6.0**
Term 2		
HUMN 330	Values and Ethics	3
MGMT 201	Principles of Management	3
	Area of Concentration course	3
	Credits Subtotal	**9.0**
Term 3		
MGMT 203	Management for Aeronautical Science	3
ETEC 315	Circuits for Engineering Technology	3
ETEC 316	Circuits Laboratory for Engineering Technology	1
	Credits Subtotal	**7.0**
Term 4		
	Area of Concentration course	3
	Open Elective (General)	3
	Area of Concentration course	3
	Credits Subtotal	**9.0**
	Credits Total:	**31.0**

Senior Year

Term 1		Credits
ETEC 410	Thermodynamics for Engineering Technology	3
	Area of Concentration course	3
	Open Elective (General)	3
	Credits Subtotal	**9.0**
Term 2		
ETEC 415	Control Systems	3
	Area of Concentration course	3
	Credits Subtotal	**6.0**
Term 3		
	Area of Concentration course	3
ETEC 490	Engineering Technology Capstone I	3
	Credits Subtotal	**6.0**
Term 4		
ETEC 491	Engineering Technology Capstone II	3
	Open Elective (General)	3
	Credits Subtotal	**6.0**
	Credits Total:	**27.0**
Total Credits		**122**

B.S. in Safety Management

The Bachelor of Science in Safety Management (BSSM) program is designed to provide students with knowledge and skills to operate as competent leaders, managers, and practitioners within the field of safety management. Students will develop technical understanding and expertise and a practical and analytical approach to problem-solving that will allow them to address a range of industry-related safety challenges in both the public and private sectors.

This degree program comprises core safety and emergency management courses with enough elective hours for students to earn as many as two minors to leverage professional development opportunities and study additional areas of interest.

The Worldwide Campus is appropriately positioned to offer the Bachelor of Science in Safety Management program; the Worldwide Campus has expertise in multi-modal curriculum delivery and experience delivering graduate programs to a widely dispersed student population.

For students wanting to pursue a master's degree, the BSSM-MSOSM 4+1 program is now available to all BSSM program students.

- Upon acceptance, students spend three academic years in undergraduate-level study. Then during their senior year, they will take up to three graduate-level courses that will meet the undergraduate 400 level elective and graduate program core requirements (GPA restrictions apply).
- Upon completing the BSSM requirements, students will be enrolled in graduate school and can complete their degree in one year. (GPA restrictions apply).

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education	
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, Social Sciences, Physical and Life Science, Mathematics, and Computer Science may be chosen from as listed, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.	
Communication Theory and Skills	
Any Communication Theory and Skills above ENGL 106	9
Humanities	
Any Upper Level Humanities	3
Any Lower Level Humanities	3
Social Sciences	
Any Social Science	6
Physical and Life Science	
Any Physical Science/Physics	3
Mathematics	
Any College Algebra or Higher Math Series	6
Computer Science	
Any Computer Science	3
Total Credits	**33**

Core/Major

Safety Management Core		
SFTY 201	Introduction to Occupational Safety and Health	3
SFTY 205	Principles of Accident Investigation	3
SFTY 311	Fundamentals of Occupational Safety and Health	3
SFTY 315	Environmental Compliance and Safety	3
SFTY 321	Ergonomics	3
SFTY 326	System Safety	3
SFTY 355	Industrial Hygiene and Toxicology	3
SFTY 360	Construction Safety	3
SFTY 365	Fire Protection	3
SFTY 440	System Safety Management	3
SFTY 450	Loss Control & Insurance	3
EMGY 310	Fundamentals of Emergency Management	3
EMGY 405	Disaster Policy and Management	3
STAT 222	Business Statistics	3
CHEM 110	General Chemistry I	3
CHEM 110L	General Chemistry I Laboratory	1
RSCH 202	Introduction to Research Methods	3
BSSM 491	Operational Applications in Safety Management	3
Total Credits		**52**

Safety Management Electives

Safety Management Elective	**18**
Select six Safety Management Courses (SFTY, EMGY, and safety-related SCTY, ESVS, HLSD courses)	

Open Electives or Choose Minor

Open Electives or Minor	**18**
Choose 18 credit hours of Open Electives and/or Minor	
Total Degree Requirements	**121**

Suggested Plan of Study (BSSM)

Freshman Year

Year One

		Credits
	Any Communication Theory and Skills above ENGL 106	6
	Any College Algebra or Higher Math Series	6
STAT 222	Business Statistics	3
RSCH 202	Introduction to Research Methods	3
	Any Social Science	6
	Any Computer Science	3
	Any Physical and Life Science/Physics	3
	Credits Subtotal	**30.0**
	Credits Total:	**30.0**

Sophomore Year

Year Two

		Credits
	Any Lower-Level Humanities	3
	Any Communication Theory and Skills above ENGL 106	3
	Any Upper-Level Humanities	3
CHEM 110	General Chemistry I	3
CHEM 110L	General Chemistry I Laboratory	1
SFTY 201	Introduction to Occupational Safety and Health	3
SFTY 205	Principles of Accident Investigation	3
EMGY 310	Fundamentals of Emergency Management	3
SFTY 311	Fundamentals of Occupational Safety and Health	3
SFTY 315	Environmental Compliance and Safety	3

SFTY 321	Ergonomics	3
	Credits Subtotal	**31.0**
	Credits Total:	**31.0**

Junior Year

Year Three

		Credits
SFTY 326	System Safety	3
SFTY 355	Industrial Hygiene and Toxicology	3
SFTY 365	Fire Protection	3
EMGY 405	Disaster Policy and Management	3
SFTY 360	Construction Safety	3
	Safety Management Elective	9
	Open Elective	6
	Credits Subtotal	**30.0**
	Credits Total:	**30.0**

Senior Year

Year Four

		Credits
SFTY 440	System Safety Management	3
SFTY 450	Loss Control & Insurance	3
	Safety Management Elective	9
	Open Electives	12
BSSM 491	Operational Applications in Safety Management	3
	Credits Subtotal	**30.0**
	Credits Total:	**30.0**

Total Credits	**121**

BSSM to MSOSM 4+1 Program: A Unique Opportunity

This program is for exceptional students committed to continuing their education through a Master's degree. This fast-paced program allows qualifying students to complete both the Bachelor of Science in Safety Management (BSSM) and the Master of Science in Occupational Safety Management (MSOSM) in five academic years.

Students must have completed 75 credit hours of undergraduate study before applying to the 4+1 program. Senior students accepted in the BSSM/MSOSM 4+1 program will be allowed to apply nine (9) specified graduate credits toward their baccalaureate degree in lieu of nine (9) specific undergraduate credits. Upon completing the BSSM requirements, students will be enrolled in graduate school and can complete their MSOSM degree in one year. Undergraduate students must earn a grade of B or better for any graduate courses taken. Students receiving a C or F grade in any MSOSM graduate courses taken for BSSM credit will be removed from the 4+1 program, have credit awarded to the BSSM degree only, and continue to complete the BSSM degree.

Students initiate program acceptance through their Academic Advisor or Campus Advisor to ensure program criteria compliance. The student's Advisor will complete the request for processing into the 4+1 program.

B.S. in Unmanned Systems Applications

Once the domain of military and government agencies, unmanned systems have entered the civilian and commercial sectors and are transforming the world as we know it. From the driverless cars roaming our streets over the unmanned aircraft soaring through our skies to the robotic rovers operating on distant planetary bodies, leading enterprises all over the world rely on unmanned systems for critical aspects of their operations.

The Bachelor of Science in Unmanned Systems Applications (BSUSA) focuses on the growth, innovative development, and effective use of unmanned system technology across the respective domains (air, space, ground, and maritime), with a strong concentration on the Air Domain. The focused curriculum addresses major challenges within the industry, including business models and applications, autonomy, airspace integration, communications, education and training, propulsion and power, and regulation.

BSUSA graduates will be prepared to support, develop, and apply the advanced technologies necessary to support the growing and dynamic needs of the industry. They will also be qualified to help guide the policies and regulations that govern this emerging field.

Students are also eligible to engage in cooperative study/internships and may elect to seek out those enriching opportunities.

BSUSA students who wish to continue their education to a master's degree and fulfill requirements may enroll in the BSUSA to MSUS 4+1 program as outlined in this program.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education	
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, Social Sciences, Physical and Life Science, Mathematics, and Computer Science may be chosen from as listed, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.	
Communication Theory and Skills	
Any Communication Theory and Skills above ENGL 106	9
Humanities	
Lower-Level Humanities (Any Lower or Upper Level Humanities)	3
Upper-Level Humanities (Any Upper Level Humanities)	3
Social Sciences	
Any Social Science	6
Physical and Life Science	
Any Physical Science/Physics	6
Mathematics	
Any College Algebra or Higher Math Series	6
Computer Science	
Any Computer Science	3
Total Credits	**36**

Core/Major

Program Core		
ASCI 309	Aerodynamics	3
UNSY 315	Unmanned Aircraft Systems and Operations	3
UNSY 316	Operational and Business Aspects of Unmanned Aircraft Systems	3
UNSY 318	Unmanned Aircraft Systems Robotics	3
UNSY 410	Unmanned Systems Sensing Technology	3
UNSY 205	Applied Physics for Unmanned Systems	3
UNSY 307	Unmanned Systems Networking	3
UNSY 311	Unmanned Ground Systems and Applications	3
UNSY 313	Unmanned Maritime Systems and Applications	3
UNSY 331	Unmanned Systems Legal and Regulatory Compliance	3

UNSY 405	Unmanned Systems Operational Environments and Conditions	3
UNSY 415	Unmanned Space Systems and Application	3
UNSY 431	Unmanned Systems Human Factors Considerations	3
UNSY 491	Operational Applications in Unmanned Systems	3
STAT 211	Statistics with Aviation Applications	3
RSCH 202	Introduction to Research Methods	3
Total Credits		**48**

Specified Electives

Specified Electives		**18**
Choose 6 courses from the list below:		
PMGT 325	Concepts and Practices of Project Management	3
COMD 322	Aviation and Aerospace Communication	3
COMD 460	Crisis Communication	3
BUSW 352	Business Quantitative Methods	3
MGMT 408	Airport Management	3
MKTG 450	Aviation/Airport Marketing	3
EMGY 405	Disaster Policy and Management	3
EMGY 310	Fundamentals of Emergency Management	3
ESVS 403	Disaster Planning and Control	3
HLSD 315	Critical Infrastructure Security, Resilience, and Risk Analysis	3
WEAX 364	Weather for Aircrews	3
ASCI 301	Introduction to Air Traffic Control	3
ASCI 403	Air Traffic Management	3
UNSY 319	Cybersecurity and Countermeasure Considerations	3
UNSY 325	Unmanned Systems Testing and Inspection	3
UNSY 329	Unmanned Systems Computation and Programming	3
UNSY 421	Unmanned Systems Mission Planning	3

Minor or Open Electives:

Open Electives		**18**

-OR-

Minor Course of Study		**18**
Choose Any Minor Course of Study (Except Unmanned Aerial Systems)		

Available Minors

Total Degree Requirements **		**120**

* *Minnesota student residents refer to* State of Minnesota Course Requirement *statement for Humanities requirements.*

***For 4+1 BSUSA students in the Minor in Small Unmanned Aircraft System (sUAS) Operation the course UNSY 515 fulfills the requirements to replace UNSY 235 and UNSY 235L*.

Suggested Plan of Study (BSUSA)

Freshman Year

Year One

		Credits
	Any Communication Theory and Skills above ENGL 106	9
	Any College Algebra or Higher Math Series	6
	Computer Science Elective	3
	Lower-Level Humanities (Any Lower or Upper Level Humanities)	3
	Any Social Science	6
STAT 211	Statistics with Aviation Applications	3
	Credits Subtotal	**30.0**
	Credits Total:	**30.0**

Sophomore Year

Year Two

		Credits
	Any Physical Science/Physics	6
RSCH 202	Introduction to Research Methods	3
UNSY 205	Applied Physics for Unmanned Systems	3
UNSY 307	Unmanned Systems Networking	3
	Track specific course	3
	Upper-Level Humanities (Any Upper Level Humanities)	3
UNSY 315	Unmanned Aircraft Systems and Operations	3
UNSY 311	Unmanned Ground Systems and Applications	3
UNSY 405	Unmanned Systems Operational Environments and Conditions	3
	Credits Subtotal	**30.0**
	Credits Total:	**30.0**

Junior Year

Year Three

		Credits
UNSY 313	Unmanned Maritime Systems and Applications	3
ASCI 309	Aerodynamics	3
UNSY 415	Unmanned Space Systems and Application	3
UNSY 316	Operational and Business Aspects of Unmanned Aircraft Systems	3
UNSY 318	Unmanned Aircraft Systems Robotics	3
UNSY 331	Unmanned Systems Legal and Regulatory Compliance	3
UNSY 410	Unmanned Systems Sensing Technology	3
	Track specific course	3
	Minor specific course	3
UNSY 431	Unmanned Systems Human Factors Considerations	3
	Credits Subtotal	**30.0**
	Credits Total:	**30.0**

Senior Year

Year Four

		Credits
	Track specific course	3
	Track specific course	3
	Minor specific course	3
	Track specific course	3
	Track specific course	3
	Minor specific course	3
	Minor specific course	3
	Minor specific course	3
	Minor specific course	3
UNSY 491	Operational Applications in Unmanned Systems	3
	Credits Subtotal	**30.0**
	Credits Total:	**30.0**

Total Credits	**120**

BSUSA-MSUS 4+1 Program: A Unique Opportunity

This program is for exceptional students who are committed to continuing their education through the Master's degree. This fast-paced program allows qualifying students the opportunity to complete both the Bachelor of Science in Unmanned Systems Applications (BSUSA) and the Master of Science in Unmanned Systems (MSUS) in five academic years.

After spending three academic years in undergraduate-level study, BSUSA students who are accepted in the BSUSA-MSUS 4+1 program option will be allowed to take up to three (3) MSUS courses to replace an equal number of remaining BSUSA courses during their senior year. The selected courses can only replace BSUSA minor requirement or additional electives in each respective BSUSA track and may not replace program core or track support courses. Before selecting the courses to be taken, students must confer with an advisor to ensure that the courses selected are suitable and align with their selected MSUS area of concentration. A grade level average of B or better must be maintained for selected MSUS courses while enrolled in the BSUSA-MSUS 4+1 program. Any final BSUSA credit hour requirements not accomplished through MSUS course selection will have to be satisfied through upper level undergraduate electives. Upon successful BSUSA program requirement completion, students will be automatically enrolled in the MSUS program and their chosen area of concentration and can complete their degree within one year.

Students who fail in any of their selected MSUS courses or fail to maintain a grade average of B or better while still completing BSUSA degree requirements will be removed from the 4+1 program option, have credit awarded to the BSUSA degree only, and may continue to complete their BSUSA degree program. In this case, published BSUSA minor requirements and/or upper level electives can be used to fulfill remaining BSUSA credit requirements.

This special program will challenge students and develop their knowledge, skills, abilities, and attitudes in the concepts of unmanned systems while integrating their gained experience in unmanned systems applications. As a minimum to be considered for acceptance to this BSUSA-MSUS 4+1 option, applicant students must hold at least a 3.00 GPA, completed at least 75 credit hours of the BSUSA program requirements to apply and demonstrated superior academic capability.

Students initiate program acceptance through their Academic Advisor or Campus Advisor; to help ensure program criteria are met. Student Advisor will complete the request for processing into the 4+1 program.

M.S. in Aeronautics

The Master of Science in Aeronautics (MSA) degree program is a broad-based, flexible degree program designed to provide both the aviation/aerospace professional and students who are interested in a career in aviation with a professional academic approach to an aviation/aerospace oriented multidisciplinary degree that is accredited internationally by the Royal Aeronautical Society. It provides an unequaled opportunity for pilot and flight crew members, ground personnel, air traffic control personnel, flight operations specialists, maintenance personnel, meteorologists, industry technical and manufacturing representatives, airport professionals, unmanned aircraft systems operators, aviation safety professionals, aviation sustainability professionals, aviation training experts and space related professionals to enhance their knowledge and pursue additional career opportunities.

The MSA degree is designed to provide the student with a broad aviation/aerospace background and technical knowledge in the 7 course core curriculum and the opportunity to select from nine different 3 course specializations to pursue their chosen career path in the aviation field.

The MSA program consists of 30 credits. Students must complete the MSA core requirements consisting of 21 credits, and complete the 9 credits that make up the selected specialization in one of the following: Aviation Safety, Human Factors, Space Operations, Unmanned Systems, or Small Unmanned Aircraft Systems, Sustainability, Maintenance, Aviation Cybersecurity, and Research.

View information for B.S. in Aeronautics (BSA) students who wish to continue on to the M.S. in Aeronautics (MSA) degree by enrolling in the BSA-MSA 4+1 program.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Major/Core

MSA Core Requirements		
ASCI 602	The Air Transportation System	3
ASCI 604	Human Factors in the Aviation/Aerospace Industry	3
ASCI 674	Project Management in Aviation/Aerospace	3
ASCI 516	Applications in Crew Resource Management	3
ASCI 645	Airport Operations and Management	3
ASCI 693	Current Research Problems in Aviation/ Aerospace	3
RSCH 665	Statistical Analysis	3
Total Credits		**21**

Specialization

Specialization	**9**
Choose at least one of the Specializations listed.	
Total Degree Requirements	**30**

Specializations:

Aviation and Aerospace Sustainability

AASI 600	Sustainable Aviation and Aerospace Perspectives	3
AASI 620	Best Practices for Aviation and Aerospace Sustainability	3
AASI 625	Sustainability Policy, Ethics & Legal Topics in Aviation and Aerospace	3

Small Unmanned Aircraft Systems (sUAS) Operations

Students declaring the sUAS Operation Specialization or registering for courses within it must be physically located within the U.S. when registering for and while participating in the UNSY 520 and UNSY 620 courses. Students must contact their Academic Advisor regarding additional cost, possible travel, and FAA Testing, prior to enrolling in the first course of this specialization, UNSY 515.		
UNSY 515	sUAS Operation Fundamentals	3
UNSY 520	sUAS Practical Application and Assessment	3
UNSY 620	sUAS Operational Planning and Safety Management	3

Unmanned Systems

UNSY 501	Application of Unmanned Systems	3
UNSY 603	Unmanned Systems Operational Configuration	3
UNSY 503	Legal and Regulatory Issues in Unmanned Systems	3

Space Operations

MSPO 511	Earth Observation and Remote Sensing	3
MSPO 512	Space Mission and Launch Operations	3
MSPO 513	Space Habitation and Life Support Systems	3

Aviation Safety

MSAS 611	Aviation/Aerospace System Safety	3
MSAS 615	Aviation/Aerospace Accident Investigation and Analysis	3
MSAS 621	Aviation/Aerospace Safety Program Management	3

Human Factors

MSHF 606	Human Cognition	3
MSHF 612	Human Performance, Limitation, and Error	3
MSHF 624	Ergonomics and Biomechanics	3

Aviation Maintenance

MAVM 601	Leadership in Global Aviation Maintenance Organizations	3
MAVM 605	Global Maintenance Resource Management	3
MAVM 615	Strategic Management of Global Maintenance, Repair and Overhaul (MRO) Operations	3

Aviation Cybersecurity

MACY 515	Foundations of Aviation Cybersecurity	3
MACY 520	Aviation Cybersecurity Threats, Actors, Tools, and Techniques	3
MACY 525	Aviation Cybersecurity Risk Management and Resilience	3

Research

RSCH 670	Research Methods	3
RSCH 700A	Thesis I	3
RSCH 700B	Thesis II	3

M.S. in Aerospace Engineering

Aerospace engineers are in huge demand for industries from military services to space travel, and the right degree from a prestigious institution can open doors for a lifetime. Embry-Riddle's Master of Science in Aerospace Engineering (MSAE) has been one of the field's most sought-after degrees for decades.

You will develop the skills to conquer challenges currently facing military and commercial air and spacecraft technology. You'll be prepared to participate in and lead cutting-edge research projects. You'll gain entry into the highest levels of private and government operations.

And now, you'll be able to get your MSAE from the convenience of your home. No commute, no classroom, no rigid schedule. It's education designed around your life.

After completing the MSAE, you will be prepared to participate in the development of military and commercial aircraft, spacecraft designs, and government projects. You will also be positioned to continue your studies with advanced research through programs such as Embry-Riddle's Ph.D. in Aerospace Engineering.

Program-Specific Criteria

Admissions Criteria

Applicants for admission to the MSAE Degree Program must meet the following criteria:

- Provide evidence of an undergraduate Bachelor of Science degree in Aeronautical or Aerospace Engineering, or equivalent with a cumulative grade point average (CGPA) of 3.0 or higher, on a 4.0 scale. If earned in the United States, the degree must be from an ABET-accredited program (accredited by the Engineering Accreditation Commission, EAC). Applicants with graduate coursework must meet the established graduate transfer CGPA. Students with a Bachelor of Science or equivalent degree in other engineering disciplines, who otherwise meet the requirements for full admission, may also be admitted to the MSAE program.
- The Graduate Records Examination (GRE) is required.

Note: Graduates of Embry-Riddle Aeronautical University receiving an engineering (ABET EAC – accredited) degree with at least a 3.2 undergraduate GPA may be excused from the GRE, letters of recommendation, and Statement of Objectives requirements.

EXCEPTIONS: Applicants who fail to satisfy the guidelines for full admission may be considered for conditional admission under circumstances determined by the Admissions Office or Program Chair. Applicants will be required to submit the following documentation in addition to official transcripts:

- Submit (3) letters of recommendation, including (2) from a recent instructor.
- Submit a current resume outlining your education, work experience, special activities and awards.
- Prepare a type-written *Statement of Objectives*, demonstrating strong capacity for written communication and elucidating the following topic areas:
  - A description of the applicant's reasons for wishing to do graduate work in the field chosen
  - A description of the applicant's interests and background
  - A description of the applicant's long-term professional goals, defining how Embry-Riddle's MSAE program supports those interests and goals

Download the MSAE Program Recommendation Form

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Major/Core

AENG 502	Strength and Fatigue of Materials	3
AENG 510	Aircraft Structural Dynamics	3
AENG 511	Engineering Materials Selection	3
AENG 514	Introduction to the Finite Element Method	3
AENG 522	Analysis of Aircraft Composite Materials	3
AENG 540	Structural Health Monitoring	3
AENG 612	Analysis of Aircraft Plate and Shell Structures	3
AENG 525	Structural Design Optimization	3
MATH 502	Boundary Value Problems	3
Take one of the following elective courses:		3
SYSE 500	Fundamentals of Systems Engineering	
or SYSE 560	Introduction to Systems Engineering Management	
SYSE 530	System Requirements Analysis and Modeling	
SYSE 610	System Architecture Design and Modeling	
SYSE 625	System Quality Assurance	
AWEN 502	Airworthiness Process and Procedures	
AWEN 510	Aircraft Airworthiness Engineering Principles	
Total Degree Requirements		**30**

M.S. in Airworthiness Engineering

The Master of Science in Airworthiness Engineering (MSAWE) degree program will educate participants in the foundational elements of

airworthiness engineering as they apply to aerospace vehicle certification, comprehensively exploring relevant civil and military airworthiness requirements to provide an understanding of the implications and impact on manned, unmanned, and other innovative vehicle systems.

Admissions Requirements:

Official transcript(s) from the accredited degree conferring institution(s) and transcripts reflecting graduate level coursework.

- Applicants must possess a Bachelor of Science degree in Physics, Math, OR an ABET accredited (EAC) Engineering degree; exceptions to this will be reviewed on a case-by-case basis.
- Applicants must demonstrate a cumulative grade point average (CGPA) of 3.0 or higher on a 4.0 scale, at the undergraduate and graduate levels.

EXCEPTIONS: Applicants who fail to satisfy the guidelines for full admission may be considered for conditional admission under circumstances determined by the Admissions Office or Program Chair. Applicants will be required to submit the following documentation in addition to official transcripts:

- *Three (3) letters of recommendation, including one (1) from a recent instructor or trainer*
  Download the MSAWE Program Recommendation Form
- *Resume outlining work experience, education, relevant activities and awards*
- *A type-written* Statement of Objectives*, demonstrating a strong capacity for written communication and addressing the following topic areas-*
  - *The applicant's understanding, in their own words, of what Airworthiness Engineering entails*
  - *The applicant's background and exposure to engineering to-date, in both their academic and professional career*
  - *A statement of the particular MSAWE electives the applicant intends to pursue (Structures, Systems, or Management) and a discussion of why this election was made.*
  - *An explanation of the applicant's overall academic and career objectives, including how the applicant believes that the MSAWE program will positively contribute to the achievement of stated goals*

Current students requesting to transfer into the MSAWE program will be required to meet the same program requirements stated above.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Major/Core

AWEN 502	Airworthiness Process and Procedures	3
SYSE 505	System Safety and Certification	3
UASE 501	Introduction to Unmanned Aircraft Systems Design	3
AWEN 510	Aircraft Airworthiness Engineering Principles	3
MATH 546	Application-Based Advanced Engineering Mathematics	3
AWEN 552	Continued Airworthiness	3
AWEN 690	Graduate Research Project	3
or PMGT 652	Concepts and Practices of Project Management	
Total Credits		**21**

Electives

Electives: (9 credit hours) Choose one of the following concentrations.		9
Structures		
AENG 502	Strength and Fatigue of Materials	
AENG 510	Aircraft Structural Dynamics	
AENG 514	Introduction to the Finite Element Method	
Engineering Management		
LGMT 500	Introduction to Supply Chain Management and the Profession	
LGMT 525	Management Science for Operations	
FINE 610	Budgeting and Finance for R&D	
Systems Engineering		
SYSE 530	System Requirements Analysis and Modeling	
SYSE 610	System Architecture Design and Modeling	
SYSE 625	System Quality Assurance	
Total Degree Requirements		**30**

Suggested Plan of Study (MSAWE)

Year One

Year One		
Term 1		**Credits**
AWEN 502	Airworthiness Process and Procedures	3
	Credits Subtotal	**3.0**
Term 2		
SYSE 505	System Safety and Certification	3
	Credits Subtotal	**3.0**
Term 3		
UASE 501	Introduction to Unmanned Aircraft Systems Design	3
	Credits Subtotal	**3.0**
Term 4		
AWEN 510	Aircraft Airworthiness Engineering Principles	3
	Credits Subtotal	**3.0**
Term 5		
MATH 546	Application-Based Advanced Engineering Mathematics	3
	Credits Subtotal	**3.0**
	Credits Total:	**15.0**

Year Two

Year Two		
Term 1		**Credits**
AWEN 552	Continued Airworthiness	3
	Credits Subtotal	**3.0**
Term 2		
	Elective #1: Structures, Systems or Engineering Management	3
	Credits Subtotal	**3.0**
Term 3		
	Elective #2: Structures, Systems or Engineering Management	3
	Credits Subtotal	**3.0**
Term 4		
	Elective #3: Structures, Systems or Engineering Management	3
	Credits Subtotal	**3.0**
Term 5		
AWEN 690	Graduate Research Project	3

or PMGT 652	Concepts and Practices of Project Management	
	Credits Subtotal	**3.0**
	Credits Total:	**15.0**
Total Credits		**30**

Master of Aviation Cybersecurity

Aviation cybersecurity encompasses a very broad and specialized environment that includes risks to avionics, in-flight entertainment systems, air traffic management systems, aviation maintenance systems, aviation supply chains, airport operations, and aerospace operations.

Aviation cybersecurity threats include attacks to steal customer and proprietary data, disrupt airport operations and aircraft maintenance and potentially impact aircraft flight navigation and tracking. Over the past several years we have seen information on hundreds of millions of aviation customers stolen in cyber-attacks. In addition to data breaches, aviation systems have also been targeted in ransomware attacks where information and services are made unavailable until a ransom is paid. Aviation experts have also expressed concern over potential vulnerabilities in newer aviation technologies that communicate information between aircraft and with air traffic control and ground services without any authentication or encryption, which could allow injection of false messages and ghost aircraft.

In response to the tremendous need to protect the aviation ecosystem, Embry-Riddle, as an internationally recognized education leader in aviation and cybersecurity expertise offers the Master of Aviation Cybersecurity (MAC) program to both define and lead the field of aviation cybersecurity.

The MAC is an academically robust graduate aviation cybersecurity program that will benefit stakeholders both in industry and in the government.

DEGREE REQUIREMENTS

Core/Major

ASCI 602	The Air Transportation System	3
MAVM 609	Aircraft Maintenance Management	3
MACY 515	Foundations of Aviation Cybersecurity	3
MACY 520	Aviation Cybersecurity Threats, Actors, Tools, and Techniques	3
MACY 525	Aviation Cybersecurity Risk Management and Resilience	3
MACY 510	Security Engineering and Management	3
MACY 516	Operational Technology Risks in Aviation - IoT, ICS, SCADA	3
MACY 517	Manned and Unmanned Systems Cybersecurity	3
MSPO 515	Cybersecurity Applications in Space	3
MACY 526	Cybersecurity Standards, Laws, and Regulations	3
Total Credits		**30**

Master of Aviation Maintenance

The Master of Aviation Maintenance (MAM) degree program is designed to provide students with the knowledge and skills to function as competent supervisors and managers of aviation maintenance programs in a dynamic and highly complex aviation global industry.

Students will develop a practical and analytical approach to problem-solving that will meet the challenges of managing and leading an aviation maintenance organization. The objective of the MAM is to provide the skills necessary for students to become influential professionals in the aviation maintenance industry. Within this context, the main goals of the MAM program are to provide students the opportunity to acquire the knowledge, skills, and abilities central to aviation maintenance and related industries. The program will provide the needed academic tools for students to become effective professionals, leaders, team members, managers, and undertake lifelong learning for continuing professional development.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Major/Core

MAVM 609	Aircraft Maintenance Management	3
MSAS 621	Aviation/Aerospace Safety Program Management	3
MAVM 644	Integrated Logistics In Aviation Management	3
SFTY 530	Safety, Health and Environmental Legislation, Litigation & Compliance	3
BUAN 505	Information Analytics and Visualization in Decision Making	3
MAVM 601	Leadership in Global Aviation Maintenance Organizations	3
MAVM 605	Global Maintenance Resource Management	3
MAVM 615	Strategic Management of Global Maintenance, Repair and Overhaul (MRO) Operations	3
MAVM 620	Project Management for Aviation Maintenance	3
MAVM 625	Trends and Challenges for Global Aviation Maintenance Organizations	3
Total Degree Requirements		**30**

Master of Space Operations

The Master of Space Operations (MSO) provides graduates of the program the necessary knowledge, skills and abilities to secure meaningful careers within today's growing space industry. This industry encompasses three major entities including: commercial space companies such as Blue Origin, civil space entities such as NASA, and the Department of Defense, such as the military's new Space Force. The degree program will be offered fully online, along with additional options for other learning modalities. The MSO degree takes a balanced approach with integrated and interdisciplinary curriculum rooted in areas of 1) domain awareness, 2) technical understanding and 3) functional execution.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Major/Core

Space Operations Core		
MSPO 500	Developing and Operating the Space Enterprise	3
MSPO 505	The Launch Industry	3
MSPO 510	The Satellite Communications Industry	3
MSPO 511	Earth Observation and Remote Sensing	3
MSPO 512	Space Mission and Launch Operations	3
MSPO 513	Space Habitation and Life Support Systems	3
MSPO 515	Cybersecurity Applications in Space	3
MSPO 520	Space Technology and Systems	3
MSPO 525	Space Law and Policy	3
PMGT 652	Concepts and Practices of Project Management	3
Total Credits		**30**

Master of Systems Engineering

Complex engineering projects are at the heart of modern business. In order to innovate, adapt, thrive, and survive, organizations must undertake efforts that require the coordination of different teams, the understanding of complex technology and tools, and the integration of interdepartmental work processes. Leaders who can effectively manage these efforts are in high demand across many industries.

The Master of Systems Engineering (MSYSE) degree program prepares and qualifies students to take on such a role. Through this focused curriculum, students will establish a solid foundation of fundamental systems-engineering knowledge, learning how to apply a systems perspective to business and technology.

The program is offered in two tracks, allowing students to tailor their education to their career goals. The Technical track concentrates on system design, analysis, and implementation. The Engineering Management track concentrates on organization, process, and management.

The MSYSE delivers exceptional learning and an esteemed credential for systems engineers entering the field, engineers wishing to broaden their perspective or advance to management positions, and managers seeking the knowledge and skills necessary for engineering products and services from a systems perspective.

Program-Specific Criteria

Admissions Criteria

Applicants and students requesting an internal transfer to MSYSE should meet the following criterion-

- *Applicant has successfully completed an equivalent to both MATH 242 and STAT 211/222 and have a 3.0 CGPA or higher in their undergraduate program*

Any applicants with graduate coursework must meet the established graduate transfer CGPA as well.

NOTE: Applicants who fail to satisfy the guidelines for full admission may be considered for conditional admission under circumstances determined by the Admissions Office or Program Chair. Applicants not meeting the MATH 242 and STAT 211/222 requirement specifically, must successfully complete SYSE 515 prior to enrolling in MSYSE core courses if accepted under conditional terms. The candidate will be notified of academic conditions of admission, including specific information on required course prerequisites, at the time a decision is rendered. Students granted custom conditional admission must adhere to the individual terms outlined in their letter of admission and will remain on conditional status until they have satisfied the terms of their conditional admission.

In addition, applicants who fail to satisfy the guidelines for full admission must submit

- *Three (3) letters of recommendation, including one (1) from a recent instructor or trainer*
  Download the MSYSE Program Recommendation Form
- *Resume outlining work experience, education, relevant activities and awards*
- *A type-written* Statement of Objectives*, demonstrating a strong capacity for written communication and addressing the following topic areas-*
  - *The applicant's understanding, in their own words, of what Systems Engineering entails*
  - *The applicant's background and exposure to engineering to-date, in both their academic and professional career*
  - *A statement of the particular MSYSE track the applicant intends to pursue (Technical or Management) and a discussion of why this election was made; If the applicant has chosen an elective set, disclosure and justification of elective selections may also be included*
  - *An explanation of the applicant's overall academic and career objectives, including how the applicant believes that the MSYSE program will positively contribute to the achievement of stated goals*

Current students requesting to transfer into the MSYSE program will be required to meet the same program requirements stated above.

Prerequisite Knowledge

The Master of Systems Engineering degree program is designed to instill specific skills and knowledge, with courses reinforcing one another, building toward student mastery. Access a Curriculum Map, outlining the Program Outcomes and suggested sequencing of student coursework.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

SYSE 500	Fundamentals of Systems Engineering	3
SYSE 530	System Requirements Analysis and Modeling	3
SYSE 560	Introduction to Systems Engineering Management	3
SYSE 625	System Quality Assurance	3
SYSE 697	Systems Engineering Project	3
Select one track from the following:		3
Technical Track		
SYSE 610	System Architecture Design and Modeling	
Engineering Management Track		
SYSE 660	Organizational Systems Management	
Total Credits		**18**

Electives

Electives	
Electives will be chosen from existing Embry-Riddle Daytona Beach and Worldwide courses in other disciplines, and must be approved by the Program Chair.	12
Total Credits	**12**
Total Degree Requirements	**30**

M.S. in Aviation and Aerospace Sustainability

The Master of Science in Aviation and Aerospace Sustainability (MSAAS) degree program presents a holistic and proactive way to examine and manage aviation/aerospace sustainability. It is designed to provide students with the knowledge to apply and create sustainability strategies, schemes, and programs for aviation and aerospace organizations, creating a competitive advantage while improving the world. Today, aviation and aerospace industries operate on a global scale and recognize the need to consider social and environmental indicators in addition to financial ones. This program cultivates a growth mindset, knowledge, and skills needed to promote sustainability. Students apply existing environmental schemes to reduce the industry's carbon footprint and enhance sustainability practices within the industry's operations and procedures. The MSAAS provides a collaborative learning environment rich with opportunities to challenge current thought processes, work in autonomous or group settings and connect with diverse populations worldwide.

Program-Specific Criteria

Prerequisite Knowledge

Subject knowledge for a specific graduate course must be satisfied before enrollment in that course is permitted. Students may enroll in graduate-

level classes only if they meet prerequisite knowledge requirements. Applicants to the MSAAS program must meet the following criteria:

- Have completed a bachelor's degree from an accredited institution, international equivalent, or closely related bachelor of science program, preferably a STEM degree.
- Have superior academic records with a minimum cumulative grade point average (CGPA) of 2.5;
- NOTE: International applicants whose primary language is not English must meet all university requirements

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

AASI 600	Sustainable Aviation and Aerospace Perspectives	3
AASI 605	Aviation and Aerospace Sustainable Organizations	3
AASI 610	Aviation and Aerospace Organization Development, Leadership & Workforce Development	3
AASI 620	Best Practices for Aviation and Aerospace Sustainability	3
AASI 625	Sustainability Policy, Ethics & Legal Topics in Aviation and Aerospace	3
AASI 635	Operational Excellence for Aerospace/Aviation Sustainability	3
RSCH 665	Statistical Analysis	3
Total Credits		**21**

Specialization

Specialization	**9**

Choose at least one of the specializations listed.

Total Degree Requirements	**30**

Specializations:

Small Unmanned Aircraft Systems (sUAS) Operations

Students declaring the sUAS Operation Specialization or registering for courses within it must be physically located within the U.S. when registering for and while participating in the UNSY 520 and UNSY 620 courses. Students must contact their Academic Advisor regarding additional cost, possible travel, and FAA Testing, prior to enrolling in the first course of this specialization, UNSY 515.

UNSY 515	sUAS Operation Fundamentals	3
UNSY 520	sUAS Practical Application and Assessment	3
UNSY 620	sUAS Operational Planning and Safety Management	3

Unmanned Systems

UNSY 501	Application of Unmanned Systems	3
UNSY 603	Unmanned Systems Operational Configuration	3
UNSY 503	Legal and Regulatory Issues in Unmanned Systems	3

Aeronautics

ASCI 693	Current Research Problems in Aviation/ Aerospace	3
ASCI 604	Human Factors in the Aviation/Aerospace Industry	3
ASCI 645	Airport Operations and Management	3

Space Operations

MSPO 511	Earth Observation and Remote Sensing	3
MSPO 512	Space Mission and Launch Operations	3
MSPO 513	Space Habitation and Life Support Systems	3

Aviation Safety

MSAS 615	Aviation/Aerospace Accident Investigation and Analysis	3
MSAS 611	Aviation/Aerospace System Safety	3
MSAS 621	Aviation/Aerospace Safety Program Management	3

Human Factors

MSHF 606	Human Cognition	3
MSHF 612	Human Performance, Limitation, and Error	3
MSHF 624	Ergonomics and Biomechanics	3

Aviation Maintenance

MAVM 601	Leadership in Global Aviation Maintenance Organizations	3
MAVM 605	Global Maintenance Resource Management	3
MAVM 615	Strategic Management of Global Maintenance, Repair and Overhaul (MRO) Operations	3

Aviation Cybersecurity

MACY 515	Foundations of Aviation Cybersecurity	3
MACY 520	Aviation Cybersecurity Threats, Actors, Tools, and Techniques	3
MACY 525	Aviation Cybersecurity Risk Management and Resilience	3

Research

RSCH 670	Research Methods	3
RSCH 700A	Thesis I	3
RSCH 700B	Thesis II	3

M.S. in Aviation Safety

Safety is at the very heart of all we do in aviation. Our industry has an enviable safety record, but we can never take that for granted. It takes knowledge, experience, and hard work to keep the public's trust. The Master of Science in Aviation Safety (MSAVS) will give you the skills and abilities you need to advance the safety and efficiency of our aviation system today, while meeting the challenges of tomorrow.

As a student in the Master of Science in Aviation Safety program, you will learn the theory and application of system safety and human performance, as well as the practical management of safety programs, safety data analysis, and accident investigation. You will hone your critical thinking, teamwork, and communication skills while learning from experts in the field and collaborating with students from around the world. Subject areas include industrial and ground safety and emergency management as well as flight operations safety. This program will prepare you for a career in operations or safety with traditional employers such as major airlines, or with new entrants in unmanned systems or commercial space. Students will have the option to access Prescott campus facilities such as the crash investigation lab.

Students interested in pursuing careers in research or academia have the option to complete a thesis.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Major/Core

ASCI 604	Human Factors in the Aviation/Aerospace Industry	3
ASCI 645	Airport Operations and Management	3
MSAS 611	Aviation/Aerospace System Safety	3
MSAS 612	Aviation/Aerospace Industrial Safety Management	3
MSAS 615	Aviation/Aerospace Accident Investigation and Analysis	3
MSAS 621	Aviation/Aerospace Safety Program Management	3
MSAS 627	Aviation Safety Data Management and Analysis	3
RSCH 665	Statistical Analysis	3
SFTY 540	Disaster Preparedness and Emergency Response	3
ASCI 693	Current Research Problems in Aviation/ Aerospace	3
Total Credits		**30**

Thesis Option

RSCH 700A	Thesis I	3
RSCH 700B	Thesis II	3
Total Degree Requirements (Thesis Option)		**36**

M.S. in Occupational Safety Management

The risk of workplace injuries, illnesses, and fatalities presents a serious threat in any industry. Organizations rely heavily upon safety and health professionals to help them mitigate these risks and maintain a safe and healthy work environment. This graduate-degree program helps students develop the skills and knowledge they need to effectively anticipate, recognize, evaluate, prevent, and control workplace safety and occupational health hazards within numerous industries.

Through the focused curriculum – which includes case studies, writing safety policies and initiatives, and participating in collaborative projects – the student will gain a solid foundation in the critical aspects of occupational safety and health, including:

- Occupational Safety and Health Management
- Hazard Control Methods
- Fire Safety
- Safety, Health and Environmental Legislation
- Human Factors and Ergonomics
- Disaster Preparedness and Emergency Response
- Regulatory Compliance
- Industrial Hygiene
- Environmental Protection

The research component will expose you to statistics and research methodology that is both applicable to the workplace and good preparation for a doctoral program. Students will complete the degree with a Capstone Project that will provide the opportunity to explore a real-world safety and/or health issue, applying your new knowledge to answer a research question.

The Occupational Safety Management coursework also helps prepare students for certification by the Board of Certified Safety Professionals and the Institute of Hazardous Materials Management (IHMM).

The Worldwide MSOSM degree program has been approved by the IHMM as an Associate Safety and Health Manager (ASHM) Program. Graduates from the MSOSM program may now apply for the ASHM credential upon graduation. The ASHM designation is an important stepping stone to the accredited Certified Safety and Health Manager (CSHM) certification. Graduates achieving a degree from an approved ASHM institution only have to demonstrate two years of experience, instead of four, in order to sit for the CSHM exam. Graduates can submit to IHMM to be able to add the ASHM designation behind their name, signifying to employers their level of preparation for the safety and health profession and they are on the path for full certification.

The MSOSM program is a Board of Certified Safety Professionals (BCSP) Qualified Academic Program (QAP). A QAP is an academic degree program in safety, health and/or environmental practices meeting BCSP standards for participation and whose curriculum has been reviewed as showing a substantial match to the Associate Safety Professional® (ASP) blueprint. Graduates of these programs may apply to hold the Graduate Safety Practitioner® (GSP) designation. The GSP designation is an alternate path to the Certified Safety Professional®(CSP), waiving the requirement to sit for the ASP exam. The GSP is not a certification, and graduates must apply at the link provided below.

Benefits of the GSP designation are:

- Recognition for being in a path toward the CSP certification
- Recognition for the level of preparation for professional safety practice
- A waiver of the ASP examination requirement for CSP eligibility
- A certificate awarding the GSP designation

BCSP and GSP details provided by http://www.bcsp.org/GSP

Upon completion of the program, your focused skills and specialized degree will distinguish you as an astute and knowledgeable safety management professional. With this distinction, you will be ready to take on occupational safety and health leadership positions – including director of safety, safety manager, safety consultant, compliance officer, and loss-control manager – in virtually every occupational setting.

Program Specific Criteria

Prerequisite Knowledge

Subject knowledge for a specific graduate course must be satisfied before enrollment in that course is permitted. Students may enroll in graduate level courses only if they meet prerequisite knowledge requirements.

*Applicants for admission to the **Master of Science in Occupational Safety Management (MSOSM)** program must have prerequisite knowledge in the following areas:*

- *Quantitative Methods*

Students should assume responsibility to see that prerequisites are satisfied. The prerequisite subject knowledge for a specific graduate course must be satisfied before enrollment in that specific course is permitted. Students may enroll in other graduate-level courses as they meet any specific prerequisite knowledge required.

The prerequisite knowledge can be validated through one of the following:

1. *Completed an undergraduate or graduate course in each of the specific subject areas and upon validation of the course from an official transcript; **-OR-***
2. *Completed a course listed in either the National or ACE Guide for which academic credit in one of the specific subject areas is recommended; **-OR-***
3. *Received at least the minimum recommended score on a CLEP, DSST/DANTES, PEP, etc. exam in each of the subject areas as required.*

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

SFTY 530	Safety, Health and Environmental Legislation, Litigation & Compliance	3
SFTY 540	Disaster Preparedness and Emergency Response	3
SFTY 570	Fire Safety Management	3
SFTY 580	Environmental Protection for the Safety, Health and Environmental Manager	3
SFTY 590	Hazard Control Methods in Occupational Safety and Health	3
SFTY 600	Occupational Safety and Health Management	3
SFTY 611	Industrial Hygiene and Toxicology	3
SFTY 619	Human Factors and Ergonomics	3
RSCH 650	Research Methods and Analysis	3
SFTY 691	Graduate Capstone Course	3
Total Degree Requirements		**30**

M.S. in Unmanned and Autonomous Systems Engineering

The 30-credit, online Master of Science in Unmanned and Autonomous Systems Engineering (MSUASE) program enables career establishment and advancement in a rapidly changing field through the development of innovative solutions operating along the spectrum of autonomy, including unmanned aircraft, autonomous cars, robotic surface and underwater vessels, spacecraft, and industrial robots. The degree is built on rigorous multidisciplinary coursework designed to provide a flexible, online, graduate educational option to develop and demonstrate knowledge attainment through project-based experiences. The curriculum features integration and application of concepts, protocols, and techniques in unmanned and autonomous systems: systems engineering, architecture, and design; safety and certification; requirements development analysis; modeling; command, control, and communication (C3); and human factors. Through the review of design, performance, and operational specifications to system testing and evaluation of end-to-end solutions, students gain comprehensive insight and practical experience affecting development, acquisition, fielding, and sustainment of unmanned system designs.

The MSUASE culminates in a two-term capstone project, conducted independently or in a team setting, to develop a technical solution to a critical real world challenge and leading to publication (e.g., conference paper, journal article, or technical report).

Program-Specific Criteria

Prerequisite Knowledge

Subject knowledge for a specific graduate course must be satisfied before enrollment in that course is permitted. Students may enroll in graduate level courses only if they meet prerequisite knowledge requirements. Applicants to the MSUASE program must meet the following requirements:

- Have completed a bachelor's degree in an Accreditation Board for Engineering and Technology (ABET-EAC) accredited engineering program, international equivalent, or closely related engineering discipline.
  NOTE: Graduates of Embry-Riddle's Bachelor of Science in Unmanned Aircraft Systems Science (BSUASS), BS in Unmanned Systems Application (BSUSA), BS in Engineering Technology (BSET), and BS in Engineering (BSE) degree programs OR graduates of non-ERAU ABET-ETAC accredited programs may be admitted, conditionally, upon completion of undergraduate engineering courses requisite for knowledge and skills, to be specified at the time of admission.
- Have superior academic records with a minimum cumulative grade point average (CGPA) of 3.0;
- Complete the Graduate Record Examination (GRE; applicable to those without an ABET accredited or approved ERAU degree, as designated above);
- Submit a complete application package, including resume, three (3) letters of recommendation, and statement of objectives
  NOTE: International applicants whose primary language is not English must also achieve the minimum score requirement of Test of English as a Foreign Language (TOEFL) or International English Language Test System (IELTS) as required by the University.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

SYSE 500	Fundamentals of Systems Engineering	3
UASE 501	Introduction to Unmanned Aircraft Systems Design	3
SYSE 505	System Safety and Certification	3
SYSE 530	System Requirements Analysis and Modeling	3
ASCI 531	Robotics and Control	3
UNSY 606	Unmanned Systems Interoperability and Control	3
SYSE 610	System Architecture Design and Modeling	3
ASCI 638	Human Factors in Unmanned Aerospace Systems	3
UASE 691	Unmanned and Autonomous Systems Capstone Design Project I	3
UASE 692	Unmanned and Autonomous Systems Capstone Design Project II	3
Total Degree Requirements		**30**

M.S. in Unmanned Systems

From self-driving cars to drone deliveries, unmanned systems are changing the way we live. To thrive in this environment, companies need leaders who understand the possibilities and challenges posed by unmanned systems.

If you work in the unmanned industry, the Master of Science in Unmanned Systems (MSUS) program will broaden your perspective, deepen your knowledge, and help you move to the next level in your career.

If you work in a field outside unmanned systems, the MSUS will build your knowledge base, help you understand the potential of unmanned technology in your own industry, and prepare you to be the expert on unmanned systems in your workplace.
In this program, you will:

- Learn from instructors with real world industry, government, and research experience.
- Network with students, alumni, and faculty with a passion for unmanned systems.
- Learn the essentials of unmanned technology, including propulsion, control, communications, autonomy, sensing, and data processing.
- Refine the critical skill of communicating complex technical material to a general audience.
- Practice the team building and collaboration skills that are highly valued by employers.

In addition to helping you capitalize on the opportunities offered by unmanned technology today, this degree will prepare you to be a leader in the dynamic, exciting future that unmanned technology offers.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

UNSY 501	Application of Unmanned Systems	3
UNSY 502	Current Issues in Unmanned Systems	3
UNSY 503	Legal and Regulatory Issues in Unmanned Systems	3
UNSY 606	Unmanned Systems Interoperability and Control	3
UNSY 603	Unmanned Systems Operational Configuration	3
ASCI 674	Project Management in Aviation/Aerospace	3
RSCH 665	Statistical Analysis	3
Total Credits		**21**

Specialization

Specialization	**9**
Select one specialization from the following list (includes 3 specific courses per):	
Total Degree Requirements	**30**

Specializations:

Aviation and Aerospace Sustainability

AASI 600	Sustainable Aviation and Aerospace Perspectives	3
AASI 620	Best Practices for Aviation and Aerospace Sustainability	3
AASI 625	Sustainability Policy, Ethics & Legal Topics in Aviation and Aerospace	3

Small Unmanned Aircraft Systems (sUAS) Operations

Students declaring the sUAS Operation Specialization or registering for courses within it must be physically located within the U.S. when registering for and while participating in the UNSY 520 and UNSY 620 courses. Students must contact their Academic Advisor regarding additional cost, possible travel, and FAA Testing, prior to enrolling in the first course of this specialization, UNSY 515.

UNSY 515	sUAS Operation Fundamentals	3
UNSY 520	sUAS Practical Application and Assessment	3
UNSY 620	sUAS Operational Planning and Safety Management	3

Aeronautics

ASCI 693	Current Research Problems in Aviation/ Aerospace	3
ASCI 604	Human Factors in the Aviation/Aerospace Industry	3
ASCI 645	Airport Operations and Management	3

Space Operations

MSPO 511	Earth Observation and Remote Sensing	3
MSPO 512	Space Mission and Launch Operations	3
MSPO 513	Space Habitation and Life Support Systems	3

Aviation Safety

MSAS 615	Aviation/Aerospace Accident Investigation and Analysis	3
MSAS 611	Aviation/Aerospace System Safety	3
MSAS 621	Aviation/Aerospace Safety Program Management	3

Human Factors

MSHF 606	Human Cognition	3
MSHF 612	Human Performance, Limitation, and Error	3
MSHF 624	Ergonomics and Biomechanics	3

Aviation Maintenance

MAVM 601	Leadership in Global Aviation Maintenance Organizations	3
MAVM 605	Global Maintenance Resource Management	3
MAVM 615	Strategic Management of Global Maintenance, Repair and Overhaul (MRO) Operations	3

Aviation Cybersecurity

MACY 515	Foundations of Aviation Cybersecurity	3
MACY 520	Aviation Cybersecurity Threats, Actors, Tools, and Techniques	3
MACY 525	Aviation Cybersecurity Risk Management and Resilience	3

Research

RSCH 670	Research Methods	3
RSCH 700A	Thesis I	3
RSCH 700B	Thesis II	3

Minor in Air Traffic Management

The goals and objectives of the air traffic management minor focus on air traffic management and operational concepts, providing students an understanding of the industry while emphasizing its global applications. The air traffic control market is projected to grow substantially over the next several years. This growth is driven by the modernization of the ATM infrastructure, the increase in the number of airports in emerging economies, and the need for more efficient airspace management. Military and civilian students currently working as controllers or in related aviation fields represent the target clientele for the ATM minor.

ASCI 301	Introduction to Air Traffic Control	3
WEAX 301	Aviation Weather	3
ASCI 303	Tower and Radar for Air Traffic Control and Management	3
ASCI 403	Air Traffic Management	3
ASCI 411	Human Factors in ATM	3
ASCI 426	Airport Management in ATM	3
Total Credits		**18**

Minor in Aviation Maintenance Operations

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines

how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

Not open to BS in Aviation Maintenance students.

AMNT 322	Aircraft Inspection and Scheduled Maintenance Programs	3
AMNT 416	Aviation Maintenance Management: A Global Perspective	3
AMNT 424	Maintenance Repair and Overhaul in Aviation	3
AMNT 429	Advanced Technologies in Design and Production of Aircraft Structures and Systems	3
MGMT 411	Logistics Management for Aviation/Aerospace	3
OBLD 427	Management of the Multicultural Workforce	3
Total Credits		**18**

Minor in Aviation Safety

Aviation Safety is an exciting facet of the aviation field that deals with predicting and preventing flight accidents, and aviation safety management. This minor will help students to learn the basics of safety and accident prevention by studying human factors of accidents, mechanical failures, and systems failures. Additionally, the Aviation Safety minor program is designed to provide students with a knowledge of practices and procedures used in establishing and maintaining an effective safety program and promote a safety culture.

This program will serve as a foundation for students with an interest in pursuing graduate work or a career in this area of study.

Not open to BS in Safety Management or BS in Aviation Maintenance/ Safety Specialization

SFTY 320	Human Factors in Aviation Safety	3
SFTY 330	Aircraft Accident Investigation	3
SFTY 335	Mechanical and Structural Factors in Aviation Safety	3
SFTY 345	Aviation Safety Program Management	3
SFTY 409	Aviation Safety	3
SFTY 440	System Safety Management	3
Total Credits		**18**

Minor in Cybersecurity Application and Management

The Cybersecurity Application and Management Minor program (15 credits, 5 courses) is open to all majors and explores the many approaches and meanings of this field that is fast becoming central to our nation's security. As we see every day in the press, cyber security can be used for offensive or defensive purposes. The approaches to defending critical infrastructures such as the energy grid, financial systems, the healthcare system, or agriculture, etc, can be either proactive (e.g., installing a firewall to detect and prevent attacks) or reactive (e.g., responding to an event). This program will introduce students to cyber security operations (e.g., day-to-day duties, actions, and responsibilities), governance (e.g., law, policy, and analysis), and education and training.

Not open to students pursuing the Cybersecurity Administrator Specialization in the BS in Technical Management degree.

CYBR 235	Computer and Network Technologies	3
CYBR 335	Information Security Tools and Techniques	3
CYBR 365	Introduction to Digital Forensics	3
CYBR 465	Cybercrime and Cyberlaw	3
CYBR 485	War, Terrorism, and Diplomacy in Cyberspace	3
Total Credits		**15**

Minor in Engineering Sciences

The overall goal of the Engineering Sciences Minor is to provide insight into what engineers do, and an understanding of the tools and techniques they use. Participants in the engineering sciences minor program will not become engineers, but they should dramatically increase their ability to integrate their skills and communicate effectively with engineering professionals. They will acquire a conceptual understanding of what engineering, engineering design process, technology, and technology-related concepts are.

The program is designed to be an effective minor to supplement students' non-engineering degree programs. This program is designed for students who are not engineering majors but are interested in understanding "how things work;" and are looking at management, technical marketing, sales, and related careers in an industry such as aviation and aerospace that continues to involve more technology.

Not open to BS in Engineering Technology or BS in Engineering students

ENGR 101	Introduction to Engineering	3
MATH 241	Calculus and Analytical Geometry I	4
PHYS 150	Physics I for Engineers	3
ESCI 201	Statics	3
SFTY 326	System Safety	3
SFTY 335	Mechanical and Structural Factors in Aviation Safety	3
AMNT 429	Advanced Technologies in Design and Production of Aircraft Structures and Systems	3
Total Credits		**22**

* Note: Prerequisite for MATH 241 is MATH 142 or MATH 143. Engineering Sciences Minor students should not take MATH 112, but rather MATH 142. Upon successful completion of MATH 142/241, students will receive credit for MATH 112.

Minor in Helicopter Operations and Safety

Helicopter operations represent a multidisciplinary component of the aviation industry with over 55 designated missions. The helicopter has exceptional versatility, which is instrumental in the continued growth of the industry. Students are exposed to historical, manufacturing, safety and operational aspects of the helicopter industry. To comprehend these aspects, students are exposed to physiological issues, challenges in flight environments, newest technologies, the integration of aviation safety, and combining it all together to learn and apply to an actual helicopter operation. This program was designed with the helicopter industry to provide students with applicable knowledge essential to understanding its multidisciplinary aspects.

ASCI 317	Rotorcraft	3
ASCI 378	Helicopter Flight Environments	3
ASCI 388	Helicopter Flight Planning	3
ASCI 428	Advanced Helicopter Systems and Functions	3
ASCI 438	Advanced Helicopter Operations	3
SFTY 409	Aviation Safety	3
Total Credits		**18**

Minor in Occupational Safety and Health

The Minor in Occupational Safety and Health brings basic skill and knowledge in the field of Safety and Health in order to be able to take into account hazards and associated risks present in our surrounding environment that could be threatening for any industry. Safety is clearly

a challenge for our organizations to prevent losses. Moreover, making a safer workplace is always rewarding for people, goods, environment and profit. Though the focused curriculum, you could gain a first foundation in the critical aspects of occupational safety, including:

- Fundamentals of Occupational Safety and Health;
- Ergonomics;
- Industrial Hygiene and Toxicology;
- System Safety Management;
- Fire Protection;
- Systems Design for Fire and Life Safety;
- Loss Control and Insurance;
- Construction Safety;
- Environmental Compliance and Safety;
- Occupational Safety and Health.

SFTY 311	Fundamentals of Occupational Safety and Health	3
SFTY 321	Ergonomics	3
SFTY 355	Industrial Hygiene and Toxicology	3
SFTY 341	Occupational Safety and Health Program Management	3
SFTY 360	Construction Safety	3
SFTY 470	Advanced Occupational Safety and Health Technology	3
Total Credits		**18**

Minor in Security and Intelligence

There has never been a time with such a need for security and intelligence professionals in the aviation security, commercial security, and the intelligence communities. The protection of aviation assets and the national security of the United States is paramount with today's security threats.

This exciting degree minor will provide the student with knowledge to work in this demanding career field. It is designed to provide the student with practical applications that will be of value when actually working in the profession.

The security and intelligence minor is also of value to those not working in the security profession but who may be assigned such security responsibility as a collateral duty.

Not open to B.S. in Aviation Security students.

SCTY 310	Introduction to Security	3
SCTY 315	Studies in Intelligence I	3
SCTY 385	Intelligence Collection and Analysis	3
SCTY 400	Airport Security	3
SCTY 485	Corporate Security	3
SCTY 488	National Security Issues and Terrorism	3
Total Credits		**18**

Minor in Small Unmanned Aircraft System (sUAS) Operation

The Small Unmanned Aircraft System Operation minor will provide students with the knowledge, skills, and abilities (KSAs) specific to the safe, responsible, and effective operation and application of small unmanned aircraft systems (sUAS). The goal is to give students an opportunity to work towards an sUAS operator certification within the framework of the university's academic setting. While core content required for successful completion of FAA theoretical knowledge testing will be provided, the minor also aims to build some operational experience and skills beyond the basic scope of FAA certification, thus, expanding the student's KSAs in planning, execution, and support of sUAS operation.

Eligibility:
Students declaring the sUAS Operation Minor or registering for courses within it must be U.S. citizens or permanent residents and must be physically located within the U.S. when registering for and while participating in the UNSY 435 course.

Important Notes:
1) Students must contact their Academic Advisor regarding additional cost, possible travel, and FAA Testing, prior to enrolling in the first course of this minor.
2) Courses must be taken in the sequence as outlined in the requirements below.

ASCI 121	Private Pilot Operations	5
SFTY 409	Aviation Safety	3
SFTY 345	Aviation Safety Program Management	3
UNSY 235	sUAS Flight and Mission Planning	3
UNSY 235L	sUAS Flight and Mission Planning Laboratory	1
UNSY 435	sUAS Practical Application and Assessment	3
Total Credits		**18**

Minor in Space Studies

The Minor in Space Studies provides undergraduates with foundational knowledge across the space domain. The growth of the space industry requires professionals who are capable of communicating and understand the nature of operating in space. The minor provides the initial knowledge and delivers content in a balanced method to include operational roles, engineering, and orbital navigation.

ASCI 110	Introduction to Space Flight	3
SPAC 300	Satellite and Spacecraft Systems	3
SPAC 310	Human Factors in Space	3
SPAC 330	Spaceflight and Operations Training	3
SPAC 400	Introduction to Space Navigation	3
UNSY 415	Unmanned Space Systems and Application	3
Total Credits		**18**

Minor in Unmanned Aerial Systems

Unmanned aerial systems (UAS) represent a significantly growing segment of the aviation/aerospace industry that provides an important capabilities modifier for military, civil, and commercial users. Understanding the historical background, development, integration, and application of this technology, coupled with a detailed comprehension of the regulatory framework, support requirements, advantages and limitations, industry needs, elemental composition, and planning provisions, provides students with the knowledge necessary to succeed in this field. Through this minor course of study you will gain exposure and experience connected to the fundamental concepts, principles, and methods associated with the use, development, configuration, and support of UAS and the associated technology.

Not open to BS in Unmanned Systems Applications students

UNSY 315	Unmanned Aircraft Systems and Operations	3
UNSY 316	Operational and Business Aspects of Unmanned Aircraft Systems	3
UNSY 318	Unmanned Aircraft Systems Robotics	3
ASCI 404	Applications in Aviation/Aerospace Law	3
ASCI 406	Airborne Law Enforcement	3
UNSY 410	Unmanned Systems Sensing Technology	3
Total Credits		**18**

Aviation Maintenance Technology Part 65

The Aviation Maintenance Technology Certificate provides broad knowledge of general aeronautics, airframe systems, and powerplant systems.

Courses taken in this Certificate can be used to prepare for the A&P testing process. For those individuals who meet the experience requirements established by the FAA, these courses help prepare the applicant for the written, oral, and practical examinations. Experience requirements can be found in Part 65 of the Federal Aviation Regulations.

To be eligible for the award of an undergraduate certificate, a student must achieve a cumulative GPA of 2.0 or higher for the courses included in the degree program. The cumulative GPA for the series of courses in the certificate program must be 2.0 or higher on a 4.0 scale.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Aviation Maintenance Technology Part 65

Certificate

AMNT 240	General Aeronautics and Applications	3
AMNT 260	Aircraft Electrical Systems Theory	3
AMNT 270	Airframe Structures and Applications	3
AMNT 271	Airframe Systems and Applications	3
AMNT 280	Reciprocating Engine Theory and Applications	3
AMNT 281	Turbine Engine Theory and Applications	3
Total Credits		**18**

Estimated Cost of Attendance

Aeronautics

The Aeronautics Certificate is designed for students who are pursuing education related to aviation to gain an understanding of: current issues, the importance of human factors in aviation, airport operations and management, and the use of crew resource management in the industry. The certificate would be of great use for airline operators, airport directors, business managers, project engineers, industry planners, manufacturers, policy and law advisers, consultants, and others involved in managing day-to-day processes within the industry.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Aeronautics

Certificate

ASCI 693	Current Research Problems in Aviation/ Aerospace	3
ASCI 604	Human Factors in the Aviation/Aerospace Industry	3
ASCI 645	Airport Operations and Management	3
ASCI 516	Applications in Crew Resource Management	3
Total Credits		**12**

Estimated Cost of Attendance

Airworthiness Engineering

Airworthiness Engineering

Certificate

The Airworthiness Engineering Certificate is structured to address the professional educational needs of participants in the principles of airworthiness engineering, especially those individuals engaged in the design, development, certification, production, operation and maintenance of air systems - either manned or unmanned, at a graduate level.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Admissions Requirements:

Official transcript(s) from the accredited degree conferring institution(s) and transcripts reflecting graduate level coursework.

- Applicants must possess a Bachelor of Science degree in Physics, Math, OR an ABET accredited (EAC) Engineering degree; exceptions to this will be reviewed on a case-by-case basis.
- Applicants must demonstrate a cumulative grade point average (CGPA) of 3.0 or higher on a 4.0 scale, at the undergraduate and graduate levels.

EXCEPTIONS: Applicants who fail to satisfy the guidelines for full admission may be considered for conditional admission under circumstances determined by the Admissions Office or Program Chair. Applicants will be required to submit the following documentation in addition to official transcripts:

Resume outlining work experience, education, relevant activities or awards
Statement of Objective, to include:

- A description of the applicant's reasons for wishing to do graduate work in the field chosen.
- A description of the applicant's interests and background.
- A description of the applicant's long term professional goals, defining how Embry-Riddle's program supports those interests and goals.

3 Letters of Recommendation, with at least two letters from recent instructors, if available; otherwise, professional references will be considered.

AWEN 502	Airworthiness Process and Procedures	3
SYSE 505	System Safety and Certification	3
UASE 501	Introduction to Unmanned Aircraft Systems Design	3
AWEN 510	Aircraft Airworthiness Engineering Principles	3
Total Credits		**12**

Estimated Cost of Attendance

Aviation and Aerospace Sustainability

The Aviation and Aerospace Sustainability professional graduate certificate considers how stakeholders, including society, governments, and the aviation industry, need to respond to the concerns of global climate change, aircraft noise disturbance, resource use, and waste production. This certificate is designed for those who are in the aviation and aerospace fields and want to gain an advantage for job advancement and demonstrate their expertise in sustainability. Courses are designed to prepare and train applicants with pertinent theory, real world application, and different tools and frameworks to develop and implement sustainable aviation and aerospace solutions.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Aviation and Aerospace Sustainability Certificate

AASI 600	Sustainable Aviation and Aerospace Perspectives	3
AASI 605	Aviation and Aerospace Sustainable Organizations	3

AASI 620	Best Practices for Aviation and Aerospace Sustainability	3
AASI 625	Sustainability Policy, Ethics & Legal Topics in Aviation and Aerospace	3
Total Credits		**12**

Estimated Cost of Attendance

Aviation Maintenance

Today the changing environment of aviation maintenance requires leaders who are well versed in diverse aviation platforms and emerging technologies. More importantly, aviation maintenance managers need expertise in project management, strategic planning and a global perspective of the industry. Aviation maintenance is an expansive field and this certificate is designed for students working in a wide range of industry sectors such as the military, airlines, MROs, FBOs, repair stations, governmental agencies and others engaged in managing day to day processes in the aviation maintenance industry.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Aviation Maintenance Certificate

MAVM 601	Leadership in Global Aviation Maintenance Organizations	3
MAVM 605	Global Maintenance Resource Management	3
MAVM 615	Strategic Management of Global Maintenance, Repair and Overhaul (MRO) Operations	3
MAVM 620	Project Management for Aviation Maintenance	3
Total Credits		**12**

Estimated Cost of Attendance

Aviation Safety

The Aviation Safety Certificate is designed for students who are pursuing education related to aviation to gain an understanding of: the importance of system safety management in the entire life cycle of a system, knowing how to conduct a proper unbiased aviation related accident or incident investigation, how to run an aviation safety program with emphasis on SMS and how to apply occupational safety and health regulations to an aviation venue. The certificate would be of great use for airline operators, airport directors, business managers, project engineers, industry planners, manufacturers, policy and law advisers, consultants, and others involved in managing day-to-day processes within the aviation industry.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Aviation Safety Certificate

MSAS 611	Aviation/Aerospace System Safety	3
MSAS 615	Aviation/Aerospace Accident Investigation and Analysis	3
MSAS 621	Aviation/Aerospace Safety Program Management	3
MSAS 612	Aviation/Aerospace Industrial Safety Management	3
Total Credits		**12**

Estimated Cost of Attendance

Occupational Safety Management

The Graduate Certificate in Occupational Safety Management is designed for students who desire to build core competencies in the field of safety and health management. The certificate program is designed to give a competitive edge to its graduates by equipping safety and health practitioners with safety and health management knowledge and skills to anticipate, recognize, evaluate, prevent and control workplace safety and occupational health hazards within numerous industries to protect people, property, the environment and organizational operations. The certificate program will also prepare practitioners with the ability to effectively manage the occupational safety and health function within a variety of industries, and justify occupational safety and health programs, initiatives and control efforts through the use of business and risk management metrics. The curriculum was designed for working professionals, as is evidenced by the flexibility of the online platform and highly relevant content, applications, and assessment protocols. A total of 12 credits, four courses, are required to complete the program.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Occupational Safety Management Certificate

SFTY 530	Safety, Health and Environmental Legislation, Litigation & Compliance	3
SFTY 590	Hazard Control Methods in Occupational Safety and Health	3
SFTY 600	Occupational Safety and Health Management	3
SFTY 611	Industrial Hygiene and Toxicology	3
Total Credits		**12**

Estimated Cost of Attendance

Small Unmanned Aircraft Systems (sUAS) Operations

The Small Unmanned Aircraft Systems (sUAS) Operations Graduate Certificate is intended for students who wish to enhance their professional expertise with application competency and practical experience in sUAS operations. By developing executive and supervisory knowledge, skills, and attitudes (KSAs) in the task-oriented application of sUAS within the National Airspace System (NAS), certificate holders will be able to assume leading roles and fill a void in expertise in organizations that wish to expand into sUAS applications or support their operations with sUAS capabilities. The Small Unmanned Aerial Systems (sUAS) Operations Graduate Certificate Program consist of 4 courses that result in students earning 12 graduate credit hours.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Small Unmanned Aircraft Systems (sUAS) Operations Certificate

Students declaring the sUAS Operations Certificate or registering for courses within it must be physically located within the U.S. when registering for and while participating in the UNSY 520 and UNSY 620 courses. Students must contact their Academic Advisor regarding additional cost, possible travel, and FAA Testing, prior to enrolling in the first course of this specialization, UNSY 515.

UNSY 515	sUAS Operation Fundamentals	3
UNSY 520	sUAS Practical Application and Assessment	3

UNSY 620	sUAS Operational Planning and Safety Management	3
ASCI 674	Project Management in Aviation/Aerospace	3
Total Credits		**12**

Estimated Cost of Attendance

Space Operations

The Space Operations graduate certificate is designed for students interested in expanding their knowledge of space operations, including engineers, manufacturers, operational personnel, and regulators.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Space Operations Certificate

MSPO 500	Developing and Operating the Space Enterprise	3
MSPO 511	Earth Observation and Remote Sensing	3
MSPO 512	Space Mission and Launch Operations	3
MSPO 513	Space Habitation and Life Support Systems	3
Total Credits		**12**

Estimated Cost of Attendance

Systems Engineering

The Systems Engineering Certificate is designed for students who are pursuing education related to systems engineering and will: Apply systems thinking tools to engineering and operational problems; Employ systems engineering tools to different types of systems throughout their lifecycle; Interpret stakeholder requirements for use in system analysis and design; Perform quantitative analysis techniques to systems engineering problems.

The Systems Engineering certification is open only to students enrolled in the MS in Engineering Management degree program.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

SYSE 500	Fundamentals of Systems Engineering	3
SYSE 530	System Requirements Analysis and Modeling	3
SYSE 560	Introduction to Systems Engineering Management	3
SYSE 610	System Architecture Design and Modeling	3
Total Credits		**12**

Estimated Cost of Attendance

Unmanned Systems

The Unmanned Systems Graduate Certificate is intended for students who wish to enhance their professional expertise in the Unmanned Systems Field. By developing managerial and supervisory knowledge, skills, and attitudes (KSAs) in the task-oriented application of unmanned systems, certificate holders will be able to assume leading roles in organizations that wish to expand their utilization of unmanned systems or unmanned-systems related capabilities. The Unmanned Systems Graduate Certificate Program consist of 4 courses that result in students earning 12 graduate credit hours.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Unmanned Systems Certificate

UNSY 501	Application of Unmanned Systems	3
UNSY 503	Legal and Regulatory Issues in Unmanned Systems	3
UNSY 603	Unmanned Systems Operational Configuration	3
UNSY 606	Unmanned Systems Interoperability and Control	3
Total Credits		**12**

Estimated Cost of Attendance

College of Arts and Sciences

The mission of the College of Arts and Sciences is to promote in students the development of competency in inquiry and problem-solving skills, communication skills, and ethical interaction with the contemporary social world.

This mission is accomplished by striving, in every interaction and at every moment during the educational process, to achieve seven encompassing and mutually informative core outcomes: critical thinking, quantitative reasoning, information literacy, communication, scientific literacy, cultural literacy and lifelong personal growth.

For Faculty lists and other information, view the College of Arts and Sciences website.

B.S. in Communication

The Bachelor of Science in Communication requires students to integrate knowledge of science and technology with practice in communication. In this program, students learn how scientists think, how they frame research questions, and how they use various methodologies to pursue their goals. Communication students additionally practice gathering, analyzing, and disseminating scientific and technological information to a variety of audiences. A significant element of the program is the capstone course, completing a senior project or an internship****.

As modern society is increasingly influenced by developments in science and technology, the demand for skilled communicators in these fields continues to grow. Aviation, aerospace, and technology industries, for example, require more internal communication specialists, as well as professionals in media and public relations, to relay information clearly and accurately. This program addresses that nationwide necessity.

News organizations rely on science communicators in various fields, including meteorology, environmentalism, medicine, and technology. Communication students work in traditional written media, such as newspapers, newsletters, magazines, and journals, as well as in cutting-edge information retrieval and delivery systems, including Web sites, networked blogs and social media.

This focused, yet flexible, course of study requires students to hone specialized communication skills and to assemble portfolios displaying those skills. These graduates, the next generation of communication specialists, are positioned to enter three specific career paths, including:

1. Communicating science information to specific and general audiences through a variety of mass media,
2. Representing companies and organizations through media relations, using written, oral, and visual media, and
3. Communicating news to general audiences through print and electronic media.

The Bachelor of Science degree in Communication requires successful completion of a minimum of 120 credit hours, of which 40 credit hours must be upper-level courses (300-400 level).

The Communication program requires coursework in General Education, the Communication Core, Communication Specified Electives, a Minor, and Open Electives.

*****Due to state authorization requirements, internships must be conducted in approved states only.*

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education		
Embry-Riddle courses in the general education categories of Communication Theory and Skills, and Humanities and Social Sciences may be chosen from those listed below, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.		
Communication Theory and Skills		**9**
ENGL 123	English Composition	3
ENGL (above ENGL 106) / SPCH / COMD (6)		6
Humanities and Social Sciences		**12**
Lower-Level Humanities		3
Lower-Level Social Sciences		3
Lower-Level or Upper-Level Humanities or Social Sciences		3
Upper-Level Humanities or Social Sciences		3
Any Physical and Life Sciences		**6**
Any Mathematics 6-hour sequence above MATH 106		**6**
Any Computer Science / Information Technology		**3**
Total Credits		**36**

Core/Major

Communication Core		33
COMD 225	Science and Technology Communication	3
COMD 260	Introduction to Media	3
COMD 265	Introduction to Newswriting and Reporting	3
COMD 320	Mass Communication Law and Ethics	3
COMD 322	Aviation and Aerospace Communication	3
COMD 335	Technology and Modern Civilization	3
COMD 350	Environmental Communication	3
COMD 360	Public Relations	3
COMD 362	Communication and Organizational Culture	3
COMD 415	Nonverbal Communication	3
COMD 495	Senior Project	3**
or COIN 496	Co-Operative Education	
**When taken as a part of the BS Communication degree, COIN 496 is a 3 credit hour course, and credit hours are approved by the Program Chair.		
Aviation, Science, & Technology Foundation		**9**
Select three courses from the following options:		
ASCI 202	Introduction to Aeronautical Science	3
ASCI 254	Aviation Legislation	3
ASCI 260	Unmanned Aerial Vehicles and Systems	3
PHYS 142	Introduction to Environmental Science	3
SFTY 201	Introduction to Occupational Safety and Health	3
SFTY 205	Principles of Accident Investigation	3
WEAX 201	Meteorology I	3
PHYS 123	Science of Flight	3
Total Credits		**42**

Electives

Communication Specified Electives		9
Select three courses from the following options:		
COMD 230	Digital Photography	3
COMD 295	Rhetorical Strategies and Analysis	3
COMD 363	Communication and Society	3
COMD 364	Visual Design	3

COMD 420	Applied Cross Cultural Communication	3
COMD 460	Crisis Communication	3

(View Minors)

Minor* **	**15-21**
Select a minor, in consultation with your advisor.	
***For students in the Bachelor of Science in Communication degree program the RSCH 202 prerequisite for courses in a minor is waived since RSCH 202 is not required for the program.	

Open Electives	**12-18**
Open elective credits are dependent upon the selected minor.	

Total Degree Requirements	**120**

* Minnesota student residents refer to State of Minnesota Course Requirement statement for Humanities requirements.

B.S. in Emergency Services

The B.S. in Emergency Services (BSES) degree program provides students with the theoretical foundations for management and leadership in fire and emergency services response organizations.

The curriculum includes the principles, theory, and practices associated with today's emergency response professionals. The program is FESHE recognized and IFSAC accredited.

The BSES degree broadly encompasses all emergency services response disciplines in public and private sectors including: fire, emergency medical service, investigation, engineering, aircraft rescue and firefighting, environmental, hazmat, inspection, dispatch, security, OSHA, instruction, public information, wildland firefighting, etc. Concepts covered include human behavior, structures and systems, prevention, protection, investigation and analysis, organization and management, research, administration, hazardous materials, personnel management, political and legal foundations, terrorism, community risk reduction, disaster planning and control, system design for life safety, occupational safety, and human program management.

The curriculum design for this degree is based on in the National Fire Academy's Fire and Emergency Services Higher Education (FESHE) Model Curriculum for a Bachelor's Degree. When students complete courses through Embry-Riddle Aeronautical University, they receive a National Fire Academy certificate just as if they completed the courses at the National Fire Academy. In addition to the six FESHE core courses, the program also offers, all of the seven FESHE non-core courses, of which students can be awarded NFA certificates for successful completion for any of the FESHE courses.

The Bachelor of Science degree in Emergency Services is one of only a handful of programs around the world to have International Fire Service Accreditation Congress (IFSAC) accreditation and FESHE recognition which all lead to demonstrate our programs excellence and student dedication.

There are two specializations currently offered at the baccalaureate level: Aviation Emergency Management, and Fire and Emergency Services.

- The Aviation Emergency Management Specialization has a focus on aircraft accident crash investigation, airport emergency management, aviation safety, and leadership in emergency response organizations.
- The Fire and Emergency Services Specialization focuses on emergency response administration, management, leadership, community risk reduction, and operational issues in emergency services.

This degree program participates in the Air University-Associate to Baccalaureate Cooperative (AU-ABC Category I). All students who have completed a Community College of the Air Force (CCAF) associates degree in Fire Science and Emergency Management are eligible. CCAF graduates can complete a Bachelor of Science in Emergency Services by taking no more than 60 semester hours beyond their CCAF degree.

B.S. in Emergency Services students who wish to continue on to a master's degree may enroll in the BSES to MSES 4+1 program as outlined in this program.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education		
Embry-Riddle courses in the general education categories of Communication Theory and Skills, and Humanities and Social Sciences may be chosen from those listed below, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.		
Communication Theory and Skills		**9**
ENGL 123	English Composition	3
ENGL (above ENGL 106) / SPCH / COMD (6)		6
Humanities and Social Sciences		**12**
Lower-Level Humanities		3
Lower-Level Social Sciences		3
Lower-Level or Upper-Level Humanities or Social Sciences		3
Upper-Level Humanities or Social Sciences		3
Any Physical and Life Sciences		**6**
Any Mathematics 6-hour sequence above MATH 106		**6**
Any Computer Science / Information Technology		**3**
Total Credits		**36**

Core/Major

Program Support		**9**
STAT 211	Statistics with Aviation Applications	3
or STAT 222	Business Statistics	
WEAX 201	Meteorology I	3
RSCH 202	Introduction to Research Methods	3

Program Specialization	**39**
Choose one Specialization	

Electives

Open Electives**	**27**

** Students are allowed to utilize their elective credits to select any Minor offered in the catalog.

Specified Electives	**9**
Choose 9 credits from ASCI/ SFTY/ESVS, EMGY 310, EMGY 400, EMGY 405, EMGY 430 Courses	

Total Degree Requirements	**120**

* Minnesota student residents refer to State of Minnesota Course Requirement statement for Humanities requirements.

Program Specializations:

Aviation Emergency Management Specialization

ESVS 301	Community Risk Reduction for the Fire and Emergency Services	3
ESVS 302	Fire Dynamics	3
ESVS 303	Fire Protection Structures and Systems	3
ESVS 305	Fire Prevention Organization and Management	3

ESVS 400	Analytical Approaches to Public Fire Protection	3
ESVS 401	Applications of Fire Research	3
ESVS 403	Disaster Planning and Control	3
ESVS 404	Managerial Issues in Hazardous Materials	3
ESVS 405	Personnel Management for Fire and Emergency Services	3
ESVS 480	Advanced Principles in Fire and Emergency Services Safety and Survival	3
SFTY 330	Aircraft Accident Investigation	3
SFTY 350	Aircraft Crash and Emergency Management	3
SFTY 409	Aviation Safety	3
Total Credits		**39**

Fire and Emergency Services Specialization

ESVS 201	Fire-Related Human Behavior	3
ESVS 301	Community Risk Reduction for the Fire and Emergency Services	3
ESVS 303	Fire Protection Structures and Systems	3
ESVS 304	Fire Investigation and Analysis	3
ESVS 305	Fire Prevention Organization and Management	3
ESVS 400	Analytical Approaches to Public Fire Protection	3
ESVS 401	Applications of Fire Research	3
ESVS 402	Fire and Emergency Services Administration	3
ESVS 403	Disaster Planning and Control	3
ESVS 404	Managerial Issues in Hazardous Materials	3
ESVS 405	Personnel Management for Fire and Emergency Services	3
ESVS 406	Political and Legal Foundations of Fire Protection	3
ESVS 480	Advanced Principles in Fire and Emergency Services Safety and Survival	3
Total Credits		**39**

BSES to MSES 4+1 Program, A Unique Opportunity

The BSES to MSES 4+1 program is for exceptional students who are committed to continuing their education through the Master of Science in Emergency Service (MSES) degree. The MSES degree program is designed for individuals seeking advanced knowledge in planning, emergency services, hazard mitigation and preparedness, disaster response, recovery, and homeland security. The 4+1 option accelerates the completion of the MSES degree by allowing qualified BSES students to complete three MSES graduate courses and count them toward both degrees.

4+1 students may begin to complete the requirements when they have achieved senior status (having earned at least 75 credit hours with a 3.00 CGPA). 4+1 students must earn a B grade or better in each of the three MSES courses. If a grade of C, D, or F is earned in any of the MSES graduate courses taken for BSES credit, the student will be removed from the 4+1 program, have credit awarded to the BSES degree only, and may continue to complete the BSES degree. Additionally, students must complete a minimum of 120 course credits for their Bachelor of Science degree.

Upon completion of the BSES degree, 4+1 students will be enrolled in the MSES program where they can continue completing the degree requirements with the three previous MSES courses already credited.

Students interested in this accelerated program option should contact their Academic Advisor or Campus Advisor.

B.S. in Homeland Security

The Bachelor of Science in Homeland Security (BSHS) degree is based on the needs of the U.S. government and its citizens and the needs of the private sector. The BSHS degree combines the University's General Education requirements with a solid core of homeland security courses and minors in international relations, cybersecurity, or several other minors available to the student. In addition, this degree allows the student to take maximum advantage of transfer credits and electives to explore breadth in related areas of study.

The Homeland Security degree is designed for students interested in obtaining a solid foundation in many of the domains of the growing homeland security enterprise. It includes terrorism studies, law and policy, emergency management, risk analysis, intelligence, physical security, environmental security, asymmetric warfare, and decision making/ strategic planning. In addition, students can choose from two ways to specialize in their homeland security education; either through (a) taking two minors or (b) one minor and at least a 15 credit "coherent block of courses" (with permission from the BSHS program coordinator). Senior capstone projects require students to work with local organizations to solve real homeland security or emergency management challenges. Internships or cooperative work experiences optimize the student's professional preparation and credentials.

The goal of the degree is to produce highly marketable graduates with entry-level skills such as the ability to perform risk analyses, write emergency management and continuity of operations plans, design and evaluate exercises, design and perform physical security evaluations, design and deliver professional briefings, and understand how to identify and protect critical infrastructure. Graduates of this program will find employment opportunities in federal or state government, universities, and the military or private sectors. In addition, the BSHS program is ideal preparation for further study in graduate school, including law, public policy, or emergency management, intelligence analysis, business, criminal justice, political science, national security studies, international affairs, and other related fields.

B.S. in Homeland Security students who wish to continue to a master's degree may enroll in the BSHS to MSHSR 4+1 program as outlined in this program.

DEGREE REQUIREMENTS

General Education

General Education	
Embry-Riddle courses in the general education categories of Communication Theory and Skills, and Humanities and Social Sciences may be chosen from those listed below, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.	
Communication Theory and Skills	**9**
ENGL 123 or equivalent	3
ENGL (above ENGL 106) / SPCH / COMD	6
Humanities and Social Sciences	**12**
Lower-Level Humanities	3
Lower-Level Social Science	3
Lower-Level or Upper-Level Humanities or Social Sciences	3
Upper-Level Humanities or Social Sciences	3
Any Physical and Life Sciences	**6**
Any Mathematics 6-hour sequence above MATH 106	**6**
Any Computer Science/Information Technology	**3**
Total Credits	**36**

Core/Major

Homeland Security Core**		
HLSD 110	Introduction to Homeland Security	3

HLSD 155	Foundations of Information Security	3
HLSD 215	Introduction to Industrial Security	3
HLSD 280	Professional Skills in Homeland Security	3
EMGY 310	Fundamentals of Emergency Management	3
HLSD 315	Critical Infrastructure Security, Resilience, and Risk Analysis	3
HLSD 320	Homeland Security Law and Policy	3
SCTY 488	National Security Issues and Terrorism	3
SCTY 315	Studies in Intelligence I	3
or SCTY 385	Intelligence Collection and Analysis	
HLSD 290	Environmental Security	3
HLSD 360	Strategic Planning and Decision Making in Homeland Security	3
HLSD 405	Emergent Topics in Homeland Security	3
or HLSD 415	Immigration and Homeland Security	
HLSD 410	Exercise Design and Evaluation in Homeland Security	3
HLSD 495	Homeland Security Capstone I	3
HLSD 496	Homeland Security Capstone II	3
Total Credits		**45**

Breadth Area or Choose Minors

Breadth Area/Minors**	
Students complete their breadth requirement by either two non-duplicating minors (minimum 30 credits total), or one minor and a "coherent block of study" (minimum 30 credits total) that is determined with consent of Program Coordinator.	
Total Credits	**30**

Program Support**		**9**
SFTY 201	Introduction to Occupational Safety and Health	3
or SFTY 409	Aviation Safety	
Select one of the following safety courses:		3
SFTY 315	Environmental Compliance and Safety	
SFTY 462	Health, Safety and Aviation Law	
STAT 222	Business Statistics	3

**For students in the Bachelor of Science in Homeland Security degree program the RSCH 202 prerequisite for Core, Program Support, or Minor courses are waived since RSCH 202 is not required for the program.

Electives

Open Electives	**3**
Choose Any 300-400 Level Course	

Total Degree Requirements	**(Minimum) 123**

* Minnesota student residents refer to State of Minnesota Course Requirement statement for Humanities requirements.

BSHS to MSHSR 4+1 Program, A Unique Opportunity

The BSHS to MSHSR 4+1 program is for exceptional students committed to continuing their education through the master's degree. This fast-paced program an accelerated BSHS leading to an M.S. in Human Security & Resilience (MSHSR) degree program in five academic years. The 4+1 option allows qualifying students to substitute either three MSHSR graduate courses covering similar concepts and principles for three required courses:

Students accepted into the 4+1 program spend three academic years in undergraduate-level study. At the beginning of their senior year (having earned at least 75 credit hours with a 3.00 CGPA), they may take up to three graduate-level courses that will meet undergraduate and graduate program requirements (when a B grade or better is achieved). Students must complete a minimum of 120 undergraduate/graduate course credits for their Bachelor of Science degree.

Upon completion of the BSHS requirements, students will be enrolled in graduate school and can complete their MSHSR degree in one year. In any graduate course taken by an undergraduate student, the student must earn a grade of B or better. If the student earns a grade of C or F in any of the MSHSR graduate courses taken for BSHS credit, the student will be removed from the 4+1 program, have credit awarded to the BSHS degree only, and may continue to complete the BSHS degree.

Courses such as MHSR 530 (Environmental Security) can be taken in lieu of HLSD 290 (Environmental Security). MHSR 520 (Principles of International Conflict Resolution) can be taken in lieu of HLSD 320 (Homeland Security Law and Policy). Any 500-level MHSR course can be taken in place of the BSHS 300/400-level elective.

Students initiate program acceptance through their Academic Advisor or Campus Advisor; to help ensure program criteria are met. Student Advisor will complete the request for processing into the 4+1 program.

B.S. in Interdisciplinary Studies

Program Plan of Study and Requirements

The Bachelor of Science in Interdisciplinary Studies (BSIS) degree program offers students a unique opportunity to transfer previously earned University and Joint Services Transcripted credit by custom designing a plan of study that serves their needs and aspirations. This flexible degree program, unique to Embry-Riddle, is designed for first-time-in-college students and students with previous academic and/or military credit who desire to study more than one academic discipline. BSIS students, minoring in Homeland Security, or Emergency Services are also eligible to participate in the BSIS 4+1 degree program option with the M.S. in Human Security and Resilience (MSHSR) degree program. BSIS 4+1 degree program option creates new opportunities for students to participate in an advanced graduate program and the Military Studies minor allows students to transfer previously earned, upper-level, American Council on Education recommended military training credit.

The Interdisciplinary Studies program consists of core requirements, in addition to two or three minors. Students who complete two minors must also have a specialization area, a group of courses closely related to one or more of their minors. The general education component provides a broad foundation of study, which leads to the core curriculum, focusing on a specialty. Core courses aim to enhance communication and analytical skills, so students gain an understanding of art, literature, and history, which shape an appreciation for the humanities. Also, core courses prepare students to discover meaningful links to technology, science, and other technical areas -- developing a renaissance education in a global economy.

Interdisciplinary Studies provides freedom for students to choose coursework, which is primarily lodged in the selection of a minor course of study. It allows students to explore the University's offerings in search of a scholarly education that will broaden knowledge and worldwide ambitions. In the capstone experience, each student will complete and document program outcomes. The Capstone Project will illustrate and provide evidence of a well-rounded education to domestic and international employers.

The flexibility of the Interdisciplinary Studies degree program allows students to build on individual strengths and interests. Depending on your choices, graduates can prepare for careers in federal or civilian aviation or aerospace, management, engineering sciences, environmental sciences, communications, mathematics, or other related professions. In addition, Interdisciplinary Studies provide a strong foundation for advanced degrees. The Interdisciplinary Studies degree program seeks

students with an entrepreneurial spirit who will cross boundaries, make creative connections, be flexible in a changing career environment, and become leaders in chosen fields.

This degree program participates in the Air University-Associate to Baccalaureate Cooperative (AU-ABC Category I). Students who have completed a Community College of the Air Force (CCAF) associate's degree are eligible. CCAF graduates can complete a Bachelor of Science in Interdisciplinary Studies by taking no more than 60 semester hours beyond their CCAF degree.

B.S. in Interdisciplinary Studies students who wish to continue on to a master's degree may enroll in the BSIS 4+1 to M.S. in Human Security and Resilience (MSHSR) **degree program option.**

In addition, BSIS students are also eligible to minor in Military Studies.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

The Bachelor of Science in Interdisciplinary Studies degree requires successful completion of a minimum of 120 credit hours. Included in the 120 credit hours must be 40 credit hours of upper-division courses (300-400 level).

General Education Requirements

For a full description of Embry-Riddle General Education guidelines, please see the General Education section of this catalog. These minimum requirements are applicable to all degree programs.

Communication Theory and Skills	9
Lower-Level Humanities	3
Lower-Level Social Sciences	3
Lower or Upper-Level Humanities or Social Sciences	3
Upper-Level Humanities or Social Sciences	3
Computer Science	3
Mathematics	6
Physical and Life Sciences	6
Total Credits	**36**

Communication Theory and Skills		
Transfer English Composition or take:		3
ENGL 123	English Composition	
Transfer in up to six (6) credit hours of writing, communication or speech courses or take two Speech/English courses		6
Lower Level Humanities		
Transfer up to three (3) credit hours of 100 or 200 level Humanities courses or take a Humanities course (Lower Level)		3
Lower Level Social Sciences		
Transfer up to three (3) credit hours of Lower Level Social Sciences or take a Social Science elective (Lower Level)		3
Lower or Upper Level Humanities or Social Sciences		
Transfer lower or upper Humanities or Social Sciences credit or select a non-duplicated Humanities or Social Science elective (lower or upper level)		3
Upper Level Humanities or Social Sciences		
Transfer up to three (3) credit hours of upper level Humanities or Social Science or take a Humanities or Social Science elective, (Upper Level) *International Relations minor students may be required to take a humanities course to satisfy this requirement.		3
Computer Sciences		
Transfer three (3) credit hours of 100 level or above computer science course credit or take one of the following courses to satisfy Computer Science requirements. The course used to satisfy the General Education Computer Science requirement cannot also be used to satisfy a Core/Major or Minor requirement:		3
CSCI 109	Introduction to Computers and Applications	
CSCI 123	Introduction to Computing for Data Analysis	
CYBR 235	Computer and Network Technologies	
Mathematics		
Take six (6) credit hours from any MATH series courses (excluding MATH 106) or transfer in direct equivalents.		6
Physical and Life Sciences		
Transfer up to six (6) credit hours of physical/life science courses or take one or two Physical and Life Sciences courses (as appropriate to add up to a total of 6 semester hours).		6

Core Requirements / Categories

Aviation Foundation		
Select one of the following:		3
ASCI 202	Introduction to Aeronautical Science	
HIST 130	History of Aviation in America	
Humanities		
Transfer up to three (3) additional credit hours of humanities upper or lower -or- take a 3 credit hour upper or lower level Humanities course.		3
Management Foundation		
Transfer three (3) 100 level or above Management credit hours or choose one Embry-Riddle Management elective.		3
Interdisciplinary Research and Skills		
Transfer a three (3) credit hour of a 100 level or above Research Methods course or take:		3
RSCH 202	Introduction to Research Methods	
Transfer three (3) credit hours of 100 level or above Statistics course or select one from below:		3
STAT 211	Statistics with Aviation Applications	
STAT 222	Business Statistics	
International Perspectives		
Transfer three (3) upper level credit hour Government course or take a three 3 credit hour upper level Government course.		3
Philosophical Perspectives		
Transfer three (3) credit hours upper level Ethics course or take:		3
HUMN 330	Values and Ethics	
Upper-Level Literature		
Transfer three (3) credit hour upper level Humanities or Literature course or take an upper level Humanities or Literature course		3
Upper-Level Communication		
Transfer three (3) credit hour upper level Communications or English course or select an upper level COMD or ENGL course		3
Senior Capstone		
BSIS 473	Interdisciplinary Studies Capstone	3
Total Core Requirements		**30**

View Minors

Available Minors

The Military Studies minor is available exclusively to BSIS students. BSIS students must select **two or three** minor fields of study. Required credits in each minor vary, depending on the minor(s) chosen. Examples of minors and required credits are shown below but can change. Please consult the Worldwide Minor Courses of Study page for up to date list. Courses taken in minors cannot duplicate (be double-counted for) requirements in other areas.

Students may select any combination of two minors, but are cautioned that some minor combinations will result in degree totals exceeding 120 credits. Additionally, students should work with their academic advisors to assure that university upper-level course graduation requirements will be fulfilled with their selected minors, or undertake additional coursework to fulfill the requirement.

Total Credits (for first Minor)	**15/22**
Total Credits (for second Minor)	**15/22**

Specialization	**15**
Specialty Area of related courses can be taken at ERAU or transferred from another college or university.	

Open Electives	**0/9**
Open Electives (Any shortages in the required upper level hours will be made up in this area).	0/9

Total Degree Credits	**(Minimum) 120**

(at least 40 semester hours need to be upper level coursework)

Footnote:
Minnesota student residents refer to State of Minnesota Course Requirement statement for Humanities requirements.

BSIS to MSHSR 4+1 Program: A Unique Opportunity

Students who are accepted into the 4+1 program, spend three academic years in undergraduate-level study, minoring in Homeland Security or Emergency Services, and then, at the beginning of their senior year (having earned at least 75 credit hours with a 3.00 CGPA), will take up to three graduate-level courses that will meet undergraduate and graduate program requirements (when a B grade or better is achieved).

Upon completion of the BSIS requirements, students will be enrolled in graduate school and can complete their MSHSR degree in one year. In any graduate course taken by an undergraduate student, a grade of B or better must be earned. If a grade of C or F is earned in the MSHSR graduate courses taken for BSIS credit, the student will be removed from the 4+1 program, have credit awarded to the BSIS degree only, and may continue to complete the BSIS degree.

Students initiate program acceptance through their Academic Advisor or Campus Advisor; to help ensure program criteria are met. Student Advisor will complete the request for processing into the 4+1 program.

M.S. in Emergency Services

The Master of Science in Emergency Services (MSES) degree program is designed for individuals seeking advanced knowledge in emergency services, emergency management, and homeland security, which include disaster mitigation, preparedness, response, recovery, and terrorism research. With its emphasis on critical thinking, leadership skills, and current research, the degree is most appropriate for those who wish to extend their education beyond foundational fire and emergency services science. The MSES students will receive advanced knowledge in all parts of Emergency Services, Emergency Management, and Homeland Security, which are critical components of handling with natural and man-made disasters. The degree will prepare students for careers in fire and emergency services, emergency management organizations, homeland security departments, higher education institutes, public and private sectors, and non-governmental organizations. Current faculty research areas include the following: disaster recovery and mitigation, fire service administration, firefighter health (e.g., quality of sleep), disaster response (e.g., Incident Command System), immigration and homeland security, disaster preparedness (e.g., policies and planning), models of accidents, and emerging technologies.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

Emergency Services Core		
MSES 510	Crisis Emergency Risk Communication	3
MSES 520	Psychological Issues Among Emergency Service Personnel	3
MSES 530	Statistics in the Public Sector	3
MSES 550	Atmospheric Conditions in Emergency Services	3
MSES 560	Ethics in the Public Sector of Emergency Services	3
MSES 690	Capstone	3
Total Credits		**18**

Program Support		
MHSR 540	Foundations of Resilience	3
SFTY 570	Fire Safety Management	3
SFTY 600	Occupational Safety and Health Management	3
PMGT 652	Concepts and Practices of Project Management	3
RSCH 670	Research Methods	3
Total Credits		**15**

Total Degree Requirements	**33**

M.S. in Human Factors

The Master of Science in Human Factors (MSHF) is an online program tailored to working professionals who want to better understand the interrelationship between humans and technology, environment, and other system components, as relates to human performance, limitations, and error in simple and complex systems. This multidisciplinary degree explores how humans interact with technology, designs, social systems, operational interfaces, and environmental factors in contexts that include healthcare, aerospace, transportation, military, security, virtual and augmented reality, simulation, computing, and other complex sociotechnical systems concerned with human performance, system design, and safety.

Students have the opportunity to pursue either a Specialist or Research Cognate, to tailor the learning experience to their specific needs, professional goals, and industry demands. Along either track, students can expect to study human physiology, cognition, psychology; human performance capabilities, limitations and errors; virtual, robotic, and simulation environments and the human experience; and the impact of ergonomics, biomechanics, and anthropometrics on human effectiveness and interactions within complex sociotechnical systems.

Students will also learn and apply the critical thought and synthesis skills required to analyze current trends and past events and designs, in which human error led to operational failures, as core elements of the curriculum in either track. Our goal is for graduates to emerge from the MS in Human Factors program with the knowledge and ability to identify trends, analyze system requirements, develop strategies, recommend solutions, and recognize opportunities for innovation in this field.

Students may opt for the opportunity to complete the Specialist Cognate, which does not incorporate the research focus (30 credits), or to pursue the Research Cognate (33 credits), which incorporates Research Methods, Statistical Analysis, and the culminating Thesis I and II. This option will allow the student to complete original human factors research at the end of the MSHF degree program.

The MSHF degree program does not include any elective courses or specializations, and it follows a prescribed prerequisite course progression for the first two core courses; MSHF 606 and MSHF 612 must be successfully completed before a student may progress in the Program, and the thesis courses ~(RSCH 700A and RSCH 700B respectively) must be the final culminating courses.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Major/Core

MSHF 606	Human Cognition	3
MSHF 612	Human Performance, Limitation, and Error	3
MSHF 624	Ergonomics and Biomechanics	3
MSHF 640	Human Physiology and Adaptation	3
MSHF 641	Systems Psychology	3
MSHF 647	Human Factors in Complex Systems	3
MSHF 652	Crew Platform/Control Room Automation, Design, and Integration	3
Total Credits		**21**

Cognates:

Specialist

RSCH 650	Research Methods and Analysis	3
MSHF 618	Virtual Environments, Simulation and Robotics	3
MSHF 653	Cognitive Systems Engineering	3
Total Credits		**9**

Research

RSCH 665	Statistical Analysis	3
RSCH 670	Research Methods	3
RSCH 700A	Thesis I	3
RSCH 700B	Thesis II	3
Total Credits		**12**

Total Degree Requirements	
Specialist Option	30
Research Option	33

M.S. in Human Security and Resilience

The Masters of Science in Human Security and Resilience (MSHSR) is a 30 credit, online program tailored to working professionals and includes a capstone course following completion of the specialization courses. Capstone projects are opportunities for students to deeply explore and address challenges from their respective worksites or issues endemic to their careers in a scholarly way. The curriculum is composed of 10 three-credit courses, including a 6 credit common core, 15 credits of specialized human security and resilience courses, 3 credits of capstone courses, and 6 credits of electives.

The discipline is rooted in the concept of human security, first defined by the United Nations Development Programme in 1994. The UNDP definition established that human security includes protection from "chronic threats as hunger, disease, and repression, and protection from sudden and hurtful disruptions in the patterns of daily lives, whether in homes, jobs or communities." According to the United Nations concept, human security is multi-dimensional and includes economic security, food security, health security, environmental security, energy security, societal security, military security, and political security.

Students learn and apply concepts of resilience to communities facing human security threats, such as organized crime and political violence (terrorism), resource competition resulting from environmental change, and post-conflict or post-disaster recovery and reconstruction. The Stockholm Resilience Center defines resilience as "The capacity of a system – be it a landscape, a coastal area or a city – to deal with change and continue to develop. This means the capacity to withstand shocks and disturbances such as a financial crisis or use such an event to catalyze renewal and innovation." Courses in resilience equip students with a deep understanding of milestone legislation and international agreements that nations, states, and communities use to address stressors. Students learn and apply resilience-building toolkits to cities facing regular stressors and disturbances, such as routine flooding, hurricanes, wildfires, drought, and urban heat.

It should be noted that there is no single definition of human security or resilience or an agreement on how to achieve either. These are some of the essential questions the security and policy community is wrestling with – and wonderful areas for continued scholarship and graduate capstone project development. For example, the capstone and research projects in the Master of Science in Human Security and Resilience program will contribute to the critical debates in this field. Graduates from this program will make a significant contribution to the development and practice of this field. Human security and resilience touch every level of government: neighborhood, state, national and international. This degree program will find interest among human security and resilience practitioners from the municipal emergency management official to the national level strategic planner; from the public health advisor to an international humanitarian aid worker.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

Common Graduate Core		**6**
MHSR 510	Introduction to Human Security	3
RSCH 670	Research Methods	3
Human Security and Resiliency Specialization		**15**
MHSR 515	International Law and U.S. Security Policy	3
MHSR 520	Principles of International Conflict Resolution	3
MHSR 530	Environmental Security	3
MHSR 540	Foundations of Resilience	3
MHSR 550	Resilience Planning and Administration	3
Capstone		**3**
MHSR 690	MHSR Capstone	3
Total Credits		**24**

Electives

Electives	
Choose 6 credits from other graduate level courses approved by program chair.	
Total Credits	**6**

Total Degree Requirements	**30**

Minor in Applied Meteorology

The Minor in Applied Meteorology introduces the student with an interest in weather to the intriguing world of meteorology.

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

WEAX 201	Meteorology I	3
WEAX 301	Aviation Weather	3
Choose 9 credits from the list below: (6 credits must be 300 level)		9

WEAX 211	Meteorological Hazards	
WEAX 261	Applied Climatology	
WEAX 322	Space Weather	
WEAX 327	Operational Analysis and Forecasting	
WEAX 363	Thunderstorms	
WEAX 364	Weather for Aircrews	
Total Credits		**15**

Minor in Communication

The Communication Minor provides students with a unique program of study that answers the demand for those who wish to integrate science and technology with solid communication skills. Objectives include providing students with a strong foundation in the basic concepts of communication in today's technology-centric world, analyzing research techniques and the principles of scientific inquiry, gaining hands-on experience with news writing and reporting and business communication essentials, exploring new media communications including social media, blogging, web site content, and more, and evaluating the laws, ethics, cultural, and societal aspects of mass communication.

Not open to BS in Communication students.

ENGL 221	Technical Report Writing	3
or ENGL 222	Business Communication	
COMD 265	Introduction to Newswriting and Reporting	3
Take three courses (9 credit hours) from the following options:		9
COMD 320	Mass Communication Law and Ethics	
COMD 322	Aviation and Aerospace Communication	
COMD 350	Environmental Communication	
COMD 360	Public Relations	
COMD 415	Nonverbal Communication	
Total Credits		**15**

Minor in Economics

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

ECON 210	Microeconomics	3
ECON 211	Macroeconomics	3
Choose any 4 of the 5 following courses:		
ECON 225	Engineering Economics	3
ECON 312	Money and Banking	3
ECON 315	Managerial Economics	3
ECON 411	International Economics	3
ECON 420	Economics of Air Transportation	3
Total Hours		**18**

Minor in Emergency Services

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

Not open to BS in Emergency Services students.

Select five from the following list of courses:		15
ESVS 201	Fire-Related Human Behavior	3
ESVS 301	Community Risk Reduction for the Fire and Emergency Services	3
ESVS 302	Fire Dynamics	3
ESVS 303	Fire Protection Structures and Systems	3
ESVS 304	Fire Investigation and Analysis	3
ESVS 305	Fire Prevention Organization and Management	3
ESVS 400	Analytical Approaches to Public Fire Protection	3
ESVS 401	Applications of Fire Research	3
ESVS 402	Fire and Emergency Services Administration	3
ESVS 403	Disaster Planning and Control	3
ESVS 404	Managerial Issues in Hazardous Materials	3
ESVS 405	Personnel Management for Fire and Emergency Services	3
ESVS 406	Political and Legal Foundations of Fire Protection	3
SCTY 488	National Security Issues and Terrorism	3
Total Credits		**15**

Minor in Environmental Science

The Environmental Science minor includes the topics of Earth systems, biological diversity, world resources (water, food, energy), global climate change, urban planning, and sustainable development. This minor meets a growing interest of students and employers in environmental responsibility and sustainability.

Required Courses:		
PHYS 142	Introduction to Environmental Science	3
PHYS 304	Environmental Science	3
CHEM 110/CHEM 110L General Chemistry/General Chemistry Laboratory		4
-OR- BIOL 120 Foundations of Biology I		3
WEAX 201	Meteorology I	3
Electives (select one):		3
COMD 350	Environmental Communication	
SFTY 315	Environmental Compliance and Safety	
PHYS 359	Self-Directed Exploration of Environmental Science	
Total Credits		**15/16**

Minor in Homeland Security

The Homeland Security minor has a strong focus on protecting the nation's transportation infrastructure and planning for, responding to, and

emergency management of events dealing with acts of terrorism and natural and man-made disasters. This minor complements degrees in safety, aeronautical science, airport management, communication, human factors, aeronautics, business, or interdisciplinary studies.

Not open to BS in Homeland Security students.

HLSD 110	Introduction to Homeland Security	3
HLSD 215	Introduction to Industrial Security	3
HLSD 155	Foundations of Information Security	3
Take any two of the following courses:		6
EMGY 310	Fundamentals of Emergency Management	
HLSD 315	Critical Infrastructure Security, Resilience, and Risk Analysis	
HLSD 320	Homeland Security Law and Policy	
HLSD 360	Strategic Planning and Decision Making in Homeland Security	
SCTY 315	Studies in Intelligence I	
SCTY 385	Intelligence Collection and Analysis	
SCTY 488	National Security Issues and Terrorism	
Total Credits		**15**

Minor in Humanistic STEM

The Humanistic STEM minor course of study provides opportunities to enhance critical thinking skills, improve communication expertise and develop an interdisciplinary mindset. The interdisciplinarity across the meta-disciplines of Humanities and STEM demonstrates to employers that students can think beyond academic silos, using a variety of perspectives in creative problem solving.

Required Courses:		
HUMN 333	How Fiction, Film and Popular Culture Represent Science and Mathematics	3
PSYC 355	The Psychology of Creativity and Innovation	3
Take any three of the following Courses		9
HUMN 240	History of Communication Technologies	
HUMN 241	Introduction to Digital Humanities	
HUMN 256	Baseball History and Statistics	
HUMN 400	Science and Aviation/Aerospace Technology in Society	
MATH 201	Learning to Reason: Art and Quotient	
MATH 202	Learning to Reason: Commerce and Flux	
Two of the following H-STEM "infusion" courses can substitute for one of the three non-required courses:		6
HIST 130	History of Aviation in America	
PHYS 142	Introduction to Environmental Science	
PHYS 224	Astronomy	
CHEM 110	General Chemistry I	
STAT 211	Statistics with Aviation Applications	
or STAT 222	Business Statistics	
Total Credits		**15-18**

Minor in Industrial/Organizational Psychology

The Industrial and Organizational Psychology minor focuses on the human performance in the workplace environment and the application of psychological principles to organizations.

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

PSYC 340	Industrial/Organizational Psychology	3
PSYC 326	Group and Team Behavior	3
PSYC 350	Social Psychology	3
or SOCI 310	Personality Development	
Choose 2 courses from one of the following elective areas:		6
Emergency Services:		
ESVS 201	Fire-Related Human Behavior	
ESVS 405	Personnel Management for Fire and Emergency Services	
English/Communications:		
ENGL 222	Business Communication	
ENGL 223	Collaborative Writing & Presenting	
COMD 362	Communication and Organizational Culture	
COMD 415	Nonverbal Communication	
Psychology:		
PSYC 320	Aviation Psychology	
PSYC 400	Introduction to Cognitive Science	
PSYC 350	Social Psychology (Whichever not taken as core)	
or SOCI 310	Personality Development	
Business:		
HRMD 314	Human Resource Management	
OBLD 317	Organizational Behavior	
OBLD 371	Leadership	
OBLD 427	Management of the Multicultural Workforce	
HRMD 482	Human Resources Training and Development	
HRMD 495	Staffing and Workforce Planning	
Aeronautics:		
SFTY 320	Human Factors in Aviation Safety	
SFTY 321	Ergonomics	
SFTY 415	Human Reliability and Safety Analysis	
Total Credits		**15**

Minor in International Relations

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

GOVT 331	Current Issues in America	3
HIST 130	History of Aviation in America	3
Select three of the following:		9

GOVT 325	International Studies	
GOVT 340	U.S. Foreign Policy	
GOVT 363	Inter-American Relations	
GOVT 402	Globalization and World Politics	
HUMN 210	World Culture	
Total Credits		**15**

Minor in Mathematics

The Mathematics minor includes a multitude of topics involving limits, derivatives, integrals, multivariable calculus, first and second order differential equations, Laplace transforms and matrix methods of solutions. The minor supports a STEM (Science, Technology, Engineering and Mathematics) emphasis highly desired by the aeronautics and technical industries.

MATH 241	Calculus and Analytical Geometry I	4
MATH 242	Calculus and Analytical Geometry II	4
MATH 243	Calculus and Analytical Geometry III	4
MATH 345	Differential Equations and Matrix Methods	4
STAT 412	Probability and Statistics	3
Total Credits		**19**

Minor in Military Science

Students will gain a general working knowledge of the military and its history, the tenets of homeland security, and basic management principles. These core elements will act as a foundation for further study in a variety of related areas within the minor program electives.

Military Science (Non-ROTC)		
Core		**9**
HIST 331	Selected Topics in US Military History	
HLSD 110	Introduction to Homeland Security	
MGMT 201	Principles of Management	
Choose any 2 courses from the following: (at least 3 credit hours must be Upper Level)		**6**
History and Government		
GOVT 320	American National Government	
GOVT 325	International Studies	
GOVT 340	U.S. Foreign Policy	
HIST 130	History of Aviation in America	
Homeland Security		
HLSD 290	Environmental Security	
HLSD 415	Immigration and Homeland Security	
Cybersecurity		
HLSD 155	Foundations of Information Security	
Security Science		
SCTY 312	Global Crime and Criminal Justice Systems	
SCTY 315	Studies in Intelligence I	
SCTY 410	Physical Security	
SCTY 488	National Security Issues and Terrorism	
SCTY 415	Studies in Intelligence II	
Leadership		
OBLD 275	Critical Thinking for Leadership	
OBLD 304	Coaching and Mentoring	
OBLD 310	Mediation, Negotiation, and Conflict Resolution	
Total Credits		**15**

Minor in Military Studies

Students, having earned Joint Services transcripted American Council of Education (ACE) upper-level recommended credit, pursuing a B.S. in Interdisciplinary Studies degree; are eligible to minor in Military Studies.

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

Available to BS in Interdisciplinary Studies students only.

Upper Level ACE Recommended Credit		
Joint Services transcripted, upper level ACE recommended academic credit.		15
Upper Level Embry-Riddle Elective Credit		
Select any two non-duplicated 300-400 level ASCI or MGMT courses.		6
Total Credits		**21**

Human Factors

The Human Factors certificate program is designed to give a competitive edge to its graduates by equipping practitioners and researchers to critically analyze human performance capabilities, limitations, and error across a wide array of industries and applications. With rapid advances in science, technology, and applications in automation, robotics, artificial intelligence, and virtual/augmented realty, sociotechnical interfaces are becoming increasingly more complex. This trend emphasizes the need to optimize the interaction between humans and systems, to enhance safety, security, performance, usability, and satisfaction. The multidisciplinary curriculum was designed for working professionals, as is evidenced by the flexibility of the online platform and highly relevant content, applications, and assessment protocols. A total of 12 credits, four courses, are required to complete the program. The required courses support Human Factors and Ergonomics Society tenets, with a concentration on applied cognition, psychology, physiology, and ergonomics.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Human Factors Certificate

MSHF 606	Human Cognition	3
MSHF 612	Human Performance, Limitation, and Error	3
MSHF 624	Ergonomics and Biomechanics	3
MSHF 640	Human Physiology and Adaptation	3
Total Credits		**12**

Estimated Cost of Attendance

College of Business

The College of Business strives to be the premier global educator of leaders and managers in aviation and aerospace. We support this mission by providing undergraduate and graduate programs in leadership and business management that are developed with a focus on the following core objectives:

- To add value to students' lives and careers
- To foster excellence in learning
- To nourish entrepreneurship and discovery in learning
- To remain connected to the aviation and aerospace industry
- To encourage diversity in all that we do

For Faculty lists and other information, view the College of Business website.

Certificates

Undergraduate

Applied Information Technology (AIT) Certificate

Graduate

Business Intelligence and Analytics
Finance
Human Resources
Information Systems Security
Information Technology Management
International Business
Leadership
Marketing
Project Management

Partnership Certificate

Airline Management
International Society of Transport Aircraft Trading (ISTAT)

A.S. in Aviation Business Administration

In the high-powered aviation industry, the key staff, operational, and executive positions are awarded to professionals who display a thorough knowledge of aviation as well as an exceptional aptitude for business. If you have a passion for this exciting field and want to develop the business skills you need to reach the top, the Associate in Science in Aviation Business Administration from Embry-Riddle Aeronautical University — Worldwide can help you achieve your goals.

As a student of this degree program, you will gain a solid foundation of core business knowledge while developing the sharp business acumen demanded at the highest levels of any organization. The Associate in Science in Aviation Business Administration explores all facets of business administration and management, including:

- Economics
- Management of Aeronautical Science
- Business Statistics & Accounting
- Business Marketing & Management
- Human Resources
- Finance

Through this comprehensive program, you will learn how to think analytically, communicate clearly, and lead a team effectively. These valuable skills will prime you for professional success in any field.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education		
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, and Social Sciences may be chosen from those listed below, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.		
Communication Theory and Skills		
ENGL 123	English Composition	3
ENGL 222	Business Communication	3
Any Communication Theory and Skills above ENGL 106		3
Humanities		
Any Humanities elective (lower or upper level)		3
Any Humanities Elective (Upper Level)		3
Social Sciences		
ECON 210	Microeconomics	3
ECON 211	Macroeconomics	3
Physical and Life Science		
Any Physics/Biology/Meteorology/Chemistry		6
Mathematics		
STAT 211	Statistics with Aviation Applications	3
or STAT 222	Business Statistics	
Any College Algebra or Higher Math or any Statistics Credit cannot be awarded for STAT 211 or STAT 222		3
Computer Science		
Any Computer Science		3
Total Credits		**36**

Core/Major

Major		
MGMT 201	Principles of Management	3
ACCT 210	Financial Accounting	3
MMIS 221	Introduction to Management Information Systems	3
MKTG 311	Marketing	3
ACCT 312	Managerial Accounting	3
OBLD 317	Organizational Behavior	3
MGMT 325	Social Responsibility and Ethics in Management	3
FINE 332	Corporate Finance I	3
Total Credits		**24**
Total Degree Requirements		**60**

A.S. in Technical Management

You're a skilled professional in a technical field, but you're ready to advance. You're looking for a move within your own organization, seeking the education to help you move into management, as well as the personal satisfaction and financial rewards that go along with it. The Associate in Science in Technical Management (ASTM) program from Embry-Riddle Aeronautical University — Worldwide can take you there.

In today's workplace, a college degree has never been more important. Employers see it as a demonstration of knowledge, motivation, and persistence — qualities that will set you above and apart from the pack. The Associate in Science in Technical Management program will appeal to your background, interests, and talents and give you a competitive edge in your career, too.

The Associate in Science in Technical Management curriculum was developed to give students the skills to marshal the resources of any organization toward its goals. Over the course of this program, students learn to organize, plan, staff, and coordinate physical assets as well as personnel.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education		
Embry-Riddle courses in the general education categories of Communication Theory and Skills, and Humanities and Social Sciences may be chosen from those listed, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.		
Communication Theory and Skills		
ENGL 123	English Composition	3
ENGL 222	Business Communication	3
Any Communication Theory & Skills above ENGL 106		3
Humanities		
Humanities elective (lower or upper level)		3
Any Upper Level Humanities		3
Social Sciences		
ECON 210	Microeconomics	3
ECON 211	Macroeconomics	3
Physical and Life Science		
Physics/Biology/Meteorology		6
Mathematics		
STAT 211	Statistics with Aviation Applications	3
or STAT 222	Business Statistics	
Any College Algebra or Higher Math or any Statistics Credit cannot be awarded for STAT 211 or STAT 222		3
Computer Science		
Any Computer Science		3
Total Credits		**36**

Core/Major

ASTM Core		
MGMT 201	Principles of Management	3
MGMT 203	Management for Aeronautical Science	3
ACCT 210	Financial Accounting	3
MMIS 221	Introduction to Management Information Systems	3
Total Credits		**12**

Electives/Minor

Technical Transfer Credit or COB Minor or MGMT Electives	**9**
If technical transfer credit is not applicable, the 9 hours can ONLY be used toward College of Business (COB) minors. If no minor is chosen, then MGMT electives have to be courses at the 200-300-400 level.	
Open Electives (Lower or Upper Level)	**3**
May be used for Minors in other Departments	
May be used for College of Business or non College of Business Minors.	

Electives/AIT* Technical Specializations

**Note: AIT Certificates and ISTA courses are only available for enrollment in select locations at select times.*

Solutions Architect Certificate	
ISTA 200-Computer Science Fundamentals	3
ISTA 222-Introduction to Programming (Python)	3
ISTA 334-Introduction to Linux System Administration	3
ISTA 390-AWS Academy Cloud Architecting	3
ISTA 420-Relational Databases and SQL	3
ISTA 424-Software Development (Python)	3
Total Credits	**18**

Total Degree Requirements	**60-66**

B.S. in Aviation Business Administration

The Aviation Business Administration program is designed for students seeking to lead and manage in the world of aviation.

Balancing key aviation concepts with advanced business strategy, the curriculum provides students with a solid foundation of industry expertise while developing the sharp business acumen demanded at the highest levels of an organization. The program explores all facets of business administration, including accounting, economics, finance, marketing, management, and global business strategies.

Upon graduation, students will be eligible and qualified candidates for desirable staff, operational, and executive positions within the military sector or civilian business community.

The degree curriculum consists of General Education, Common Undergraduate Business Core, Transfer Credit (when applicable) and the BSABA Core and Electives.

As part of the college of business undergraduate degree, students will take a comprehensive exam in MGMT 436 (Strategic Management).

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education		
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, and Social Sciences may be chosen from those listed below, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.		
Communication Theory and Skills		
ENGL 123	English Composition	3
ENGL 222	Business Communication	3
Any Communication Theory and Skills above ENGL 106		3
Humanities*		
Any Humanities elective (lower or upper level)		3
Any Humanities Elective (upper level)		3
Social Sciences		
ECON 210	Microeconomics	3
ECON 211	Macroeconomics	3
Physical and Life Science		
Any Physics/Biology/Meteorology/Chemistry		6
Mathematics		
STAT 211	Statistics with Aviation Applications	3
or STAT 222	Business Statistics	

Any College Algebra or Higher Math or any Statistics Credit cannot be awarded for STAT 211 or STAT 222		3
Computer Science		
Computer Science Elective		3
Total Credits		**36**

Core/Major

Common Business Core		
MGMT 201	Principles of Management	3
MMIS 221	Introduction to Management Information Systems	3
MKTG 311	Marketing	3
ACCT 210	Financial Accounting	3
ACCT 312	Managerial Accounting	3
OBLD 317	Organizational Behavior	3
MGMT 325	Social Responsibility and Ethics in Management	3
FINE 332	Corporate Finance I	3
BUSW 335	International Business	3
BUSW 390	Business Law	3
LGMT 420	Management of Production and Operations	3
MGMT 436	Strategic Management	3
Total Credits		**36**

Aviation Management Core		
BUSW 352	Business Quantitative Methods	3
ECON 315	Managerial Economics	3
or ECON 420	Economics of Air Transportation	
BSAB 410	Management of Air Cargo	3
or AMNT 416	Aviation Maintenance Management: A Global Perspective	
MGMT 415	Airline Management	3
SFTY 350	Aircraft Crash and Emergency Management	3
MKTG 450	Aviation/Airport Marketing	3
MMIS 494	Aviation Information Systems	3
or SFTY 345	Aviation Safety Program Management	
MGMT 408	Airport Management	3
or MGMT 412	Airport Planning and Design	
or BSAB 425	Trends and Current Problems in Air Transportation	
MGMT 411	Logistics Management for Aviation/Aerospace	3
or PMGT 325	Concepts and Practices of Project Management	
MGMT 426	International Aviation Management **	3
**Recommended to be taken prior to MGMT 436 Strategic Management		
Total Credits		**30**

Electives

Open Electives	**12**
BSABA Open Electives (Transfer credit, ERAU undergraduate course, or specified electives from approved list below)	
Specified Electives	**6**
BSABA Specified Electives (must be non-duplicated courses)	
Any non-duplicated COB undergraduate course, ASCI, CYBR, ECON, BSSM, SCTY, or SFTY course 300 level or higher. Students will need to meet any prerequisite requirements which could result in additional credit hours in the degree.	
Total Credits	**18**

Minor Option
Students have the option to structure electives such that a Minor may be earned. Some minors could result in more than 120 total hours.
View Possible Minors
Total Degree Requirements **120**

* Minnesota student residents refer to State of Minnesota Course Requirement statement for Humanities requirements.

B.S. in Business Analytics

Organizations are generating volumes of data. This data could be used to solve problems, generate insight, mitigate risk, identify superior products, etc. if it were properly analyzed. The Bachelor of Science in Business Analytics (BSBA) is grounded in the concepts of Evidence-Based Management and seeks to provide data-driven answers to today's organizational questions. Students will learn how to source, manipulate, and analyze data as well as generate insightful results all within an ethical framework. These results will include infographics, visualizations, and executive reports suitable for a business audience. In addition, students will learn the hands-on skills needed to use popular analytics software platforms and manage large volumes of data and report out those results in impactful ways using aviation and aerospace examples and case studies. The goal of this degree is to enable to the student to look through a business lens, generate new insights with data, and influence key business decisions.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education		
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, and Social Sciences may be chosen from the list below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.		
Communication Theory and Skills		
ENGL 123	English Composition	3
ENGL 222	Business Communication	3
Any Communication Theory and Skills above ENGL 106		3
Humanities*		
Humanities elective (lower or upper level)		3
Humanities Elective (upper level)		3
Social Sciences		
ECON 210	Microeconomics	3
ECON 211	Macroeconomics	3
Physical and Life Science		
Physics/Biology/Meteorology/Chemistry/Environmental Science/Astronomy		6
Mathematics		
STAT 211	Statistics with Aviation Applications	3
or STAT 222	Business Statistics	
Any College Algebra or Higher Math or any Statistics Credit cannot be awarded for STAT 211 or STAT 222		3
Computer Science		
CSCI 123	Introduction to Computing for Data Analysis	3
Total Credits		**36**

Core/Major

Common Business Core		
MGMT 201	Principles of Management	3
MMIS 221	Introduction to Management Information Systems	3
MKTG 311	Marketing	3
ACCT 210	Financial Accounting	3
ACCT 312	Managerial Accounting	3
OBLD 317	Organizational Behavior	3
MGMT 325	Social Responsibility and Ethics in Management	3
FINE 332	Corporate Finance I	3
BUSW 335	International Business	3
BUSW 390	Business Law	3
LGMT 420	Management of Production and Operations	3
MGMT 436	Strategic Management	3
Total Credits		**36**

Business Analytics Core		
BUSW 352	Business Quantitative Methods	3
BUAN 301	Evidence-Based Management: The Need for Data	3
BUAN 428	Business Analytics and Data Intelligence	3
BUAN 302	Communication and Ethics in Data Analysis	3
MMIS 385	Programming Concepts	3
MMIS 392	Database Management	3
BUAN 304	Advanced Statistics and Analytics Concepts	3
BUAN 405	Applied Analytics I -- Descriptive Analytics	3
BUAN 406	Applied Analytics II -- Predictive Analytics	3
BUAN 407	Business Intelligence in Industry Capstone	3
Total Credits		**30**

Electives

Transfer Credit -or- COB Minor -or- COB non-duplicated undergraduate level courses	**15**
Open Electives (Lower or Upper Level)	**3**
Total Degree Requirements	**120**

* Minnesota student residents refer to State of Minnesota Course Requirement statement for Humanities requirements.

B.S. in Leadership

Leadership plays a key role in today's global economy and over the past several years has become one of hottest topics in business. Learning how to lead in a complex environment is vital to organizational success. The Bachelor of Science in Leadership (BSL) focuses on developing a holistic leader through a comprehensive and practical leadership education. Students who complete the degree will have knowledge in foundational leadership theories, complexity, ethics, critical thinking, communication, culture and diversity, decision-making, coaching and mentoring, and other areas related to leadership. This degree ensures that students have the appropriate skills to contribute as a leader in all aspects of society.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education		
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, and Social Sciences may be chosen from the list below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.		
Communication Theory and Skills		
ENGL 123	English Composition	3
ENGL 222	Business Communication	3
Any Communication Theory and Skills above ENGL 106		3
Humanities*		
Humanities elective (lower or upper level)		3
Any upper Level Humanities		3
Social Sciences		
ECON 210	Microeconomics	3
ECON 211	Macroeconomics	3
Physical and Life Science		
Physics/Biology/Meteorology		6
Mathematics		
STAT 211	Statistics with Aviation Applications	3
or STAT 222	Business Statistics	
Any College Algebra or Higher Math or any Statistics Credit cannot be awarded for STAT 211 or STAT 222		3
Computer Science		
Any Computer Science		3
Total Credits		**36**

Core/Major

Common Business Core		
MGMT 201	Principles of Management	3
MMIS 221	Introduction to Management Information Systems	3
MKTG 311	Marketing	3
ACCT 210	Financial Accounting	3
ACCT 312	Managerial Accounting	3
OBLD 317	Organizational Behavior	3
MGMT 325	Social Responsibility and Ethics in Management	3
FINE 332	Corporate Finance I	3
BUSW 335	International Business	3
BUSW 390	Business Law	3
LGMT 420	Management of Production and Operations	3
MGMT 436	Strategic Management	3
Total Credits		**36**

Leadership Core		
OBLD 275	Critical Thinking for Leadership	3
OBLD 285	The Evolution of Leadership	3
OBLD 300	Emotional, Social, and Cognitive Intelligence	3
OBLD 304	Coaching and Mentoring	3
OBLD 310	Mediation, Negotiation, and Conflict Resolution	3
OBLD 315	Contemporary Leadership Theories	3
OBLD 402	Ethics, Values, and Differences	3
OBLD 407	Driving Change in Organizations	3

OBLD 412	Leadership Practicum	3
Total Credits		**27**

Electives

Transfer Credit -or- COB Minor-or- MGMT Electives	**21**
If technical transfer credit is not applicable, the 21 credit hours can ONLY be used toward College of Business (COB) minors. Minors require fulfillment of a minimum of 15 credit hours. If no minor is chosen, then MGMT electives 200-300-400 level courses may be used.	
Total Degree Requirements	**120**

** Minnesota student residents refer to State of Minnesota Course Requirement statement for Humanities requirements.

B.S. in Logistics and Supply Chain Management

The Bachelor of Science in Logistics and Supply Chain Management is a 120 credit hour program that is available through the Embry-Riddle Worldwide Campus network. Curriculum is built upon a strong foundation of established coursework that will help you distinguish yourself as a leader in this fast-growing career field.

You will have the choice of multiple learning modes – online, face-to-face, video teleconference – to gain the advanced knowledge and skill sets that set you apart as an informed professional. Topics of study will include: technology, process, and people solutions for warehousing, distribution, and transportation operations; inventory management methods that optimize the supply chain; purchasing and procurement policies and procedures; metrics for tracking and analyzing supply chain performance; best practices, regulations, and professional ethics.

Successful completion of this program will provide you with a strong foundation of knowledge that will serve you on the job and prepare you for future training and education, including a Master's Degree or professional certifications such as the Certified Professional in Supply Management (CPSM) and Certified Professional in Supplier Diversity (CPSD) offered by the Institute for Supply Management (ISM); or the Certified Supply Chain Professional (CSCP) offered by Association for Supply Chain Management (ASCM); or Certified Professional Logistician (CPL) offered by the International Society of Logistics (SOLE). The certification process for the above can be found on each organization's website, and it involves taking exams on different topics and may also require a minimum number of years of professional experience.

Embry-Riddle Logistics and Supply Chain Management graduates are in great demand around the corner and around the world. Any industry that is impacted by manufacturing, warehousing, distribution, transportation, and/or inventory management, is in great need for logisticians and supply chain professionals. A career in Logistics and Supply Chain Management also pays very well. Source: Salary.com for average Supply Chain Manager salary.

As part of the college of business undergraduate degree, students will take a comprehensive exam in MGMT 436 (Strategic Management).

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education		
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, and Social Sciences may be chosen from those listed below, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.		
Communication Theory and Skills		
ENGL 123	English Composition	3
ENGL 222	Business Communication	3
Any Communication Theory and Skills above ENGL 106		3
Humanities*		
Humanities elective (lower or upper level)		3
Humanities Elective (Upper Level)		3
Social Sciences		
ECON 210	Microeconomics	3
ECON 211	Macroeconomics	3
Physical and Life Science		
Physics/Biology/Meteorology		6
Mathematics		
STAT 211	Statistics with Aviation Applications	3
or STAT 222	Business Statistics	
Any College Algebra or Higher Math or Statistics Credit cannot be awarded for STAT 211 or STAT 222		3
Computer Science		
Any Computer Science		3
Total Credits		**36**

Core/Major

Business Core		
MGMT 201	Principles of Management	3
MMIS 221	Introduction to Management Information Systems	3
MKTG 311	Marketing	3
ACCT 210	Financial Accounting	3
ACCT 312	Managerial Accounting	3
OBLD 317	Organizational Behavior	3
MGMT 325	Social Responsibility and Ethics in Management	3
FINE 332	Corporate Finance I	3
BUSW 335	International Business	3
BUSW 390	Business Law	3
LGMT 420	Management of Production and Operations	3
MGMT 436	Strategic Management	3
Total Credits		**36**

Logistics & Supply Chain Management Core		
BUSW 352	Business Quantitative Methods	3
LGMT 236	Principles of Procurement Management	3
LGMT 331	Transportation Principles	3
LGMT 400	Business Process Integration	3
LGMT 430	Business Process Configuration	3
LGMT 440	Advanced Professional Logistics	3
LGMT 444	Principles of Supply Chain Management	3
Total Credits		**21**

Electives

Technical Transfer Credit -or- COB Minor-or-COB Electives	**12**
If technical transfer credit is not applicable, the 12 hours may ONLY be used toward College of Business (COB) minors or COB electives. Minors require fulfillment of a minimum of 15 credit hours. If no minor is chosen, then 200-300-400 level COB courses may be used.	
Open Electives	**15**
Total Degree Requirements	**120**

* Minnesota student residents refer to State of Minnesota Course Requirement statement for Humanities requirements.

B.S. in Project Management

From developing transformative technologies to launching bold new products, companies in every industry need projects delivered on time and on budget with minimal friction. Project managers have the opportunity to work on leading-edge ventures in fields of their choice. And the need for the expertise of these project leaders is only growing.

As one of the few undergraduate degree programs in this dynamic field, the Embry-Riddle Bachelor of Science in Project Management (BSPM) will help you master the skills to lead the new projects and strategic initiatives that keep companies ahead of the curve. The project management curriculum was developed entirely by certified PMPs®, industry leaders who possess the recognized global standard for project management knowledge and experience issued by the Project Management Institute® (PMI) – the worldwide leader in the development of standards for the dynamic profession of Project Management.

BSPM graduates will be equipped to manage, drive and execute on vital projects required by companies today and in the future. They will also be prepared to pursue certification or continue on with higher education.

The Bachelor of Science in Project Management is accredited by the PMI Global Accreditation Center for Project Management Education Programs (GAC). Degree programs that achieve GAC accreditation must demonstrate and meet the GAC's rigorous global standards of accreditation, which include an assessment of each program's objectives and outcomes, faculty and student evaluations, onsite and online resources, annual self-evaluation, and proof of continuous improvements in the area of project management education. GAC accreditation ensures the quality of academic degree programs and their graduates in order to meet the standards of the rapidly growing field of project management.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education		
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, and Social Sciences may be chosen from the list below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.		
Communication Theory and Skills		
ENGL 123	English Composition	3
ENGL 222	Business Communication	3
Any Communication Theory and Skills above ENGL 106		3
Humanities*		
Humanities elective (lower or upper level)		3
Humanities Elective (Upper Level)		3
Social Sciences		
ECON 210	Microeconomics	3
ECON 211	Macroeconomics	3
Physical and Life Science		
Physics/Biology/Meteorology/Chemistry, etc.		6
Mathematics		
STAT 211	Statistics with Aviation Applications	3
or STAT 222	Business Statistics	
Any College Algebra or Higher Math or any Statistics Credit cannot be awarded for STAT 211 or STAT 222		3
Computer Science		
Any Computer Science		3
Total Credits		**36**

Core/Major

Common Business Core		
MGMT 201	Principles of Management	3
MMIS 221	Introduction to Management Information Systems	3
MKTG 311	Marketing	3
ACCT 210	Financial Accounting	3
ACCT 312	Managerial Accounting	3
OBLD 317	Organizational Behavior	3
MGMT 325	Social Responsibility and Ethics in Management	3
FINE 332	Corporate Finance I	3
BUSW 335	International Business	3
BUSW 390	Business Law	3
LGMT 420	Management of Production and Operations	3
MGMT 436	Strategic Management	3
Total Credits		**36**
Project Management Core		
PMGT 300	The Project Management Profession	3
PMGT 391	Project Planning 1	3
PMGT 394	Project Planning 2	3
PMGT 400	Project Risk and Control	3
Choose 2 courses from the following:		6
PMGT 424	Project Management in Aviation Operations	
PMGT 461	Global Project Management	
PMGT 465	Managing Troubled Projects	
PMGT 470	Agile Project Management	
PMGT 490	Project Management Capstone	3
Total Credits		**21**

Electives

Transfer Credit, Minor, or COB Electives	**15**
Technical Transfer Credit, Any Worldwide Minor, or College of Business 300-400 level electives.	15
Open Electives	**12**
Total Degree Requirements	**120**

* Minnesota student residents refer to State of Minnesota Course Requirement statement for Humanities requirements.

B.S. in Technical Management

The Technical Management degree is designed to prepare students for a variety of managerial/supervisory positions in today's business environment. The program teaches students how to think critically, to employ applied research and problem-solving skills to evaluate, manage, and improve business processes.

Many working adults with a background in a technical specialty are looking for opportunities to move transition into a management or supervisory position as a way of advancing in their careers. For these individuals, Embry-Riddle Aeronautical University's Bachelor of Science in Technical Management programs could be the key to gaining the experience and knowledge to make the transition to management.

The management courses enable students to develop their management, leadership, and organizational behavior skills. Additionally, the business information system courses teach students how to approach, understand, and resolve problems inherent with the implementation and control of a variety of such systems.

This degree opens career opportunities in several fields. Regardless of background, Technical Management students gain valuable skills, learning how to organize, plan, staff, and coordinate company resources toward the organization's goals and objectives.

This degree is designed to accommodate a transfer student who have either completed an appropriate associate degree at an accredited college or university (generally 60 credit hours) or has a minimum of 60 hours in coursework from the general education categories of Communication Theory and Skills, Mathematics, Physical Sciences, Computers, Humanities, and Social Sciences.

The Bachelor of Science in Technical Management curriculum offers general education, common undergraduate business core, plus six majors and minors that take students deeper into their areas of interest, including: areas of Technical Management, Aviation Management, Management of Information Systems, Information Security, Occupational Safety and Health, and Human Resources Management.

Note: As part of the college of business undergraduate degree, students will take a comprehensive exam in MGMT 436 (Strategic Management).

BSTM Program Notes:

1) Students in the Human Resources Management Major should complete HRMD 314 Human Resource Management before taking other courses in the Major.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

General Education

General Education		
Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities, and Social Sciences may be chosen from the list below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.		
Communication Theory and Skills		
ENGL 123	English Composition	3
ENGL 222	Business Communication	3
Any Communication Theory and Skills above ENGL 106		3
Humanities**		
Humanities elective (lower or upper level)		3
Any Upper Level Humanities		3
Social Sciences		
ECON 210	Microeconomics	3
ECON 211	Macroeconomics	3
Physical and Life Science		
Physics/Biology/Meteorology/Chemistry, etc.		6
Mathematics		
STAT 211	Statistics with Aviation Applications	3
or STAT 222	Business Statistics	
Any College Algebra or Higher Math or any Statistics Credit cannot be awarded for STAT 211 or STAT 222		3
Computer Science		
Any computer Science		3
Total Credits		**36**

Core/Major

Common Business Core		
MGMT 201	Principles of Management	3
MMIS 221	Introduction to Management Information Systems	3
MKTG 311	Marketing	3
ACCT 210	Financial Accounting	3
ACCT 312	Managerial Accounting	3
OBLD 317	Organizational Behavior	3
MGMT 325	Social Responsibility and Ethics in Management	3
FINE 332	Corporate Finance I	3
BUSW 335	International Business	3
BUSW 390	Business Law	3
LGMT 420	Management of Production and Operations	3
MGMT 436	Strategic Management	3
Total Credits		**36**

Choose Major:	**21**
Technical Management Major	
Aviation Management Major	
Management of Information Systems Major	
Information Security Major	
Occupational Safety and Health Major	
Human Resources Management Major	
Leadership	

Electives/AIT* Specializations

**Note: AIT Certificate and ISTA courses are only available for enrollment in select locations at select times.*

Transfer Credit -or- COB Minor-or- MGMT Electives	**12**
If technical transfer credit is not applicable, the 12 hours can ONLY be used toward College of Business (COB) minors. If no minor is chosen, then MGMT electives 200-300-400 level courses.	
Open Electives (Lower or Upper Level) may be used for Minors in other departments.	**15**
Applied Information Technology (AIT) Certificates are available at certain locations at certain times and will count towards elective credit within the degree.	
Solutions Architect Certificate	
ISTA 200, ISTA 222, ISTA 390, ISTA 334, ISTA 420, ISTA 424	

Available Minors

Students have the option to structure electives such that a Minor may be earned.

Total Degree Requirements	**120**

Technical Management Major

Technical Management Major		
MMIS 320	Business Information Systems	3

MMIS 321	Aviation/Aerospace Systems Analysis Methods	3
PMGT 325	Concepts and Practices of Project Management	3
MISA 394	Information Security Management	3
MGMT 411	Logistics Management for Aviation/Aerospace	3
LGMT 444	Principles of Supply Chain Management	3
MKTG 449	Strategic Marketing Management	3
Total Credits		**21**

Aviation Management Major

Aviation Management Major

The Aviation Management Major is designed to provide students interested in pursuing a management discipline in the aviation, defense, and aerospace fields with a detailed and relevant flow of courses.

Students taking courses in this Major will receive a depth of knowledge in a wide array of aviation, airport, and airline management areas. In addition, this major features a course that will concentrate on today's trends, opportunities and problems in air transportation. The aviation-related management courses should be both rewarding and challenging to the students participating in this Major.

MGMT 408	Airport Management	3
MGMT 412	Airport Planning and Design	3
MGMT 415	Airline Management	3
AMNT 416	Aviation Maintenance Management: A Global Perspective	3
BSAB 425	Trends and Current Problems in Air Transportation	3
MGMT 426	International Aviation Management	3
MKTG 450	Aviation/Airport Marketing	3
Total Credits		**21**

Management of Information Systems Major

Management of Information Systems Major

As information systems become more advanced and increasingly global, the need for Information Systems specialists increases as well. The Management of Information Systems (MIS) major focuses on the business processes of organizations and the information technology utilized in those organizations. The program prepares students to learn to design, implement, and maintain effective information systems in organizations. The MIS major is designed to develop the skills and knowledge necessary for information systems development and support positions.

MMIS 321	Aviation/Aerospace Systems Analysis Methods	3
MMIS 385	Programming Concepts	3
MMIS 392	Database Management	3
MMIS 393	Computer Networks	3
MISA 394	Information Security Management	3
BUAN 428	Business Analytics and Data Intelligence	3
MMIS 494	Aviation Information Systems	3
Total Credits		**21**

Information Security Major

Information Security Major

The Information Security Major prepares students to understand the managerial aspects and technics of information security in a business context. Organizations must understand that information and the ability to transact are core enablers and without these abilities organizations can face great loses, negative publicity, or worse. Students who complete this major will understand the role of information security, how to respond to data breaches and incidents, and generate solid continuity plans to ensure the organization can continue to transact even when assets are vulnerable or compromised. Today's thread landscape is always changing so a keen understanding of information security is paramount.

MISA 386	Fundamentals of Information Systems Security	3
MISA 387	Managing Risk in Information Systems	3
MISA 388	System Forensics, Investigation, and Response	3
MMIS 389	Information Assurance and Information Quality	3
MISA 402	Legal Issues in Information Security	3
MISA 403	IT Audit and Control	3
MISA 404	Business Continuity & Disaster Recovery Planning	3
Total Credits		**21**

Occupational Safety and Health Major

Occupational Safety and Health Major

Creating and maintaining a safe work environment and protecting workers from hazards have become a critical issue in nearly every industry. The Occupational Safety and Health major was developed to prepare students for supervisory or management positions relating to occupational safety and health in environmental compliance, ergonomics, industrial hygiene and toxicology, construction, fire protection, and systems design. This program is geared toward students who are seeking new opportunities in the public or private sector, such as service or manufacturing industries, local, state, or federal agencies, and the military.

SFTY 311	Fundamentals of Occupational Safety and Health	3
SFTY 315	Environmental Compliance and Safety	3
SFTY 321	Ergonomics	3
SFTY 355	Industrial Hygiene and Toxicology	3
SFTY 360	Construction Safety	3
SFTY 365	Fire Protection	3
SFTY 420	Systems Design for Fire & Life Safety	3
Total Credits		**21**

Leadership Major

Leadership Major

The Leadership Major is for high-performing individuals looking to make a difference in their organizations. Organizational leaders and employers often point to the need for employees to develop "soft" skills to advance their careers. Students develop the critical competencies to lead in today's increasingly complex environment. Students learn foundational and contemporary leadership theories. Additionally, students will explore various leadership topics such as critical thinking, emotional intelligence, communication, coaching, mentoring, ethics, diversity, equity, and inclusion. This major ensures that students have the appropriate skills to contribute as a leader in all aspects of society.

OBLD 275	Critical Thinking for Leadership	3
OBLD 285	The Evolution of Leadership	3
OBLD 304	Coaching and Mentoring	3

OBLD 310	Mediation, Negotiation, and Conflict Resolution	3
OBLD 315	Contemporary Leadership Theories	3
OBLD 402	Ethics, Values, and Differences	3
OBLD 407	Driving Change in Organizations	3
Total Credits		**21**

Human Resources Management Major

Human Resources Management Major

The Human Resources Management major was developed for students interested in pursuing careers in Human Resources Management. In addition to preparing students to work in public, private and non-profit sectors, students will be well prepared to obtain leading industry Human Resources certificates and credentials. Graduates in this major can seek employment in both aviation and non-aviation industries as compensation and benefits specialists, recruitment and retention specialists, human resources generalists, and other, related occupations. Human Resources Management is an ever growing field and spans all industry and geographic boundaries. As with the other BSTM majors, the requirements for the Human Resources Management major is 21 credit hours and will involve the following courses:

HRMD 314	Human Resource Management	3
BUSW 324	Aviation Labor Relations	3
OBLD 371	Leadership	3
OBLD 427	Management of the Multicultural Workforce	3
HRMD 482	Human Resources Training and Development	3
HRMD 483	Compensation and Benefits	3
HRMD 495	Staffing and Workforce Planning	3
Total Credits		**21**

See BSTM Program Notes.

** Minnesota student residents refer to State of Minnesota Course Requirement statement for Humanities requirements.

M.B.A. in Aviation

The Master of Business Administration in Aviation degree program is designed to emphasize the application of modern business concepts, methods, and tools to the challenges of aviation and business. The special intricacies of aviation are woven into a strong, traditional business foundation by combining a specific core of distinct business competencies with a strong aviation foundation.

The degree program is comprised of three modules. The first module is comprised of 9 credit hours focused on high reliability organizations (HRO). High reliability organizations focus on risk, managing risk and resiliency. Concepts from these courses can be applied to all organizations. The second module of the MBAA is the business core and is structured based on input from industry to provide students with the skills necessary to advance their careers into managing functional departments and above.

The third module of the degree structure provides the students two options. For option 1, the third block consists of a certificate in the subject of the student's choice and provides the opportunity for students to focus their studies to match their career goals. The certificate is an academic certificate meeting the requirements of the appropriate accrediting body and is comprised of 4 courses (12 credit hours) in the subject area of choice. The total degree requirements for option 1 is 36 credit hours. Option 2 is a non-certificate option where students may take 12 credit hours of non-duplicated COB graduate courses of their choice, approved ERAU graduate courses (approval required from MBAA department chair), or potentially apply transfer credit to their degree. The total degree requirements for option 2 is also 36 credit hours.

The MBAA program is accredited by the Accreditation Council for Business Schools & Programs (ACBSP). This achievement means the program has been peer-reviewed, scrutinized, and meets the stringent requirements set forth by ACBSP.

Program-Specific Criteria

Prerequisite Knowledge

Subject knowledge for specific graduate courses must be satisfied before enrollment in those courses is permitted. Students may enroll in graduate level courses only if they meet prerequisite knowledge requirements.

The program will not require an undergraduate degree in business for admissions. However, as required by ACBSP, prerequisite knowledge in accounting, finance, economics, marketing, management, and business statistics is required. This prerequisite knowledge can be acquired in a number of ways. However, one method to acquire the prerequisite knowledge and other information about the MBAA degree that is required of all MBAA degree seeking students will be accomplished through a short MBAA Preflight Orientation Course. The orientation course welcomes students to the degree program through interactive activities and provides (reviews) the prerequisite knowledge needed to be successful in the program. Students must complete the Preflight Orientation prior to taking their first MBAA course.

Other methods to meet required prerequisites for specific courses include (these methods are more applicable to certificate seeking students):

1. Completed an undergraduate or graduate course in each of the specific subject areas and upon validation of the course from an official transcript; -OR

2. Completed third party leveling course and proof of completion; -OR

3. Completed a course listed in either the National or ACE Guide for which academic credit in one of the specific subject areas is recommended; -OR

4. Received at least the minimum recommended score on a CLEP, DSST/DANTES, PEP, etc. exam in each of the subject areas as required; -OR

5. Undergraduate degree in business; -OR

6. Approval of department chair.

Specific prerequisites for each graduate course are contained in the Graduate Courses section of this catalog. Students must assume responsibility to see that all prerequisites are satisfied. The prerequisite subject knowledge for a specific graduate course must be satisfied before enrollment in that specific course is permitted. Students may enroll in other graduate-level courses as they meet the specific prerequisite knowledge required as outlined above.

Other Program Information:
As part of MBAA degree students will take a comprehensive exam in BUSW 635, Business Strategy for Managers.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

High Reliability Organization		
HROM 510	Enterprise Risk Management	3
HROM 520	Organizational Resilience	3
HROM 530	Modeling and Decision-Making	3
Total Credits		**9**

Business Core		
MKTG 510	Economics of Marketing	1.5
MKTG 511	Science of Selling	1.5
MKTG 512	Delivering Customer Solutions	1.5
ACCT 510	Business Accounting	1.5
FINE 518	Corporate Finance	3
OBLD 519	Organizational and Employee Behavior	1.5

HRMD 549	Personnel Management	1.5
BUSW 635	Business Strategy for Managers	3
Total Credits		**15**

Certificate Option

Certificate Options:	**12**

Choose from Certificates listed:

- Airline Management
- Business Intelligence and Analytics
- Finance
- Human Resources
- Information Systems Security
- Information Technology Management
- International Business
- Leadership
- Marketing
- Project Management

-OR-

Non-Certificate Option

Non-Certificate Option:	**12**

12 credit hours of non-duplicated COB or other ERAU college graduate courses of student's choice. For courses outside of the COB or transfer credit, Department Chair approval is required.

Total Degree Requirements	**36**

M.S. in Engineering Management

The Master of Science in Engineering Management (MSEM) degree is designed for working professionals who desire to add management skill to their prior degrees in engineering, math, physical science, computer science, or another STEM field. The degree is designed to assist those students to move into managerial roles in technical organizations. The degree expands on the student's existing technical abilities, adding management knowledge and skills.

Technical organizations require managers who understand the technical nature of the firm's business. Upon completion of the multi-disciplinary degree, students will have the knowledge to become managers in a technical organization.

The degree program will be comprised of three sections. The first section will be comprised of 9 credit hours focused on high reliability organizations (HRO). High reliability organizations focus on risk, managing risk and resiliency. Concepts from these courses can be applied to all organizations. The second block of the MSEM will be the engineering management core. The third block consist of a certificate in the area of the student's choice and provides the opportunity for students to focus their studies to match their career goals.

Program-Specific Criteria

Prerequisite Knowledge:

The program will not require an undergraduate degree in business for admissions. However, as required by ACBSP, prerequisite knowledge in accounting, finance, economics, marketing, management, and business statistics is required. This will be accomplished through a short MSEM Preflight Orientation Course that welcomes students to the degree program through interactive activities and provides the prerequisite knowledge needed to be successful in the program. Students must complete the Preflight Orientation prior to taking their first MSEM course.

The Master of Science in Engineering Management with a certificate in Project

Management is accredited by the PMI Global Accreditation Center for Project

Management Education Programs (GAC). Degree programs that achieve GAC accreditation must demonstrate and meet the GAC's rigorous global standards of accreditation, which include an assessment of each program's objectives and outcomes, faculty and student evaluations, onsite and online resources, annual self-evaluation, and proof of continuous improvements in the area of project management education. GAC accreditation ensures the quality of academic degree programs and their graduates in order to meet the standards of the rapidly growing field of project management.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

High Reliability Organization		
HROM 510	Enterprise Risk Management	3
HROM 520	Organizational Resilience	3
HROM 530	Modeling and Decision-Making	3
Total Credits		**9**

Engineering Management Core		
EMGT 500	Managing in the STEM Environment	3
EMGT 510	Project Scheduling	1.5
EMGT 505	Professional Standards	1.5
EMGT 520	Quality for Projects and Operations	3
FINE 610	Budgeting and Finance for R&D	3
EMGT 620	Technology and Innovation Management	3
Total Credits		**15**

Certificate

Certificate Options:	**12**

Choose any College of Business Graduate Certificate

- Business Intelligence and Analytics
- Finance
- Human Resources
- Information Systems Security
- Information Technology Management
- International Business
- Leadership
- Marketing
- Project Management
- Systems Engineering

-OR-

Non-Certificate Option

Non-Certificate Option:	**12**

12 credit hours of non-duplicated COB or other ERAU college graduate courses of student's choice. For courses outside of the COB or transfer credit, Department Chair approval is required.

Total Degree Requirements	**36**

M.S. in Information Security and Assurance

Complex, emerging threats to information quality and security make it difficult to protect a company's profits, performance, and reputation. Add to this a scarcity of high-level leaders who grasp both the technical and business aspects of information assurance, and we face the prospect of a perfect storm of information risks.

Embry-Riddle offers the Master of Science in Information Security and Assurance (MSISA) degree for professionals who aspire positions in the information security arena. Curriculum is offered through the College of Business and focuses on the technology and business aspects of how information security drives enterprise-wide strategy and success.

The MSISA is delivered with an interdisciplinary approach that makes the learning applicable to any industry.

MSISA Program Notes:

1) It is strongly suggested that MISA 501 and then MISA 502 be the first two courses a student takes in their degree program. Many other classes build on this knowledge.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

Information Security & Assurance Core		
MISA 501	Assured Business Systems: Managing and Protecting the Information Systems Enterprise	3
MISA 502	Risk Management and Business Continuity	3
MISA 503	Informatics: Security Implications of Cross-Disciplinary Computing	3
MISA 504	Enterprise Systems Architectures for Information Assurance	3
MISA 505	Incident Management and Information Forensics	3
MISA 506	Cyber Law, Cyber Compliance, and Information Assurance	3
MISA 507	Quality Management for Information Assurance	3
Total Credits		**21**

Certificate

Certificate Options	12
Certificate: Choose any 12 credit hour College of Business Graduate Certificate	

- Business Intelligence and Analytics
- Finance
- Human Resources
- Information Systems Security
- Information Technology Management
- International Business
- Leadership
- Marketing
- Project Management

-OR-

Non-Certificate Option

Non-Certificate Option	12
12 credit hours of non-duplicated COB or other ERAU college graduate courses of student's choice. For courses outside of the COB or transfer credit, Department Chair approval is required.	

Total Degree Requirements	33

M.S. in Leadership

Many companies look the same from the outside, but on the inside, there are dramatic differences in culture and performance. It all starts with leadership.

Good leaders develop high-performing teams that consistently outperform their competition. These teams capitalize on their strengths, draw inspiration from diversity, and hold each other accountable to achieving their mission.

Good leadership is not a fluke. Good leaders are systematically developed. The Master of Science in Leadership degree helps students develop the competencies that are essential for leading an organization effectively.

Through this comprehensive curriculum, you will learn how to:

- Communicate powerfully and develop additional sources of influence.
- Understand your leadership capacities and minimize your blind spots.
- Analyze and diagnose organizational issues that impact your team's performance.
- Anticipate the need for organizational change and renewal.
- Establish and foster a high-performing culture across your organization.

In addition to preparing you for today's most challenging leadership positions, this degree will equip you with the skill and vision to become one of the architects of tomorrow.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

Leadership Core		
OBLD 500	Leadership Foundations in Research	3
OBLD 511	Organizational Leadership	3
OBLD 521	Leadership Communication	3
OBLD 535	Leadership & Organizational Design	3
OBLD 632	Strategic Decision-Making for Leaders	3
OBLD 633	Adaptive Leadership in Complex Environments	3
OBLD 634	Leadership Ethics and Corporate Social Responsibility	3
OBLD 635	Organizational Change	3
OBLD 641	Resonant Leadership: Leading Change	3
OBLD 690	Graduate Leadership Capstone	3
Total Credits		**30**

M.S. in Logistics and Supply Chain Management

Globalization is affecting almost every aspect of the world's economy – and the world's economy is sustained by global logistics and supply chain management. As a result, the demand for qualified logistics and supply

chain professionals is higher than ever. Competition is fierce for the most prominent positions.

The right education can distinguish you from other professionals in your field and make you more marketable in both the public and private sectors.

A Master of Science degree in Logistics and Supply Chain Management will benefit you even more by providing you with:

- An excellent foundation for the profession due to the alignment of the program with the Institute for Supply Management (ISM) Supply Chain Capability Model
- The courses in the program includes subject matter that aids in the preparation for the CPSM (Certified Professional in Supply Management) certification.
- A career that pays very well. Source: Salary.com see average Supply Chain Director salary.

Other Program Information:

As part of the **Master of Science in Logistics and Supply Chain Management** program, students will take the Logistics and Supply Chain Management Capstone Course (LGMT 692). This culminating experience integrates supply chain management with the other key functions of the operation by means of sales and operations planning simulation.

Students who take the three course sequence of SAP courses (LGMT 540, LGMT 600, and LGMT 630) will be eligible for SAP student recognition award.

In addition to SAP, students will use software extensively throughout the program with a particular emphasis on Microsoft Excel.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

LGMT 500	Introduction to Supply Chain Management and the Profession	3
LGMT 525	Management Science for Operations	3
LGMT 526	Business Analytics for Operations	3
LGMT 540	Procurement for Logistics Managers	3
LGMT 550	Production and Material Control	3
LGMT 560	Transportation	3
LGMT 651	Supply Chains in the Global Environment	3
LGMT 692	Logistics and Supply Chain Management Simulation	3
Total Credits		**24**

Electives

Electives:	**6**
Open electives – 6 graduate credit hours	

Optional SAP Sequence: The following Course are required: LGMT 600 and LGMT 630

Total Degree Requirements	**30**

M.S. in Management

The Master of Science in Management (MSM) degree program provides you with a greater focus on the theory and practice of management than a more general business degree. Whether you are interested in promoting into management, transitioning from the military or already have a management position, this program introduces you to cutting-edge concepts at play in today's global marketplace.

Our goal is to help position you for success by equipping you with both the technical skills and managerial skills to manage resources, lead teams, and apply solutions to organizational challenges within the organization or oceans away.

This program is taught by faculty who will challenge you to become a better thinker. You will learn how to analyze problems and research and implement solutions. The MSM program is action-oriented and offers you the hands-on tools and experience to grow within your current role, as well as reach your future goals.

The degree program includes three sections. The first section is comprised of 9 credit hours focused on high reliability organizations (HRO). High reliability organizations focus on risk, managing risk and resiliency. Concepts learned in these courses can be applied to all organizations. The second section of this degree is the Management Core and has been structured based on input from industry to provide students with the skills necessary to advance their careers. The third section consists of a certificate in the area of the student's choice and provides the opportunity for students to focus their studies to match their career goals.

All MSM students gain practical management skills, such as:

- Quantitative analytical skills – using numbers to make decisions
- Change management skills – the ability to adapt, control, and effect organizational change
- An understanding of organizational structure and leadership
- Effective communication strategies
- Strategic action, critical thinking, and decision-making skills
- Managing people and business processes

The Master of Science in Management program is accredited by the Accreditation Council for Business Schools & Programs (ACBSP). This achievement means that the program has been peer-reviewed, scrutinized, and meets the stringent requirements set forth by the ACBSP.

The Society for Human Resources Management (SHRM) has acknowledged that the Master of Science in Management program when combined with the Human Resources Certificate as fully aligning with SHRM's *HR Curriculum Guidebook and Templates.* Students enjoy many benefits of this alignment beyond the curriculum itself through ERAU's relationship with SHRM.

Prerequisite Knowledge:

The program does not require an undergraduate degree in business for admissions. However, as required by ACBSP, prerequisite knowledge in accounting, finance, economics, marketing, management, and business statistics is required. This will be accomplished through a short MSM Preflight Orientation Course that welcomes students to the degree program through interactive activities and provides the prerequisite knowledge needed to be successful in the program. Students must complete the Preflight Orientation prior to taking their first MSM course

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

High Reliability Organization		
HROM 510	Enterprise Risk Management	3
HROM 520	Organizational Resilience	3
HROM 530	Modeling and Decision-Making	3
Total Credits		**9**

Business Core		
MGMT 510	Management and the Organization	3
MGMT 550	Managerial Communications	3
MGMT 610	Business Process Management	3
MGMT 680	Strategic Action	3

PMGT 549	Applied Project Management	1.5
HRMD 549	Personnel Management	1.5
Total Credits		**15**

Certificate

Certificate Option:	**12**

Choose certificate option from list below:

- Business Intelligence and Analytics
- Finance
- Human Resources
- Information Systems Security
- Information Technology Management
- International Business
- Leadership
- Marketing
- Project Management

-OR-

Non-Certificate Option

Non-Certificate Option:	**12**

12 credit hours of non-duplicated COB or other ERAU college graduate courses of student's choice. For courses outside of the COB or transfer credit, Department Chair approval is required.

Total Degree Requirements	**36**

M.S. in Management Information Systems

For the modern business enterprise, the ability to utilize information effectively is key to creating a competitive advantage. The most successful and sought-after leaders are those who understand how data can be used to drive profits, plans and projections

Now you can forge your future as an MIS leader with this exciting degree from the Embry-Riddle College of Business. With a focus on the critical intersection of information and business management, the Master of Science in Management Information Systems (MSMIS) program is designed for busy professionals who are interested in how information is applied to achieve bottom-line results.

Individuals with business, managerial and/or technical backgrounds will experience a new dimension of learning and opportunity with a choice of certificates including Business Intelligence and Analytics and Information Technology Management. While students may choose any offered certificate, the Business Intelligence and Analytics certificate is a SAS© approved specialization. Students who complete this pathway will also earn a recognized badge credential from SAS© in Business Intelligence and Analytics.

If you are interested in advancing your career into enterprise-wide MIS leadership, consider this program as a springboard to your future.

MSMIS Program Notes:

1) It is strongly suggested that MMIS 501 and then MMIS 531 be the first two courses a student takes in their degree program. Many other classes build on this knowledge.
2) Students are encouraged to have a Windows-based PC or the ability to emulate a Windows-based PC. In the absence of such, open-source software may need to be downloaded to complete certain activities.
3) BUAN 505 will count for both the degree core and certificate for students who choose the Business Intelligence and Analytics certificate making the degree 30 credit hours.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

Management Information Systems Core		
MMIS 501	Business Systems: Managing the IS Enterprise	3
MMIS 503	Data & Information Modeling & Management	3
BUAN 505	Information Analytics and Visualization in Decision Making	3
MMIS 506	Systems Analysis and Design	3
MMIS 507	Information Systems Strategic Planning	3
MMIS 531	Information Systems Project Management	3
MMIS 690	Management Information Systems Capstone	3
Total Credits		**21**

Certificate

Certificate Options	**9-12**

Certificate: Choose any College of Business Graduate Certificate

- Business Intelligence and Analytics
- Finance
- Human Resources
- Information Systems Security
- Information Technology Management
- International Business
- Leadership
- Marketing
- Project Management

-OR-

Non-Certificate Option

Non-Certificate Option	**12**

12 credit hours of non-duplicated COB or other ERAU college graduate courses of student's choice. For courses outside of the COB or transfer credit, Department Chair approval is required.

Total Degree Requirements	**30-33**

M.S. in Project Management

Program-Specific Criteria

Project management expertise applies to every industry, allowing you the flexibility to choose your destiny.

After earning a Master of Science in Project Management (MSPM), you'll be able to generate plans, execute projects, and capture your initiatives' successes in order to increase project efficiencies.

Much of the course work is collaborative – just as it is in the workplace. The program curriculum was developed entirely by certified PMPs®, the recognized global standard for project management knowledge and experience issued by the PMI®. PMI® is the worldwide leader in the development of standards for the evolving profession of Project Management.

For your Graduate Capstone Project, you will participate in a scenario and experience the entire life-cycle of a project. You will apply your project management mastery by showcasing the skills and abilities developed throughout your educational experience. This degree doesn't just give you an understanding of projects – it gives you the skills needed to lead projects.

The Master of Science in Project Management is accredited by the PMI Global Accreditation Center for
Project Management Education Programs (GAC). Degree programs that achieve GAC accreditation must
demonstrate and meet the GAC's rigorous global standards of accreditation, which include an assessment of each program's objectives and outcomes, faculty and student evaluations, onsite and online resources, annual self-evaluation, and proof of continuous improvements in the area of project management education. GAC accreditation ensures the quality of academic degree programs and their graduates in order to meet the standards of the rapidly growing field of project management.

The MSPM program relies heavily on use of current PMIS (Project Management Information Systems) software and other common-use software for word processing, presentation, and computation. While the use of some of these PMIS programs will be the subject of learning exercises within the program, the successful student will be expected to show proficient skill in word processing, spreadsheet usage, and presentation graphics.

Estimated Cost of Attendance

DEGREE REQUIREMENTS

Core/Major

PMGT 500	Foundations of Project Management	3
PMGT 510	Management Science for Project Managers	3
PMGT 520	Fundamentals of Project Scope, Schedule, Cost, and Resource Management	3
PMGT 530	Fundamentals of Project Quality, Communication, Stakeholder, Resource, and Procurement Management	3
PMGT 613	Assessing and Managing Project Risk	3
PMGT 614	Directing and Controlling Projects	3
PMGT 670	Contemporary Project Management	3
PMGT 690	Project Management Capstone *	3
MGMT 672	Planning and Execution of Strategy	3
OBLD 632	Strategic Decision-Making for Leaders **	3
* The Project Management Capstone is the last course taken in the MSPM program.		
** OBLD 500 Prerequisite for OBLD 632 is not required for MSPM students.		
Total Degree Requirements		**30**

Minor in Air Cargo Management

The goal of the Air Cargo Management Minor is to provide the students with supplemental knowledge and tools required to be successful in the evolving air cargo industry. The target audience for this minor will be the students who are currently working in this field and those students who aspire to be part of the workforce of this ever growing field. The areas of study include Air Transportation Systems, Economics of Air Transportation, International Aviation Management, Aviation Maintenance Management, Airport Management, and Airline Management.

With the upward trend of online shopping and commerce, the demand for air cargo management expertise is expected to increase in the years to come. A minor in air cargo management will expose students to all facets of both domestic and international air cargo logistics operations. The Air Cargo Management Minor will provide students a competitive edge with the differentiated knowledge, skills, and abilities that compliments their major program of study.

BSAB 410	Management of Air Cargo	3
MGMT 415	Airline Management	3
MGMT 426	International Aviation Management	3
ECON 420	Economics of Air Transportation	3
MGMT 408	Airport Management	3
Total Credits		**15**

Minor in Airport Management

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

ASCI 254	Aviation Legislation	3
MGMT 408	Airport Management	3
MGMT 412	Airport Planning and Design	3
Select two of the following:		6
SFTY 345	Aviation Safety Program Management	
SFTY 350	Aircraft Crash and Emergency Management	
SFTY 409	Aviation Safety	
ASCI 404	Applications in Aviation & Aerospace Law	
ASCI 412	Corporate and Business Aviation	
BUSW 324	Aviation Labor Relations	
LGMT 331	Transportation Principles	
MGMT 436	Strategic Management	
BSAB 410	Management of Air Cargo	
FINE 418	Airport Administration & Finance	
BSAB 425	Trends and Current Problems in Air Transportation	
MGMT 426	International Aviation Management	
MGMT 499	Special Topics in Management	
SCTY 400	Airport Security	
SCTY 488	National Security Issues and Terrorism	
Total Credits		**15**

Minor in Aviation Management

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

Only available to Worldwide undergraduate students enrolled in degree programs other than BS in Aviation Business Administration and BSTM-Aviation Management Major.

MGMT 408	Airport Management	3
MGMT 415	Airline Management	3
FINE 418	Airport Administration & Finance	3

MGMT 426	International Aviation Management	3
MKTG 450	Aviation/Airport Marketing	3
Total Credits		**15**

Minor in Human Resources

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

Not open to BS in Technical Management-Human Resources Management Major students.

HRMD 314	Human Resource Management	3
HRMD 482	Human Resources Training and Development	3
HRMD 483	Compensation and Benefits	3
BUSW 324	Aviation Labor Relations	3
OBLD 427	Management of the Multicultural Workforce	3
Total Credits		**15**

Minor in Leadership

The Minor in Leadership offers individuals looking to impact organizational practices from an applied leadership lens. Organizational leaders and employers often point to the need for employees to develop "soft" skills to advance their careers. Students develop the critical competencies to lead in today's increasingly complex environment.

Not open to students pursuing BS in Leadership or BS in Technical Management- Leadership Major.

OBLD 304	Coaching and Mentoring	3
OBLD 310	Mediation, Negotiation, and Conflict Resolution	3
OBLD 315	Contemporary Leadership Theories	3
OBLD 402	Ethics, Values, and Differences	3
OBLD 407	Driving Change in Organizations	3
Total Credits		**15**

Minor in Logistics Management

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

Not open to BS in Logistics & Supply Chain Management students.

LGMT 331	Transportation Principles	3
BSAB 410	Management of Air Cargo	3
MGMT 411	Logistics Management for Aviation/Aerospace	3
LGMT 440	Advanced Professional Logistics	3
LGMT 444	Principles of Supply Chain Management	3
Total Credits		**15**

Minor in Management

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

Not open to students pursuing College of Business undergraduate degrees or BS in Aviation Maintenance-Management Specialization. Students pursuing College of Business undergraduate degrees cannot take minors that are in the same field as their majors.

ECON 210	Microeconomics	3
MGMT 201	Principles of Management	3
ACCT 210	Financial Accounting	3
MKTG 311	Marketing	3
Specified Electives in Management		3
Choose any upper-level MGMT course.		
Total Credits		**15**

Minor in Management Information Systems

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

Not open to BS in Technical Management – Management Information Systems Major students

MMIS 392	Database Management	3
MISA 394	Information Security Management	3
MMIS 422	Information Technology Management, Strategy, and Governance	3
BUAN 428	Business Analytics and Data Intelligence	3
MMIS 494	Aviation Information Systems	3
Total Credits		**15**

Minor in Marketing

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

MKTG 311	Marketing	3
LGMT 444	Principles of Supply Chain Management	3
MKTG 449	Strategic Marketing Management	3
MKTG 450	Aviation/Airport Marketing	3
Select one course from the following:		3
ECON 315	Managerial Economics	
ECON 420	Economics of Air Transportation	
Total Credits		**15**

Minor in Project Management

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

Not open to BS in Project Management students

PMGT 300	The Project Management Profession	3
PMGT 391	Project Planning 1	3
PMGT 394	Project Planning 2	3
PMGT 400	Project Risk and Control	3
BUSW 352	Business Quantitative Methods	3
Total Credits		**15**

Minor in Technical Management

Minor courses of study are academic programs designed to satisfy students' personal interest and to meet their professional needs. Students explore, in some depth, the offerings in a field of study.

A minor course of study provides the student with significant experience in a discipline organized around skills, methodology, and subject matter. To gain the greatest value from their academic experience, students are encouraged to select minors that complement their degree program and/or other minors that they are pursuing.

The student becomes subject to the requirements of the minor as stated in the catalog that are in effect at the time the minor is declared. The department/program chair responsible for a particular minor determines how students fulfill deficits in credits for a minor and certifies that students are qualified to receive the minor.

Only available to Worldwide undergraduate students enrolled in degree programs other than BS in Technical Management

OBLD 371	Leadership	3
PMGT 391	Project Planning 1	3
MISA 394	Information Security Management	3
LGMT 444	Principles of Supply Chain Management	3
MKTG 449	Strategic Marketing Management	3
Total Credits		**15**

Applied Information Technology (AIT) Certificate

Program is not available at this time. Please contact your advisor if you have any questions.

Embry-Riddle's Applied Information Technology (AIT) Certificates provides you the opportunity to develop the knowledge, skills, attitudes and abilities you'll need to kick-start your career in Applied Information Technologies.

As an AIT student you'll take undergraduate courses in the certificate's area of focus. Laboratories, exercises, team activities and individual projects give you the opportunity to develop and demonstrate your skills. Along the way, you're preparing to study for well recognized, external certificates that are associated with the program.

Check out https://worldwide.erau.edu/ait to learn more about the AIT program and how you can become a part of it.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Solutions Architect Certificate

Solutions Architect Certificate	
ISTA 200-Computer Science Fundamentals	3
ISTA 222-Introduction to Programming (Python)	3
ISTA 334-Introduction to Linux System Administration	3
ISTA 390-AWS Academy Cloud Architecting	3
ISTA 420-Relational Databases and SQL	3
ISTA 424-Software Development (Python)	3
Total Credits	**18**

Estimated Cost of Attendance

Airline Management (IATA)

The International Air Transport Association (IATA) **c**ertificate is a partnership certificate and is delivered by (IATA).

The Airline Management Certificate credit can be applied to the MBAA program. Students completing the certificate as a component of the MBAA must meet admissions requirements for the MBAA.This certificate is offered as a component of the MBAA in partnership with IATA. More details can be found at MBAA-IATA Partnership. The schedule of classes for the first cohort can be found at the link under "Requirements & Courses".

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Airline Management

Certificate

AIRM 600	Airline Cost Efficiency Practices and Value-add Strategies	3
AIRM 610	Airline Business Diversification: Generating Ancillary Revenues	3
AIRM 605	Revenue Management and Pricing with Simulation in Times of Crises	3
AIRM 615	Airline Business Models and Competitive Strategies	3
Total Credits		**12**

Estimated Cost of Attendance

Business Intelligence and Analytics

The Business Intelligence and Analytics Certificate enables students to:

- Develop analytics strategies to solve complex business problems
- Identify data sources and analysis tools to generate actionable business intelligence
- Manipulate data in database form to clean data and prepare it for analysis
- Interpret analytics results in the form of infographics, dashboards, and other visualizations useful to a variety of audiences.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Business Intelligence and Analytics

Certificate

BUAN 505	Information Analytics and Visualization in Decision Making	3
BUAN 522	Business Analytics, Social Network and Web Analytics	3
BUAN 523	Data Mining for Business Analytics	3
BUAN 524	Applied Business Intelligence and Analytics	3
Total Credits		**12**

In addition to an ERAU certificate, the above coursework is approved by SAS as part of the SAS Specialization Program. A SAS Digital Badge in Business Intelligence and Analytics will be issued by ERAU and SAS upon completion of this coursework.

Estimated Cost of Attendance

Finance

The Finance Certificate enables students to:

- Apply appropriate analytical techniques to make optimal financial decisions
- Value various types of financial assets
- Apply financial strategies that enhance the firm's value

*Incorporating the ISTAT certificate into the Finance certificate *may* be an option. Contact the Department of Business Administration for additional information.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Finance

Certificate

FINE 615	Investments	3
FINE 618	Advanced Corporate Finance	3
Prerequisite: FINE 518 or FINE 610 or FINE 332 or equivalent course or documented competence and approval from the Department Chair.		
FINE 628	Introduction to Financial Engineering: Futures and Options	3
FINE 653	International Finance	3
Total Credits		**12**

Estimated Cost of Attendance

Human Resources

The Human Resources Certificate enables students to:

- Analyze the roles and responsibilities of different facets of HRM including compensation and benefits, talent management, organizational training and development, and workforce planning
- Analyze critical HRM issues that impact domestic and multinational enterprises
- Use job analysis tools create a strategic workforce staffing plan.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Human Resources

Certificate

HRMD 607	Human Resource Development	3
HRMD 608	Human Resources Management	3
HRMD 678	Talent Acquisition and Workforce Planning	3
HRMD 679	Comprehensive Reward Systems	3
Total Credits		**12**

Estimated Cost of Attendance

Information Systems Security

The Information Systems Security Certificate enables students to:

- Analyze information security challenges in today's business environment
- Analyze IT policy and governance practices related to information security practices
- Establish detection, containment and recovery strategies.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Systems Security

Certificate

MISA 531	Secure Information Systems Design	3
MISA 532	Integrated Threat Warning and Attack Assessment for Enterprise Information Systems	3
MISA 533	Product and Systems Safety and Reliability: Issues for Information Assurance	3
MISA 534	Aviation / Aerospace Issues for Information Security	3
Total Credits		**12**

Estimated Cost of Attendance

Information Technology Management

The Information Technology Management Certificate enables students to:

- Evaluate an organization's IT strategy
- Appraise the various aspects of IT enterprise architecture
- Generate solutions to common enterprise-level information technology challenges

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Information Technology Management Certificate

MMIS 504	Knowledge Management: Quality Management for the IS Enterprise	3
MMIS 541	Information Risk Management	3
MMIS 552	Information Systems and Information Technology Governance	3
MMIS 553	Change Management and Configuration Control	3
Total Credits		**12**

Estimated Cost of Attendance

International Business

The International Business Certificate enables students to:

- Analyze different factors that influence global strategy
- Analyze the internal success factors to operate in the global marketplace
- Analyze the external success factors to operate in the global marketplace

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

International Business Certificate

MKTG 632	Global Marketing	3
	Prerequisite: MKTG 510, MKTG 511, MKTG 512 or MKTG 311 or equivalent.	
FINE 653	International Finance	3
	Prerequisite: FINE 518 or FINE 610 or FINE 332 or equivalent.	
FINE 673	Global Economic Analysis	3
BUSW 604	International Business Administration	3
	Prerequisites: as noted above or documented competence with approval of department chair.	
Total Credits		**12**

Estimated Cost of Attendance

International Society of Transport Aircraft Trading (ISTAT)

The ISTAT certificate is a partnership certificate and will be issued by ISTAT and not Embry-Riddle.

The ISTAT certificate is designed for students who have completed an undergraduate degree in business, accounting, finance or economics, or related transportation fields of study looking for a rewarding and challenging career in the aircraft financing, leasing and other ISTAT member industries.

Students only pursuing the ISTAT certificate should apply as non-degree seeking graduate students. Students who wish to pursue the certificate as part of their degree program should coordinate any potential credit toward a degree with the appropriate college and program chair.

In addition to Embry-Riddle admission requirements, students must be vetted through ISTAT University and meet the ISTAT admission requirements.

Non-degree seeking ISTAT applicants with educational experience outside the United States will be reviewed on a case-by-case basis by the Program Chair after completing the ISTAT application process. Enrollment will be limited to the ISTAT courses only (FIND 695A, FIND 695B and FIND 695C). For students who subsequently apply for entry into a degree program, additional documentation may be required and applicants must be admitted in accordance with all applicable international admissions requirements.

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

International Society of Transport Aircraft Trading (ISTAT) Certificate

FIND 695A	Topics in Aircraft Finance I	2
FIND 695B	Topics in Aircraft Finance II	2
FIND 695C	Topics in Aircraft Finance III	2
Total Credits		**6**

Estimated Cost of Attendance

Leadership

The Leadership Certificate enables students to:

- Apply the proper leadership theories to real-world cases in a broad range of contexts to improve organizational outcomes
- Evaluate different leadership perspectives within broad and diverse populations to address future organizational needs based on changing social, cultural, and organizational norms to include globalization

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Leadership Certificate

OBLD 511	Organizational Leadership	3
OBLD 521	Leadership Communication	3
OBLD 535	Leadership & Organizational Design	3
OBLD 633	Adaptive Leadership in Complex Environments	3
~OBLD 500 will be waived for non-Leadership degree seeking students		
Total Credits		**12**

Estimated Cost of Attendance

Marketing

The Marketing Certificate enables students to:

- Apply marketing analytical tools with an emphasis on content marketing, optimizations and usage
- Apply innovation and ethical approaches when developing marketing strategy and communications with stakeholders

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Marketing Certificate

MKTG 630	Customer Value	3
MKTG 632	Global Marketing	3
MKTG 633	Digital Marketing	3
MKTG 514	Professional Service Marketing	3
Prerequisite: MKTG 510, MKTG 511, MKTG 512 or MKTG 311 or equivalent course or documented third party leveling course.		
Total Credits		**12**

Estimated Cost of Attendance

Project Management

The Project Management Certificate enables students to:

- Perform generally accepted project management techniques to plan and execute projects
- Apply analytical tools for problem solving and effective project decision-making
- Apply ethical, behavioral, and communications skills within the project team environment
- Analyze project metrics for the purpose of reporting and control of projects

Note: Certificate programs are not eligible for Title IV Federal Financial Aid unless taken as part of a degree program.

Project Management Certificate

PMGT 500	Foundations of Project Management	3
PMGT 520	Fundamentals of Project Scope, Schedule, Cost, and Resource Management	3
PMGT 530	Fundamentals of Project Quality, Communication, Stakeholder, Resource, and Procurement Management	3
PMGT 613	Assessing and Managing Project Risk	3
Prerequisite required: MSEM: LGMT 525		
Total Credits		**12**

Estimated Cost of Attendance

Minor Courses of Study

Minor Courses of Study

Students pursuing undergraduate degrees cannot take minors that are in the same field as their majors.

Air Cargo Management
Airport Management
Air Traffic Management
Applied Meteorology
Aviation Management
Aviation Maintenance Operations
Aviation Safety
Communication
Cybersecurity Application and Management
Economics
Emergency Services
Engineering Sciences
Environmental Science
Helicopter Operations and Safety
Homeland Security
Human Resources
Humanistic STEM
Industrial/Organizational Psychology
International Relations
Leadership
Logistics Management
Management
Management Information Systems
Marketing
Mathematics
Military Science
Military Studies
Occupational Safety and Health
Project Management
Security and Intelligence
Small Unmanned Aircraft System (sUAS) Operation
Space Studies
Technical Management
Unmanned Aerial Systems

General Education Requirements

Embry-Riddle Aeronautical University recognizes the importance of communications and quantitative skills in all areas of aviation. Successful pilots, airport managers, aviation maintenance technicians, and other aviation professionals must possess these skills to perform their jobs effectively.

Introduction

Recognizing its general and special missions in education, Embry-Riddle Aeronautical University embraces a general education program. This course of study ensures that students possess the attributes expected of all university graduates. Encouraging intellectual self-reliance and ability, the general education program enables students, regardless of their degree program, to understand the significance of acquiring a broad range of knowledge.

Throughout the general education program, students gain and enhance competence in written and oral communication. They practice reasoning and critical thinking skills, collaboration and demonstrate computer proficiency. As students engage in this course of study, they familiarize themselves with and investigate ideas and methodologies from several disciplines. These include the arts and humanities, the social sciences, and the natural sciences and mathematics. The program also helps students recognize interrelationships between the disciplines.

Promoting the appreciation of varied perspectives, the general education program provides intellectual stimulation, ensuring that students are broadly educated. This course of study empowers students to make informed value judgments, to expand their knowledge and understanding of themselves, and to lead meaningful, responsible, and satisfying lives as individuals, professionals, and concerned members of their society and the world. The courses in the General Education Program are designed to build the skills in students that they can apply in their academic degree programs, their jobs and life in general.

Watch the following videos to learn more about our general education courses.

- CHEM 110 - Chemistry in the Real World
- WEAX 201 - Knowledge of the Weather is Essential
- RSCH 202 - Solve Real World Problems with Research
- PHYS 102 - Physics an Everyday Part of Life
- MATH 111 - Math in the Real World
- ENGL 123 - Communicate More Effectively and Professionally

Requirements

Embry-Riddle Aeronautical University's general education program encourages effective learning and provides a coherent base for students to pursue their academic specializations. In specific support of the goals of general education, candidates for bachelor's degrees must complete course work in the following areas.

I. Communication Theory and Skills, 9 hours

In order to lead meaningful and responsible lives in complex societies, students produce, evaluate, articulate, and interpret information and meanings in oral and written communications.

II. Mathematics, 6 hours

In order to develop quantitative reasoning skills and to use and understand the language of science and technology, students must demonstrate mathematical proficiency. Three hours may be satisfied by skills assessment or course completion. The other three credit hours must be completed by taking a course that has college algebra as a prerequisite.

III. Computer Science/Information Technology, 3 hours

In order to use computers and to understand and evaluate their significance in the solution of problems, students study the concepts, techniques, and tools of computing.

IV. Physical and Life Sciences, 6 hours

In order to appreciate current understandings of the natural world, students study the concepts and methods of the physical and life sciences, applying the techniques of scientific inquiry to problem solving.

V. Humanities, 3-6 hours at lower level, *3 hours at 300-400 level

In order to participate in the complexity of human experiences that arise in a framework of historical and social contexts, students are exposed to the Humanities. Areas of study may include cultural, aesthetic, philosophical, and spiritual dimensions of the human condition.

VI. Social Sciences and Economics, 3-6 hours at lower level, *3 hours at 300-400 level

In order to understand interrelationships between the individual and society and connections between historical memory and the future, students examine the social sciences, including history, government, economics, psychology, and sociology.

*In order to experience advanced studies in either the Humanities or Social Sciences, students must choose at least one upper-level elective in the Humanities or Social Sciences.

Associate Degree General Education Requirements

Candidates for associate degrees must complete a 36 General Education credit-hour requirement. The university is committed to ensuring that students possess a general education knowledge that will help them be successful in whatever degree program they select.

University General Education Competencies

While taking General Education required courses, students develop a basic set of General Education skills (i.e., competencies, listed below) based on course learning outcomes. This skill set will be instrumental to student success in upper level courses within their degree program; in these courses students will practice application of this skill set, eventually demonstrating mastery before graduation. As a result, students will graduate with a set of General Education competencies that will provide the basis for success in life and on the job. The following skills are the competencies that all University students will develop, practice, and master in preparation for graduate school or the workplace.

Collaborative Learning

Students will be able to work effectively with others on diverse teams to produce quality written documents, oral presentations, and/or meaningful projects. Students will assist in organizing others to accomplish a shared task, contribute actively to a group, and work to resolve any conflicts that occur.

Communication

Students will communicate concepts in written, digital, and oral forms for technical and/or non-technical audiences.

Critical Thinking

Students will synthesize and apply knowledge in order to define and solve problems within professional and personal environments.

Cultural Literacy

Students will analyze historical events, cultures, cultural artifacts, social issues, and/or philosophical concepts.

Information Literacy

Students will conduct meaningful research, including gathering information from primary and secondary sources as well as incorporating and documenting source material in their writing.

Quantitative Reasoning

Students will, through mathematical proficiency and analysis, demonstrate the use of digitally enabled technology in order to interpret data for the purpose of drawing valid conclusions and solving associated mathematical and/or economic problems.

Scientific Literacy

Students will analyze scientific evidence as it relates to the physical world and its inhabitants.

Technological Literacy

Students will demonstrate the ability to select, use, manage, and evaluate technologies. Students should understand what technologies and technological processes are, how they work, their constraints and trade-offs, and how they shape society. Students should also be able to apply or integrate technologies and technological systems in solving practical problems.

State of Minnesota Course Requirement

Residents of the State of Minnesota are required to comply with Minnesota Degree Standards which require students to complete four (4) credits of Humanities. Since Embry-Riddle Aeronautical University – Worldwide baccalaureate degree programs require a minimum of three (3) credits in Humanities, an additional one (1) hour of Humanities credit is required. Students may choose to take an additional Humanities course as one of their elective courses. Students should seek the assistance of their Campus Director at their Worldwide Campus home location if there are questions. For Online students not associated with a Worldwide Campus location, their primary contact is their Online Academic Advisor at the Online Campus.

State of Nevada Course Requirement

All students who obtain their degree from an Embry-Riddle Worldwide Campus in Nevada must complete a course that covers the United States and State Constitution. Students may satisfy this requirement by completing GOVT 320 American National Government or through transfer credit of an equivalent course from another institution. This requirement does not apply to students taking courses through the Online Campus outside Nevada.

University General Education Competencies

As a competency-based program, each course in the general education core assesses acquired skills in the following areas:

Collaborative Learning

Students will be able to work effectively with others on diverse teams to produce quality written documents, oral presentations, and/or meaningful projects. Students will assist in organizing others to accomplish a shared task, contribute actively to a group, and work to resolve any conflicts that occur.

Communication

Students will communicate concepts in written, digital, and oral forms for technical and/or non-technical audiences.

Critical Thinking

Students will synthesize and apply knowledge in order to define and solve problems within professional and personal environments.

Cultural Literacy

Students will analyze historical events, cultures, cultural artifacts, social issues, and/or philosophical concepts.

Information Literacy

Students will conduct meaningful research, including gathering information from primary and secondary sources as well as incorporating and documenting source material in their writing.

Quantitative Reasoning

Students will, through mathematical proficiency and analysis, demonstrate the use of digitally enabled technology in order to interpret data for the purpose of drawing valid conclusions and solving associated mathematical and/or economic problems.

Scientific Literacy

Students will analyze scientific evidence as it relates to the physical world and its inhabitants.

Technological Literacy

Students will demonstrate the ability to select, use, manage, and evaluate technologies. Students should understand what technologies and technological processes are, how they work, their constraints and trade-offs, and how they shape society. Students should also be able to apply or integrate technologies and technological systems in solving practical problems.

Undergraduate Courses

Courses numbered 1-99 are basic skills courses and do not apply toward degree requirements. Courses numbered 100-299 are lower-division courses and are generally taken in the freshman and sophomore years. Many lower-division courses serve as prerequisites for other coursework, and students are urged to plan ahead to meet necessary prerequisites. Undergraduate prerequisite courses taken with Embry-Riddle must be completed with a grade of C or better.

Courses numbered 300-499 are upper-division courses, reflecting advanced levels of technical skills and disciplinary knowledge. Upper-division work is generally taken in the junior and senior years. Graduate courses are numbered at 500 and above.

Numbers in parentheses, immediately following course titles and numbers, indicate lecture and laboratory hours that a class meets each week. For example, (3,0) signifies that the course consists of three lecture hours and zero laboratory hours weekly.

Accounting - UG (ACCT)

Courses

ACCT 210 Financial Accounting 3 Credits (3,0)
The use of financial accounting information in business operations. The accounting cycle; adjusting entries; merchandising operations; inventory; depreciation; accounting for assets, liabilities, and stockholder's equity; financial statement analysis.

ACCT 312 Managerial Accounting 3 Credits (3,0)
The use of managerial accounting information in business operations. Job order costing, process costing; cost management systems; cost-volume-profit analysis; costing methods; business decisions; budgets; control activities; performance measurement. Pre-Requisite: if student is in 2021-2022 catalog or newer
Prerequisites: ACCT 210.

Aeronautical Engineering (AERO)

Aeronautics Courses

AERO 309 Aerodynamic Performance of Flight Vehicles 3 Credits (3,0)
This course includes a history of atmospheric flight, properties of the atmosphere, concepts of fluid flows, dimensional analysis, airfoil and wing aerodynamics, propulsion including reciprocating and gas turbines, airplane performance, and stability and control.
Prerequisites: ENGR 115 and ESCI 305 and ENGL 221 and ESCI 204.

Aeronautical Science - UG (ASCI)

Courses

ASCI 110 Introduction to Space Flight 3 Credits (3,0)
This course provides the student with a background in the major aspects of space flight. Topics covered include the history of space flight; propulsion theory; orbital mechanics fundamentals; space transportation operations; U.S. space policy; and present and future commercial, industrial, and military applications in space.

ASCI 121 Private Pilot Operations 5 Credits (5,0)
This course develops the aeronautical knowledge required for certification as a Private Pilot with an Airplane Single Engine Land rating. Topics include; regulations, safety, pre-solo operations, cross-country planning, airspace, chart use, communications, weather, performance, weight and balance, aerodynamics and decision-making. Co-Requisite: ASCI 121L (not required for sUAS minor students)

ASCI 121L Airmen Knowledge Test Preparation 1 Credit (0,1)
This course supports the aeronautical knowledge testing preparation required as part of the certification for the appropriate FAA certification or ratings. Students are introduced to airman's knowledge testing (AKT) employed by the FAA and are also exposed to the electronic testing software and testing procedures.
Corequisites: ASCI 121.

ASCI 199 Special Topics in Aeronautical Science 1-3 Credit (1-3,0)
Individual independent or directed studies of selected topics in general aviation. Prerequisites: Consent of instructor and approval of department and program chairs. May be repeated with a change of subject. Special topics courses involving flight training are offered in selected areas for the purpose of gaining proficiency in required pilot operations for various certificates and ratings.

ASCI 202 Introduction to Aeronautical Science 3 Credits (3,0)
An introductory course in aeronautical sciences that provides students an orientation in aviation topics appropriate to Aeronautical Science degree programs. Subjects include: the aviation profession, the science of flight, safety, security and human factors; aviation resources; the aviation environment; and meteorology.

ASCI 221 Introduction to Flight Physiology 3 Credits (3,0)
This course is an introduction to the fundamental concepts and topics of flight physiology. The course will explore basic anatomical systems, physiological effects on the human body such as vision and hearing, atmospheric effects, physical stressors, and physiological challenges to flight operations, including disorientation, loss of situational awareness, hypoxia, decompression, impairment and incapacitation.

ASCI 254 Aviation Legislation 3 Credits (3,0)
This course examines the evolution of federal civil aviation regulations in the United States. Students will examine the past and present problems prompting regulation of the industry, the resultant safety, legislation, airport development, funding legislation and international aviation legislation.

ASCI 260 Unmanned Aerial Vehicles and Systems 3 Credits (3,0)
This course is a survey of Unmanned Aerial Vehicles (UAV) and systems, emphasizing the military and commercial history, growth and applications of UAVs. Course will include basic acquisition, use and operation of UAVs with an emphasis on operations.

ASCI 299 Special Topics in Aeronautical Science 1-3 Credit (1-3,0)
Individual independent or directed studies of selected topics in general aviation. Prerequisites: Consent of instructor and approval of department and program chairs. May be repeated with a change of subject. Special topics courses involving flight training are offered in selected areas for the purpose of gaining proficiency in required pilot operations for various certificates and ratings.

ASCI 301 Introduction to Air Traffic Control 3 Credits (3,0)
This course is designed to introduce the student to the operating environment of air traffic control. An overview of major governing authorities including the Federal Aviation Administration, the International Civil Aviation Organization, the Civil Aviation Authority of Singapore, Eurocontrol, and Brazil's Department of Airspace Control along with other controlling agencies will be covered, including the mission, organization and operations, regulations, publications, manuals, maps, charts, and regulations used by pilots and air traffic controllers. ATC procedures, and future air traffic control systems are also discussed. This course provides students with a fundamental knowledge of the air traffic control systems and traffic management principles.
Prerequisites: RSCH 202.

ASCI 303 Tower and Radar for Air Traffic Control and Management 3 Credits (3,0)
This course covers the basic air traffic control (ATC) procedures for tower terminal operations and terminal radar ATC facilities. Fundamental knowledge of tower operations within the air traffic control system and content knowledge however, not limited to the following areas will be covered: (a) control tower equipment and operating positions; (b) the airport traffic area; (c) navigation aids; (d) airspace; (e) traffic patterns; (f) controller/pilot phraseology; (g) aircraft taxi instructions; (h) Interagency communications and intra-facility coordination; (i) aviation regulations; (j) notification and handling of emergency aircraft. Duties and responsibilities of the terminal radar air traffic controller are integrated into an understanding of how the total ATC system works.
Prerequisites: RSCH 202.

ASCI 309 Aerodynamics 3 Credits (3,0)
Students are provided with an opportunity to explore incompressible flow airfoil theory and wing theory. Topics center on calculation of stall speed, drag and basic performance criteria, configuration changes, high and low speed conditions, special flight conditions, and an introduction to compressible flow.
Prerequisites: MATH 112 or MATH 142 or MATH 143 and PHYS 102 or PHYS 150 and RSCH 202.

ASCI 317 Rotorcraft 3 Credits (3,0)
This course traces the historical development of rotorcraft and introduces the many unique aspects of rotorcraft operations. Rotorcraft operations are examined from the operations, management, and maintenance perspectives. Included are rotorcraft operations and airworthiness regulations, airspace and facilities requirements, and environmental considerations. Uses of rotorcraft to include military and civilian applications are studied. Rotorcraft design, manufacturing, materials, systems, and the variations in rotor configuration are topics of study.
Prerequisites: RSCH 202.

ASCI 357 Flight Physiology 3 Credits (3,0)
This course explores aero-medical information. Topics include 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.
Prerequisites: RSCH 202.

ASCI 378 Helicopter Flight Environments 3 Credits (3,0)
During this course, the student obtains the foundation for helicopter operations in terrain flight and in varying environmental conditions. The student will be introduced to aspects particular to helicopter flight as it pertains to adverse weather and day and night environments specifically pertaining to take off, cruise and landing. Emphasis will be placed on understanding principles of flight close to the Earth and hazards both natural and man-made. Additional emphasis will be placed on helicopter flight in and around mountains, snow, desert and overwater operations. The student will be exposed to visual references and how to adjust perceptions to maintain safe, low-level flight in and around hazardous conditions present in commercial helicopter operations. By the end of the course, the student will have sufficient knowledge to understand the concepts necessary for employment in the commercial helicopter industry. Pre-Requisite: FAA/military helicopter pilot certificate or course listed.
Prerequisites: ASCI 317 and RSCH 202.

ASCI 388 Helicopter Flight Planning 3 Credits (3,0)
During this course, the student obtains the foundation for FARs as they relate to flight planning and navigation for various operations. The student will be able to use regulatory and operational considerations used in helicopter flight operations. Remote location operations and low level flight and navigation procedures will be studied closely. Cargo planning for internal and external operations nodes during near-ground operations will be discussed. By the end of the course, the student will have sufficient knowledge to understand the concepts necessary for effective flight planning and operation in the commercial helicopter industry. Pre-Requisite: FAA/military helicopter pilot certificate or course listed.
Prerequisites: ASCI 317 and RSCH 202.

ASCI 399 Special Topics in Aeronautical Science 1-3 Credit (1-3,0)
Individual independent or directed studies of selected topics in general aviation. Prerequisites: Consent of instructor and approval of department and program chairs. May be repeated with a change of subject. Special topics courses involving flight training are offered in selected areas for the purpose of gaining proficiency in required pilot operations for various certificates and ratings.

ASCI 403 Air Traffic Management 3 Credits (3,0)
The course introduces the student to traffic flow management definitions, concepts, technologies (current and planned for future air traffic systems and operations, and applications required to perform system analysis of the constraints and their impact on efficiency of traffic flows within the air traffic airspace. Management concepts related to technology, collaboration, and innovation in Air Traffic Control (ATC) and Air Traffic Management (ATM) will also be covered. Topics covered include Global Air Navigation Plan (GANP), governance restrictions, regulatory capabilities, ATM systems, sustainable infrastructure, and environmental impacts. The implications on managers of ongoing air navigation improvement programs of International Civil Aviation Organization (ICAO) Member States (SESAR in Europe; NextGen in the United States; CARATS in Japan; SIRIUS in Brazil, and others in Canada, China, India, Asia, Pacific, Africa and The Russian Federation) are also introduced.
Prerequisites: RSCH 202.

ASCI 404 Applications in Aviation & Aerospace Law 3 Credits (3,0)
Applications in Aviation & Aerospace Law explores the chronological development, federal and state regulatory functions, and rights and liabilities of pilots, maintenance personnel, aircraft manufacturers, and airport and aircraft operators. Students will examine case histories, liens and security interest in aircraft, as well as international conferences, bilateral and multilateral agreements, and criminal statutes. Students will also examine the legal aspects of unmanned aerial systems and operations, as well as space commercialization.
Prerequisites: RSCH 202.

ASCI 406 Airborne Law Enforcement 3 Credits (3,0)
Airborne Law Enforcement covers the historical and modern issues that shape present day airborne law enforcement organizations. Students will study how airborne law enforcement impacts the criminal justice system. Additionally, operational issues, including management of airborne law enforcement units will be studied. Aviation laws and civil/criminal laws that effect airborne law enforcement operations will also be covered. Students will review pilot and crew duties along with aircraft selection and emerging technologies that impact present day airborne law enforcement organizations. The role of airborne law enforcement in preventing and responding to terrorist threats is also reviewed. Safety issues, as they apply to airborne law enforcement, will also be studied.
Prerequisites: RSCH 202.

ASCI 411 Human Factors in ATM 3 Credits (3,0)
This course focuses on the major human causative agent in aircraft accidents as they apply to air traffic control and management: the human being. Emphasis is placed on the psychological and physiological factors that enhance the accident probability. Ergonomic capabilities of humans as related to Air Traffic Control (ATC) and its influence in aviation design is also covered. Performance limitations of air traffic controllers are examined to assess how these limitations are impacted by different variables in the ATC environment. This course will also investigate how human factors can result in human error, but at the same time be used to bring about strategies that can enhance efficiency, effectiveness, and safety to mitigate human error in ATC.
Prerequisites: RSCH 202.

ASCI 412 Corporate and Business Aviation 3 Credits (3,0)
The course is designed to provide the student with an understanding of the operation of a corporate flight department, value of management mobility, aircraft and equipment evaluation, maintenance, flight operations, administration, and fiscal considerations.
Prerequisites: RSCH 202.

ASCI 426 Airport Management in ATM 3 Credits (3,0)
The focus of this course will be an examination of the management of airports. An emphasis on the facilities that comprise an airport system, including airspace, airfield, terminal and ground access operations will be covered, as well as the aspects of global air traffic management systems that are directly linked to airports. Airports are tangibly the beginning and end of aircraft movements within air traffic management systems. Knowledge of the operational aspects of air traffic systems and other international air navigation system components such as WAAS, ADS-B and PBN-OPD that are owned, operated or occur on airport properties are critical concepts of air traffic management. The course also evaluates the influences of NextGen and other international modernized air navigation systems on airport operations management with regards to facilities, local ATC, airport tenants, airline operations, environmental impacts and community relations programs.
Prerequisites: RSCH 202.

ASCI 428 Advanced Helicopter Systems and Functions 3 Credits (3,0)
During this course, the student will study the principles and functions of advanced helicopter systems with an emphasis on automatic flight control systems and associated pilot interface mechanisms, power and rotor systems, avionics, environmental systems and structures. Pre-Requisite: FAA/military helicopter pilot certification or courses listed.
Prerequisites: ASCI 317 and ASCI 388 and RSCH 202.

ASCI 438 Advanced Helicopter Operations 3 Credits (3,0)
During this course, the student will obtain the foundation for advance and specialized commercial helicopter operations. The student will be introduced to broad areas of commercial flight operations. Emphasis will be placed on developing knowledge in organization, budgeting, airframe selection, mission support, insurance, maintenance, ground support operations, safety and training programs, recordkeeping and regulatory compliance. By the end of the course, the student will have sufficient knowledge to understand the concepts necessary to function as a professional in the aviation industry.
Prerequisites: ASCI 317 and ASCI 388 and ASCI 378 and RSCH 202.

ASCI 491 Operational Applications in Aeronautics 3 Credits (3,0)
Culminating experience for students in the Aeronautics degree program. Students to explore how their chosen career field fits into the broader aviation industry while examining more deeply issues related to their minor field of study. Macro-level review of the aviation industry and how to prepare to meet industry expectations for those entering the profession. Contemporary issues and emerging trends within the industry. Assignments will challenge student critical thinking, collaborative problem solving, written and oral communications, and lifelong learning skills. Pre-Requisite: Course listed and Senior Standing.
Prerequisites: RSCH 202.

ASCI 499 Special Topics in Aeronautical Science 1-3 Credit
Individual independent or directed studies of selected topics in general aviation. Pre-Requisite: Consent of instructor and approval of department and program chairs. May be repeated with a change of subject. Special topics courses involving flight training are offered in selected areas for the purpose of gaining proficiency in required pilot operations for various certificates and ratings.

Air Force Aerospace Studies (USAF)

Courses

USAF 101 Heritage and Values 1 Credit (1,0)
Survey course designed to introduce students to the United States Air and Space Forces and provides an overview of the basic characteristics, missions, and organization of the Air and Space Forces. Leadership Laboratory is mandatory for Air Force ROTC cadets and complements this course by providing cadets with followership experiences.
Corequisites: USAF 101L.

USAF 101L Leadership Laboratory 0 Credits (0,2)
LLAB is a dynamic and integrated grouping of leadership developmental activities designed to meet the needs and expectations of prospective Department of the Air Force second lieutenants and complement the AFROTC academic program. It is a student planned, organized, and executed practicum conducted under the supervision of the Detachment Commander and Operations Flight Commander.
Corequisites: USAF 101.

USAF 102 Heritage and Values 1 Credit (1,0)
Continuation of AF 102. Survey course designed to introduce students to the United States Air and Space Forces and provides an overview of the basic characteristics, missions, and organization of the Air and Space Forces. Leadership Laboratory is mandatory for Air Force ROTC cadets and complements this course by providing cadets with followership experiences.
Prerequisites: USAF 101 **Corequisites:** USAF 102L.

USAF 102L Leadership Laboratory 0 Credits (0,2)
LLAB is a dynamic and integrated grouping of leadership developmental activities designed to meet the needs and expectations of prospective Department of the Air Force second lieutenants and complement the AFROTC academic program. It is a student planned, organized, and executed practicum conducted under the supervision of the Detachment Commander and Operations Flight Commander.
Corequisites: USAF 102.

USAF 201 Team and Leadership Fundamentals 1 Credit (1,0)
Provides a fundamental understanding of both leadership and team building. The lessons and course flow are designed to prepare students for field training and leadership positions in the detachment.
Prerequisites: USAF 102 **Corequisites:** USAF 201L.

USAF 201L Leadership Laboratory 0 Credits (0,2)
LLAB is a dynamic and integrated grouping of leadership developmental activities designed to meet the needs and expectations of prospective Department of the Air Force second lieutenants and complement the AFROTC academic program. It is a student planned, organized, and executed practicum conducted under the supervision of the Detachment Commander and Operations Flight Commander.

USAF 202 Team and Leadership Fundamentals 1 Credit (1,0)
Continuation of USAF 201. Provides a fundamental understanding of both leadership and team building. The lessons and course flow are designed to prepare students for field training and leadership positions in the detachment.
Prerequisites: USAF 201 **Corequisites:** USAF 202L.

USAF 202L Leadership Laboratory 0 Credits (0,2)
LLAB is a dynamic and integrated grouping of leadership developmental activities designed to meet the needs and expectations of prospective Department of the Air Force second lieutenants and complement the AFROTC academic program. It is a student planned, organized, and executed practicum conducted under the supervision of the Detachment Commander and Operations Flight Commander.
Corequisites: USAF 202.

USAF 301 Leading People and Effective Communication 3 Credits (3,0)
Utilizes student's field training experience to take a more in-depth look at leadership. Special emphasis is placed on enhancing communication skills, and why that is important as a leader. Students have an opportunity to try out these leadership and management techniques in a supervised environment as juniors and seniors.
Prerequisites: USAF 202 **Corequisites:** USAF 301L.

USAF 301L Leadership Laboratory 0 Credits (0,2)
LLAB is a dynamic and integrated grouping of leadership developmental activities designed to meet the needs and expectations of prospective Department of the Air Force second lieutenants and complement the AFROTC academic program. It is a student planned, organized, and executed practicum conducted under the supervision of the Detachment Commander and Operations Flight Commander.
Corequisites: USAF 301.

USAF 302 Leading People and Effective Communication 3 Credits (3,0)
Continuation of USAF 301. Utilizes student's field training experience to take a more in-depth look at leadership. Special emphasis is placed on enhancing communication skills, and why that is important as a leader. Students have an opportunity to try out these leadership and management techniques in a supervised environment as juniors and seniors.
Prerequisites: USAF 301 **Corequisites:** USAF 302L.

USAF 302L Leadership Laboratory 0 Credits (0,2)
LLAB is a dynamic and integrated grouping of leadership developmental activities designed to meet the needs and expectations of prospective Department of the Air Force second lieutenants and complement the AFROTC academic program. It is a student planned, organized, and executed practicum conducted under the supervision of the Detachment Commander and Operations Flight Commander.
Corequisites: USAF 302.

USAF 401 National Security/Commissioning Preparation 3 Credits (3,0)
Designed for college seniors and gives them the foundation to understand their role as military officers and how they are directly tied to our National Security Strategy. 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.
Prerequisites: USAF 302 **Corequisites:** USAF 401L.

USAF 401L Leadership Laboratory 0 Credits (0,2)
LLAB is a dynamic and integrated grouping of leadership developmental activities designed to meet the needs and expectations of prospective Department of the Air Force second lieutenants and complement the AFROTC academic program. It is a student planned, organized, and executed practicum conducted under the supervision of the Detachment Commander and Operations Flight Commander.
Prerequisites: USAF 401.

USAF 402 National Security/Commissioning Preparation 3 Credits (3,0)
Continuation of USAF 401. Designed for college seniors and gives them the foundation to understand their role as military officers and how they are directly tied to our National Security Strategy. 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.
Prerequisites: USAF 401 **Corequisites:** USAF 402L.

USAF 402L Leadership Laboratory 0 Credits (0,2)
LLAB is a dynamic and integrated grouping of leadership developmental activities designed to meet the needs and expectations of prospective Department of the Air Force second lieutenants and complement the AFROTC academic program. It is a student planned, organized, and executed practicum conducted under the supervision of the Detachment Commander and Operations Flight Commander.
Corequisites: USAF 402.

USAF 403L Leadership Laboratory 0 Credits (0,0)
Development of personal leadership and managerial abilities. Examination and demonstration of Air Force customs and courtesies, drill and ceremonies and standards of discipline and conduct.

USAF 404L Leadership Laboratory 0 Credits (0,0)
Development of personal leadership and managerial abilities. Examination and demonstration of Air Force customs and courtesies, drill and ceremonies and standards of discipline and conduct.

Aviation Maintenance - UG (AMNT)

AMNT courses designated as Part 65 are available at the Worldwide Campus only.

Courses

AMNT 240 General Aeronautics and Applications 3 Credits (3,0)
Introduction to general aeronautics, physical mathematics, weight and balance, government regulations regarding aircraft maintenance, common and special tools and measuring devices, fluid lines, hardware, aircraft servicing, and related documentation.

AMNT 260 Aircraft Electrical Systems Theory 3 Credits (3,0)
Introduction to aircraft electrical systems; the principles and concepts of basic DC and AC electrical theory, magnetism, batteries, generators, motors, voltage regulators, circuit protection and electrical component installations.

AMNT 265 Aeronautical Electronics for Aviation Maintenance Technicians 3 Credits (3,0)
Radio laws and regulations, aircraft radio communication, radar systems, radio wave propagation, electronic and electronic principles, radio practice, circuit components, and practical circuits, signal and emissions, radar systems and antennas and power feeder lines. Use various types of equipment and troubleshoot procedures.

AMNT 270 Airframe Structures and Applications 3 Credits (3,0)
This course is an introduction to airframe structures, appropriate applications and repairs. The study of aircraft wood, dope, fabric, sheet metal, welding theory and methods of fabrication are included in this course.

AMNT 271 Airframe Systems and Applications 3 Credits (3,0)
This course is an introduction to airframe systems and applications. The study of airframe systems such as aircraft electrical systems, fuel systems, cabin atmosphere control systems, instrument systems, communication and navigations systems, ice and rain control systems, fire protection systems, and aircraft inspection are including in this course.

AMNT 272 Fundamentals of Aircraft Avionics 3 Credits (3,0)
This course is an introduction to aircraft avionics systems. It includes a study of the principles, theories, and concepts of basic solid-state devices, electronic bridges, synchros, bridges, servos, gyros, compass systems, navigation systems, instrument landing systems, autopilot controls and system, flight management computers, weather/airborne radar, and communications systems. Students taking this course should have significant aviation maintenance experience or permission of the instructor.

AMNT 280 Reciprocating Engine Theory and Applications 3 Credits (3,0)
This course is an introduction into the characteristics of the reciprocating engine. Topics of study include theory, construction, propeller systems, fuel metering, lubrication, exhaust, engine installation and overhaul, and operational maintenance procedures.

AMNT 281 Turbine Engine Theory and Applications 3 Credits (3,0)
This course is an introduction into aircraft propulsion systems and applications. Theory, principles of operation, and controls and systems for propellers and turbine engines are analyzed in this course.

AMNT 290 Introduction to Aerospace Composites 3 Credits (3,0)
This introductory course explores the basic concepts of composite materials commonly used in the aerospace industry. This course provides the basic knowledge of composite materials and technology that form the essential underpinnings for further exploration, regardless of discipline, e.g. maintenance, engineering, or unmanned systems. Students will learn general properties, advantages, and possible disadvantages to composite systems common in the aerospace industry as well as common design concerns, technologies and techniques for manufacturing and inspection of composite structures with a special emphasis on repair scenarios and practices. This course also identifies current and emerging health and safety issues pertinent to working with composite materials.

AMNT 322 Aircraft Inspection and Scheduled Maintenance Programs 3 Credits (3,0)
The curriculum within this course provides an in-depth study of aircraft inspection programs and scheduled maintenance processes. National and international regulations governing aircraft inspection and maintenance are evaluated. Inspection program requirements are examined including processes such as pre-flight, post-flight, hourly, calendar, cycles, annual, progressive, and phased inspections. Types and techniques involving non-destructive inspection are explored. Industry practices in managing scheduled maintenance requirements are studied including aircraft reliability, life cycle management, and trend analysis.
Prerequisites: RSCH 202.

AMNT 416 Aviation Maintenance Management: A Global Perspective 3 Credits (3,0)
The curriculum within this course provides a comprehensive examination of maintenance policies, procedures and practices employed in the management of aviation maintenance programs in a global, multi-organizational industry. Emphasis is placed on all aspects of maintenance management, including organizational management, planning, forecasting, cost control, reliability, flight scheduling, and safety.
Prerequisites: RSCH 202.

AMNT 424 Maintenance Repair and Overhaul in Aviation 3 Credits (3,0)
The curriculum within this course provides an in-depth analysis of the requirements, policies, and procedures necessary for the operation of a Maintenance Repair and Overhaul (MRO) organization. Topics include; airline maintenance operations, engineering, and maintenance. Also included is the repair of structures, systems, and aircraft components. Furthermore, the curriculum explores MRO financing, domestic and off-shore operations, regulatory requirements, logistics, supply chain support, human resources and industry oversight.
Prerequisites: RSCH 202.

AMNT 429 Advanced Technologies in Design and Production of Aircraft Structures and Systems 3 Credits (3,0)
The curriculum within this course explores advanced technologies used during the design, production, and certification of aircraft structures and systems. Topics include an analysis of structural materials, including advanced composites and alloys, and an in-depth examination of the design and production of automated systems utilized throughout the aircraft. Examined are national and international aviation regulations and airworthiness standards governing the design, production, and certification of aircraft structures and systems.
Prerequisites: RSCH 202.

AMNT 491 Operational Applications in Aviation Maintenance 3 Credits (3,0)
Culminating experience for students in the Aviation Maintenance degree program.Comprehensive examination of organizational maintenance policies, programs, and procedures with an emphasis on airworthiness requirements, planning, reliability, safety, and Operations Specifications (OpSpecs). Proficiency in broad field of aviation maintenance operations. Incorporates Flight Operations, Safety Science, and Maintenance Management disciplines. Holistic view of aviation maintenance industry and associated challenges. Pre-Requisite: Course listed and Senior Standing.
Prerequisites: RSCH 202.

Biology, Life Science (BIOL)

Courses

BIOL 120 Foundations of Biology I 3 Credits (3,0)
A biological science course introducing the fundamentals of biology and essential structures, components, and processes of life. Emphasis placed on biochemistry; cell structure, function, organization, and division; sources and uses of biological energy; as well as genetics and inheritance.

Business - UG (BUSW)

Courses

BUSW 324 Aviation Labor Relations 3 Credits (3,0)
An investigation of labor-management relations with applications to the aviation and aerospace industries. Historical development of management-workforce public policy and laws. Current methodologies, processes and tools used to promote cooperative workforce relations, to resolve workforce conflicts, and to promote employee trust in high reliability organizations.
Prerequisites: MGMT 201.

BUSW 335 International Business 3 Credits (3,0)
Attention is focused on the impact of foreign trade on the broader aviation industry and their contribution to economic development. Analysis of economic development and international trade with an examination of the opportunities and threats of the complex environment of international business and current U.S. relations with other nations.
Prerequisites: MGMT 201.

BUSW 352 Business Quantitative Methods 3 Credits (3,0)
Development, implementation, and utilization of business models for managerial decision making. Various techniques for modeling, such as statistical analyses techniques, data analysis, regression and correlation analysis, forecasting, simulation, and optimization models are covered. Developing models needed in decision support systems using Microsoft Excel.
Prerequisites: STAT 211 or STAT 222.

BUSW 390 Business Law 3 Credits (3,0)
A survey of the legal aspects of business transactions is provided. Areas covered include contracts, partnerships, corporations, consumer credit, and the government's influence over business law.
Prerequisites: MGMT 201.

Business Administration - UG (BSAB)

Courses

BSAB 410 Management of Air Cargo 3 Credits (3,0)
This course offers in-depth understanding of the air cargo industry and the complexities involved in the movement of air cargo to include the evolution of the air cargo industry, management of air cargo operations; regulations governing airfreight; significance to economy and society; and future growth of the industry.
Prerequisites: MGMT 201.

BSAB 425 Trends and Current Problems in Air Transportation 3 Credits (3,0)
An analysis of selected contemporary issues, problems, and trends facing management in various segments of the aviation industry, including general aviation and the airlines, will be covered. Students apply previously learned concepts to practical problems to develop increased understanding and demonstrate knowledge of the subject.
Prerequisites: MGMT 201 and MKTG 311 and FINE 332 and ACCT 210 or ACCT 312.

Business Analytics - UG (BUAN)

Courses

BUAN 301 Evidence-Based Management: The Need for Data 3 Credits (3,0)
Students are introduced to the theories of Evidence-Based Management (EBM) and the importance of making data-driven decisions. Through several course examples, students will be asked to look for publicly available data sets to address their working hypothesis as well as bridge existing data sets to form new data relationships. Students will be exposed to consumer, economic, demographic, sales, and other types of data often used in making business decisions with prescriptive analytics. Students will also be exposed to the scientific method and the role of quantitative and qualitative analysis in generating business intelligence.
Prerequisites: MMIS 221 and CSCI 123.

BUAN 302 Communication and Ethics in Data Analysis 3 Credits (3,0)
This course focuses on how data is communicated as well as best practices in data ethics. Understanding ethics, the ethical use of data, and the role of ethics in communicating data will be explored as well as common pitfalls in the overall presentation of data. Students will use recent casesthat involve communications and ethical challenges from which to explore and understand how properly communicating data can be as important as the analysis itself.
Prerequisites: BUAN 301.

BUAN 304 Advanced Statistics and Analytics Concepts 3 Credits (3,0)
This course builds on the math core and business statistics to focus on mathematical models, simulation models, and forecasting tools that enable the student to work with big data in an applied business format. The student will use data cleansing concepts and prepare data for analysis and chose the propermethod of analysis based on the structure of the data. Students will use the SAS suite of products and learn the hands-on skills for data cleansing, model building and forecasting using real life scenarios.
Prerequisites: BUAN 301 and BUSW 352.

BUAN 405 Applied Analytics I -- Descriptive Analytics 3 Credits (3,0)
This course focuses on descriptive analysis of a large data set to test a hypothesis. Sentiment analysis will also be introduced to manage qualitative data and obtain additional insights from qualitative sources. Live data dashboards will be introduced as an integrative bridge between descriptive analytics and data presentation. Complete analysis models will be built and tested using a variety of different data sets using the SAS suite of products as well as less structured programming languages.
Prerequisites: BUAN 304.

BUAN 406 Applied Analytics II -- Predictive Analytics 3 Credits (3,0)
This course uses the SAS suite of products to make predictions and forecast results from large data sets. Students will understand the different predictive nodes of SAS suit products to include neural networks, regression models, and other predictive concepts and how to apply those models to a data set and interpret model comparison output. Students will also utilize compiled and/or interpreted coding languages to build applications for predictions.
Prerequisites: BUAN 405.

BUAN 407 Business Intelligence in Industry Capstone 3 Credits (3,0)
This Capstone experience will include a student-selected project that encompasses the entire problemsolving process from data sourcing through the presentation of results using data visualizations. The project will require a report-out to an executive audience including decision recommendations. Students will also be introduced to the application of business intelligence concepts within the aviation industry as well as be exposed to marketing metrics, psychometrics, etc. and how business can use big data in everyday operations.
Prerequisites: BUAN 406.

BUAN 428 Business Analytics and Data Intelligence 3 Credits (3,0)
The massive growth of the Internet and the rapid expansion of communication and information technology have resulted in a great flow of data -- both structured and unstructured, and while accessing and gathering data is important, analyzing and making sense of that data is even more important. This course introduces students to how businesses can use applications and technologies to effectively manage, analyze, and distribute enterprise data to arrive to more accurate analysis that can lead to more confident decision making and greater operational efficiencies, cost reduction, greater revenue, and reduced risks.
Prerequisites: MMIS 221.

Chemistry (CHEM)

Courses

CHEM 110 General Chemistry I 3 Credits (3,0)
Fundamental principles of general chemistry to include inorganic nomenclature, stoichiometry, atomic structure, periodic relationships, chemical bonding, geometry of molecules, properties of gases, chemical thermodynamics, and properties of solutions.

CHEM 110L General Chemistry I Laboratory 1 Credit (0,1)
Experiments parallel the materials in the associated chemistry lecture course. Topics include chemical stoichiometry, states of matter, solutions, and thermodynamics.
Prerequisites: CHEM 110 **Corequisites:** CHEM 110.

Co-Operative Education & Internship - UG (COIN)

Courses

COIN 494 Co-Operative Education 1-4 Credit (1-4,0)
The student will gain practical learning experience in full-time or part-time employment that is related to the student's degree program and career goals. Course title and level are based on work assignment.

COIN 496 Co-Operative Education 1-4 Credit (1-4,0)
The student will gain practical learning experience in full-time or part-time employment that is related to the student's degree program and career goals. Course title and level are based on work assignment.

COIN 497 Co-Operative Education 1-4 Credit (1-4,0)
The student will gain practical learning experience in full-time or part-time employment that is related to the student's degree program and career goals. Course title and level are based on work assignment. Continuation of COIN 496.

COIN 498 Co-Operative Education 1-4 Credit (1-4,0)
The student will gain practical learning experience in full-time or part-time employment that is related to the student's degree program and career goals. Course title and level are based on work assignment. Continuation of COIN 497.

Communication (COMD)

Communication Courses

COMD 225 Science and Technology Communication 3 Credits (3,0)
This course introduces the practices of communicating news and issues in science and technology to a variety of publics through magazine-style writing and public speaking. Guest speakers will present research questions, methodologies and issues within the sciences. Coursework also includes readings from successful science and technology communicators, illustrating various solutions to writing about complex subjects. Special topics include identifying science and technological stories, evaluating sources and information, and communicating findings clearly, comprehensibly and accurately for publication and speaking engagements.
Prerequisites: ENGL 221 or ENGL 222.

COMD 230 Digital Photography 3 Credits (3,0)
This course introduces fundamental photographic skills through digital technologies. Emphasis is placed on the tools, techniques, and aesthetics of a range of photographic applications pertaining to graphic design and interactive media.

COMD 260 Introduction to Media 3 Credits (3,0)
The structure of professional opportunities in, and social sciences arising from media industries. Required of all Communication students. Must be taken within the first year of entering the program.
Prerequisites: ENGL 123.

COMD 265 Introduction to Newswriting and Reporting 3 Credits (3,0)
Introduction to the fundamentals, theories and practice of news writing and reporting. Identify what constitutes news, as demonstrated by daily news media, conduct interviews, generate story ideas, and write and report news stories using Associated Press style, inverted pyramid organization, and the five Ws of news writing content. Introduction to how editorial departments in contemporary news organizations operate, to the legal, ethical and cultural issues in the news business, the evolution of digital and social media in the news media, and various news-writing strategies beyond the inverted pyramid.
Prerequisites: ENGL 123.

COMD 295 Rhetorical Strategies and Analysis 3 Credits (3,0)
An examination of the theory and practice of effective persuasion for the purposes of shaping public opinion and policy. Students study the principles of Aristotelian rhetoric, and examine how they are applied in public discourse by opinion writers, politicians, political parties, public policy advocates, special interest groups, and documentary film-makers. This writing-intensive course also focuses on effective composition of rhetorical analysis essays.
Prerequisites: ENGL 123.

COMD 320 Mass Communication Law and Ethics 3 Credits (3,0)
A case study-based Communication course introducing students to the legal and ethical environments underpinning First Amendment rights in the United States from the nation's founding to the present. Topics in law include intents of the framers, prior restraint, libel, privacy, obscenity, freedom of information laws, shield laws, copyright and broadcast and cable regulation. Practices of journalists, media relations practitioners and Internet communication will be examined. Topics in ethics concentrate on models for decision making in difficult situations.
Prerequisites: ENGL 221 or ENGL 222.

COMD 322 Aviation and Aerospace Communication 3 Credits (3,0)
This course introduces the practices of communicating news and issues in aviation and aerospace to a variety of publics through magazine-style writing and public speaking. Students will learn how to recognize the news value of contemporary aviation issues, to gain an understanding of those issues through research and interviews with experts, and to write about and discuss the issues. Coursework also includes readings from respected aviation writers that illustrate aviation's economic and social impact on society. Special topics include safety, airport security and congestion, emerging legal issues, and international aviation trends.
Prerequisites: ENGL 221 or ENGL 222 and COMD 265.

COMD 335 Technology and Modern Civilization 3 Credits (3,0)
This course is a humanistic analysis of technology, with attention to its influence upon modern American culture in a global context. Topics include the history and development of technology; the influence of technology upon certain philosophies such as determinism and utilitarianism; the influence of technology on the ecosphere; and the depiction of technology in imaginative literature and the fine arts.

COMD 350 Environmental Communication 3 Credits (3,0)
An examination of a specific national and/or regional environmental issue, including such topics as climate change, pollution, conservation, policy-making and policy change. Course focuses on food as a specific environmental issue. Students' individual interests determine their research focus.
Prerequisites: ENGL 221 or ENGL 222.

COMD 360 Public Relations 3 Credits (3,0)
This course focuses on different theories of persuasive communication and the construction of persuasive messages. Individual instructors may explore persuasive communication in public service and political campaigns, interpersonal communication, social movements, persuasive writing, or advertising. Students are evaluated on their ability to recognize, apply, and evaluate the communication theories used to design persuasive messages.
Prerequisites: COMD 265.

COMD 362 Communication and Organizational Culture 3 Credits (3,0)
Analysis of organizational culture, a study of theory, as well as application of research methods in communication. Allows students to assess particular organizations and to increase their ability to initiate organizational change. Entails a variety of research methods, including rhetorical, qualitative and quantitative methods.
Prerequisites: SPCH 219.

COMD 363 Communication and Society 3 Credits (3,0)
An examination of human communication with specific focus on gender and sexuality. Analysis of verbal discourses, non-verbal communication, symbolic imagery and media as means of constructing identity and social norms.
Prerequisites: SPCH 219.

COMD 364 Visual Design 3 Credits (3,0)
This course presents principles of visual design applying to print and electronic publications, including unity, emphasis, balance, line, shape, value, color, and texture. Special topics include ethics, typography, semiotics, and layout. Students analyze existing graphical artifacts and create print and electronic projects focused on communicating science and technology, using professional design software.
Prerequisites: ENGL 221 or ENGL 222.

COMD 415 Nonverbal Communication 3 Credits (3,0)
Nonverbal Communication entails the study of communication behaviors and processes, not involving the expression of written or spoken words, which contribute information to a message. Special attention is directed to the study of voice qualities; facial expression and body language; space, personal distance, and touch; the use of time and objects; and personal appearance. Study also involves nonverbal communication in applied settings, as well as research strategies for observing, measuring, and understanding nonverbal phenomena.
Prerequisites: SPCH 219 and ENGL 221 or ENGL 222.

COMD 420 Applied Cross Cultural Communication 3 Credits (3,0)
An examination of the challenges to communicating across the variety of subcultures present in work environments. Ethnicity, nationality, gender, physical impairment and sexuality are among the areas of difference often present in business and professional environments which may influence the establishment of cooperative working relationships. Means for analyzing and developing strategies to transcend and make positive use of sub-cultural differences will be considered.
Prerequisites: SPCH 219.

COMD 460 Crisis Communication 3 Credits (3,0)
Mastery of writing and speaking genres in media relations with an emphasis on crisis communication.
Prerequisites: ENGL 221 or ENGL 222 and COMD 360.

COMD 495 Senior Project 3 Credits (3,0)
One option for the capstone experience for the communication program. Provides students with the opportunity to integrate and exhibit knowledge and communication skills acquired during their program of study. Allows students to select from a number of project options, such as researching, writing, and presenting a conference paper; developing a website; creating and delivering a workshop; engaging in a service-learning project; and conducting an empirical study. Requires students to assemble a professional eportfolio that illustrates the depth and breadth of work completed in the program. Pre-Requisite: Senior status.

Computer Engineering (CESC)

Computer Engineering Courses

CESC 220 Digital Circuit Design 3 Credits (3,0)
This course provides a knowledge and facility in logic design, interfacing digital circuits, Boolean algebra, combinatorial logic circuits, circuit minimization techniques, flip-flop storage elements, shift registers, counting devices, sequential logic circuits, state machines and computer structure. Requires concurrent registration in CESC 222 except for Engineering Sciences Major in BS in Technical Management or Development Track in BS in Unmanned Systems Applications.
Prerequisites: ENGR 101 **Corequisites:** CESC 222.

CESC 222 Digital Circuit Design Laboratory 1 Credit (0,1)
This course enables students to perform laboratory experiments in the measurement and verification of digital circuits, discrete and integrated logic circuit design analysis and measurements.
Corequisites: CESC 220.

Computer Science (CSCI)

Courses

CSCI 109 Introduction to Computers and Applications 3 Credits (3,0)
Overview of skills needed for office productive software (word processing, spreadsheets and presentation tools), the structures of computer networking and the utilization of the internet; computer literacy supported through lectures, discussions, and readings on the computer process, the impact of computers on society, emerging technologies, and hardware and software purchasing decisions.

CSCI 123 Introduction to Computing for Data Analysis 3 Credits (3,0)
Students are expected to use a wide and complex set of computer tools and systems. A purpose of this course is to build upon their existing knowledge and help ensure students are proficient in common computer systems and with a skill set to solve a wide variety of data analysis problems. Using Microsoft Excel and R software along with their advanced features students will expand their understanding of computers and software while being equipped to solve large and dynamic data sets.

CSCI 399 Special Topics in Computer Science 1-6 Credit (1-6,0)
These are individual independent or directed studies of selected topics in computer science. Consent of the instructor and the department chair is required.

CSCI 499 Special Topics in Computer Science 1-6 Credit (1-6,0)
These are individual independent or directed studies of selected topics in computer science. Consent of the instructor and the department chair is required.

Cybersecurity (CYBR)

Cybersecurity Courses

CYBR 235 Computer and Network Technologies 3 Credits (3,0)
Introduction to the technology that underlies computers and communication networks, Understanding of how computers operate; how users interact with computers; how computers store data; how computers communicate with other computers; the building blocks of communications networks; the Internet, and TCP/IP communications protocols and applications.

CYBR 335 Information Security Tools and Techniques 3 Credits (3,0)
Introduction to the tools and techniques used to secure computers; data networks; and digital information. How attackers view and identify vulnerabilities; weaknesses. Methods to attack and secure operating systems; communications infrastructures; and data networks including TCP/IP and the Internet; including attacker applications. Demonstration and hands-on exercises.
Prerequisites: CYBR 235.

CYBR 365 Introduction to Digital Forensics 3 Credits (3,0)
Introduction to the field of digital forensics; its use in gathering evidence; information interpretation for criminal and civil courts; use for intelligence gathering; in research; and incident response. Legal aspects governing search and seizure; the role of file systems and operating systems and how they interrelate; basic tools for computer, network, and mobile forensics acquisition, analysis, and reporting. Demonstration and hands-on exercises.
Prerequisites: CYBR 335.

CYBR 465 Cybercrime and Cyberlaw 3 Credits (3,0)
Types of criminal behavior in cyberspace, such as identify theft, white collar crimes, fraud, child sexual exploitation, intellectual property theft, and online scams. Laws governing cyberspace, defining criminal activity and guiding law enforcement investigations; U.S. decisional law guiding search and seizure of digital devices and information; international laws related to computer crime and privacy.
Prerequisites: CYBR 335 and CYBR 365.

CYBR 485 War, Terrorism, and Diplomacy in Cyberspace 3 Credits (3,0)
Cyberdiplomacy; cyberwar; cyberterrorism, definitions and examples and uses in illegal, violent actions against people for purposes of furthering ideological, economic, or political objectives. Impact of cyberspace on modern views of warfare, terrorism, and diplomacy.
Prerequisites: CYBR 465.

Economics (ECON)

Courses

ECON 210 Microeconomics 3 Credits (3,0)
This course is an introduction to the economic principles of free enterprise supply and demand, private and social implications of revenue maximization, cost minimization, profit maximization, market structure, and resource markets. Current microeconomic issues in aviation (such as elasticity, pricing, taxes, subsidies, market implications, liability reform, evolution of airline completion, etc.) are discussed.
Prerequisites: MATH 111 or MATH 140 or MATH 143 or MATH 241 and ENGL 123 or ENGL 143.

ECON 211 Macroeconomics 3 Credits (3,0)
This course is an introductory analysis of employment, inflation, recession, GDP economic growth, national income/output and international trade with an emphasis on practical policy alternatives. Macroeconomic aviation applications such as the counter-cyclical growth of start-up airlines and consideration of ATC privatization are incorporated.
Prerequisites: MATH 111 or MATH 140 or MATH 143 or MATH 241 and ENGL 123 or ENGL 143.

ECON 225 Engineering Economics 3 Credits (3,0)
This course is an introduction to microeconomic principles, problems, and policies as well as basic financial principles such as time value of money, capital budgeting, and cost of capital. The course will provide the engineering graduate with the tools needed for success in the workplace.

ECON 312 Money and Banking 3 Credits (3,0)
This course is a preliminary investigation of the financial institutions of the US and the relationship of monetary policy to income and price stabilization. Analyses of international capital flows will also be undertaken.
Prerequisites: ECON 210 and ECON 211 and RSCH 202.

ECON 315 Managerial Economics 3 Credits (3,0)
This course presents an analytical approach to the manager's role in understanding pricing, costing, production and forecasting. This course emphasizes the quantitative and qualitative applications of economic principles to business analysis. Aviation related topics commonly discussed include airport privatization and employee ownership of airlines, forecasting passenger demand, airline production and cost analysis, optimal pricing and production decisions, sensitivity analysis, and capital budgeting.
Prerequisites: ECON 210 and STAT 211 or STAT 222.

ECON 399 Special Topics in Economics 1-4 Credit (1-4,0)
These courses are individual independent or directed studies of combinations of selected topics in economics. Pre-Requisite: Consent of instructor and approval of the department chair.

ECON 411 International Economics 3 Credits (3,0)
This course introduces the student to the theories of international macroeconomics. Topics include international trade, comparative advantage, tariffs, quotas, export subsidies, and trade agreements. The course studies and analyzes current issues such as the U.S. trade deficit, harmonization of fiscal and monetary policies among countries, and policies toward multination firms.
Prerequisites: ECON 210 and ECON 211 and RSCH 202.

ECON 420 Economics of Air Transportation 3 Credits (3,0)
In this course, students will explore the economic aspects of airline service with consideration given to the impact of federal aid and regulation, types of aircraft, airport problems, consumer interests and competitive practices.
Prerequisites: ECON 210 and ECON 211.

ECON 499 Special Topics in Economics 1-4 Credit (1-4,0)
These courses are individual independent or directed studies of combinations of selected topics in economics. Pre-Requisite: Consent of instructor and approval of the department chair.

Electrical Engineering (ELEC)

Electronics Courses

ELEC 220 Circuits 3 Credits (3,0)
Introduction of the fundamentals of electrical engineering. Circuit theory and variables. Voltage-current relationship for passive elements. Circuit analysis and network solutions. Phasors and frequency-domain analysis. Transient analysis of first and second order systems. Equivalent circuits and power.
Prerequisites: ENGL 221 and MATH 345 and PHYS 250 and PHYS 253
Corequisites: ELEC 221.

ELEC 221 Circuits Laboratory 1 Credit (0,1)
Lab experiments for ELEC 220 using resistors, inductors, capacitors, operational amplifiers, and DC and AC sources. Hardware and Software circuit simulations will be used.
Corequisites: ELEC 220.

ELEC 230 Electronics 3 Credits (3,0)
Diodes Characteristics, and Applications, Full-Wave rectifiers, Half-Wave rectifiers, Switching; Field Effect Transistors (FET); Bipolar Junction Transistors(BJT); Models, Characteristics, Applications, Biasing, DC Analysis, Small Signal Analysis; Operational Amplifiers and Integrated circuits.
Prerequisites: ELEC 220 and ELEC 221 **Corequisites:** ELEC 231.

ELEC 231 Electronics Laboratory 1 Credit (0,1)
Lab experiments for ELEC 230. Using both hardware and software simulations with Diodes, Field Effect Transistors (FET) and Bipolar Junction Transistors (BJT) to design rectifiers, biasing networks, and small signal amplifiers.
Corequisites: ELEC 230.

Emergency Management (EMGY)

Courses

EMGY 310 Fundamentals of Emergency Management 3 Credits (3,0)
This course studies the various elements involved with all phases of emergency management. It includes thorough coverage of the historical background of emergency management (EM) in the United States viewed through several significant disaster events and the emergence of the most significant laws and policies that have defined and continue to shape the management of emergencies through local, state and federal levels of government including: HSPD 5, HSPD 8, the Stafford Act, the National Flood Insurance Act, along with other pre-FEMA and post-9/11 legislative actions. Topics include a survey and analysis of natural and technological hazards; detailed coverage of FEMA's all hazards approach; all phases of EM cycle - mitigation, preparation, response and recovery; integrated emergency management systems; the incident command and the National Incident Management Systems, and Emergency Support Functions; risk assessment factors; and traditional and social media communications. The course culminates in a group project with each student writing and formally presenting an integrated emergency management plan (EMP).
Prerequisites: RSCH 202.

EMGY 400 Introduction to Incident Command System 3 Credits (3,0)
The primary focus of this course is to introduce the history, features and principles, and organizational structure of Emergency Management and the Incident Command System (ICS) as a systematic tool used in the command, control, and coordination of emergency response. The course defines and explains the relationship between ICS and the National Incident Management System (NIMS), a standardized approach to incident management developed by the Department of Homeland Security; and the National Response Framework (NRF), a part of the National Strategy for Homeland Security that provides a unified national response to disasters and emergencies.
Prerequisites: RSCH 202 and EMGY 310.

EMGY 405 Disaster Policy and Management 3 Credits (3,0)
Disaster Policy & Management introduces principles of disaster management, the understanding of disaster policy, and the global organization of disaster and crisis public management. This course focuses on disaster management in the United States and its relationship between disaster management and public management; through case studies and other activities students will gain a thorough understanding of national disaster policy and crisis management at all levels of government.
Prerequisites: RSCH 202.

EMGY 430 Emergency Management and Contingency Planning 3 Credits (3,0)
This course provides students with a comprehensive overview of emergency management practices in both government and private organizations in the U.S. The students will become familiar with the basic concepts, principles, and terms used in the emergency management discipline that includes preparedness, mitigation, response and recovery operations. Students will focus on the planning and leadership roles during natural and man-made disasters and interaction between government and private organizations during such incidents. During the course, the students will discuss the individual roles of the federal, state, and local governments and the private sector in such emergencies. The students will become familiar with the National Response Framework and the National Incident Management System and their application during national disasters. Students will also examine the essentials of business contingency planning in the private sector for disasters. Finally, students will plan and participate in a mock disaster drill to demonstrate their full understanding of the course material.
Prerequisites: RSCH 202.

Emergency Services - UG (ESVS)

Courses

ESVS 201 Fire-Related Human Behavior 3 Credits (3,0)
An introduction of fire-related human behavior combining disciplines in social sciences and engineering to predict human behavior during fire and other emergencies. Occupant characteristics, social environment, and building characteristics influence how humans react in different situations.

ESVS 299 Current Topics in Fire and Emergency Services 1-3 Credit (1-3,0)
These courses consist of individual independent or directed studies of selected topics in Fire science. Pre-Requisite: Consent of Instructor, Approval of Department and Program Chairs, and 12 Hours of ESVS Courses.

ESVS 301 Community Risk Reduction for the Fire and Emergency Services 3 Credits (3,0)
This course provides a theoretical framework for the understanding of the ethical, sociological, organizational, political, and legal components of community risk reduction, and a methodology for the development of a comprehensive community risk reduction plan.

ESVS 302 Fire Dynamics 3 Credits (3,0)
This course examines fire dynamics within the context of firefighting and its applications to fire situations, including combustion, flame spread, flashover, and smoke movement, as well as applications to building codes, large-loss fires, and fire modeling.

ESVS 303 Fire Protection Structures and Systems 3 Credits (3,0)
This course examines design principles involved in structural fire protection and automatic suppression systems, including fire resistance and endurance, flame spread evaluation, smoke control, alarm systems, sprinkler innovations, evaluation of sprinkler system designs, and specialized suppression systems.

ESVS 304 Fire Investigation and Analysis 3 Credits (3,0)
This course examines technical, investigative, legal, and managerial approaches to the arson problem, including principles of incendiary fire analysis and detection, environmental and psychological factors of arson, gang-related arson, legal considerations and trial preparations, managing the fire investigation unit, intervention and mitigation strategies, and shaping the future.

ESVS 305 Fire Prevention Organization and Management 3 Credits (3,0)
This course examines the factors that shape fire risk and the tools for fire prevention, including risk reduction education, codes and standards, inspection and plans review, fire investigation, research, master planning, various types of influences, and strategies.

ESVS 399 Current Topics in Fire and Emergency Services 1-3 Credit (1-3,0)
These courses consist of individual independent or directed studies of selected topics in Fire science. Prerequisites: Consent of Instructor, Approval of Department and Program Chairs, and 12 Hours of ESVS Courses.

ESVS 400 Analytical Approaches to Public Fire Protection 3 Credits (3,0)
This course examines the tools and techniques of rational decision making in fire and emergency services agencies, including data collection, statistics, probability, decision analysis, utility modeling, resource allocation, and cost-benefit analysis.
Prerequisites: RSCH 202.

ESVS 401 Applications of Fire Research 3 Credits (3,0)
This course examines the basic principles of research and methodology for analyzing current fire-related research. The course also provides a framework for conducting and evaluating independent research in the following areas: fire dynamics, fire test standards and codes, fire safety, fire modeling, structural fire safety, life safety, firefighter health and safety, automatic detection and suppression, transportation fire hazards, risk analysis and loss control, fire service applied research and new trends in fire-related research.
Prerequisites: RSCH 202.

ESVS 402 Fire and Emergency Services Administration 3 Credits (3,0)
This course is designed to be a progressive primer for students who want more knowledge about fire and emergency services administration. The course demonstrates the importance of the following skills, necessary to manage and lead a fire and emergency services department through the challenges and changes of the 21st century: Persuasion and influence, accountable budgeting, anticipation of challenges and the need for change, and using specific management tools for analyzing and solving problems. A central part of the course focuses on how the leadership of a fire and emergency services department develops internal and external cooperation to create a coordinated approach to achieving the department's mission.
Prerequisites: RSCH 202.

ESVS 403 Disaster Planning and Control 3 Credits (3,0)
This course examines concepts and principles of community risk assessment, planning, and response to fires and natural and human-caused disasters, including National Incident Management System--Incident Command Systems (NIMS ICS), mutual aid and automatic response, training and preparedness, communications, civil disturbances, terrorist threats/incidents, hazardous materials planning, mass casualty incidents, earthquake preparedness, and disaster mitigation and recovery.
Prerequisites: RSCH 202.

ESVS 404 Managerial Issues in Hazardous Materials 3 Credits (3,0)
This course presents current issues in management of a department-wide hazardous materials program. It includes issues that are pertinent to officers and managers in public safety departments, including regulations and requirements for hazardous materials (HAZMAT) preparedness, response, storage, transportation, handling and use, and the emergency response to terrorism threat/incident. Subjects covered include State, local and federal emergency response planning, personnel and training, and operational considerations such as determining strategic goals and tactical objectives.
Prerequisites: RSCH 202.

ESVS 405 Personnel Management for Fire and Emergency Services 3 Credits (3,0)
This course examines relationships and issues in personnel administration and human resource development within the context of fire-related organizations, including personnel management, organizational development, productivity, recruitment and selection, performance management systems, discipline, and collective bargaining.
Prerequisites: RSCH 202.

ESVS 406 Political and Legal Foundations of Fire Protection 3 Credits (3,0)
This course examines the legal aspects of the fire service and the political and social impacts of legal issues. This course includes a review of the American legal system and in-depth coverage of legal and political issues involving employment and personnel matters, administrative and operational matters, planning and code enforcement, and legislative and political processes with regard to the fire service.
Prerequisites: RSCH 202.

ESVS 480 Advanced Principles in Fire and Emergency Services Safety and Survival 3 Credits (3,0)
This course examines the 16 Firefighter Life Safety Initiatives (FLSI)--what they mean and how they can be adapted by every fire and emergency service organization. The 16 FLSI were developed by the National Fallen Firefighters Foundation (NFFF) with the support and consultation of virtually every major United States fire service organization. The goal of this course, set at the supervisory and managerial level, is to formulate and put into practice health and safety procedures that address firefighter injuries and fatalities. The course will also focus on the need for a culture change, especially regarding how decisions made at the managerial and operational levels can exert influence to ensure that "everyone goes home".
Prerequisites: RSCH 202.

ESVS 499 Current Topics in Fire and Emergency Services 1-3 Credit (1-3,0)
These courses consist of individual independent or directed studies of selected topics in Fire science. Pre-Requisite: Consent of Instructor, Approval of Department and Program Chairs, and 12 Hours of ESVS Courses.
Prerequisites: RSCH 202.

Engineering (ENGR)

Engineering Courses

ENGR 101 Introduction to Engineering 3 Credits (3,0)
This course is an introduction to the interdisciplinary aspects of the engineering of aerospace systems. It is a project-based course, demonstrating how the engineering profession is a multi-disciplinary field. Students are involved in an array of conceptual exercises, simple design activities, and projects dealing with engineering in aerospace-related areas.
Prerequisites: MATH 142 or MATH 143 or qualifying score on the mathematics skills assessment.

ENGR 115 Introduction to Computing for Engineers 3 Credits (3,0)
This is an introductory course in computer programming for scientists and engineers. This course introduces students to aspects of algorithm design and software development including specification of the problem, design of a solution, implementation of code, and testing. This course applies a problem-solving approach to developing algorithms. Algorithms are implemented and utilize the following topics: data types and related operations; looping; decision; input/output; functions; arrays; and files.
Prerequisites: ENGR 101.

ENGR 120 Graphical Communications 3 Credits (3,0)
Students will use free-hand pencil sketching and CAD as tools for graphical communication of engineering designs. Topics include the standard form for design graphics and view layout, orthographic projection, section and auxiliary views, dimensioning, and tolerancing.
Prerequisites: ENGR 101.

ENGR 330 Signals & Systems 3 Credits (3,0)
Signal representations; response due to various inputs: using convolution, Fourier series, Fourier transforms, Laplace transforms, Z-transform; filter design.
Prerequisites: ELEC 220 **Corequisites:** ENGR 331.

ENGR 331 Signals & Systems Laboratory 1 Credit (0,1)
Lab for ENGR 330. The student will gain hands-on experience with programming in MATLAB. MATLAB will enable the students to link the theory they will gain in ENGR 330 to real software implementations. The lab will cover convolution, Fourier series, Fourier transforms, Laplace transforms, Z-transform, and filter design.
Corequisites: ENGR 330.

ENGR 350 Project Management for Engineered Systems 3 Credits (3,0)
Students will study systems thinking and lifecycle considerations in the completion of project initiation, planning, monitoring, control, and closeout activities for engineering systems. Additional topics include various roles in engineering project teams, effective communication and systematic planning and evaluation of project activities, costs, quality, risks and performance.
Prerequisites: ENGR 120 and ECON 225.

ENGR 400 Fundamentals of Energy Systems 3 Credits (3,0)
Single phase power, three phase power, magnetics circuits, transformers, DC machines, induction motors and synchronous machines, introduction to alternative energy, computer based projects will be assigned.
Prerequisites: PHYS 160 and ENGR 330.

ENGR 404 Mechatronics 3 Credits (3,0)
This course is an introduction to mechatronics with emphasis on integration of mechanical, electrical, and computer systems. Topics include the applications and interfacing of microcontrollers, sensors, actuators, and other electrical components commonly used in smart electromechanical devices.
Prerequisites: ELEC 220 and ELEC 221 and ELEC 230 and ELEC 231
Corequisites: ENGR 405.

ENGR 405 Mechatronics Laboratory 1 Credit (0,1)
This course is the Lab component for ENGR 404 with the emphasis on interfacing of microcontrollers, sensors, actuators, and other electrical components. It focuses on the hands-on part of mechatronic system. Topics include the programming skills of microcontroller unit used for sensors, actuators, and integrated systems.
Corequisites: ENGR 404.

ENGR 450 Systems and Controls 3 Credits (3,0)
This course is a continuation to ENGR 330 and ENGR 331 (Signals and Systems & Signals and Systems Laboratory) and will focus on the design of controllers for dynamic interdisciplinary engineering systems. Classical and modern control using state space in time and frequency domains will be covered. Digital control, optimal control, and observability and controllability will be introduced. Matlab and Simulink will also be used throughout the course.
Prerequisites: ENGR 330.

ENGR 490 Capstone Design Project I 3 Credits (3,0)
The first of two courses intended to provide senior level engineering students with experience in the multiple phases of a design project. This course will focus on the system requirements definition, exploration of the design space, and development of a conceptual design of a team project. Students will develop a preliminary design of the selected system design concept using computer based design and analysis tools. Pre-Requisite: All courses in the BSE program as published in the Suggested Plan of Study must be completed with the exception of those identified in Terms 3 and 4 of the Senior year.

ENGR 491 Capstone Design Project II 3 Credits (3,0)
The final course in the capstone design sequence. Students will conduct a detailed design of the final project as well as conduct verification and validation exercises to demonstrate how the system performed when compared to system specifications and user requirements.
Prerequisites: ENGR 490.

Engineering Science (ESCI)

Courses

ESCI 201 Statics 3 Credits (3,0)
The purpose of this course is to provide the engineering student with the ability to analyze static equilibrium problems in a logical manner. It is designed to provide assistance to the student for preparation in all solid mechanics courses. Emphasis is placed on an understanding of principles employed in the solution of problems rather than reliance on a rote process of substitution in numerous formulas.
Prerequisites: PHYS 150 and ENGR 101.

ESCI 202 Solid Mechanics 3 Credits (3,0)
The concepts of stress and strain and their tensor properties. Elastic stress strain relations. Analysis of stress and deformation in members subject to axial, torsional, bending and combined loading. Column stability.
Prerequisites: ESCI 201.

ESCI 204 Dynamics 3 Credits (3,0)
A vector treatment of the kinematics and kinetics of particles and rigid bodies. Acceleration, work, energy, power, impulse, and momentum.
Prerequisites: ESCI 201 and MATH 242.

ESCI 206 Fluid Mechanics 3 Credits (3,0)
Physical characteristics of the fluid state. Fluid statics. Kinematics of fluid motion. Flow of an incompressible ideal fluid. The impulse-momentum principles. Similitude and dimensional analysis; fluid measurements.
Prerequisites: ESCI 201 and PHYS 160.

ESCI 305 Thermodynamics 3 Credits (3,0)
This course is a study of the concepts of heat and work and their transformation as governed by the first and second laws of thermodynamics. Topics discussed include properties of pure substances, ideal gas behavior and relationships, reversible processes and temperature- entropy diagrams, conventional power cycles, properties of ideal gas mixtures and combustion.
Prerequisites: ESCI 206 and MATH 345.

ESCI 325 Engineering Materials and Structures 3 Credits (3,0)
This course is an introduction to major classes of materials (such as metal alloys and composites) used in aerospace engineering applications. Students will explore fundamental deformation mechanisms of high use alloys (such as titanium) and how composite materials enable directional tailoring of material and structural properties.
Prerequisites: ENGL 221 and ESCI 202 and ESCI 305.

Engineering Technology (ETEC)

Courses

ETEC 310 Material Science for Engineering Technology 3 Credits (3,0)
This course includes an introduction to materials science and engineering. Emphasis is given on the "processing, structure, properties, performance" relationships that lead to the development of materials for society's needs. Examples are drawn from the major materials classes. Pre-Requisite: Courses listed or greater or equivalent from mathematics skills assessment.
Prerequisites: CHEM 110 and PHYS 160 and ESCI 202.

ETEC 315 Circuits for Engineering Technology 3 Credits (3,0)
DC and AC circuits. Circuit analysis techniques for current, voltage, and power calculations. Three-phase transmission lines, AC transformers. Circuit analysis through linear algebra and calculus.
Prerequisites: MATH 242 and CESC 222 **Corequisites:** ETEC 316.

ETEC 316 Circuits Laboratory for Engineering Technology 1 Credit (0,1)
Laboratory course for ETEC 315. Hardware and software simulation of DC and AC circuits, transformers, 3-phase circuits.
Corequisites: ETEC 315.

ETEC 409 Applied Aeronautics 3 Credits (3,0)
In this course, students will apply the principles of aerodynamics, performance, and stability. Topics covered include airfoil and wing theory in the generation of lift and drag, high-lift systems, propeller and rotor performance, Reynolds number and Mach number effects, aircraft performance during the different stages of flight, and the effect of weight and balance on the stability of an aircraft.
Prerequisites: ASCI 309 and ENGR 115 and MATH 241.

ETEC 410 Thermodynamics for Engineering Technology 3 Credits (3,0)
This course is designed to provide a comprehensive review of the heat, work, and kinetic theory of gases, equation of state, thermodynamics system, control volume, first and second laws of thermodynamics, reversible and irreversible processes, and introduction to basic thermodynamic cycles.
Prerequisites: ESCI 206.

ETEC 415 Control Systems 3 Credits (3,0)
This course is designed to provide a comprehensive review of the analyses of closed loop systems using frequency response, root locus, and state variable techniques. System design is performed based on analytic and computer methods. This is an introductory control systems course. It presents a broad overview of control techniques for continuous and discrete linear systems, and focuses on fundamentals such as modeling and identification of systems in frequency and state-space domains, stability analysis, graphical and analytical controller design methods.
Prerequisites: ESCI 204 and ETEC 315.

ETEC 490 Engineering Technology Capstone I 3 Credits (3,0)
First senior design course for engineering technology students. Design project definition; conceptual design; preliminary design.
Prerequisites: ENGR 115 and ENGR 120 and ETEC 310 and ETEC 410 and ETEC 415 and ECON 210 or ECON 211 or ECON 225.

ETEC 491 Engineering Technology Capstone II 3 Credits (3,0)
Second senior design course for engineering technology students. Detailed design; test design against project requirements.
Prerequisites: ETEC 490.

English (ENGL)

(Communication Theory & Skills)

Review the ERAU Worldwide English placement policy under the Skills Assessments *section of the Worldwide Catalog.*

Courses

ENGL 106 Introduction to Composition 3 Credits (3,0)
This course focuses on the basic principles of unity, support, and coherence as applied to the writing of a variety of paragraphs and essays. Grammar, mechanics, punctuation, sentence skills and basic writing skills are emphasized. Pre-Requisite: Qualifying score on the ERAU English Skills Assessment or course listed.
Prerequisites: GNED 104.

ENGL 123 English Composition 3 Credits (3,0)
This course focuses on the principles of using writing for thinking, as well as a tool for expressing ideas. It addresses the composing process, research and documentation, and rhetorical strategies for various audiences and purposes. Students develop their communicative, evaluative, critical thinking, and research writing abilities. Pre-Requisite: Qualifying score on the ERAU English Skills Assessment or course listed.
Prerequisites: ENGL 106.

ENGL 143 Studies in Rhetorical Theory 3 Credits (3,0)
This course is a broad survey of speculation concerning the nature and techniques of persuasion, this course is a continuation of ENGL 123. This writing-intensive course will focus on enduring issues in the study of rhetoric: the value of such a study, the nature of audiences, the most effective techniques, and the continual re-framing of these issues to meet changing circumstances.
Prerequisites: ENGL 123.

ENGL 221 Technical Report Writing 3 Credits (3,0)
This course introduces students to the preparation of formal and informal technical reports, abstracts, proposals, instructions, professional correspondence and other forms of technical communication. Major emphasis is placed on the long technical report and the acquisition of advanced writing skills.
Prerequisites: ENGL 123.

ENGL 222 Business Communication 3 Credits (3,0)
This course is an introduction to effective business communication. Topics in oral, written, non-verbal and intercultural communications are covered. Research methods, effective speaking and the preparation of letters, memoranda and reports are emphasized.
Prerequisites: ENGL 123.

ENGL 223 Collaborative Writing & Presenting 3 Credits (3,0)
This course is a study of collaborative writing and presenting with an emphasis on best practices for team formation, management, and collaboration on planning, composing, and editing documents and presentation materials. Additionally, students will work through team challenges and group conflict scenarios, individual and group reflection, and peer evaluation.
Prerequisites: ENGL 123.

ENGL 355 Creative Writing 3 Credits (3,0)
This course culminates the interpretive and expressive elements of communications classes. The study, practice and utilization of a personal style of creative composition, examples of contemporary literature and submittal of publications are included in this course.
Prerequisites: ENGL 123.

Finance and Economics - UG (FINE)

Courses

FINE 332 Corporate Finance I 3 Credits (3,0)
Finance functions as used by management including financial analysis and control, financial planning, short and long-term financings, risk and return relationship, capital investment evaluation, cost of capital, and risk in planning financial strategies. Aviation-related businesses are emphasized.
Prerequisites: ACCT 210.

FINE 333 Personal Financial Planning 3 Credits (3,0)
Personal financial planning is examined. Areas of concentration include preparation of financial planning and budgeting, tax-related issues, managing cash and credit, analyzing investment decisions, purchasing process of housing and auto, analysis of insurance needs, and retirement and estate planning.

FINE 418 Airport Administration & Finance 3 Credits (3,0)
This course explores organizational, financial, and contractual management strategies for public use, commercial service airports. Areas of emphasis include grant assurances and airport compliance requirements, marketing and enhanced revenue generation, budgeting (expenses and revenues, operating and capital budgeting), finance and accounting strategies, legal issues and liability, performance measurement standards, and current trends and issues for airport administrators.
Prerequisites: FINE 332 and MGMT 408 and MKTG 311.

General Education (GNED)

Courses

GNED 103 Basic Mathematics 1 Credit (1,0)
The purpose of this course is to enable the student who did not take algebra in high school or who took it several years ago to succeed in an intermediate algebra course or in courses that require a very basic knowledge of the fundamentals of algebra. Topics included in the course are properties of the rational numbers to include review of operations with fractions, simple linear equations and inequalities in one variable, ratio, proportion, percent, basic operations with simple polynomials and applications to problem solving integrated throughout the course. This course cannot be used to satisfy credit for General Education requirements.

GNED 104 Basic English 1 Credit (1,0)
Emphasis in the course is placed on improving conceptual and organizational skills, grammar, spelling, capitalization, punctuation, and word choice. Students will also practice arranging ideas and supporting details in logical order, identifying topic and thesis statements, recognizing errors in pronoun usage, using verb tenses correctly, recognizing parallel structures and misplaced modifiers, and using coordination and subordination effectively. Students will also complete a variety of writing assignments. They will practice editing and revising paragraphs before submitting them for a grade, making corrections in sentence structure, content and rhetoric. The culmination of the course is applying learned skills to a final essay. This course cannot be used to satisfy credit for General Education requirements.

Government (GOVT)

(Social Sciences)

Courses

GOVT 320 American National Government 3 Credits (3,0)
This course covers basic issues of American democracy, constitutional principles, and the executive, legislative, and judicial branches of government.

GOVT 325 International Studies 3 Credits (3,0)
An overview of the land, the people, the culture, and the history of one region of the world, this course emphasizes current events and policies on the global scene. Specific content varies from year to year.

GOVT 331 Current Issues in America 3 Credits (3,0)
This is a course in selected political-economic issues of national and international importance. It includes extensive use of journals, magazines and newspapers to supplement lectures and discussions.
Prerequisites: RSCH 202.

GOVT 340 U.S. Foreign Policy 3 Credits (3,0)
A survey of the evolution of present American foreign policy, stressing the factors that affect and shape this policy. Attention is given to present governmental offices, agencies, and departments and the role each plays in policy formulation and implementation. Emphasis is on the period since World War II.
Prerequisites: RSCH 202.

GOVT 363 Inter-American Relations 3 Credits (3,0)
This course explores the development of U.S. political and economic relations with Latin America from their beginnings in the 19th century to present.
Prerequisites: RSCH 202.

GOVT 401 American Constitutional Law 3 Credits (3,0)
This course is a study of the basics of the United States Constitution and the rights of the individual. Included is the study of the First Amendment freedoms of speech, press, assembly, association, and religion; the right to privacy; and Fourteenth Amendment equal protection. Constitutional law pertaining to the rights of the criminally accused and the duties and responsibilities of the officer to protect and respect such rights is also studied.

GOVT 402 Globalization and World Politics 3 Credits (3,0)
This course is a study of the contemporary debate on globalization and new world order. Key topics include but are not limited to problems of definition in globalization; transborder issues and the role of the state; multinational corporations; labor and the terms of international trade; issues of environmental degradation; international organizations and nongovernment organizations in global affairs; terrorism, global crime, and international security human rights, democracy and cultural nationalism; technology and global communication.
Prerequisites: RSCH 202.

History (HIST)

(Social Sciences)

Courses

HIST 119 U.S. History to 1865 3 Credits (3,0)
U.S. history from the age of exploration to 1865. European conquest and colonization; revolution and nation-building; the market revolution; nationalism and sectionalism; slavery; the Jacksonian era; western expansion; religion and reform; the Civil War.

HIST 130 History of Aviation in America 3 Credits (3,0)
A survey of the history of America in the 20th century, the course emphasizes the explosive growth of aviation as a major influence upon the economic, military, and societal development of the United States.

HIST 302 Evolution of Scientific Thought 3 Credits (3,0)
This course traces the development of science from the earliest times through the modern period, with particular emphasis given to our changing concepts of nature and of science itself.

HIST 331 Selected Topics in US Military History 3 Credits (3,0)
The selected topics related to the evolution of the US military from colonial times to present day. Examination of major conflicts; mobility and intelligence; the military and politics; impact of technology on the military; force on force versus insurgencies; the military industrial complex.
Prerequisites: ENGL 123 or ENGL 221 and RSCH 202.

Homeland Security (HLSD)

Courses

HLSD 110 Introduction to Homeland Security 3 Credits (3,0)
The primary focus of this course is on issues dealing with the security of the citizens and industries of the United States, with emphasis on the transportation system and critical infrastructure protection roles of states, cities, and municipalities. Specific subjects introduced include the mission; the functions and responsibilities; and the legislative and regulatory framework governing the various agencies of the Department of Homeland Security; criminal acts against transportation; emergency management within the United States; the intelligence community and its role in homeland security; and issues pertaining to air; airtime; surface; and cargo security.

HLSD 155 Foundations of Information Security 3 Credits (3,0)
Survey of the broad field of cyber-security and information assurance. Definition of information security; the need for this field of study; ethical and legal issues; risk management and planning; and information security technology; role of the U.S. Department of Homeland Security (DHS) in securing the cyberspace and the nation's information-related infrastructures.

HLSD 215 Introduction to Industrial Security 3 Credits (3,0)
This course will review the fundamentals of security and emergency planning and management. The nature, scope, history, and essential elements of security in the workplace are discussed with emphasis on personal protection and to a limited extent property protection. The workplace will include selected aviation and industrial settings. Operational aspects of security that include strategies for identifying and controlling security exposures and applicable legal issues are also discussed. Students develop and/or evaluate security programs for selected industries.
Prerequisites: HLSD 110.

HLSD 280 Professional Skills in Homeland Security 3 Credits (3,0)
Business and professional skills to begin a career in homeland security. Ethics, program management, leadership, and professionalism in homeland security. Personality evaluations, cover letter and resume preparation, interviewing skills, and winning internships.

HLSD 290 Environmental Security 3 Credits (3,0)
Students will learn how environmental issues may give rise to sociopolitical instability around the world. This course will explore how the development and execution of U.S. domestic and foreign policy, and ultimately U.S. national security, can be impacted by emerging threats to nations from environmental health issues, infrastructure vulnerabilities, and natural resource shortages caused by rapid industrialization, population growth, and urbanization in less developed countries. It will also examine transnational threats from ozone depletion, deforestation, and climate change. In a seminar format, students and faculty will cover a variety of readings and discuss their conclusions. Students will have the opportunity to lead class discussions on assigned readings.
Prerequisites: HLSD 110.

HLSD 315 Critical Infrastructure Security, Resilience, and Risk Analysis 3 Credits (3,0)
Critical infrastructure security, resilience, and risk analysis. History and evolution of critical infrastructure on both public and private levels. Federal definitions, sector identification, composition and characteristics of critical infrastructure, as expressed in formal documents (Stafford Act, PDD-63; HSPD-7, PPD-21) and within the private sector. The public-private partnership approach between infrastructure sectors, and sector-specific plans, critical infrastructure in a global context. Definition and role of resilience in critical infrastructure planning and disaster mitigation, response, and recovery. Complete a project involving an in-depth review and presentation of a critical infrastructure sector. Additionally, the concept of risk analysis as a means by which resources and assets are allocated to critical infrastructure(s). Complete a group project utilizing a qualitative risk assessment methodology. Risk fundamentals, network theory, continuity of business planning, and cost-benefit analysis. A formal risk analysis report will be completed at the conclusion of the project and an oral presentation will be delivered. Role of risk in the overall mission of the Department of Homeland Security, to include the National Infrastructure Protection Plan (NIPP). Successful completion of a FEMA on-line certification on the NIPP.
Prerequisites: HLSD 110 and HLSD 215.

HLSD 320 Homeland Security Law and Policy 3 Credits (3,0)
This course is an overview of key legal, policy, and ethical issues in the context of Homeland Security policy and practice. Students examine legal concepts regarding constitutional rights of individuals, legal process, access to courts, the law of war, and national security principles as they relate to homeland security legislation and policy initiatives. Legal principles of due process, habeas corpus, search and seizure, compulsory process, and international agreements are explored in greater depth. The law of war will be examined in the context of preemptive war and the 2006 National Security Strategy, as well as issues involving the status of combatants and detention. Elements of national security law, including intelligence collection and sharing, the Patriot Act, and military-civilian relations will also be discussed. Recent Supreme Court decisions relating to some of the above concepts and legal principles will be examined and discussed.
Prerequisites: HLSD 110 and HLSD 215.

HLSD 360 Strategic Planning and Decision Making in Homeland Security 3 Credits (3,0)
Strategic planning is the process of defining an organization's strategy (a long term plan of action designed to achieve a particular goal or objective) or direction and making decisions on allocating its resources to pursue this strategy, including its capital, its technology and its human resources. This course will investigate the nature of strategic planning as it relates to homeland security and national security in the U.S. In addition, students will explore how strategic planning relates to decision making in more stable environments as well as decision making under uncertainty. Relevant legislation and past decisions (such as the Bay of Pigs and the Cuban Missile Crisis) will be explored. In addition, the basic concepts of and techniques for strategic communication will be explored and developed and related to decision making. Pre-Requisite: Take HLSD 290 or HLSD 215, and course listed.
Prerequisites: HLSD 110.

HLSD 405 Emergent Topics in Homeland Security 3 Credits (3,0)
Multiple learning opportunities for students in either the terrorism or the emergency management area of concentration. Advanced readings in current/emerging topics specific to a given area of concentration. Articles, case studies, and talking points that each student will read and be prepared to discuss in class. In addition, the concept of business continuity planning. Student-led scholarly discussion of a topic assigned to him/her. Domestic and foreign policy implications.
Prerequisites: HLSD 110.

HLSD 410 Exercise Design and Evaluation in Homeland Security 3 Credits (3,0)
This course studies the nature and structure of exercise design as it is applied in the homeland security professions in general, and in the field of emergency management in particular. Students will be introduced to the nature and characteristics of both discussion-based and operations-based exercises as well as the Homeland Security Exercise Evaluation Program (HSEEP) inside the Department of Homeland Security. A brief history of the origins of emergency management and its legislative background (e.g., HSPD 5 and HSPD 8) will be presented. A final student project and presentation that demonstrates the student's understanding of how exercises are designed, scripted, implemented, and evaluated is required.
Prerequisites: HLSD 315.

HLSD 415 Immigration and Homeland Security 3 Credits (3,0)
This course overviews the key historical, legal, and current debates in the context of Immigration and Homeland Security. Students examine the history of U.S. immigration, immigration policies including border security and deportation policy, nativism and xenophobia, the role of globalization on migration, and undocumented immigrants and immigrant rights.
Prerequisites: HLSD 110.

HLSD 495 Homeland Security Capstone I 3 Credits (3,0)
This course is designed to allow the student to explore more deeply issues specific to aspects of homeland security as they affect businesses. Students are expected to work collaboratively in groups to identify a real client, on or off campus, for whom the student group will attempt to solve a homeland security or emergency management related challenge. Each student group will research the origins of their client's challenge, and attempt to identify best practices in the field in order to adapt and apply them to their client's challenge. All projects will contain an introduction, literature review, problem statement, risk/hazard analysis, risk mitigation plan, and policy recommendations that are sensitive to economic realities facing their client. Students will culminate their final projects with presentations to their classmates and to their clients at the end of the term. The expectation of this class is to develop a professional example of the student's thinking and writing.

HLSD 496 Homeland Security Capstone II 3 Credits (3,0)
This course is designed to allow the student to explore more deeply issues specific to aspects of homeland security as they affect businesses. Students are expected to work collaboratively in groups to identify a real client, on or off campus, for whom the student group will attempt to solve a homeland security or emergency management related challenge. Each student group will research the origins of their client's challenge, and attempt to identify best practices in the field in order to adapt and apply them to their client's challenge. All projects will contain an introduction, literature review, problem statement, risk/hazard analysis, risk mitigation plan, and policy recommendations that are sensitive to economic realities facing their client. Students will culminate their final projects with presentations to their classmates and to their clients at the end of the term. The expectation of this class is to develop a professional example of the student's thinking and writing.

Human Resources Management/ Development - UG (HRMD)

Courses

HRMD 314 Human Resource Management 3 Credits (3,0)
A comprehensive overview of relevant principles, processes, and practices as applied in organizations with focus on effectively managing human resources (HR) theories, philosophies, and functions; An in-depth study of the interrelationship of managers, organizational staff and/or specialists; Areas of concentration include human resource planning; recruitment and selection; training and development; compensation and benefits; safety and health; international HR, and managing HR in small and entrepreneurial firms.
Prerequisites: MGMT 201.

HRMD 482 Human Resources Training and Development 3 Credits (3,0)
This course introduces the student to the roles of training and development in the growth and success of organizations. Students will learn about current developments in training, research, and in practice, including the strategic role of training and the use of new technologies in training. The use of the ADDIE model, a systematic instructional design model, will provide a framework for effective training including (1) Analysis, (2) Design, (3) Development, (4) Implementation, and (5) Evaluation. Course material will delve into such specifics as needs assessment, learning and transfer design, employee development and career management.
Prerequisites: MGMT 201.

HRMD 483 Compensation and Benefits 3 Credits (3,0)
This course introduces the student to the theoretical and practical bases of compensation and benefits. Importance will be placed on strategic role; in other words, how pay decisions help the organization achieve a competitive advantage and its goals. This course includes a systematic review and analysis of organizational reward systems. Total compensation systems include the environment as well as the impact of intrinsic rewards on employee motivation. Job analysis and performance appraisal will also be given emphasis.
Prerequisites: MGMT 201.

HRMD 495 Staffing and Workforce Planning 3 Credits (3,0)
This course is designed to provide an overview of the strategic planning processes by which organizations staff positions with both internal and external applicants. The course's concentration will focus on the identifying and utilizing of forecasting tools involving personnel needs, recruitment strategies, and various applicant screening and interviewing techniques. Discussion topics will also include key legal compliance issues, HRM planning, job/competency analysis, engaging in an active diverse staffing pool, and the retention of personnel.
Prerequisites: MGMT 201.

Humanities (HUMN)

Courses

HUMN 142 Studies in Literature 3 Credits (3,0)
This course emphasizes writing, reading and appreciation skills. Reading materials include selected novels, poems and plays.
Prerequisites: ENGL 123.

HUMN 210 World Culture 3 Credits (3,0)
This course focuses on the cultural development of world societies including but not limited to religious, social, political, and philosophical arenas as all apply to contemporary circumstances. Skills emphasized are: comprehensive comparative reading, analysis and critiques, and writing.
Prerequisites: ENGL 123.

HUMN 213 Introduction to Islamic Studies 3 Credits (3,0)
This interdisciplinary course will provide students with a broad overview of Islamic history and contemporary culture. It will explore the social and cultural conditions of pre-Islamic Arabia, the foundational teachings of Islam, the history and aesthetic form of the Quran, the biography and sayings of Muhammad and the relationship between Muhammad's biography and contemporary Islamic practices, including the daily rituals, modes of dress and gender norms variously observed in societies where Islam is predominant. The course will culminate with an exploration of specific cultural and social issues facing contemporary Muslims, including the role of women in public space, the separation between religion and politics, and religious violence. Skills emphasized will be: comprehensive comparative reading, analysis, and writing.
Prerequisites: ENGL 123.

HUMN 220 Asian Studies 3 Credits (3,0)
This course will provide an overview of the historical and contemporary cultures found across Asia, for any student interested in the diversity of human experiences found across the largest continent in the world. Drawing on a variety of humanistic and social science disciplines, this course explores the influence of history, politics, and religion, among other topics, on contemporary Asian cultures.
Prerequisites: ENGL 123.

HUMN 240 History of Communication Technologies 3 Credits (3,0)
A survey of the technologies humans have used to record and transmit their ideas and experiences, with an emphasis on major advancements in communication technology (e.g., cuneiform, the printing press, and hypertext and networked communication). Exploration of the cultural and social conditions of these technologies in order to evaluate the tools used to communicate and consider how material form shapes the production, transmission, and reception of messages.
Prerequisites: ENGL 123.

HUMN 241 Introduction to Digital Humanities 3 Credits (3,0)
A survey of the field of digital humanities and its history, methods and theoretical approaches. The creation of humanities resources using digital tools and exploration of various forms of publishing, design, and research.

HUMN 256 Baseball History and Statistics 3 Credits (3,0)
Examines the history of baseball, from the sport's beginnings in the nineteenth century to the present day. Places baseball history in the context of American history, revealing how the national pastime has both reflected and influenced American society. Provides an overview of some of the statistics and statistical models used to measure and evaluate player performance, including not only such traditional statistics as batting average, slugging percentage, and earned-run average but also newer, more advanced metrics such as Wins Above Replacement and Weighted On-Base Average.

HUMN 299 Special Topics in Humanities 1-6 Credit (1-6,0)
Individual independent or directed studies of selected topics in the humanities.

HUMN 300 World Literature 3 Credits (3,0)
This course provides a study of the major works and literary trends in world literature. Course content varies by instructor and is listed in the Schedule of Courses.
Prerequisites: ENGL 123.

HUMN 310 American Literature 3 Credits (3,0)
This course is a survey of intellectual backgrounds, major works and literary trends in American literature. Course content varies by instructor and is listed in the Schedule of Courses.
Prerequisites: ENGL 123.

HUMN 330 Values and Ethics 3 Credits (3,0)
This course focuses on the process of practical ethics as a way of resolving moral conflict and of understanding professional responsibility in a multi-culturally diverse society without devaluating specific viewpoints of ethical or metaphysical theory, ideology, or religion. Students will use proposals, value judgments, observation statements, assumptions, and alternate-world assumptions in arguing contemporary issues of moral importance. With this basic moral logic, students will resolve issues in terms of rights, responsibilities, and the community of rational beings; in terms of consequences and contingencies; and in terms of habituated virtues and character. Free and unrestricted discourse will be encouraged so as to let students find common ground in diversity.
Prerequisites: ENGL 123.

HUMN 333 How Fiction, Film and Popular Culture Represent Science and Mathematics 3 Credits (3,0)
Students will explore representations of mathematics and science in literature, film and popular culture. Traditional media (books, drama, film, and television) as well as web-based media (webcomics, YouTube series, and podcasts) will be the venues in which students discuss the portrayal of the lives of scientists and mathematicians as well as scientific theories and mathematics concepts. Pre-Requisite: ENGL 123 and minimum of a 3-hour MATH course.
Prerequisites: ENGL 123.

HUMN 340 Aviators and Aviation in Film 3 Credits (3,0)
Representation of aviators and aviation in popular film from the silent era to the present. Evolution from the aviator to the astronaut. Historical and social context of specific films. Birth of film as a novel technology. Introduction to film analysis.
Prerequisites: ENGL 123.

HUMN 350 War in Contemporary American Literature 3 Credits (3,0)
Analysis of and writing about American literature from the 20th century to the present. Selected novels, short stories, poetry, comics, drama, and memoir. Particular focus on wars in Iraq and Afghanistan, and the "War on Terror." Literary conventions and techniques considered in history and social contexts.
Prerequisites: ENGL 123.

HUMN 399 Special Topics in Humanities 1-6 Credit (1-6,0)
These courses are individual independent or directed studies of selected topics in the humanities. Pre-Requisite: Consent of instructor and approval of the department chair.

HUMN 400 Science and Aviation/Aerospace Technology in Society 3 Credits (3,0)
Throughout history, science and technology have consistently transformed society. From medicine to communications to the arts and all points between, our culture is very much a society of science and technology. A systemic awareness of how science and technology both impact and are influenced by society is critical to function as a responsible professional in an increasingly complex world. This course will examine the interrelated roles that science and technology play in society, with a particular emphasis on aviation and aerospace.
Prerequisites: ENGL 123 and RSCH 202.

HUMN 499 Special Topics in Humanities 1-6 Credit (1-6,0)
These courses are individual independent or directed studies of selected topics in the humanities. Pre-Requisite: Consent of instructor and approval of the department chair.

Information Security and Assurance - UG (MISA)

Courses

MISA 386 Fundamentals of Information Systems Security 3 Credits (3,0)
This course focuses on new risks, threats, and vulnerabilities in a digital world. The integration of the Internet and broadband communications into our everyday lives has created a need for information system security. Furthermore, compliance laws require organizations to protect and secure privacy data and reduce liability.
Prerequisites: MMIS 221.

MISA 387 Managing Risk in Information Systems 3 Credits (3,0)
Managing Risk in Information Systems provides a unique, in-depth look at how to manage and reduce IT associated risks. This course provides a comprehensive explanation of the Risk, Response, and Recovery Domain in addition to providing a thorough overview of risk management and its implications on IT infrastructures and compliance.
Prerequisites: MISA 386.

MISA 388 System Forensics, Investigation, and Response 3 Credits (3,0)
Computer crimes call for forensics specialists, people who know how to find and follow the evidence. System Forensics, Investigation, and Response begin by examining the fundamentals of system forensics; such as what forensics is, the role of computer forensics specialists, computer forensic evidence, and application of forensic analysis skills. It also gives an overview of computer crimes, forensic methods, and laboratories. It then addresses the tools, techniques, and methods used to perform computer forensics and investigation. Finally, it explores emerging technologies as well as future directions of this interesting and cutting-edge field.
Prerequisites: MISA 386.

MISA 394 Information Security Management 3 Credits (3,0)
This course presents the concepts of information security in an enterprise approach to provide managers with tools and understanding needed to allocate scarce security resources. Introduction to security attributes and policies, developing effective and appropriate enterprise security plans, threats, vulnerabilities, and risk management concepts. Study of the architecture of an enterprise security system is developed to include a need analysis, levels of protection, detection strategies and correction/recovery with crisis management, risk analysis, and business continuity plans.
Prerequisites: MMIS 221.

MISA 402 Legal Issues in Information Security 3 Credits (3,0)
Explores laws, legal compliance, security governance and processes instrumental to information security; protection of privacy; protection against unreasonable intrusion.
Prerequisites: MISA 386.

MISA 403 IT Audit and Control 3 Credits (3,0)
The course is designed to provide a foundation for the study of information technology (IT) auditing and the IT audit process. The course introduces the fundamentals of IT auditing, main reasons why IT auditing is a specialized area of auditing, and the principle objectives of IT auditing. The course emphasizes business management issues regarding the security and control of IT and the achievement of value through managed IT processes. Students will also be introduced to control evaluation techniques and a number of the primary references used by IT professionals and IT auditors regarding IT management and control.
Prerequisites: MISA 386.

MISA 404 Business Continuity & Disaster Recovery Planning 3 Credits (3,0)
Every year, nearly one in five businesses, non-profit and government activities suffer major disruptions to their ongoing operations because of catastrophic failures in their critical information systems. And although information systems and their technologies can provide some measure of "fail-safe" capabilities, without management attention to business continuity planning, the organization is putting its institutional life at risk! This course addresses the strategic, tactical and day-to-day operational planning and implementation of an integrated set of plans that assure the long-term survivability of the organization's ability to keep doing business in the face of major malware threats, natural disasters, or man-made hazards that could cripple or destroy the information flow that business decision making depends upon. In doing so, the course places contingency planning and response into a solid information risk management and information security framework. By focusing on critical information flow - and how people use information systems and technologies to make and carry out decisions before, during and after disaster strikes - the course sheds light on critical decisions that organizations must make, both technology issues and technology-independent considerations.
Prerequisites: MISA 386.

Information Systems &Technologies Applications (ISTA)

- The following Cybersecurity AIT courses are not currently available for enrollment: ISTA 240, ISTA 340, ISTA 345, ISTA 440, ISTA 445.

Courses

ISTA 200 Computer Science Fundamentals 3 Credits
A survey of computer science topics. Students will walk the path of history to understand current trends, utilize propositional logic to rigorously analyze logical statements, work with numbers in non-decimal bases; and learn the fundamentals of networking, cloud architecture, and algorithmic complexity.

ISTA 210 Database Fundamentals 3 Credits
This course introduces database concepts and programming using SQL. Students are introduced to SQL server and data warehouse fundamental principles. Key topics include an introduction to relational databases, SQL syntax, and DML. This course is part of a set of five related ISTA courses that make up the Data Base and Business Intelligence Administrator specialization's technical content.

ISTA 220 Programming Fundamentals in C# 3 Credits
An introduction to applications programming in C# including a coverage of the Visual Studio development environment. Key topics including C# syntax, variables, types, expressions, classes, and interfaces are introduced leading to a final application project. Pre-Requisite: Students in the Microsoft Software and Systems Academy Cloud Applications Developer program must have a current, valid Microsoft Technology Associate certification 98-361, Software Development Fundamentals. All other students: no prerequisite.

ISTA 222 Introduction to Programming (Python) 3 Credits
An introduction to computer programming utilizing Python. Students will write imperative, structured, and procedural programs in Python, use git to store versioned history, and engage in individual and peer-programming projects.

ISTA 230 Network Fundamentals for Server Systems 3 Credits
This course introduces the student to computer networks, their core technologies and architectural concepts, and applying these to develop and deploy server systems for a variety of needs. Using the ISO 7-layer protocol model as a framework, students learn the concepts behind the TCP/IP network protocol stack and become familiar with tools and techniques for building, managing and diagnosing problems in such networks. Virtual machine technologies and software-defined networks will also be addressed. Pre-Requisite: Students in the Microsoft Software and Systems Academy Server and Cloud Administrator program must have one of the following current, valid certifications: Microsoft Technology Associate (MTA) 98-366, Network Fundamentals; MTA 98-367, Network Security Fundamentals; CompTIA Network+ certification; or CompTIA Security+ certification. All other students: no prerequisite.

ISTA 240 Network and Systems Internals for Cybersecurity 3 Credits
This course introduces the student to computer networks, operating systems, and their core technologies and architectural concepts. Using the ISO 7-layer protocol model as a framework, students learn the concepts behind the TCP/IP network protocol stack and become familiar with tools and techniques for building, managing and diagnosing problems in such networks. Operating systems fundamentals are explored using Windows and Linux, using a variety of tools to explore systems internals. Pre-Requisite: Students in the Microsoft Software and Systems Academy Cybersecurity Administrator program must have either a current, valid Microsoft Technology Associate certification 98-367, Security Fundamentals; or a current, valid CompTIA Security+ certification. All other students: no prerequisite.

ISTA 310 SQL Server Administration and T-SQL 3 Credits
This course is building upon fundamental database concepts and focuses on methods for inputting, retrieving and updating database information using T-SQL and DML. This course is part of a set of five related ISTA courses that make up the Data Base and Business Intelligence Administrator specialization's technical content.

ISTA 312 Implementing Data Warehouses and Databases 3 Credits
This course provides an introduction to practical techniques for building and using a data warehouse using SQL server. Topics include dimensioning a warehouse, extracting, transforming and controlling the flow of data as well as the use of SSIS. This course is part of a set of five related ISTA courses that make up the Data Base and Business Intelligence Administrator specialization's technical content.

ISTA 322 Developing ASP.NET Web Applications 3 Credits
This course prepares students to develop dynamic Web applications using the .NET framework. Students are introduced to the technologies of programming for the Web, various architectural approaches and the MVC (Model-View-Controller) framework. Students use the Microsoft Web Technologies stack within the course project in order to develop a dynamic Web application. Pre-Requisite: Students in the Microsoft Software and Systems Academy Cloud Applications Developer program must have a current, valid Microsoft Technology Associate certification 98-361, Software Development Fundamentals. All other students: no prerequisite.

ISTA 330 Identity and Access Control for Server Systems 3 Credits
Controlling access to or use of the resources and capabilities provided by server systems requires access control policies; and access control policies need user and process identification in order exert control and protect information. Using server network systems concepts, students will develop administrative (people-facing) and logical (systems and software) policies for identity management and access control. Pre-Requisite: Students in the Microsoft Software and Systems Academy Server and Cloud Administrator program must have either a current, valid Microsoft Technology Associate certification 98-366, Network Fundamentals; or a current, valid CompTIA Network+ certification. All other students: no prerequisite.

ISTA 332 Advanced Server Systems Management 3 Credits
Server-based information systems provide many opportunities to improve reliability and availability of the applications, data and decision support systems that these servers support. Clusters of servers can provide backup and restore capabilities, automatic or managed failover, and load balancing to enhance the organization's abilities to meet its mission needs. This course provides in-depth examination and application of these concepts in a variety of systems and server settings. Pre-Requisite: Students in the Microsoft Software and Systems Academy Server and Cloud Administrator program must have either a current, valid Microsoft Technology Associate certification 98-366, Network Fundamentals; or a current, valid CompTIA Network+ certification. All other students: no prerequisite.

ISTA 334 Introduction to Linux System Administration 3 Credits
An introduction to navigating, configuring, maintaining, and administering Linux systems. Students will receive hands-on experience administering their own Linux systems as virtual machines and will work in teams to build and deploy Linux systems in the AWS cloud.

ISTA 340 Identity and Access for Cybersecurity 3 Credits
Proper validation of the identity of a person or process requesting the use of information resources is vital to the safe, secure and resilient design and operation of any information system. Access to those resources, even including verifying their existence, is a privilege, and like all privileges, it must only be granted to properly authorized persons or processes. This course examines the fundamental models of identity, identity management, access and access control, both in local systems, networks and in the cloud. Pre-Requisite: Students in the Microsoft Software and Systems Academy Cybersecurity Administrator program must have either a current, valid Microsoft Technology Associate certification 98-367, Security Fundamentals; or a current, valid CompTIA Security+ certification. All other students: no prerequisite.

ISTA 345 Systems Security Policies and Practices 3 Credits
This course introduces the core concepts of information systems security practices, including key elements of successful information security policies and programs. It sets these in a context of ethical, legal and regulatory considerations, using the National Institute of Standards and Technology (NIST) Cybersecurity Framework. This course relies upon the Cybersecurity Common Book of Knowledge and other materials from (ISC)2, and prepares students for the System Security Certified Practitioner (SSCP) certification exam from (ISC)2. Class activities and online virtual labs provide students with hands-on exploration and application of the concepts and techniques presented throughout the course. Pre-Requisite: Students in the Microsoft Software and Systems Academy Cybersecurity Administrator program must have either a current, valid Microsoft Technology Associate certification 98-367, Security Fundamentals; or a current, valid CompTIA Security+ certification. All other students: no prerequisite.

ISTA 390 AWS Academy Cloud Architecting 3 Credits
AWS Academy's "AWS Academy Cloud Architecting" course is taught by an AWS Academy Accredited Instructor. Students will leave this course ready to take the AWS Certified Solutions Architect certification exam.

ISTA 410 Data Modeling and Reporting 3 Credits
An introduction to multidimensional and tabular data models including customization, maintenance, reporting, and data delivery. This course is part of a set of five related ISTA courses that make up the Data Base and Business Intelligence Administrator specialization's technical content.

ISTA 412 Designing Business Intelligence Solutions 3 Credits
This course introduces the design process for developing a BI solution from planning and designing the infrastructure to creating an ETL (Extract, Transform, and Load) solution complete with reporting services. This course is part of a set of five related ISTA courses that make up the Data Base and Business Intelligence Administrator specialization's technical content.

ISTA 420 Relational Databases and SQL 3 Credits
Applications in SQL and databases. Students will load industry-standard example databases into an RDBMS to query, filter, group, and aggregate data with single and multi-table select queries. They will create and normalize schemas for real data, specify the tables in SQL, and import the data into the resulting database.

ISTA 421 Developing Cloud Applications 3 Credits
Developing applications programs that run in the Cloud requires developers to design code with many different and sometimes conflicting requirements in mind. User access authorization, data protection (in motion and at rest), provisioning, licensing and monetizing of apps are design issues that all must take cloud hosting considerations into account. Using the Microsoft Azure public cloud stack as a foundation, this course combines approaches from the Universal Windows Platform and ASP.NET MVC to guide the student through these and other development, deployment and sustainment issues of apps in and for the Cloud. Pre-Requisite: ISTA 220 and ISTA 322 or the approval of the MSSA Program Chair.

ISTA 422 Deploying Apps in Azure 3 Credits
This course looks at how applications developers provision, deploy and support applications and their related web pages, databases, etc., by means of public cloud infrastructures such as Microsoft Azure. Students will gain practical knowledge of public cloud systems resource management concepts and mechanisms, chargeback and pricing models, and how to choose cloud provider features for the right mix of cost, performance, availability and ease of use. Pre-Requisite: Students in the Microsoft Software and Systems Academy (MSSA), Cloud Applications Developer Specialization: ISTA 322 and ISTA 220, plus recommendation by the MSSA Program Chair for continued study in this Specialization. All other students: ISTA 322 and ISTA 220.

ISTA 424 Software Development (Python) 3 Credits
Applications in team development of software, including testing and debugging and object-oriented programming. Students will design, develop, and deploy useful software products individually and in teams utilizing Python and git/GitHub.

ISTA 430 Topics in IT Systems Administration 3 Credits
This course uses systems management and administration technologies, such as Windows Systems Center, to monitor, manage and administer cloud environments, while also monitoring and managing key infrastructure elements and applications that run within cloud environments. Students will also learn how to operate and extend these technologies to achieve high availability, protection and recovery services, and use service level agreements (SLAs) to manage and optimize private, public and hybrid cloud systems. Pre-Requisite: ISTA 332, or approval of the MSSA Program Chair.

ISTA 432 Building Azure Infrastructures 3 Credits
This course continues our study of the deployment, configuration and operation of private cloud systems and infrastructures using Windows Systems Center and Azure technologies. Building on previous ISTA courses, students will learn how to use and manage virtual networking, virtual machines and related technologies to plan, configure, control, optimize and support private cloud infrastructures, systems and applications. Hands-on exercises will also investigate how to plan for, deploy and support SQL database applications and services, web site deployment and configuration, as well as a variety of monitoring, incident analysis and problem-solving techniques. Pre-Requisite: ISTA 332, or approval of the MSSA Program Chair.

ISTA 440 Information Systems Vulnerabilities and Hardening 3 Credits
All information systems contain vulnerabilities that may be exploited by threat actors in ways that are disruptive or damaging to the systems' owners, operators, stakeholders or to others. This course uses a risk management framework to prioritize vulnerability identification and assessment, leading to risk mitigation, so as to protect (or harden) information most valuable or vital to the organization. Pre-Requisite: Successful completion of ISTA 345 Systems Security Policies and Practices and ISTA 340 Identity and Access for Cybersecurity or the approval of the MSSA Program Chair.

ISTA 445 Cyber Incident Investigation & Resolution 3 Credits
Cybersecurity incidents may cause information systems to malfunction or cease to operate, causing loss or damage to their owners, customers, employees, and many other stakeholders. Investigating these incidents is an evidence-based, forensic process that seeks to establish cause and effect, identify responsible parties, and inform decisions about incident containment and resolution. This course looks at the tools and techniques used to gather digital and other evidence, preserve, assess and analyze it, and develop conclusions and recommendations for action. Legal and other constraints on such investigations are also examined. Pre-Requisite: Successful completion of ISTA 345, Systems Security Policies and Practices and ISTA 340 Identity and Access for Cybersecurity or the approval of the MSSA Program Chair.

Interdisciplinary Studies (BSIS)

Courses

BSIS 473 Interdisciplinary Studies Capstone 3 Credits (3,0)
Students will complete a variety of projects and written assignments designed to encourage self-analysis of career and intellectual interests in the student's chosen career field based on their Worldwide Minor. This information will be used to develop a proposal and complete a capstone project. The final written project will consist of research, related literature review, and analysis targeted towards a specified audience. A presentation of the project is also required. Pre-Requisite: RSCH 202 or equivalent and completion of at least 88 hours in the degree program.

Logistics and Supply Chain Management - UG (LGMT)

Courses

LGMT 236 Principles of Procurement Management 3 Credits (3,0)
This course introduces students to the procurement function of the firm including the strategic impact of purchasing and supply chain management on competitiveness and profitability. Students will gain experience with the underlying business processes that flow from and support the purchasing process using relevant SAP modules. The purchasing process is examined as it relates to producing products and services, taking and fulfilling orders, billing for products and services rendered, and recording revenues and payments to vendors. The relationship between purchasing and inventory management, materials management, just- in-time manufacturing, and manufacturing resource planning will be explored within a global context. The role of supply chain partnerships is also addressed including how to evaluate, bargain, and negotiate contracts with suppliers in an ethical manner while considering risks.
Prerequisites: MGMT 201.

LGMT 331 Transportation Principles 3 Credits (3,0)
The basic principles of the several modes of transportation (air, sea, rail, highway, and pipeline) are analyzed. Topics include problems of competition, the importance of each in the economy, and future developmental prospects.
Prerequisites: MGMT 201.

LGMT 400 Business Process Integration 3 Credits (3,0)
In this course, students will exercise their knowledge of business processes to manage end to end transactions from the upstream, operations, and downstream value chain ranging from supplier to customer. Students will employ SAP to initiate, manage and complete integrated transactions throughout a wide variety of case scenarios.
Prerequisites: LGMT 236.

LGMT 420 Management of Production and Operations 3 Credits (3,0)
An intensive study of management of production and operations in all organizations, both service-oriented and product-oriented, will be conducted. Scheduling, inventory control procurement, quality control, and safety are investigated. Particular attention is given to applications of aviation-oriented activities.
Prerequisites: MGMT 201.

LGMT 430 Business Process Configuration 3 Credits (3,0)
In this course, students will learn the fundamentals to configure ERP systems. The students will get an understanding of the options available for configuration parameters and system's functional aspects.
Prerequisites: LGMT 400.

LGMT 440 Advanced Professional Logistics 3 Credits (3,0)
In the advanced professional logistics course, a heavy emphasis is placed on the analysis of the Systems Engineering, Integrated Logistics Support and other previously learned business logistics theories and concepts so as to determine their appropriate application. A secondary emphasis is placed on the horizontal integration of these theories and concepts in a practical framework, which will serve as professional guidance for the business logistics manager.
Prerequisites: BUSW 352.

LGMT 444 Principles of Supply Chain Management 3 Credits (3,0)
Supply Chain Management is one of the hottest topics in business today. The focus of this course is on understanding the history, principles, and major elements of supply chain management. Specific topics include sourcing and purchasing management; managing supplier relationships; demand forecasting; inventory management; quality management; domestic and international transportation; customer relationship management; enterprise resource planning systems; facility location decision-making; performance management; and future challenges facing supply chain managers.
Prerequisites: MGMT 201 and BUSW 352 and LGMT 420.

Management - UG (MGMT)

Courses

MGMT 201 Principles of Management 3 Credits (3,0)
A comprehensive overview of relevant management principles and practices as applied in organizations with focus on management theories, philosophies, and functions; Focus on the nature, operating principles, activities, and theories that form the basis for the management functions of planning, organizing, leading, and controlling. Pre-Requisite: ENGL 221 or ENGL 222 for students enrolled in College of Business programs.

MGMT 203 Management for Aeronautical Science 3 Credits (3,0)
An introductory course in aeronautics to provide students an orientation in aviation and other aerospace related topics appropriate to management degree programs. Subjects include: aviation careers; the science of flight; aviation safety managerial responsibilities; passenger and cargo security issues; safety and human factors issues; aircraft airworthiness certifications; aviation resources; the aviation environment; and meteorology.
Prerequisites: MGMT 201.

MGMT 299 Special Topics in Management 1-4 Credit (1-4,0)
These are individual independent or directed studies of selected topics in management. Pre-Requisite: Consent of instructor and approval of the department chair.

MGMT 325 Social Responsibility and Ethics in Management 3 Credits (3,0)
Inquiry into ethics and social responsibility for managers. Economic, legal, political, environmental, technological social issues. Interactions between government, business, and society.
Prerequisites: MGMT 201.

MGMT 399 Special Topics in Management 1-4 Credit (1-4,0)
These are individual independent or directed studies of selected topics in management. Pre-Requisite: Consent of instructor and approval of the department chair.

MGMT 408 Airport Management 3 Credits (3,0)
Management and operation of the commercial service airports in the United States, emphasis on airport system facilities including landside, airside and airspace; rules and regulations governing airport operations, funding programs, airport security policies economic, political, environmental, and social role of airports.
Prerequisites: MGMT 201.

MGMT 411 Logistics Management for Aviation/Aerospace 3 Credits (3,0)
Students are provided with an opportunity to examine ways to optimize the physical flow of goods and materials within a firm from acquisition through production, and movement through channels of distribution. The course focuses on applying logistics theory to aviation management problems in materials handling, managing inventory, planning capacities, and locating distribution centers. Case studies with aviation/aerospace applications using computer models are included.
Prerequisites: MGMT 201.

MGMT 412 Airport Planning and Design 3 Credits (3,0)
Principles and essential elements of current U.S. and international airport planning and design trends; airport master planning and layout plans; geometric design and layout of the airfield and terminal facilities; obstruction analysis; signage and lighting; forecasting; airside and landside interface; capacity and delay effects; environmental planning.
Prerequisites: MGMT 201 and MGMT 408 and STAT 211 or STAT 222.

MGMT 415 Airline Management 3 Credits (3,0)
Administrative aspects of airline operation and management; annual profit plan, uniform system of accounts and reports, demand analysis, scheduling, the theory of pricing, fleet planning, facilities planning, and airline financing.
Prerequisites: MGMT 201.

MGMT 416 Space Tourism 3 Credits (3,0)
Space tourism is one of the hottest topics in the aerospace business today and the future of travel. The focus on this course is on understanding the developing space tourism business, the market, cost engineering, marketing, delivery vehicles, and safe operations. Specific topics include suborbital and orbital space flight, delivery vehicle capability, market demand, market supply, regulations, and safety. As part of this class, students will prepare a business plan or objectively assess technologies required for a safe space tourism flight.
Prerequisites: MGMT 201.

MGMT 426 International Aviation Management 3 Credits (3,0)
The student will perform an investigation of international aviation management and its three elements: the nature of international aviation business; working in a foreign environment; and managing in an international environment.
Prerequisites: MGMT 201 and MKTG 311 and FINE 332 and ACCT 210 or ACCT 312.

MGMT 436 Strategic Management 3 Credits (3,0)
This course introduces students to strategic management principles involving strategy, formulation, implementation, evaluation and organization analysis are studied. Case analysis, employing strategic management principles, is used to solve and examine organizational problems. Total Quality Management concepts are studied for improvement of organizational effectiveness.
Prerequisites: ECON 210 ECON 211 MGMT 201 ACCT 210 MMIS 221 MKTG 311 ACCT 312 OBLD 317 MGMT 325 FINE 332 BUSW 335 BUSW 390 and LGMT 420.

MGMT 499 Special Topics in Management 1-4 Credit (1-4,0)
These are individual independent or directed studies of selected topics in management. Pre-Requisite: Consent of instructor and approval of the department chair.

Management Information Systems - UG (MMIS)

Courses

MMIS 221 Introduction to Management Information Systems 3 Credits (3,0)
The course integrates many theories, concepts, and methodologies related to the implementation and use of Information Systems within an enterprise. Special attention is given to the following topics: Digital technology; Winning, engaging, and retaining consumers; Optimizing performance with enterprise systems and analytics; Managing business relationships, projects and codes of ethics.
Prerequisites: MGMT 201.

MMIS 320 Business Information Systems 3 Credits (3,0)
Management approach to business information systems; general characteristics, potential, and limitations of business systems; the ways in which business systems are interrelated; the inherent management problems involved in the implementation and control of such systems.
Prerequisites: MGMT 201.

MMIS 321 Aviation/Aerospace Systems Analysis Methods 3 Credits (3,0)
An overview of the system development life cycle is provided in this course. Emphasis is on current system documentation through the use of both classical and structured tools/techniques for describing process flows, data flows, data structures, file designs, input and output designs, and program specifications.
Prerequisites: MMIS 221.

MMIS 385 Programming Concepts 3 Credits (3,0)
This course presents a language-independent introduction to programming concepts in design and implementation. Topics covered include data types, control structures, arrays, files, functions, top-down modules design, and data validation. The course discusses the design issues of the various languages construct, examining the design choices for these constructs in some of the most common programming languages, and critically comparing design alternatives.
Prerequisites: MMIS 221.

MMIS 389 Information Assurance and Information Quality 3 Credits (3,0)
This course provides an overarching model for information assurance for businesses, government agencies, and other enterprises needing to establish a comprehensive plan. All the components of security and how they relate are featured. Topics include asset identification, human factors, compliance with regulations, personnel security, risk assessment and ethical considerations, as well as computer and network security tools and methods.
Prerequisites: MISA 386.

MMIS 392 Database Management 3 Credits (3,0)
Database systems are powerful, complex facilities for managing data. The advent of database management systems for personal computers in the 1980s moved database management into the hands of everyday users from all segments of the population. This course presents the fundamental concepts of database management. It covers key topics related to any database management system, including database models, database design and implementation, database management systems functions, and database management approaches.
Prerequisites: MMIS 221.

MMIS 393 Computer Networks 3 Credits (3,0)
Computer networks is a rapidly evolving field. This course presents an introduction to fundamental concepts in the design and implementation of computer communication networks, their protocols, and applications. Topics to be covered include: network architecture, fundamentals of data transmission, LAN technology and data link protocols, and network security.
Prerequisites: MMIS 221.

MMIS 422 Information Technology Management, Strategy, and Governance 3 Credits (3,0)
The course examines how firms use IT to architect a foundation for executing their business strategies and competing on information products and services. Information Technology departments are required to increase system performance and improve availability while simultaneously reduce costs and improve quality. The use of best practices methods and metrics must be used.
Prerequisites: MMIS 221.

MMIS 494 Aviation Information Systems 3 Credits (3,0)
This course will focus on a variety of information technology systems that are in use and their impact on successful operations within the aviation industry. An overview of current and emerging technologies in reservation systems, aircraft productivity modeling, air traffic control systems and various database, data communication and e-commerce systems will be explored.
Prerequisites: MMIS 221.

Marketing - UG (MKTG)

Courses

MKTG 311 Marketing 3 Credits (3,0)
An exploration of marketing theory and marketing management; market research, customer relations, promotion, distribution and sales management, and creating customer value.
Prerequisites: MGMT 201.

MKTG 449 Strategic Marketing Management 3 Credits (3,0)
Development and implementation of marketing strategy, focusing on strategic analysis and evidence-based marketing decisions. Emphasis will be given to marketing strategy, market analysis and targeting, strategic marketing programming, and evaluation.
Prerequisites: MKTG 311.

MKTG 450 Aviation/Airport Marketing 3 Credits (3,0)
Marketing in the airline/airport industries. Consumer segmentation, integrated marketing communications and social media for customer targeting and service delivery. Channel structure and ancillary revenue generation. Route development and non-aeronautical revenues.
Prerequisites: MKTG 311.

Mathematics - UG (MATH)

Review the ERAU Worldwide Mathematics placement policy under the Skills Assessments *section of the Worldwide Catalog.*

Courses

MATH 106 Basic Algebra & Trigonometry 3 Credits (3,0)
The course includes a study of the basic laws of numbers, fractions, exponents, complex numbers, and radicals, as well as an understanding of a variety of expressions and equations including; equalities, inequalities, polynomials, and quadratics. The elements of trigonometry will also be reviewed. Pre-Requisite: Qualifying score on the ERAU Mathematics Skills Assessment or course listed.
Prerequisites: GNED 103.

MATH 111 Pre-calculus for Aviation 3 Credits (3,0)
This is a pre-calculus course designed for the student aviation. Topics include a review of the fundamentals of algebra; linear equations and inequalities, quadratic equations; variation; polynomial, rational, exponential, logarithmic and trigonometric functions; radian measures; right triangle solutions, vectors and the laws of sines and cosines. Pre-Requisite: Qualifying score on the ERAU Mathematics Skills Assessment or course listed.
Prerequisites: MATH 106.

MATH 112 Applied Calculus for Aviation 3 Credits (3,0)
This course presents basic calculus, designed for the student of aviation. Topics include differentiation and integration of algebraic functions; applications to velocity, acceleration, area, curve sketching, and computation of extreme values.
Prerequisites: MATH 111 or MATH 140 or qualifying score on the mathematics skills assessment.

MATH 140 College Algebra 3 Credits (3,0)
This course focuses on fundamentals of exponents, radicals, linear and quadratic equations, inequalities, functions, graphing techniques, and complex numbers. It includes an introduction to function, curve sketching, elementary theory of equations, sequences and series, matrix algebra and systems of equations, linear, polynomial, logarithmic, exponential, inverse and composite functions, variation, and systems of equations. Pre-Requisite: Qualifying score on the ERAU Mathematics Skills Assessment or course listed.
Prerequisites: MATH 106.

MATH 142 Trigonometry 3 Credits (3,0)
Students will be introduced to trigonometric functions and their graphs; identities; radian measure with applications; compound, half and double angle identities; solving elementary trigonometric equations, right and oblique triangles, law of sines and cosines; inverse trigonometric functions; vectors and trigonometric form of a complex number.
Prerequisites: MATH 111 or MATH 140 or qualifying score on the mathematics skills assessment.

MATH 143 Precalculus Essentials 3 Credits (3,0)
This is a precalculus course with an emphasis on functions and their graphs, including polynomial, rational, exponential, logarithmic, and trigonometric; radian measure; trigonometric identities and equations; vectors, parametric and polar curves; sequences and series; binomial theorem. NOTE: This course is open only to Engineering degree students.
Prerequisites: MATH 106 or MATH 111 or MATH 140 or qualifying score on the mathematics skills assessment.

MATH 201 Learning to Reason: Art and Quotient 3 Credits (3,0)
Addresses both the abstract and applied aspects of data science, proportionality, and geometric concepts. Exploration of the development of mathematics and the modern technologies used to apply ancient ideas to today's problems as well as the human need for creativity across disciplinary boundaries.Pre-Requisite: Qualifying score on the ERAU Mathematics Skills Assessment or course listed.
Prerequisites: MATH 106.

MATH 202 Learning to Reason: Commerce and Flux 3 Credits (3,0)
A quantitative approach to life's decisions, addressing both the abstract and applied aspects of using mathematics in finance, technology, and design. Exploration of the development of mathematics and the technologies used to assist in decision-making.Pre-Requisite: Qualifying score on the ERAU Mathematics Skills Assessment or course listed.
Prerequisites: MATH 106.

MATH 241 Calculus and Analytical Geometry I 4 Credits (4,0)
This course is a study of graphs and functions; limits and continuity; differentiation and integration of algebraic and elementary transcendental functions; applications of first and second derivatives.
Prerequisites: MATH 142 or MATH 143 or qualifying score on the mathematics skills assessment.

MATH 242 Calculus and Analytical Geometry II 4 Credits (4,0)
This course is a study of differentiation and integration of transcendental functions; special integration techniques; applications of the definite integral; numerical methods; infinite series.
Prerequisites: MATH 241.

MATH 243 Calculus and Analytical Geometry III 4 Credits (4,0)
This course is a study of solid analytic geometry; vector functions in three dimensions; partial differentiation; directional derivative and gradient; line integrals; multiple integrals.
Prerequisites: MATH 242.

MATH 345 Differential Equations and Matrix Methods 4 Credits (4,0)
This course is a study of the treatment of ordinary differential equations to include principle types of first and second order equations; methods of substitution on simple higher order equations; linear equations and systems of linear equations with constant coefficients; methods of undetermined coefficients and variation of parameters; Laplace transforms; series solutions; linear algebra and matrix methods of solutions; applications to physics and engineering.
Prerequisites: MATH 243.

Mechanical Engineering (MECH)

Mechatronics Courses

MECH 302 Introduction to Robotics 3 Credits (3,0)
This course is an introduction to robotics with emphasis on the mathematical tools for kinematics and dynamics of robot arms. Topics include the geometry and mathematical representation of rigid body motion; forward and inverse kinematics of articulated mechanical arms; trajectory generation, splines, interpolation; manipulator dynamics; position sensing and actuation; and an introduction to topics in manipulator control and computer vision.
Prerequisites: ENGL 221 and ESCI 204 and ELEC 230 and ELEC 231 and CESC 220 and CESC 222 **Corequisites:** MECH 303.

MECH 303 Robotics Laboratory 1 Credit (0,1)
This course is lab part of the introduction to robotics with emphasis on hands-on experience of embedded microcontroller unit and emulation of serial robotic systems. Topics include the programming skills of microcontroller unit used for robotic systems; coding MCU for sensors and actuators; forward and inverse kinematics of articulated mechanical arms; and trajectory generation and interpolation.
Corequisites: MECH 302.

MECH 313 Instrumentation and Data Acquisition 2 Credits (2,0)
This course will be a combination of theoretical and applied topics related to instrumentation, data acquisition, and hardware interfacing with mechatronic systems. This course covers aspects related to interfacing sensors and actuators with computers including sampling rates; sources of error and time delay; analog and digital signal conditioning circuits; and the influence of EMI, grounding, and noise in the power supply. Students will be exposed to data acquisition and control software (e.g., LabVIEW).
Prerequisites: ELEC 230 and ELEC 231 and CESC 220 and CESC 222
Corequisites: MECH 314.

MECH 314 Instrumentation and Data Acquisition Laboratory 1 Credit (0,1)
This course is the lab companion for MECH 313, and aims to provide hands-on experience emphasizing measurement and instrumentation concepts, sensor operations, and computer-based data acquisition and analysis. Specifically, students will build data acquisition system based on LabVIEW and myDAQ to collect and analyze data from commonly used sensors for measuring temperature, pressure, and displacement, etc.
Prerequisites: ELEC 230 and ELEC 231 and CESC 220 and CESC 222
Corequisites: MECH 313.

Meteorology - UG (WEAX)

Meteorology Courses

WEAX 201 Meteorology I 3 Credits (3,0)
This is a survey course in meteorology that includes applications to flight. Included is a systematic development of the following topics: the composition and general structure of the atmosphere, energy and energy transfer, seasonal and daily controls on temperature, pressure, wind, local and regional circulations, atmospheric stability, vertical motion, turbulence, moisture, fog, clouds, precipitation, icing, the general circulation pattern, climate, jet streams, air masses, fronts, mid-latitude cyclones, tropical cyclones, thunderstorms, and weather observations and charts.

WEAX 211 Meteorological Hazards 3 Credits (3,0)
This course is a survey of hazards resulting from atmospheric processes, including other global natural hazards resulting from geologic, seismic, hydrologic, and astronomic processes connected to the atmosphere. Topics will include tropical cyclones, severe weather, climate extremes, volcanism, tsunamis, wildfires, and solar activity, and will be extended to aviation and other applications.

WEAX 261 Applied Climatology 3 Credits (3,0)
This course is an in-depth survey of the varied climates of the world and of the impact of climate on aviation. Emphasis is placed on understanding energy exchange processes that control climate and in describing in detail how and why temperature, precipitation and wind vary during the year and in relation to geography. Included is a treatment of climate variability, including how and why climate is thought to have changed in the past, and how it might change in the future, and of the tools used to understand this variability.
Prerequisites: WEAX 201.

WEAX 301 Aviation Weather 3 Credits (3,0)
This course is an expansion of WEAX 201 - Meteorology I with a focus on aviation weather hazards such as thunderstorms, strong winds, fog, icing, turbulence, snow storms, and volcanic ash. Practical application of theoretical concepts such as thickness, thermal winds, jet streams, cyclone formation, and stability is achieved through exercises and projects utilizing current or historic weather examples and designed to complement lecture materials. Emphasis is on navigating today's online environment for obtaining real-time aviation weather products and information to gain practical experience in making informed weather-sensitive decisions.
Prerequisites: WEAX 201.

WEAX 322 Space Weather 3 Credits (3,0)
This course is an introduction to the Sun-Earth relationship and focused on understanding its societal and technological impacts. With the continued growth of the satellite communications industry and our growing dependence on wireless communication and instant access to global information, we are becoming more and more susceptible to problems caused by space weather. The course provides the students with understanding of the key concepts of radiation and convection, solar structure, the heliosphere: the corona and the solar wind, the interplanetary magnetic field, cosmic rays, Earth's space environment and upper atmosphere, the technological impacts of space storms, the perils of living in space, the impact of space weather on climate variability, and will discuss other space weather phenomena. The students will investigate several case studies of space weather storms and how they can damage or destroy orbiting satellites, injure or kill astronauts, degrade or blackout certain radio and navigation communications, and cause regional power failures by destroying critical components of electrical power grids.

WEAX 327 Operational Analysis and Forecasting 3 Credits (3,0)
Introduction to operational weather analysis and forecasting using conceptual understanding of observations, numerical model output, and synoptic-scale processes. Meteorological time and date conventions; surface station plots; METAR and SYNOP code; upper-air station plots; isoplething of surface and upper-air isobaric charts; basic satellite and radar feature identification; temperature and vorticity advection; advection on upper-air and sea-level pressure charts; vorticity, divergence, and continuity; advection and relationship to vertical motion; pattern recognition and conceptual analysis using upper-air charts; pattern recognition and conceptual analysis using sea-level pressure charts; skew-T analysis; types of soundings; basic temperature and precipitation forecasting.
Prerequisites: WEAX 301.

WEAX 363 Thunderstorms 3 Credits (3,0)
This course provides tools for analyzing and forecasting thunderstorms and their associated hazards. Key characteristics of the thunderstorm and its environment are explored using both case studies and real-time weather data. Students examine atmospheric soundings to determine the likelihood of storm development and the amount of energy available for thunderstorms. Vertical wind shear is analyzed for clues about storm organization and severity. Other information, such as weather charts, computer models, satellite imagery, and Doppler radar imagery, is used to observe the characteristics of thunderstorms and the weather patterns that favor them. Students gain a basic scientific understanding of thunderstorm behavior as well as practical experience observing and predicting them.
Prerequisites: WEAX 201.

WEAX 364 Weather for Aircrews 3 Credits (3,0)
Making use of the Weather Center and the Internet, students collect and study weather data from around the world. Emphasis is placed on decoding information contained in the remarks section of weather observations and on the differences between North American weather charts and those produced in other parts of the world. Students investigate the flying conditions and aviation environment over the seven continents. The proper operation of airborne weather radar is studied. Students identify weather hazards by using ground-based weather radar and satellite imagery.
Prerequisites: WEAX 301.

Organizational Behavior and Leadership - UG (OBLD)

Courses

OBLD 275 Critical Thinking for Leadership 3 Credits (3,0)
Emphasizes several models and strategies for critical thinking within a leadership context. Additional topics include: digital literacy tools; library research; and written communication.
Prerequisites: MGMT 201.

OBLD 285 The Evolution of Leadership 3 Credits (3,0)
Explore the historical roots of modern leadership theory; in-depth look at the societal, cultural, economic, and political environment that led to the forming of specific leadership theories; emphasis understanding the context of leadership theories, and then applying that context to one's own environment.
Prerequisites: OBLD 275.

OBLD 300 Emotional, Social, and Cognitive Intelligence 3 Credits (3,0)
Examines behavioral competencies needed for success in the enterprise. Topics include relationship building, networking, boundary spanning and mindfulness. Being aware of being emotionally, socially, and cognitively intelligent will establish the practical underpinnings of primal leadership.
Prerequisites: OBLD 275.

OBLD 304 Coaching and Mentoring 3 Credits (3,0)
Introduces coaching and mentoring as performance management techniques. Topics include theoretical underpinnings, models, development, and evaluation of coaching and mentoring programs.
Prerequisites: OBLD 275.

OBLD 310 Mediation, Negotiation, and Conflict Resolution 3 Credits (3,0)
Develops skills and methods for successful conflict management. Topics include mediation, negotiation, resolution and avoidance. Special emphasis will be placed on the relationships of the leader and how to help address conflict in a positive manner that results in personal and systematic change.
Prerequisites: OBLD 275.

OBLD 315 Contemporary Leadership Theories 3 Credits (3,0)
Explores emergent organizational leadership theories. Topics include full-range leadership, values-based leadership, authentic leadership, complex adaptive leadership, and self-leadership.
Prerequisites: OBLD 275.

OBLD 317 Organizational Behavior 3 Credits (3,0)
Overview and analysis of various behavioral concepts affecting individual and group performance within business organizations with an emphasis on research, theory, and practice.
Prerequisites: MGMT 201.

OBLD 371 Leadership 3 Credits (3,0)
The focus of this course is about leadership in organizations. In the increasingly competitive global economy, leaders must develop the necessary skills to lead organizational development, change, and create a motivating workplace. This course focuses on analyzing the leadership skills that enhance organizational success. Topics discussed are the approaches and models of leadership, organization change, and organization development.
Prerequisites: MGMT 201.

OBLD 402 Ethics, Values, and Differences 3 Credits (3,0)
Ethical issues related to leadership and the ethics of leadership; diversity, civility, social contract, power, influence, vision, authenticity, fairness, rights and responsibilities, and self-interest.
Prerequisites: OBLD 275.

OBLD 407 Driving Change in Organizations 3 Credits (3,0)
Explores the forces that drive change and examines planned change within organizations. Topics include assessing the need for change, involving stakeholders in the change process, communicating the need for change, developing strategies for managing change, and evaluating change projects.
Prerequisites: OBLD 275.

OBLD 412 Leadership Practicum 3 Credits (3,0)
The leadership practicum provides students an opportunity to apply previous knowledge in an organization of their choice. Students can put into practice what is learned. Students will serve in a consultative role to work on a problem or outcome and report their findings in a variety of formats.
Prerequisites: OBLD 275.

OBLD 427 Management of the Multicultural Workforce 3 Credits (3,0)
Management of the multicultural workforce. Elements of cultural anthropology pertaining to international business and communicating across cultures. Managing contrasting cultural values while maintaining organizational culture are addressed in the context of international aviation management.
Prerequisites: MGMT 201.

Physical Science (PHYS)

Courses

PHYS 102 Explorations in Physics 3 Credits (3,0)
Survey course in elementary physics. Stress will be placed on basic concepts, principles and history of the development of physics. Presentation will include selected topics in mechanics, heat, light, sound, electricity and magnetism, and modern physics.
Prerequisites: MATH 106 or MATH 111 or MATH 140 or MATH 142 or MATH 143 or MATH 241.

PHYS 123 Science of Flight 3 Credits (3,0)
Connects basic principles within select branches of the natural sciences - atmospheric science, biology, chemistry, environmental science, and physics - with general applications of flight. Aerodynamics and aircraft control; propulsion and hydraulics; aircraft materials; effects of atmospheric phenomenon; environmental impacts.

PHYS 142 Introduction to Environmental Science 3 Credits (3,0)
This introductory course stresses the interrelations of all aspects of the living and the nonliving world. It introduces the student to key concepts and principles that govern how nature works and the application of these concepts and principles to possible solutions to environmental and resource problems.

PHYS 150 Physics I for Engineers 3 Credits (3,0)
This course explores vectors and scalar quantities, kinematics, Newton's Law of Motion, work, work-energy, conversion of energy, conversion of momentum, center of mass and its motion, torque, equilibrium and orbital motion.
Prerequisites: MATH 241 **Corequisites:** MATH 241.

PHYS 160 Physics II for Engineers 3 Credits (3,0)
This is a calculus-based study of the fundamental principles of classical mechanics and topics include, rotational motion, simple harmonic motion, waves, fluid, heat, kinetic energy, and thermodynamics.
Prerequisites: PHYS 150 and MATH 242 **Corequisites:** MATH 242.

PHYS 199 Special Topics in Physical Science 1-4 Credit (1-4,0)
These are individual independent or directed studies of topics in the fields of the physical sciences impinging on aerospace development or practices, and which are of current or anticipated interest. Pre-Requisite: Consent of instructor and approval of the department chair.

PHYS 224 Astronomy 3 Credits (3,0)
A descriptive course dealing with the structure and evolution of the physical universe. Topics include the solar system (Earth, Moon, Sun, and planets), stars, black holes, galaxies, quasars, cosmology, and exobiology. Planetarium trips and night-observing sessions optional.

PHYS 250 Physics III for Engineers 3 Credits (3,0)
This course is a calculus-based study of the fundamental principles of classical mechanics. It is the third course of a three-semester sequence, intended for students of science and engineering and is designed to provide the student with an appropriate background for more advanced physics and engineering course work. Topics of discussion include; electric forces, electric field, Gauss's law, Ohm's law Ampere's law, Faraday's law, Lenz's law, Kirchhoff's law and Maxwell's equations; electric potential and electrostatic potential energy; capacitance; simple DC circuit theory; magnetic force, magnetic field; inductance; electromagnetic oscillations and wave propagation; Linear accelerators, cyclotrons.
Prerequisites: PHYS 160 **Corequisites:** PHYS 253.

PHYS 253 Physics Laboratory for Engineers 2 Credits (0,2)
Experiments complement the materials in the associated physics lecture sequence (PHYS 150, PHYS 160, PHYS 250). Topics include measurements and uncertainties, representation of data, graphical analysis, error analysis, kinematics, Newtonian motion, rotational motion, torque, conservation of energy, conservation of momentum, simple harmonic motion, thermodynamics, properties of waves, electrostatics, DC circuits and measurement tools, resistors, capacitors, diodes, RC circuits, ray optics, refraction, properties of light.
Prerequisites: PHYS 150 and PHYS 160 or PHYS 250 **Corequisites:** PHYS 250.

PHYS 299 Special Topics in Physics 1-4 Credit (1-4,0)
These are individual independent or directed studies of topics in the fields of the physical sciences impinging on aerospace development or practices, and which are of current or anticipated interest. Pre-Requisite: Consent of instructor and approval of the department chair.

PHYS 304 Environmental Science 3 Credits (3,0)
This course explores interrelationships between humans and the environment and impacts of human activities on the environment. Scientific, economic, societal, and technological principles will be applied to the management of pollution of Earth's resources, including land and soil resources, water resources, and energy resources.
Prerequisites: RSCH 202 and PHYS 142.

PHYS 359 Self-Directed Exploration of Environmental Science 3 Credits (3,0)
This is an individual independent study of topics in the fields of the physical sciences impinging on environmental science, and which are of current or anticipated interest. Pre-Requisite: Consent of the instructor and the approval of the department chair.

PHYS 399 Special Topic Physical Sciences 3 Credits (3,0)
These are individual independent studies of topics in the fields of the physical sciences impinging on environmental science, and which are of current or anticipated interest. Pre-Requisite: Consent of the instructor and the approval of the department chair.

PHYS 499 Special Topic Physical Science 1-4 Credit (1-4,0)
These are individual independent or directed studies of topics in the fields of the physical sciences impinging on aerospace development or practices, and which are of current or anticipated interest. Pre-Requisite: Consent of instructor and approval of the department chair.

Project Management - UG (PMGT)

Project Management Courses

PMGT 300 The Project Management Profession 3 Credits (3,0)
In this course, students will be introduced to the project management profession. A common professional language is adopted as a foundation. Students explore the environment where project management is applied to organizational projects by project managers, following global standards and professional ethics.
Prerequisites: MGMT 201.

PMGT 325 Concepts and Practices of Project Management 3 Credits (3,0)
This course provides undergraduate students, who are not enrolled in a project management degree program, an appreciation for the depth and breadth of the project management profession. The course will address the complete project lifecycle including initiating, planning, executing, monitoring and controlling and closing. Emphasis will be placed on gaining a knowledge of common terminology, principles, techniques and tools that are found global standards for project management.
Prerequisites: MGMT 201.

PMGT 391 Project Planning 1 3 Credits (3,0)
This course introduces basic concepts and tools of project management, such as the work breakdown structure, network diagrams, and critical path. At the end of this course, students will be able to apply the tools to management project scope, schedule, cost, and resources, following global project management standards and professional ethics.
Prerequisites: STAT 222 or STAT 211 PMGT 300 for BSPM.

PMGT 394 Project Planning 2 3 Credits (3,0)
This course continues the study of basic concepts and technical tools of project management, such as the communication matrix, stakeholder analysis, and make-buy decisions. At the end of this course, students will be able to apply the tools to the management of project quality, communication, stakeholder, and procurement management, following global project management standards and professional ethics.
Prerequisites: PMGT 391.

PMGT 400 Project Risk and Control 3 Credits (3,0)
This course applies concepts and technical tools of project management, such as the work risk matrix, status reports, and change logs. At the end of this course, students will be able to apply the tools to the management of project risk, project execution, and project control, following global project management standards.
Prerequisites: PMGT 394.

PMGT 424 Project Management in Aviation Operations 3 Credits (3,0)
This course introduces the student to the concept of project management within aviation operations. It addresses the three-dimensional goals of every project: the accomplishment of work in accordance with budget, schedule, and performance requirements. The procedures for planning, managing, and developing projects in an aeronautical environment are covered, as well as the aspects of controlling project configuration from inception to completion. Automated tools used to determine cost, schedule, staffing, and resource allocation are covered, as well as the process of determining the effectiveness and technical validity of aviation-related projects.
Prerequisites: PMGT 400.

PMGT 461 Global Project Management 3 Credits (3,0)
Emerging and evolving economies, world circumstances, and global competition require that project managers be able to lead and manage project in this challenging arena. Project Managers must operate within environments that contain diverse cultures and projects including multiple corporations crossing internationalboundaries. In this course, students will analyze the global environment and determine criteria for international project selection. Additionally, students will consider requirements to prepare themselves, others, and the organization for global expansion.
Prerequisites: PMGT 400.

PMGT 465 Managing Troubled Projects 3 Credits (3,0)
This course applies concepts and technical tools of project management to manage troubled projects. At the end of this course, students will be able to determine the project status using the schedule baseline, cost estimations, and earned value management techniques, following global project management standards and professional ethics. Students will learn how to perform a project audit and will create a troubled project recovery plan.
Prerequisites: PMGT 400.

PMGT 470 Agile Project Management 3 Credits (3,0)
Students will acquire a working knowledge of agile project management methodologies, tools, and techniques. The working knowledge starts by differentiating agile project management from traditional project management lifecycles. Scrum methods are used to manage the project status using the schedule baseline and cost estimations, as outlined in the Agile Manifesto.
Prerequisites: PMGT 400.

PMGT 490 Project Management Capstone 3 Credits (3,0)
This course is designed to provide the student the opportunity to apply knowledge gained throughout the degree program. Demonstration of the study of project management, paying particular attention to technical project management, project leadership, and business strategy. Pre-Requisite: The Project Management Capstone is the last course taken in the BSPM Program.

Research - UG (RSCH)

Courses

RSCH 10 Research Preparation 0 Credits (0,0)
This performance-oriented course is designed to increase student success in college by introducing and actively engaging students in the research process. Topics include: understanding research, sourcing, using a library, choosing a research topic, gathering and organizing information, analyzing a thesis and outline, and determining how to cite and reference sources. This course is for zero credit hours, cannot be used to satisfy credit requirements for ERAU degrees, and may be repeated.

RSCH 202 Introduction to Research Methods 3 Credits (3,0)
This course is a general introduction to research intended to equip first and second year undergraduate students with the skills needed in their studies. Topics covered include the purposes of research, defining research and research problems, defining a hypothesis, problem solving and knowledge discovery, methods of quantitative and qualitative research, conducting literature reviews, designing appropriate methodologies, evaluating outcomes, analysis and communicating the results.
Prerequisites: ENGL 123 or ENGL 221 and STAT 211 or STAT 222.

RSCH 395 Supervised STEM Research Independent Study 3 Credits (3,0)
In this Independent Study course, the student will collaboratively or individually complete a STEM-related undergraduate research project under close supervision of a faculty member. Regardless of the nature of the research, the culmination of this course is the submission of a formal research paper. Any student wishing to attempt a STEM research independent study must begin by obtaining the agreement of a faculty member to supervise the project. Once a supervisor is secured, departmental approval is required to enroll. The basic details of the project should be collaboratively developed and presented to the proposed faculty supervisor prior to initiating registration. Group work is permissible with the approval of the supervising faculty member.
Prerequisites: RSCH 202.

Safety - UG (SFTY)

Courses

SFTY 201 Introduction to Occupational Safety and Health 3 Credits (3,0)
This course introduces the student to the basic health and safety concepts associated with industry and transportation. Included are a comprehensive health and safety overview; a historical study of the legislative development; enactment of appropriate statutes, regulations, laws; the definition of safety terms; and a discussion of the ethics and professionalism required by the health and safety profession. This course also introduces hazard recognition and reporting, evaluation, and control concepts used in risk management, accident investigation, ergonomics, and accident prevention.

SFTY 205 Principles of Accident Investigation 3 Credits (3,0)
This course is an introduction to the process required for the investigation of accidents. Topics will include different methods of accident investigation, such as root cause analysis and Management Oversight Risk Tree (MORT), among others. Further topics will include filing appropriate accident reports and applications of corrective actions.

SFTY 210 Introduction to Aerospace Safety 3 Credits (3,0)
This course provides an introduction and overview of the theories, concepts, applications and practices of the field of aerospace safety. This course is designed for the beginning aviation safety student and covers topics such as human factors, mechanical factors, accident investigation, safety programs and safety statistics.

SFTY 299 Special Topics in Safety 1-3 Credit (1-3,0)
These courses consist of individual independent or directed studies of selected topics in safety. Pre-Requisite: Consent of instructor, approval of department and program chairs, and 12 hours of SFTY courses.

SFTY 311 Fundamentals of Occupational Safety and Health 3 Credits (3,0)
The student will be provided an introduction and overview of the Occupational Safety and Health (OSH) Act and how provisions of the Act are implemented in the workplace. The course is designed for the beginning safety student and is a prerequisite for most of the higher-level safety courses. Material presented covers the rights and responsibilities under the OSH Act, the appeals process, recordkeeping, and voluntary protection programs. The course also includes an introduction to OSHA's general industry standards and an overview of the requirements of the more frequently referenced standards.
Prerequisites: RSCH 202.

SFTY 315 Environmental Compliance and Safety 3 Credits (3,0)
This course examines matters associated with health and safety relating to the environment including air, water quality and sanitation. Areas of concentration include hazardous materials, their storage, handling, and transportation. Additional study includes waste management and cleanup as well as a detailed study of environmental laws, regulations, and protection of workers involved in activities associated with hazardous material activities.
Prerequisites: RSCH 202.

SFTY 320 Human Factors in Aviation Safety 3 Credits (3,0)
This course focuses on the major causative agent in aircraft accidents: the human being. Emphasis is placed on psychological and physiological factors that enhance the accident probability. Included is a detailed analysis of ergonomics (human engineering) and its influence in aviation design.
Prerequisites: RSCH 202.

SFTY 321 Ergonomics 3 Credits (3,0)
The concepts and physiological aspects of ergonomics will be examined in this course. Material presented covers anthropometric principles in workspace and equipment design, workspace design, human-machine systems, analysis and design of displays and controls, and environmental factors affecting work environment.
Prerequisites: RSCH 202.

SFTY 326 System Safety 3 Credits (3,0)
This course will emphasize the specialized integration of safety skills and resources into all phases of a systems life cycle. Topics will include qualitative and quantitative tools and techniques for system analysis and design applied to accident analysis, prevention, and mitigation.
Prerequisites: RSCH 202.

SFTY 330 Aircraft Accident Investigation 3 Credits (3,0)
This course is a detailed evaluation of methods and procedures involved in aircraft accident investigation. The organization, duties and procedures of an aircraft board are analyzed. The student explores procedures for determining accident causes through analysis of such elements as the function and techniques employed by the trained accident investigator and the role of the specialized laboratory. Analysis is also made of reporting procedures and the all-important follow-up work designed to avoid similar or related aircraft accidents.
Prerequisites: RSCH 202.

SFTY 335 Mechanical and Structural Factors in Aviation Safety 3 Credits (3,0)
This course examines the influence that design, manufacturing, metallurgy, and maintenance have on aircraft accidents. A detailed analysis of the failure process will be conducted. Additional topics of discussion include: stress and design loading, fatigue, corrosion, and the envelope of operation.
Prerequisites: RSCH 202.

SFTY 341 Occupational Safety and Health Program Management 3 Credits (3,0)
Students will learn about the principles of the development and management of materials, techniques, and procedures used in the implementation of occupational safety and health programs and their application in a variety of occupational settings. Examined will be the management techniques, governmental regulations, and safety and health programs developed for industry. The course will focus on the history of the safety and health movement; government regulations; safety and health program organization; hazard information and analysis process; and implementation of an occupational safety and health program.
Prerequisites: RSCH 202.

SFTY 345 Aviation Safety Program Management 3 Credits (3,0)
This course is a study of the principles of the development and management of an effective safety program. The philosophy and historical development of major concepts are examined with particular emphasis on areas of special concern in organizational accident prevention. Students analyze the influence of morale, education and training, the role of the supervisor, and other substantial program elements of value to the safety manager.
Prerequisites: RSCH 202.

SFTY 350 Aircraft Crash and Emergency Management 3 Credits (3,0)
Theory, practices and techniques utilized in the response phase of aircraft crashes and emergencies are examined. This course is designed as a "real world" introduction to the field of emergency response at the CFR agency level, the airport response and administration levels and the related and associated entities involved in aircraft mishaps.
Prerequisites: RSCH 202.

SFTY 355 Industrial Hygiene and Toxicology 3 Credits (3,0)
This course focuses on the evaluation of principles associated with industrial hygiene. Topics include recognition, evaluation and control of hazards related to noise, vibration, ionizing and non-ionizing radiation, thermal conditions, pressure, chemicals, airborne contaminants, and biological substances. These subjects will be discussed in relation to all regulatory requirements, using both engineering and non-engineering controls for reducing or eliminating health hazards in the workplace.
Prerequisites: PHYS 102 or PHYS 160 and SFTY 311 and RSCH 202.

SFTY 360 Construction Safety 3 Credits (3,0)
The student is provided with an opportunity for an in-depth study of construction safety and the importance of safety and health in the construction industry. The Code of Federal Regulations (29 CFR 1926) governing the construction industry will be examined. The focus is the management and application of the regulations in the workplace, typically through safety inspections, job safety planning, organizing and conducting health and safety training, investigating and maintaining records of construction accidents, incidents, and injuries and illnesses.
Prerequisites: RSCH 202.

SFTY 365 Fire Protection 3 Credits (3,0)
This course introduces the basics of fire and fire protection. Students will study the physics, chemistry, characteristics and behavior of fire, fire hazards of material, fire suppression systems, extinguishing agents, and detection and alarm systems. Primary emphasis will be on transportation related fire hazards and the regulatory requirements associated with air, rail, marine, and highway modes of transportation.
Prerequisites: PHYS 102 and SFTY 311 and RSCH 202.

SFTY 375 Propulsion Plant Investigation 3 Credits (3,0)
A technical course in aircraft reciprocating and turbine engine fundamentals and new propulsion and propeller technologies relevant accident investigative procedures. Areas of study include basic construction and design with emphasis on major sections, components, and their mechanical relationships. Power plant systems and system mishap investigation is also covered and includes fuel, lubrication, ignition, and start systems. A study of propeller basics and investigative techniques is also included. On site field investigation as well as engine teardown/ disassembly procedures are presented.
Prerequisites: RSCH 202.

SFTY 399 Special Topics in Safety 1-3 Credit (1-3,0)
These courses consist of individual independent or directed studies of selected topics in safety. Pre-Requisite: Consent of instructor, approval of department and program chairs, and 12 hours of SFTY courses.

SFTY 409 Aviation Safety 3 Credits (3,0)
This course covers all facets for an aviation safety program including both flying safety and safety of ground operations. Major problem areas in aviation safety, safety program evaluation, and impact of accidents on industry are covered. Focus is on human factors, basic accident prevention programs, and the roles of various government and industry organizations have in preventing accidents.
Prerequisites: RSCH 202.

SFTY 415 Human Reliability and Safety Analysis 3 Credits (3,0)
This course will emphasize an understanding of probability and human reliability as an important technique in safety analysis. Topics will include qualitative and quantitative tools and techniques for human reliability analysis applied to accident analysis, prevention, and mitigation.
Prerequisites: RSCH 202.

SFTY 420 Systems Design for Fire & Life Safety 3 Credits (3,0)
This course centers on design principles involved in building construction standards and building codes to assure maximum life and property safety from fires, explosions, and natural disaster. Egress design specifications, occupancy and construction classifications, and fire protection requirements for buildings will be covered.
Prerequisites: PHYS 102 and SFTY 311 and RSCH 202.

SFTY 421 Ergonomics II 3 Credits (3,0)
This course is an extension of SFTY 321 - Ergonomics. SFTY 421 will explore in greater depth human factors and its relationship to ergonomics in organizational and social environments, as well as the relationship between ergonomics and general workplace safety. In addition, the course will explore how human factors can improve occupational safety, and how one may predict and analyze hazards in order to design and engineer safer industrial workplaces.
Prerequisites: SFTY 321 and RSCH 202.

SFTY 440 System Safety Management 3 Credits (3,0)
This course reviews the development and implementation of the system safety discipline in technical industries, including aviation. "System Safety" entails specialized integration of skills and resources in all phases of the life cycle of a given system in furtherance of accident prevention. Its heritage is systems engineering and management theory but amplified to include modern safety practices derived from numerous disciplines. Students will acquire an understanding of how accident prevention is designed into equipment, processes, and facilities under development, evaluated and enhanced during testing, and assured or otherwise controlled during operational use.
Prerequisites: RSCH 202.

SFTY 450 Loss Control & Insurance 3 Credits (3,0)
The principles of loss control, insurance, and financial risk management, as they apply to the SHE (Safety, Health, and Environmental) professional, are studied in this course. The basic concepts of financial risk management, legal principles, property and liability insurance, life and health insurance, employee benefits, social insurance, and functional and financial operations of insurers will be examined. Primary emphasis is placed on consumer considerations, coverage of personal risk management, and financial planning.
Prerequisites: RSCH 202.

SFTY 453 Construction Scheduling and Control 3 Credits (3,0)
This course provides students with a thorough understanding of project planning and scheduling principles utilized in facilities and construction management. It introduces various planning and control techniques in an integrated planning and control system. It helps students develop an understanding of time, cost, and resource management principles as well as ethical issues involved. The course also provides an overview of advanced project planning concepts and the software used.

SFTY 457 Industrial Safety for Facilities Managers 3 Credits (3,0)
The objective of this course is to introduce the student to the occupational health and safety hazards and regulations as it pertains to the day to day operations and maintenance of industrial plants and manufacturing facilities. This course will cover the Occupational Safety and Health Administration (OSHA) regulations with a focus on the General Industry (29 CFR 1910) and Construction (29 CFR 1926) safety standards. OSHA's most cited safety violations provide the foundation for the course giving the student the opportunity to recognize various industrial hazardous conditions on the job site and recommend mitigation techniques to prevent accidents.

SFTY 462 Health, Safety and Aviation Law 3 Credits (3,0)
This course introduces the student to the legal issues and concerns confronting the health and safety industry. Included is an overview of the historical legal precedence established for the aviation industry as well as a comprehensive examination of the laws, regulations and legislation that governs the actions and authority of the health and safety professional. This course also provides an introduction to the governing bodies and associations tasked with setting the legal standards by which the industry must operate, including the scope and level of their authority.
Prerequisites: RSCH 202.

SFTY 470 Advanced Occupational Safety and Health Technology 3 Credits (3,0)
This course is the culminating experience that derives from previous work in the occupational safety and health technology field. In this course, a heavy emphasis is placed on the analysis of previously learned occupational safety and health theories and concepts so as to determine their appropriate application. A secondary emphasis is placed on the horizontal integration of these theories and concepts in a practical framework, which will serve as professional guidance for the practicing Occupational Safety and Health Technologist. Students will draw on previous occupational safety and health studies, and develop and defend an in-depth analysis of an occupational safety and health issue in a program or business of their choice.
Prerequisites: SFTY 311 and SFTY 341 and SFTY 355 and RSCH 202.

SFTY 499 Special Topics in Safety 1-3 Credit (1-3,0)
These courses consist of individual independent or directed studies of selected topics in safety. Pre-Requisite: Consent of instructor, approval of department and program chairs, and 12 hours of SFTY courses.

Safety Management (BSSM)

Courses

BSSM 491 Operational Applications in Safety Management 3 Credits (3,0)
Culminating experience for students in the Safety Management program. Comprehensive examination of problem-solving, system design, experimentation and data analysis, effective communication, ethics and professionalism, and teamwork as related to safety management. Proficiency in broad field of safety. Pre-Requisite: Course listed and Senior Standing.
Prerequisites: RSCH 202.

Security and Emergency Services (SSES)

Courses

SSES 110 Critical Thinking in Contemporary Problems 3 Credits (3,0)
The developing process of actively thinking and skillfully conceptualizing, applying, analyzing, synthesizing, or evaluating information. Developing critical thinking skills through the lens of contemporary issues, especially focused on international affairs, disasters, and security crises.

SSES 401 Applied Research Methods in Security and Emergency Services 3 Credits (3,0)
Examining the multiple ways in which social scientists conduct research. Identifying the relationship between theory and research methods; discussing the logic of research methodology; analyzing how to "make sense" of data produced through the various research methods in security issues and emergent disasters.

Security Science (SCTY)

Security Science Courses

SCTY 310 Introduction to Security 3 Credits (3,0)
This course provides an overview of the historical development of the security profession and the role of security today as part of the criminal justice system, business and society. The current security disciplines such as contract security, private investigations, industrial security, aviation security, cultural property security, physical security and information security will be explored. Legal and ethical aspects of the security profession are explored along with a review of the development of an effective professional proprietary security.
Prerequisites: RSCH 202.

SCTY 312 Global Crime and Criminal Justice Systems 3 Credits (3,0)
In this course, students will be presented the current status and predicted trends in global crime and criminal justice systems. They will be given descriptions of the three types of terrorism: domestic (U.S.), international (group-directed), and state-sponsored. Concepts and theories will be applied in discussions on how to best combat the threat.
Prerequisites: RSCH 202.

SCTY 315 Studies in Intelligence I 3 Credits (3,0)
In this course, the student will be provided descriptions of the varied ways strategic intelligence is used by world leaders to shape policy and its effect on world events. Intelligence collection, analysis, and dissemination and counterintelligence will be among the issues examined and discussed. Pre-Requisite: one psychology course and one government/history course, or permission of the instructor.
Prerequisites: RSCH 202.

SCTY 385 Intelligence Collection and Analysis 3 Credits (3,0)
In this course, the student will be given the opportunity to gain practical experience in the intelligence functions of analysis, writing, and briefing. The student will be expected to demonstrate an "intelligence-oriented mind" and ability to work under time pressure. The student will become familiar with analytical methodologies and writing styles that make complex world events explicable to military decision makers and senior policy makers.
Prerequisites: RSCH 202.

SCTY 400 Airport Security 3 Credits (3,0)
This course will cover specific facets of aviation- related security to include physical and procedural controls, regulations of the Department of Homeland Security, the Transportation Security Administration, the Federal Aviation Administration and ICAO, as well as international treaties. The course will also discuss the current threat, counter terrorism measures, new technologies in the field and the importance of the aviation industry, both passenger and cargo to the global economy.
Prerequisites: RSCH 202.

SCTY 410 Physical Security 3 Credits (3,0)
This course is designed to provide a comprehensive review the methods utilized to conduct an effective physical security risk analyst. Building on the results of the risk analyst the five line of defense, property line, areas security, outer shell of structures, and interior of structures, are examined in detail. The deployment of intrusion detection systems, fire protections systems, access control, barriers, security lighting and use of security cameras are discussed.
Prerequisites: RSCH 202.

SCTY 415 Studies in Intelligence II 3 Credits (3,0)
The course is a simulation of intelligence officers' activities. The student will function as an intelligence desk officer for either a government, global corporation, terrorist group, global criminal organization, or multilateral political organization. Using the simulation, the student will study and practice many components of tactical and strategic intelligence. Some components included will be intelligence collection, evaluation, analysis, production, and dissemination; intelligence oversight; covert and clandestine operations; intelligence bureaucracies; espionage; ethical and moral issues in intelligence; and counterintelligence. The course emphasizes functional interactions.
Prerequisites: RSCH 202.

SCTY 420 General Aviation Security 3 Credits (3,0)
The focus of this course is to identify what general aviation is and to explore the security and terrorism threats to the general aviation community. Methods of protection of general aviation airports, aircraft, fixed-base operations, hangers and flight schools will be addressed. The establishment of the Aircraft Owners and Pilots Association Airport Watch is examined. The use of physical security measures and the establishment of a security force operations will be addressed.
Prerequisites: RSCH 202.

SCTY 430 Counterterrorism for Aviation 3 Credits (3,0)
This course will focus on the specific threats to the aviation community from terrorism. An historical overview of aviation terrorism is explored along with terrorist groups and tactics used against the aviation profession, Specific methods of protection to the aviation profession is investigated to include the use of the Transportation security Administration, Airport Security Coordinators, airport law enforcement, personnel screening, access control and physical at airports and on commercial aircraft.
Prerequisites: RSCH 202.

SCTY 485 Corporate Security 3 Credits (3,0)
The student will be exposed to issues in the field of private/corporate security. Private security firms work with public law enforcement strengthening the overall security posture of firms, schools, etc. Beginning with a discussion of the differences between public and private police, students will analyze security needs of business and private establishments, in detail, and the threats that might emanate from tapped phones, bugged offices, stolen papers, covert recording, undercover employees, phony repair people, fax intercepts, etc. The substance of the course will include practical and theoretical elements affecting the field.
Prerequisites: RSCH 202.

SCTY 488 National Security Issues and Terrorism 3 Credits (3,0)
Although terrorism has been a known phenomenon for centuries, it has become the most frequent form of conflict in the late 20th century. Success in preventing nuclear warfare and in curbing the outbreak of most conventional war has resulted in more forms of low intensity violence, a significant feature of which is overt terrorism. Ideological hardening, ethnic militancy, and religious revivalism have fueled terrorist ambitions. Broadly speaking, there are three types of terrorism, classified on the basis of actors. The course will address all three types: domestic US, international or group directed, and state sponsored.
Prerequisites: RSCH 202.

SCTY 490 Aviation Security Capstone Course 3 Credits (3,0)
The Aviation Security Capstone Course is the culminating effort of the student's entire learning experience. The student will complete a project associated with a problem in the aerospace industry that provides significant evidence of experience in aviation and aeronautical studies. Students will work with designated faculty members to formulate, develop, and complete the aviation security project. The completion of the Capstone Course is designed to document evidence that Program Outcomes are understood and provides the student evidence of knowledge to show to current and prospective employers. The Capstone Course will be taken at the end of the student's degree program as the final course of the degree program.
Prerequisites: RSCH 202.

Social Sciences (PSYC)

Courses

PSYC 220 Introduction to Psychology 3 Credits (3,0)
This course will introduce the student to the field of psychology, and is a survey of the bio-psychosocial continuum and the intra-psychic, interpersonal, and organizational factors affecting human behavior. A primary feature of the course is its focus on the scientific method as the route to psychological knowledge. Students examine the rationalist, empiricist and experimental foundations of the scientific method and how these foundations can be critiqued. Topics include sensation, perception, learning, motivation, emotion, memory, personality, psychopathology, physiological psychology and social processes. Emphasis is placed on the application of the basic principles of psychology to engineering, aviation, public policy and business.

PSYC 320 Aviation Psychology 3 Credits (3,0)
A study of the complexities of human factors research in aviation. Drawing extensively on such diverse areas as human physiology, basic learning theory, aviation safety, and pilot training. The course surveys the study of human behavior as it relates to the aviator's adaptation to the flight environment.
Prerequisites: RSCH 202.

PSYC 326 Group and Team Behavior 3 Credits (3,0)
This course focuses on using experiential learning techniques to cover group/team behavior, from learning basic human communications skills to applying these skills in small groups. Effective small groups functioning from the viewpoint of systems theory is presented, and the stages of group development. Topics include participative management, decision making, groupthink, social loafing, problem solving, organizational change, etc.

PSYC 340 Industrial/Organizational Psychology 3 Credits (3,0)
This course is a survey of major topics in industrial-organizational psychology, with emphasis on organizational and personnel psychology applied to business, industry and government. It is an examination and critical review of theories and research in selected areas of organizational behavior. Emphasis is on intrapersonal behavior, such as motivation, job stress and job satisfaction.

PSYC 350 Social Psychology 3 Credits (3,0)
This course is intended to provide students with an introduction to the interactional forces between groups and the individual in society. Topics include the following: introduction to social psychology, group influence, the self in a social world, prejudice-disliking others, social beliefs and judgments, attraction and intimacy, genes, culture and gender, altruism-helping others, conformity, and persuasion.

PSYC 355 The Psychology of Creativity and Innovation 3 Credits (3,0)
Interdisciplinary focus highlighting creative processes in the arts and the sciences. How psychologists and scientists define, measure and conduct research on creativity and innovation; how the creative problem-solving process works; how to design and construct a creative product; and how the social environment affects the development of the creative personality from individual, group and cross-cultural perspectives. PSYC 220 is recommended prior to taking this course.
Prerequisites: RSCH 202.

PSYC 360 Cultural Psychology 3 Credits (3,0)
Interdisciplinary focus on how cultural norms influence the way individuals think, feel, and behave. Basic tenets of cultural psychology including specific topics that bridge cultural psychology and identity, including group and identity formation, stereotyping, prejudice, stigma, intergroup contact, and multiculturalism; how to interpret and evaluate relevant research findings; how diverse aspects of humans' day-to-day lives both differ and are constant across cultures; and how these principles can be applied to everyday life and human interaction. PSYC 220 is recommended prior to taking this course.
Prerequisites: RSCH 202.

PSYC 400 Introduction to Cognitive Science 3 Credits (3,0)
This course is an introduction to the science of the mind from the perspective of cognitive psychology, this course is a study of linguistics, neuroscience, philosophy, and artificial intelligence. The focus is on the similarities and differences in the approaches taken by researchers in their study of cognitive mechanisms in these different fields. Issues to be addressed include: What does it mean to be able to think? What kind of computational architecture(s) is most appropriate to describe cognitive mechanisms? Is the mind an emergent property of the brain? What kind of hardware is required for thinking to occur? Can a computer have a mind?

Sociology (SOCI)

(Social Sciences)

Courses

SOCI 210 Introduction to Sociology 3 Credits (3,0)
Students are provided an integrated survey of the fundamental concepts of culture, forms of collective behavior, community and social organization, social interaction, and social change. The social effects of aviation and the impact of science on the social order living in an air age will also be investigated.

SOCI 299 Special Topics/Social Science 1-6 Credit (1-6,0)
These are individual independent or directed studies of selected topics in the areas of history, sociology, psychology, and human culture in general. Pre-Requisite: Consent of instructor and approval of the department chair.

SOCI 300 Marriage & Family 3 Credits (3,0)
This course analyzes the sociological, physical, psychological, legal and economic aspects of the American family. Demographic trends and interpersonal behavior in family and marriage are discussed, including childbearing and divorce, theories of mate selection, preparation for marriage, marital interaction, sexuality, parenthood and marital adjustment. Contemporary controversial issues, such as the relationship of unmarried couples, alternative marriage forms, abortion, and violence are also addressed as they relate to the family.

SOCI 310 Personality Development 3 Credits (3,0)
This course is a survey of selected theories of human nature and functioning from the beginnings of modern Psychology to present developments, including psychodynamic, cognitive, behavioral, biological, humanistic and other types. Various concepts of personality and the associated methodologies for gathering validating knowledge are explored. Theories are applied to normal issues in personal, professional and relational life, and theory-related skills are taught for self-awareness, problem-solving, habit change, and emotional and interpersonal competence.

SOCI 399 Special Topics/Social Science 1-6 Credit (1-6,0)
These are individual independent or directed studies of selected topics in the areas of history, sociology, psychology, and human culture in general. Pre-Requisite: Consent of instructor and approval of the department chair.

SOCI 499 Special Topics/Social Science 1-6 Credit (1-6,0)
These are individual independent or directed studies of selected topics in the areas of history, sociology, psychology, and human culture in general. Pre-Requisite: Consent of instructor and approval of the department chair.

Space Studies (SPAC)

Courses

SPAC 300 Satellite and Spacecraft Systems 3 Credits (3,0)
Orbital satellites and spacecraft are discussed according to their application, design, and environment. The power system, shielding, and communication systems are reviewed along with their missions, space environment and limitations.

SPAC 310 Human Factors in Space 3 Credits (3,0)
Basic principles of aerospace human factors with an emphasis on human factors issues with living and working in space. Research, principles and methods that are essential in optimizing the interaction between people and machine elements of aerospace systems.

SPAC 330 Spaceflight and Operations Training 3 Credits (3,0)
Introduction of astronaut and cosmonaut selection and training showing strong parallels with military pilot selection and training, including the rapid evolution of manned space flight training. Current selection techniques and Spaceflight and Operations Training programs examined along with the training center facilities and shared training techniques used for International Space Station crews. Examination of commercial training programs already in place and planned.

SPAC 400 Introduction to Space Navigation 3 Credits (3,0)
This course will introduce the student to basic elements of space navigation at the introductory physics level. The consequences of Newton's law of gravitation and central force motion, including Kepler's three laws of planetary motion, are explained. The physical characteristics of the solar system and the Earth/Moon system are reviewed. The basic methods and techniques of navigating in near-Earth orbit and the Moon and planets are described.

Speech (SPCH)

Courses

SPCH 219 Speech 3 Credits (3,0)
This course is a continuation of the study of communication and communication theory, with an emphasis on overcoming communication apprehension, developing listening skills, mastering oral performance and writing about communication. Individual sections may focus on public speaking, group discussion, oral interpretation or interpersonal communication.

SPCH 319 Advanced Speech 3 Credits (3,0)
This course continues the study of oral communication with emphasis on effective public speaking. It includes the analysis and practice of modern and traditional methods of persuasion within and beyond the classroom.
Prerequisites: SPCH 219.

Statistics (STAT)

Courses

STAT 211 Statistics with Aviation Applications 3 Credits (3,0)
This course is a study of basic descriptive and inferential statistics. Topics include types of data, sampling techniques, measures of central tendency and dispersion, elementary probability, discrete and continuous probability distributions, sampling distributions, hypothesis testing, confidence intervals, and simple linear regression.
Prerequisites: MATH 111 or MATH 140 or MATH 143 or MATH 201 or MATH 202 or MATH 241.

STAT 222 Business Statistics 3 Credits (3,0)
This course is a study of basic descriptive and inferential statistics. Topics include types of data, sampling techniques, measures of central tendency and dispersion, elementary probability, discrete and continuous probability distributions, sampling distributions, hypothesis testing, confidence intervals, and simple linear regression.
Prerequisites: MATH 111 or MATH 140 or MATH 143 or MATH 201 or MATH 202 or MATH 241.

STAT 320 Decision Mathematics 3 Credits (3,0)
This course is a study of mathematical concepts and applications in mathematical model building and problem solving. Included are mathematical areas which are basic to decision theory.
Prerequisites: STAT 211 or STAT 222.

STAT 412 Probability and Statistics 3 Credits (3,0)
Finite sample spaces; conditional probability and Bayes' Theorem; discrete and continuous random variables and their functions; expected value, variance and standard deviation; systematic study of the major discrete and continuous distributions; moment generating functions; hypothesis testing and estimation.
Prerequisites: MATH 242.

Unmanned Systems - UG (UNSY)

Courses

UNSY 205 Applied Physics for Unmanned Systems 3 Credits (3,0)
This course provides students with a foundation in physics as required to understand unmanned systems applications such as sensor technology; communication and control interfaces; and electro-technical and electronic application design, construction, & implementation. Emphasis is put on elementary particle theory, field properties, wave propagation, and optical relationships as required for an understanding of applications within the electromagnetic spectrum to include modulation concepts, analog and digital electronic circuitry to include signal logic, and electromechanical and electromotive devices to include servo applications.
Prerequisites: PHYS 102 and MATH 140 and MATH 142 or MATH 143 or MATH 111.

UNSY 235 sUAS Flight and Mission Planning 3 Credits (3,0)
This course will introduce undergraduate students to specific aspects of small unmanned aircraft systems (sUAS) flight and mission planning in support of task-oriented flying operations. Attention will be given to tools, methods, and skills used to support selection, configuration, and application processes during planning, pre-flight, inflight (monitoring and data-gathering), post-flight, and post-processing procedures. A comprehensive understanding of current sUAS systems and operating requirements will be reviewed and navigation concepts and components introduced. Unmanned aircraft contain a variety of system packages that are unique to the environment in which they operate. The student will identify the system packages available, and determine their proper operation during unmanned aircraft flight applications.
Prerequisites: UNSY 316 or ASCI 260 **Corequisites:** UNSY 235L.

UNSY 235L sUAS Flight and Mission Planning Laboratory 1 Credit (0,1)
This laboratory is dedicated to Unmanned Aircraft System (UAS) flight planning techniques, procedures, and methods. Students will apply vehicle specific knowledge to create detailed flight plans and adhere to procedures. This lab is designed to complement UNSY 235.
Prerequisites: UNSY 316 or ASCI 260 **Corequisites:** UNSY 235.

UNSY 307 Unmanned Systems Networking 3 Credits (3,0)
This course is a study of the information technology, communications, and frequency spectrum used in conjunction with unmanned systems around the world. Students explore signal processing, communications, interfaces, data links/exchange, FCC regulations, interoperability, and communication standards and protocols associated with robotic systems. Attention will be given to tools and methods used to support development, configuration, and application of unmanned systems individual and networked operations through communication and information processing of signals and data.
Prerequisites: UNSY 205 and RSCH 202.

UNSY 311 Unmanned Ground Systems and Applications 3 Credits (3,0)
This course provides students with an introduction to the fundamental concepts and commonly applied technology used for unmanned ground systems (UGS). Students are exposed to an historical perspective, control fundamentals, control systems, mobility methods, sensor systems, and applications such as agriculture, search and rescue, firefighting, construction, mining, and others. Attention will be given to tools and methods used to support development, configuration, and application of UGS to conduct operations of appropriate vehicles, sensors, and payloads in terrestrial environments.
Prerequisites: RSCH 202.

UNSY 313 Unmanned Maritime Systems and Applications 3 Credits (3,0)
This course provides students with an introduction to the fundamental concepts and commonly applied technology used for unmanned maritime systems (UMS). Students are exposed to an historical perspective, control fundamentals, control systems, surface and underwater methods, sensor systems, and applications such as search and locate, inspection, construction, and others. Attention will be given to tools and methods used to support development, configuration, and application of UMS to conduct operations of appropriate vehicles, sensors, and payloads in marine environments.
Prerequisites: RSCH 202.

UNSY 315 Unmanned Aircraft Systems and Operations 3 Credits (3,0)
This course chronicles the development of Unmanned Aircraft Systems (UAS), Unmanned Aircraft Vehicles (UAV), and their role in the aviation industry, as well as an increased awareness of the importance of UAS in modern commercial and military operations. This course chronicles the development of UAS, their operations and applications. An analysis of UAS is covered, including structural and mechanical factors, avionics, navigation, flight controls, remote sensing, guidance control, propulsion systems, and logistical support. Operations of UAS include an examination and analysis of their integration with commercial and military airspace, air traffic control and civilian/federal air and ground operations. The course will also look at past, current and future applications of UAS operations, with an emphasis on commercial applications.
Prerequisites: RSCH 202.

UNSY 316 Operational and Business Aspects of Unmanned Aircraft Systems 3 Credits (3,0)
Differentiating the needs of civil aviation for Unmanned Aircraft Systems (UAS). How to implement such needs within national airspace and aviation regulatory constraints; skill sets and tools used to mitigate restrictions; create flight plan operations that can successfully employ UAS.

UNSY 318 Unmanned Aircraft Systems Robotics 3 Credits (3,0)
Integrating robotic technology into the hardware and software regimes of unmanned aviation. Examinations of control and system programming in the context of specific missions through guided discussions, simulation and the operation of actual unmanned aircraft robotic systems.

UNSY 319 Cybersecurity and Countermeasure Considerations 3 Credits (3,0)
This course provides students with an introduction to the emerging threats and hazards involving cybersecurity aspects of the design and application of unmanned systems. It includes a study of vulnerabilities within several platform components and data links. Specific emphasis will be given to payload data links and C3 (Command, Control and Communication). It features an examination of aspects such as jamming, spoofing and hacking, as well as intentional electromagnetic interference. Attention will also be given to tools and methods used to protect and encrypt platform components and data links. Students will also explore and assess risks and threats associated with unmanned systems, in particular small UAS. The aspects of countermeasures will be framed around three process steps: detection, classification and action.
Prerequisites: UNSY 316 and RSCH 202.

UNSY 321 Unmanned Systems Localization and Path Planning 3 Credits (3,0)
This course introduces students to concepts of localization, orientation, and navigation as applicable to the application of unmanned systems in various operational domains (e.g., air, space, ground, and maritime). Different navigational methods will be examined, utilizing on/off-board technologies for determining and manipulating vehicle positioning and orientation, to include visual sensors; distance and density sensing; inertial navigation; positional referencing and determination mechanisms; computational methods; and possible combinations supporting sensor fusion and dead reckoning. A required knowledge base in cartographical methods and principles will be provided to lead into presentation and discussion of pre/in-flight planning considerations and applicable error corrections. Emphasis will be placed on application of planning and optimization practices and the required navigational calculation framework.
Prerequisites: UNSY 205 and RSCH 202.

UNSY 325 Unmanned Systems Testing and Inspection 3 Credits (3,0)
This course provides students with an opportunity to explore and apply the fundamental concepts, methods, and tools associated with the testing and inspection of unmanned systems components, elements, subsystems, and unified designs. Types and methods of testing and inspection will be examined, including acceptance, compliance, quality assurance and control, reliability, and system/subsystem operational readiness. Students will gain a comprehension of the rationale and variation among test and inspection types to produce strategies and plans, map requirements, justify recommendations, and document results. Attention will be placed on the development, manufacturing, and operational (configuration and application) environments.
Prerequisites: RSCH 202.

UNSY 329 Unmanned Systems Computation and Programming 3 Credits (3,0)
This course provides students with an introduction to commonly applied unmanned systems computational technology and an opportunity to apply basic programming concepts, with a focus on methodologies for task-oriented unmanned systems applications. It includes a) the examination of system processing requirements, appropriate hardware and software design; b) the development of programming solutions to specific unmanned systems tasks; and c) testing and debugging to optimize unmanned systems solutions. Attention will be given to the tools and methods used to support the development, configuration, and application of computational architectures with respect to representative unmanned systems operations.
Prerequisites: UNSY 205 and CESC 220 and ENGR 115 and RSCH 202 and UNSY 318.

UNSY 331 Unmanned Systems Legal and Regulatory Compliance 3 Credits (3,0)
This course introduces students to the wide ranging legal requirements, regulations, and policies affecting the development and application of unmanned systems across various operational domains (air, space, maritime, and ground). It features examination of current legal frameworks and domain specific rules; compliance enforcement; challenges and issues; case examples; processes for change; intellectual property and design; and emerging concepts. Unique factors and challenges that impact domain specific types of unmanned systems such as unmanned aerial systems (UAS) and autonomous automobiles will be addressed. Attention will be given to those laws, regulations, and policies relating to the development, configuration, and application of command, control, and communication (C3), autonomous operation, and the capture and review of sensor data.
Prerequisites: RSCH 202.

UNSY 405 Unmanned Systems Operational Environments and Conditions 3 Credits (3,0)
This course provides an overview of complex environmental issues and conditions with respect to factors affecting performance and appropriateness of platform and associated components. Students are introduced to concepts of matching the mission purpose and the environment/conditions with the design and capabilities of an unmanned system. Elements of extreme temperature, terrain, weather, pressure, range, and required endurance are explored. Attention will be given to considerations relating to the development, configuration, and application of correctly identified robotic solutions based on problem sets, environments, conditions, and operational types.
Prerequisites: RSCH 202.

UNSY 410 Unmanned Systems Sensing Technology 3 Credits (3,0)
Overview of the technology and concepts used to remotely gather information to satisfy task requirements; gain understanding about an unmanned system's operating environment. Examine fundamental concepts and methods of sensing systems including the type, format, and capabilities of sensors; component and system integration; use cases; challenges and issues; and emerging concepts. Tools and methods used to support development, configuration, and application of sensing systems. Complex mission planning assignments and guided discussion.

UNSY 415 Unmanned Space Systems and Application 3 Credits (3,0)
This course will introduce students to the fundamentals and commonly applied technology for unmanned space systems. Historical perspectives, current developments, and possible future concepts will be discussed. Students will be exposed to unmanned space system specific considerations of craft design requirements, maneuvering fundamentals and control systems, and payload selection. A fundamental knowledge base in space navigation and orbital maneuvering will be provided. This course builds on other unmanned systems courses (as defined in Pre-Requisites). Previously introduced unmanned systems operational domains (air, space, ground, and maritime) will be applied towards exploration of extraterrestrial celestial bodies, such as planets, moons, comets, and asteroids. Attention will be given to the conceptual understanding of current and future challenges in unmanned space system development and employment.
Prerequisites: RSCH 202.

UNSY 421 Unmanned Systems Mission Planning 3 Credits (3,0)
This course will build on prior unmanned systems localization and path planning coursework and will introduce students to concepts of task and object oriented unmanned systems employment. Previous navigational knowledge will be applied towards specific mission objectives, incorporating considerations of point/area of interest approach planning; payload selection and employment optimization; inter/intra-system coordination and de-confliction; contingency planning; and mission assessment/evaluation. Attention will be given to application of task and objective definitions; system, sensor, and payload selection/matching; and performance based scenario planning.
Prerequisites: UNSY 410 and UNSY 321 and UNSY 405 and RSCH 202.

UNSY 431 Unmanned Systems Human Factors Considerations 3 Credits (3,0)
This course serves as an overview of human factors concepts and implications affecting the development, configuration, and application of unmanned systems. Students will be exposed to types and functions of human-machine-interfaces (HMI)s; human behavior, capabilities, and limitations; psychological and perceptual information processing; sensation, cognition, and ergonomics; and effects of autonomy. Attention will be given to considerations relating to the development, configuration, and application of HMIs used for command, control, and communication (C3), autonomous operation, and the review and manipulation of sensor data.
Prerequisites: RSCH 202.

UNSY 435 sUAS Practical Application and Assessment 3 Credits (3,0)
This course will introduce undergraduate students to safely and effectively perform small unmanned aircraft systems (sUAS) operations in support of program and educational goals, through the practical application and practice of fundamental knowledge, skills, and abilities (KSA)s. Students will participate in the review and practice of basic to advanced aircraft controls (manual and automatic), checklist and emergency procedures, flight planning, review of platform specific traits, aerial photography and post-flight processing techniques, pilot application, crew resource management, and instructor-student practical assessment. The use of both interactive scenario-based modeling and simulation and actual (live) sUAS tools helps students to establish and improve unmanned airmanship skills in settings supporting incremental exposure, progression, and assessment combined with instructor-guided feedback and practice. With the successful completion of this course a student can expect to demonstrate appropriate application of unmanned airmanship, while attaining further comprehension of key factors supporting productive, purposeful, responsible, and legal operation of sUAS. Students must acquire items detailed in the ERAU-Worldwide sUAS Toolkit at their own expense. Eligibility: Students must be U.S. citizens or permanent residents and must be physically located within the U.S., and hold an FAA Part 107 Remote Pilot Certificate while participating in the UNSY 435 course.
Prerequisites: UNSY 235 and RSCH 202.

UNSY 491 Operational Applications in Unmanned Systems 3 Credits (3,0)
Culminating experience for students in the Unmanned Systems Applications degree program. Industry growth, innovative development, and effective use of unmanned system technology across the respective domains (air, space, ground, and maritime). Major challenges within the industry including interoperability, autonomy, airspace integration, communications, education and training, propulsion and power, teaming, and regulation. Pre-Requisite: Course listed and Senior Standing.
Prerequisites: RSCH 202.

US Military Service (USMS)

Courses

USMS 101 Basic Military Science I 1 Credit (1,0)
A study of the defense establishment and the organization and development of the U.S. Army. A study of the roles that active Army forces, Army Reserve forces, and the Army National Guard play in our nation's defense. A study of military courtesy, customs, and traditions of the service. A historical perspective of the role of the different branches of the U.S. Army and the role they have played in the freedom of our nation. An introduction to physical readiness training. Course includes lectures and laboratory. Field training exercises normally include M16-A1 rifle firing, rappelling training, and airmobile helicopter operations.
Corequisites: USMS 101L.

USMS 101L Basic Military Science Laboratory 0 Credits (0,3)
Training on basic soldier tasks and skills, such as land navigation, basic rifle marksmanship and movement as a member of a fire team and rifle squad. Practical application of field craft and soldier skills in a tactical environment.

USMS 102 Basic Military Science II 1 Credit (1,0)
Continued emphasis on physical readiness training. Course includes lecture and laboratory. Field training exercises normally include M16-A1 rifle firing, rappelling training, and airmobile helicopter operations.
Corequisites: USMS 102L.

USMS 102L Basic Military Science II Laboratory 0 Credits (0,3)
Consists of Air Force customs, courtesies, health, physical fitness, field training orientation, drill and ceremonies. These courses are graded Pass/Fail.

USMS 201 Basic Military Leadership I 2 Credits (2,0)
A review of the customs and traditions of the service. The fundamentals of leadership development and the importance of understanding the principles that are important to effective leadership. This includes focus on goal setting, communication, problem solving, decision making, and group process. The course requires mandatory physical training and includes lecture and laboratory.
Corequisites: USMS 201L.

USMS 201L Basic Military Leadership I Laboratory 0 Credits (0,3)
Builds on the topics covered in 101L and 102L. Further in-depth training on basic soldier tasks and skills, such as land navigation, basic rifle marksmanship and movement as a member of a fire team and rifle squad. Practical application of field craft and soldier skills in a tactical environment.

USMS 202 Basic Military Leadership II 2 Credits (2,0)
The fundamentals of military geography and their application in the use of navigational aids for the military forces. A study of preventive medicine countermeasures and first-aid techniques that every leader must know. The course requires mandatory physical training and includes both lecture and leadership laboratory. Two weekend training exercises normally include M16-A1 rifle firing, rappelling training, and airmobile helicopter operations.
Corequisites: USMS 202L.

USMS 202L Basic Military Leadership II Laboratory 0 Credits (0,3)
This is a continuation course building on the experience and tactics of USMS 201L.

USMS 301 Adaptive Tactical Leadership 3 Credits (3,0)
Cadets are challenged to study, practice, and evaluate adaptive leadership skills as they are presented with challenging scenarios related to squad tactical operations. Cadets receive systematic and specific feedback on their leadership attributes and actions. Pre-Requisite: Complete basic military science (or given constructive credit) and be a contracted Army ROTC cadet.
Corequisites: USMS 301L.

USMS 301L Adaptive Tactical Leadership Laboratory 0 Credits (0,3)
Planning, coordination, execution and evaluation of training and activities with basic course students and ROTC program. Students develop and refine leadership skills in position of responsibility.

USMS 302 Adaptive Tactical Leadership II 3 Credits (3,0)
Cadets receive increasingly intense situational leadership challenges to build awareness and skills in leading tactical operations. Cadets review aspects of combat, stability, and support operations in preparation for the Leadership Development and Assessment Course.
Prerequisites: USMS 301 **Corequisites:** USMS 302L.

USMS 302L Adaptive Tactical Leadership II Laboratory 0 Credits (0,3)
Practice and refinement of leadership skills. Different roles assigned for students at different levels in the program. Planning, coordination, execution and evaluation of training and activities with basic course students and ROTC program.

USMS 401 Developing Adaptive Leaders 3 Credits (3,0)
A course to develop proficiency in planning, executing, and assessing complex operations, functioning as a member of a staff, and providing performance feedback to subordinates. Cadets assess risk, make ethical decisions, and lead fellow cadets.
Prerequisites: USMS 301 and USMS 301L and USMS 302 and USMS 302L **Corequisites:** USMS 401L.

USMS 401L Developing Adaptive Leaders Laboratory 0 Credits (0,3)
Different roles assigned for students at different levels in the program. Practice and refinement of leadership skills. Planning coordination, execution and evaluation of training and activities with basic course students and ROTC program.

USMS 402 Leadership in a Complex World 3 Credits (3,0)
A course in exploring the dynamics of leading in the complex situations of current military operations, examining customs and courtesies, military law, principles of war, and rules of engagement in the face of international terrorism.
Prerequisites: USMS 401 and USMS 401L **Corequisites:** USMS 402L.

USMS 402L Leadership in a Complex World Laboratory 0 Credits (0,3)
Different roles assigned for students at different levels in the program. Practice and refinement of leadership skills. Planning, coordination, execution and evaluation of training and activities with basic course students and ROTC program.

Graduate Courses

Graduate courses are numbered at 500 and above. Numbers immediately following course titles indicate lecture hours that a class meets weekly.

Graduate prerequisite courses taken with Embry-Riddle must be completed with a grade of B or better.

Embry-Riddle Aeronautical University – Worldwide courses are not necessarily offered every term, nor are they necessarily offered at all locations.

Numbers in parentheses, immediately following course titles and numbers, indicate lecture and laboratory hours that a class meets each week. For example, (3,0) signifies that the course consists of three lecture hours and zero laboratory hours weekly.

Accounting - GR (ACCT)

Courses

ACCT 510 Business Accounting 1.5 Credit (1.5,0)
Accounting concepts for business managers. Emphasizes ethical decisions to business scenarios and developing communications skills. Accounting cycle, financial statements, and accrual accounting, and understanding accounting information user Define accounting and its role in business.

Aerospace Engineering (AENG)

Courses

AENG 502 Strength and Fatigue of Materials 3 Credits (3,0)
Analysis of stress and deformation in rods, beams, plates, shells and solids using the elementary theories of elasticity and plasticity. Theories of strength, impact, fatigue and creep. Computer methods and applications.

AENG 510 Aircraft Structural Dynamics 3 Credits (3,0)
Vibrations of deformable elastic structures using the assumed modes method. Analysis of a continuous system for specialized cases. Undamped and damped free and forced vibration of single-degree-of-freedom and multiple-degree-of-freedom system. Computer programming skills are necessary.

AENG 511 Engineering Materials Selection 3 Credits (3,0)
Introduction to mechanical behavior of common aerospace materials as it relates to structural performance. Methods for strengthening and toughening of metals ceramics and composites. Materials selection basics using functions, constraints, objectives. Ashby materials property charts. Materials selection with multiple constraints and conflicting objectives and shape factors. Designing hybrid materials and composites. Case studies from general and aerospace engineering. Course project.

AENG 514 Introduction to the Finite Element Method 3 Credits (3,0)
Basic equations of the theory of elasticity. Energy principles. Formulation and assembly of stiffness matrices and load vectors for elastic solids. Modeling considerations. Solution methods Computer implementation of finite element and stress analysis procedures. Interpretation of computer solutions. Design applications.

AENG 522 Analysis of Aircraft Composite Materials 3 Credits (3,0)
Fiber materials, tapes cloths, resin systems. Theory of elastic anisotropic materials. Elastic constants for multi-ply composites. Matrix formulation. Computer analysis. Strength and theory of failure. Sources and use of experimental data. Design considerations.

AENG 525 Structural Design Optimization 3 Credits (3,0)
Review of numerical optimization techniques. Structural applications of linear and discrete methods, approximation techniques and sensitivity analysis, shape and topology optimization. Optimality criteria methods. Applications to trusses, frames and composite laminates. Optimization simulations using computer graphics software. Emphasis on modern optimization techniques linked to numerical methods of structural analysis (finite element method) through a structural design course project.

AENG 540 Structural Health Monitoring 3 Credits (3,0)
General introduction of structural health monitoring and nondestructive evaluation techniques of mechanical and aerospace structural components. Passive and active damage analysis through intelligent actuation and sensing systems. Damage detection, diagnosis, and prognosis are discussed utilizing signal processing techniques and physics based approaches.

AENG 612 Analysis of Aircraft Plate and Shell Structures 3 Credits (3,0)
Bending and buckling of plates. Cylindrical bending. Boundary value problems. Axisymmetric problems. Deformation of shells. Energy principles. Stress and stability analysis. Approximate methods. Finite element methods. Computer applications.

Aeronautical Science - GR (ASCI)

Courses

ASCI 509 Advanced Aerodynamics 3 Credits (3,0)
In this course, students will examine current flight applications and problems. Specifically, this includes transonic, supersonic, and hypersonic aerodynamics, principles of aircraft stability and control, and operational strength considerations. Emphasis is placed on the applications of the rapidly changing technological innovations in aerodynamics and the solutions to the problems created by these advances.

ASCI 514 Computer-Based Instruction 3 Credits (3,0)
This course addresses the analysis, design, development, implementation, and evaluation of web/computer-based training (W/CBT) as it applies to applications in the aviation/aerospace industry. The course offers practice in the systematic design of computer-based instruction with emphasis on tutorials, drill and practice, and simulation. W/CBT lessons are developed using available authoring systems.

ASCI 515 Aviation/Aerospace Simulation Systems 3 Credits (3,0)
The course focus is on a comprehensive examination of simulation in modern aviation/aerospace that includes history, state-of-the-art, and current research and development. Discussions focus on the extent and impact of simulator application throughout the industry and the effects on training costs and safety. Topics range from basic design principles to flight crew training for initial qualification, continuation and currency purposes. The course emphasizes implementation of training that is transferable from simulated to real world environments. Systems simulators to the simulation models used in management, flight operations, scheduling, or air traffic control, are examined in detail.

ASCI 516 Applications in Crew Resource Management 3 Credits (3,0)
In this course, students examine the common concepts of crew resource management (CRM) as developed by major air carriers and explore the theoretical basis of such training. Topics such as supervision of crewmembers, counseling, manner and style, accountability, role management, and use of simulators and computer-based instruction will be studied. Each student has the opportunity to become knowledgeable in a specific area of CRM by assisting in the development of a CRM research document as part of the course.

ASCI 530 Unmanned Aerospace Systems 3 Credits (3,0)
This course offers a conceptual approach to overall system design of unmanned aircraft and spacecraft systems, including remotely operated and autonomous unmanned aerial systems (UAS) and unmanned space systems. Course will include the concepts of communication systems, payload systems, control stations and related systems, vehicle specific systems, and support systems. The requirements for system architecture development and conceptual level assessment of major system elements will be examined as they relate to use in industry. The major system elements will be evaluated from a systems engineering perspective to include consideration for cost and weight estimation, basic aircraft performance, safety and reliability, lifecycle topics, vehicle subsystems, and system integration.

ASCI 531 Robotics and Control 3 Credits (3,0)
The purpose of this course is to analyze the concepts of modeling, design, planning, and control of robotic systems. The student will evaluate robotics and control design decisions specific to unmanned systems, including remotely operated and autonomous unmanned aerial systems (UAS) and unmanned space systems. Course topics include robotics foundations in kinematics, dynamics, control, motion planning, trajectory generation, programming, telemetry, sensor integration, remote operation, and design. Course applications include task and motion planning for utilization within unmanned system technology.

ASCI 550 Aviation Education Foundations 3 Credits (3,0)
This course assists in developing contexts and concepts in which educational problems and issues may be understood, particularly the role of aviation in education. Emphasis is placed on development, implementation and evaluation of aviation education.

ASCI 602 The Air Transportation System 3 Credits (3,0)
Air Transportation is a complex and rapidly evolving industry that plays a substantial role in global and national economies and in efforts to improve environmental quality and promote sustainable development. Major components include the human, technological, environmental and operational aspects of airports, airspace, air traffic management, aircraft and aircraft component manufacturing and design, airlines, and other airspace users. This course is foundational for the Master of Science in Aeronautics degree and focuses on the complex global air transportation system infrastructure, its strengths and vulnerabilities, and the influences by and impacts to global and national economies, environmental sustainability, and technological advancement.

ASCI 604 Human Factors in the Aviation/Aerospace Industry 3 Credits (3,0)
This course presents an overview of the importance of the human role in all aspects of the aviation and aerospace industries. Emphasis is on issues, problems, and solutions of unsafe acts, attitudes, errors, and deliberate actions attributed to human behavior and the roles supervisors and management personnel play in these actions. Students examine the human limitations in the light of human engineering, human reliability, stress, medical standards, drug abuse, and human physiology. Discussions include human behavior as it relates to the aviator's adaptation to the flight environment, as well as the entire aviation/aerospace industry's role in meeting the aviator's unique needs.

ASCI 606 Global Air Traffic Control and Management 3 Credits (3,0)
This course is designed to examine the management concepts related to technology, collaboration, and innovation in Air Traffic Control (ATC) and Air Traffic Management (ATM). Topics covered include Global Air Navigation Plan (GANP), governance restrictions, regulatory capabilities, ATM systems, sustainable infrastructure, and environmental impacts. The implications on managers of ongoing air navigation improvement programs of International Civil Aviation Organization (ICAO) Member States (SESAR in Europe; NextGen in the United States; CARATS in Japan; SIRIUS in Brazil, and others in Canada, China, India, Asia, Pacific, Africa and The Russian Federation) are analyzed.

ASCI 614 Advanced Aviation/Aerospace Curriculum Development 3 Credits (3,0)
This course will investigate the traditional manner of curriculum development and then proceeds to prepare an instructional framework for a variety of aviation and aerospace instructional programs. The course focuses on instructional strategies and delivery modalities, as well as the impact of social forces, in aviation/aerospace educational environments. Systematic approaches to planning, designing, implementing and evaluating curriculum development will also be explored.

ASCI 620 Air Carrier Operations 3 Credits (3,0)
This course is an overview of air carrier operations from the viewpoints of the cockpit flight crew, cabin crew, operational specialists, managers, and dispatchers. Topics include airline history, organization, crewmember requirements, training programs, duty time, aircraft airworthiness, dispatch, flight operations, and maintenance. Air carrier operational problems, both domestic and internationally since deregulation and 9/11, will be explored.

ASCI 623 Aircraft Design and Development 3 Credits (3,0)
This course is an overview of aircraft design and development. Included are vehicle mission, the requirements directed by economics, commercial operator requirements and requests, military and defense considerations, and research and developmental processes needed to meet vehicle requirements. Aviation and aerospace manufacturing organizations and techniques are addressed to include planning, scheduling, production, procurement, supply, and distribution systems. Aviation and aerospace maintenance systems from the built-in test equipment to the latest product support activities are explored.

ASCI 624 Global Aviation Leadership: Critical Decision Making in Air Traffic Systems 3 Credits (3,0)
This course is designed to give students in Air Traffic Management (ATM) a practical and comprehensive understanding of leadership theories and practice applicable to ATM as well as critical decision-making processes. These processes are in government and industry organizations supporting Air Traffic Management, Airport Management, Human Factors, and Safety Systems globally. Knowledge of the operational aspects of NextGen, SESAR and other international air navigation system components such as WAAS, ADS-B and PBN-OPD as they apply to ethical and moral responsibilities will be analyzed.

ASCI 625 The Role of Airports in Global Air Traffic Management 3 Credits (3,0)
This course examines the aspects of Global Air Traffic Management systems that are directly linked to airports. Airports are tangibly the beginning and end of aircraft movements within air traffic management systems. Knowledge of the operational aspects of NextGen, SESAR and other international air navigation system components such as WAAS, ADS-B and PBN-OPD that are owned, operated or occur on airport properties are critical concepts of air traffic management. The course also evaluates the influences of NextGen and other international modernized air navigation systems on airport operations management with regards to facilities, local ATC, airport tenants, airline operations, environmental impacts and community relations programs.

ASCI 634 Aviation/Aerospace Psychology 3 Credits (3,0)
This is a survey course that covers the primary areas of interest in aviation psychology. Topic areas may include the effects of alcohol on performance, aviation safety and accident investigation, cockpit and air traffic control automation, display and control issues and design, personnel selection, task analysis, workload assessment, training research and development, scale development methodologies, crew resource management, and other areas of current interest. The topic areas change periodically depending on the focus of the current research environment.
Prerequisites: MSHF 606 and MSHF 612 for MSHF.

ASCI 637 Unmanned Aerospace Systems Operations and Payloads 3 Credits (3,0)
This course focuses on the operational and payload capabilities of unmanned systems, including remotely operated and autonomous unmanned aerial systems (UAS) and unmanned space systems, under a variety of mission standards. Operational course content includes typical software and hardware installations, launch and recovery procedures, normal and emergency procedures, and the appropriate selection of payload based upon mission requirements. Students will research current and future payloads and sensor systems utilized in unmanned aircraft and space systems. An exploration of multi-mission payload applications and requirements, including state-of-the art, secure uplink and downlink telecommunications, signals intelligence, precision geo-location, airborne cellular network, and software-defined communications relay will be conducted.

ASCI 638 Human Factors in Unmanned Aerospace Systems 3 Credits (3,0)
This course is designed to present an overview of the importance of major human factors issues associated with unmanned systems, including remotely operated and autonomous unmanned aerial systems (UAS) and unmanned space systems operations across a variety of platforms employed in both commercial and military operations. Emphasis will be placed on the differences and commonalities between occupied and unoccupied systems, with a focus on the human factor issues encountered by individual unmanned operators (pilots and sensor operators) as well as UAS teams. Students will become familiar with human factor issues surrounding unmanned launch, recovery, long duration operations, fatigue, human performance, Ground Control Station (GCS) design, use of automation, Situation Awareness (SA), Crew Resource Management (CRM), integration into the National Air Space (NAS), attitudes and perspectives of both government agencies and public entities, use of technology to compensate for no-pilot-onboard, and regulatory issues and solutions. Discussions of human capabilities and limitations as it relates to safe and effective operation of unmanned aircraft and space systems in a variety of commercial and military operations will be included.

ASCI 642 International Aviation Policy 3 Credits (3,0)
This course addresses international management and aviation policy through the examination of major trends and issues challenging the aviation manager. Cross-cultural situations are evaluated from the perspective of interpersonal relationships in a diverse domestic and foreign environment, and in the context of evolving global trends. Strategic planning and negotiation are examined by defining the major tasks involved in organizing for international aviation, such as designing the organization and staffing. Managing workforce diversity is examined from culture-based and comparative perspectives, along with the function of control through the examination of effective control systems for overseas operations that ensure environmental interdependence through social responsibility and ethical behavior.

ASCI 645 Airport Operations and Management 3 Credits (3,0)
This course focuses on management and operation of public use airports. Topics covered include airport and airport systems, airport operations management and airport administrative management. Within these areas, airport organization, the airfield, airspace, air traffic control, airport certification management, terminal and ground access, financial management, airport's economic/political/social roles, airport planning including capacity and delay and finally, the future of airport management will be covered.

ASCI 674 Project Management in Aviation/Aerospace 3 Credits (3,0)
This course examines the concepts and principles of project management in the aviation/aerospace industry. It addresses the ten knowledge areas of project management: integration, scope, time, cost, quality, human resources, communications, risk, procurement, and stakeholders. Process areas of initiation, planning, execution, control, and closure of projects are studied. Emphasis is placed on strategies for developing projects in an aviation/aerospace environment. Project management software is utilized as appropriate.

ASCI 691 Graduate Capstone Course 3 Credits (3,0)
The Master of Science in Aeronautics (MSA) Graduate Capstone Project (GCP) course is the culminating effort of the student's entire learning experience in the MSA degree. It is a written document on an aviation/aerospace topic that exposes the student to the aspects of research and technical writing. This course is included in the MSA curriculum to provide the student with the opportunity to research a project of special interest, but not to the level of a thesis. This is a required course for those students who choose not to write a thesis. Students will work with designated faculty to formulate, develop, and complete the aviation/aerospace project. The completion of the GCP course is designed to document significant evidence that all Program Outcomes have been met, and provides the student evidence of experience to show to current and prospective employers. The GCP course will be taken at the end of the student's degree program.

ASCI 693 Current Research Problems in Aviation/Aerospace 3 Credits (3,0)
Equips students with applied research techniques and skills. Current aviation/aerospace problems are resolved using accessible qualitative and quantitative data for rapid analysis, creating recommendations suitable for industry practitioners. Problems encountered as an aviation/aerospace professional working in the industry are solved. Synthesizes current, relevant literature, challenging students to critically analyze and interpret research findings of others as a foundation for creative problem solving. Presents forum for debate on current aviation/aerospace issues resulting in potential strategic solutions. Requires students to present applied research designs, rationale, and solutions for evaluation.

ASCI 699 Special Topics in Aeronautical Science 1-3 Credit (1-3,0)
Students may elect to perform a special, directed analysis and/or independent study in an area of particular interest. A detailed proposal of the desired project must be developed and presented to the Program Chair and Department Chair of the degree program being sought for faculty review and recommendation at least three weeks prior to the end of registration for a term.

Airline Management (AIRM)

Courses

AIRM 600 Airline Cost Efficiency Practices and Value-add Strategies 3 Credits (3,0)
Continuous improvement, cost cutting plans, revenue maximization through strategic segmentation, and monetizing key units and products to optimize profitability and returns.

AIRM 605 Revenue Management and Pricing with Simulation in Times of Crises 3 Credits (3,0)
Fundamental and principles of airline revenue management (RM).

AIRM 610 Airline Business Diversification: Generating Ancillary Revenues 3 Credits (3,0)
Ancillary revenue such as a la carte features, commission-based products, frequent flier programs, and advertising sold by the airline. Includes low-cost carriers and premium legacy carriers.

AIRM 615 Airline Business Models and Competitive Strategies 3 Credits (3,0)
Management skills, strategic thinking in airlines. Network. Fleet. Schedule. Marketing, revenue management in a competitive market.

Airworthiness Engineering (AWEN)

Courses

AWEN 502 Airworthiness Process and Procedures 3 Credits (3,0)
Introduction to Airworthiness concepts. Overview of Civil and Military organizational structures in aircraft certification all types. Roles and Responsibilities of the different types of FAA Representatives. FAA rule-making, advisory process, production rules, certification procedures, Exemptions, and Special Conditions. Types of Airworthiness Approvals: Commercial, Military Derivative Aircraft. Roles and Responsibilities of the different Military Aviation Authorities. Military certification procedures, Non-Compliances, civil & military risk acceptance.

AWEN 510 Aircraft Airworthiness Engineering Principles 3 Credits (3,0)
Guiding, physical and scientific principles related to the definitions of airworthiness requirements of aircraft are studied. A general treatment of flight dynamics, mission operations, maintenance and the life cycle environments are studied as they relate to established criteria used in airworthiness certification requirements for manned and unmanned air vehicle systems. The approach is foundational, adding substance to the qualitative nature of MIL-HDBK-516C while exploring the relevant military and civilian specifications such as the Joint Service Specification Guides (JSSG) and Title 14, Code of Federal Regulations as they apply in the formulation of an air system's airworthiness certification basis. Principles of aircraft mission definition, systems and components design, substantiation, validation, manufacture and serviceability are addressed.
Prerequisites: AWEN 502 and UASE 501 and SYSE 505.

AWEN 552 Continued Airworthiness 3 Credits (3,0)
Activities necessary to ensure continuing safety of flight, reliability, and dependability. Principles and requirements for establishing plans and instructions of all maintenance and sustainment actions needed to accomplish the same in order to assure the continuing airworthiness of an air-system throughout its life cycle. Efforts needed for ensuring the continued airworthiness of existing air-systems when modified, altered, or upgraded from its approved certified condition, building upon the fundamental concepts covered in prerequisite courses. Commercial, military, domestic, and foreign airworthiness requirements; incorporating airworthiness into project planning for air-systems; proper identification of hazards; risk assessment, modeling, and mitigation; and the role of airworthiness within Safety Management Systems.
Prerequisites: AWEN 502 and AWEN 510 and MATH 546 and SYSE 505 and UASE 501.

AWEN 690 Graduate Research Project 3 Credits (3,0)
This capstone course provides students with a project-based opportunity to apply the needed precepts and notions of airworthiness certification. The student will complete a project that provides significant evidence of experience in airworthiness studies. Students will work with designated faculty to formulate, develop, and complete the project. The completion of this capstone course is designed to document significant evidence that all Program Outcomes have been met and provides the student evidence of experience to show to current and prospective employers. This capstone course will be taken as the last class in the student's degree program.
Prerequisites: AWEN 502 AWEN 510 AWEN 552 UASE 501 SYSE 505 MATH 546.

Aviation & Aerospace Sustainability (AASI)

Courses

AASI 600 Sustainable Aviation and Aerospace Perspectives 3 Credits (3,0)
An examination of aviation/aerospace's interaction with the world from the viewpoint of positive and negative effects. Short term and long-term effects will be investigated to highlight the significant challenges associated with forming a sustainable future for the industry by examining case studies and best management and technology practices.

AASI 605 Aviation and Aerospace Sustainable Organizations 3 Credits (3,0)
Investigate sustainable operations of aviation and aerospace organizations. Analyze how the distinctive operations of aviation and aerospace organizations could move along with sustainability practices. Sustainable strategies must be a core element within aviation and aerospace organizations; the development of a sustainable strategy should consider the distinctive characteristics of the industry and the interactions among its stakeholders.

AASI 610 Aviation and Aerospace Organization Development, Leadership & Workforce Development 3 Credits (3,0)
Aviation and aerospace industries reach across cultural and international boundaries. This course encompasses contemporary organization development (OD) and interventions that help organizations balance economic, social, and environmental objectives and behavioral issues in the industry. The course examines the principles of organization development, change, leadership, cross-cultural communications, diversity, and social equity.

AASI 620 Best Practices for Aviation and Aerospace Sustainability 3 Credits (3,0)
Systems in aviation and aerospace are complex and diverse across many global platforms. This course investigates the design, development, operation, maintenance, and decommissioning of flight vehicles and the systems needed to keep them sustainable by applying forward-thinking engineering, environmental, and best practices to determine sustainable solutions. This course will also present the accelerating development practices that can benefit international aviation's contribution across the main pillars of sustainability.

AASI 625 Sustainability Policy, Ethics & Legal Topics in Aviation and Aerospace 3 Credits (3,0)
For any type of aviation or aerospace activity, the quest towards a more sustainable future must integrate policies, legal requirements, and ethical concerns. Legal considerations include international treaties along with federal, state, and local laws and regulations governing environmental, intellectual property, aftermarket product ownership rights and others. These legal obligations form a crucial component of sustainability for any organization.

AASI 630 Sustainable Aviation and Aerospace Organizational Communications 3 Credits (3,0)
In this course, students will investigate the current communications methods utilized in corporate communications within the aviation and aerospace industry. Many aviation and aerospace organizations now encompass increasingly global boundaries. As such, the necessity to communicate clearly and effectively across multiple types of groups inside as well as outside an organization is a sustainable responsibility. Students will examine best practice communication methods utilized by industries of all types to identify best practices or updated methods of communication to promote sustainability in the aviation and aerospace industry.

AASI 635 Operational Excellence for Aerospace/Aviation Sustainability 3 Credits (3,0)
This course focuses on operations for aviation and aerospace companies under the context of sustainability. Companies can boost effectiveness and customer service while increasing safety and reducing environmental impact simultaneously, both important for the aviation industry and all types of industries and companies. This course focuses on different ISO standards, sustainability guiding principles, risk management standards, methodologies, results-oriented quality tools, and other Models to achieve operational excellence in the sector.

AASI 691 Aviation and Aerospace Sustainability Graduate Capstone 3 Credits (3,0)
The MSAAS Capstone Course is the culminating effort of the student's entire learning experience. The student will complete an individual project that provides significant evidence of experience in aviation and or aerospace studies. Students will work with designated faculty to formulate, develop, and complete the aviation and or aerospace sustainability project. The completion of the Capstone Course is designed to document significant evidence that all Program Outcomes have been met. The Capstone Course will be taken at the end of the student's degree program.

Aviation Cybersecurity (MACY)

Courses

MACY 510 Security Engineering and Management 3 Credits (0,3)
This course is designed to teach how cybersecurity should be integrated early on in any project or other use of information in a computer or network setting. Emphasis is placed on the relationship between information and the operation and mission of an agency, business, organization, or other entity. This course specifically ties together information and communications technology (ICT), cybersecurity, business, policies, and ethics. Topics include security engineering concepts (although this is not an engineering course), distributed systems, network attacks and defense, security management, encryption, the role of training and education, and more.

MACY 515 Foundations of Aviation Cybersecurity 3 Credits (3,0)
This course examines how cybersecurity impacts the entire aviation ecosystem that includes the supply chain, manufacturing, maintenance, airports, and aircraft. Cyber threats to commercial airplanes, unmanned aircraft (drones), air traffic control, and aerospace will also be analyzed. The course will discuss the threats to aviation security and the recommended mitigations of those threats. Humans play a critical role in cybersecurity. They can be the weakest point of the attack or the first line of defense. This course will examine the role of humans in aviation cybersecurity. It will also review regulations and best practices in aviation cybersecurity and discuss how to incorporate them into an operational plan of securing aviation systems.

MACY 516 Operational Technology Risks in Aviation - IoT, ICS, SCADA 3 Credits (3,0)
This course explores the operational technology (OT) risks in aviation. The course examines the use of OT in aviation, including the Internet of Things (IoT), Industrial Control Systems (ICS), and Supervisory Control and Data Acquisition (SCADA). OT is used in several ways in the aviation industry, including aircraft manufacturing, maintenance, tracking of passengers and luggage, passenger entertainment, building maintenance, avionics, and more. Many of these OT have poor security and are unable to prevent cybersecurity attacks. It is this connectivity and vulnerability that make the study of OT so crucial in aviation cybersecurity.

MACY 517 Manned and Unmanned Systems Cybersecurity 3 Credits (3,0)
This course evaluates the unique cybersecurity challenges and environment of unmanned aviation systems. New and emerging threats will be analyzed as this aviation field continues to grow and evolve. The course will focus on jamming, spoofing, hacking, and electronic interference of unmanned systems.

MACY 520 Aviation Cybersecurity Threats, Actors, Tools, and Techniques 3 Credits (3,0)
This course explores the cybersecurity threats and actors that pose risks to aviation. It reviews both the tools and techniques used by malicious actors and those used to defend against the threats and attacks. This course provides the fundamentals of developing an incident response plan and operational defense plan to prepare an organization to respond to cybersecurity threats and attacks.

MACY 525 Aviation Cybersecurity Risk Management and Resilience 3 Credits (3,0)
This course investigates the cybersecurity risk management process including risk identification, assessment and evaluation, mitigation, and monitoring and apply that process to aviation cybersecurity. Cybersecurity risk assessment begins with the need for a thorough identification of assets, followed by both qualitative and quantitative risk assessment to evaluate and prioritize risks. This course will emphasize the goal of cybersecurity resilience in the aviation domain that is focused not only on prevention and detection, but also on recovering from cybersecurity attacks. A comprehensive incident response strategy will be developed as an essential element of resilience.

MACY 526 Cybersecurity Standards, Laws, and Regulations 3 Credits (3,0)
This course provides an introduction to the various international and national standards, laws, and regulations that pertain to both the cybersecurity and aviation ecosystems. This course will look at some of the various institutions such as the International Civil Aviation Organization (ICAO), U.S. Federal Aviation Administration (FAA), and European Union Aviation Safety Agency (EASA) that proscribe regulations and statutes. Compliance with established standard can assist in risk mitigation. Students will also analyze situations where standard from various agencies may conflict with each other.

Aviation Finance (FIND)

Courses

FIND 695A Topics in Aircraft Finance I 2 Credits (2,0)
This course is the first of the three required courses for the ISTAT University diploma in aircraft financing. This course introduces students to aircraft selection strategy basics from an airline and leasing company's perspective, including important considerations of mission capability, availability, economics, and availability of financing. In addition, the course provides a detailed review of aviation legal and regulatory framework and discusses applicable governing laws, conventions and treaties, lessor and operator liability, and aviation insurance. Students will also learn principles of aircraft leasing versus ownership, including pros and cons of aircraft ownership, types of leases, lessor and lessee relationship and obligation, and lease accounting. Pre-Requisite: FINE 518 or equivalent or permission of instructor.

FIND 695B Topics in Aircraft Finance II 2 Credits (2,0)
This course is the second of the three required courses for the ISTAT University diploma in aircraft financing. This course introduces students to airline credit analysis and provides them with tools and techniques to conduct quantitative and qualitative credit analysis of domestic and international airlines. Student will also learn sources of capital and financial instruments that airlines and leasing companies use in aircraft funding. In addition, the course provides a detailed review of the fleet portfolio management and risk management that leasing companies employ to reduce their exposure to aircraft residual values, foreign exchange, interest rate, and other risks. Pre-Requisite: FIND 695A or permission of the instructor.

FIND 695C Topics in Aircraft Finance III 2 Credits (2,0)
This course is the last of the three required courses for the ISTAT University diploma in aircraft financing. This course provides an in depth review of the principals of maintenance reserve, maintenance reserve economics and rate setting and maintenance reserve management, transactionmodeling for aircraft returns (includes advanced excel simulations) and lease negotiations between the lessor and the lessee Students will also learn advanced excel skills (calculation of IRRs, Multiples, NPV analysis, return of capital, pay back periods, lease earnings) test the model functionality and interpret data from them. Pre-Requisite: FIND 695B or permission of the instructor.

Aviation Maintenance - GR (MAVM)

Courses

MAVM 601 Leadership in Global Aviation Maintenance Organizations 3 Credits (3,0)
The course focus is on the leadership role in Global Maintenance Organizations principles and application to evaluate and implement a maintenance philosophy that supports a global aviation maintenance organization. The course addresses the leadership of subordinate managers and supervisors through the communication of organizational philosophies and directives, including prioritizing assigning and tracking goals, objectives, and standards.

MAVM 605 Global Maintenance Resource Management 3 Credits (3,0)
In this course, students will examine the leadership role in Maintenance Resource Management (MRM) principles and applications, to include compliance with Federal Aviation Administration and European Aviation Safety Agency guidelines. Specific emphasis is placed on management's role in the five pillars of MRM: communication, decision-making, situational awareness, workload management, and teamwork skills, as they pertain to awareness and mitigation of latent and active failures. The overall objective is to manage maintenance technical skills, interpersonal skills, and human performance and cognition in a way that increases communication effectiveness and enhances safety. Included are the foundations in Crew Resource Management, the dirty dozen, and case studies in aircraft accidents attributed to maintenance failures.

MAVM 609 Aircraft Maintenance Management 3 Credits (3,0)
This course features a detailed analysis of commercial air carrier and general aviation aircraft maintenance that includes regulation, organization and structure, capabilities and limitations, maintenance levels, inspection and reporting requirements, and prevention and correction inspections. Case studies of typical and unique maintenance scenarios are utilized. A major course objective is to heighten awareness of the critical interface of maintenance with flight, supply, and training activities.

MAVM 615 Strategic Management of Global Maintenance, Repair and Overhaul (MRO) Operations 3 Credits (3,0)
This course covers the concepts and management fundamentals of Maintenance, Repair and Overhaul (MRO) operations in a dynamic and complex global industry. The course addresses strategic management and control of scheduled and unscheduled inspections, maintenance and repair, including cost projection, analysis, maintenance trends and maintenance recorded keeping for efficiencies in operations. Compliance with national and international laws and regulations applicable to global MRO operations are explored.

MAVM 620 Project Management for Aviation Maintenance 3 Credits (3,0)
This course provides the student with project management fundamental techniques and principles utilized within the aviation maintenance industry to increase efficiency in managing resources in a global business environment. The content of this course addresses the development of strategies to effectively manage a global aviation maintenance organization and the requirements to balance project constraints of scope, quality, schedule, budget, resources, and risks. The five Process Groups of Initiating, Planning, Executing, Monitoring and Controlling, and Closing are covered, as well as the aspects of controlling and managing aviation maintenance tasks from inception to completion. Software will be used to analyze the cost, schedule, staffing, and resource allocations, as well as to demonstrate the value of automated calculations, record keeping, and reporting related to managing aviation maintenance.

MAVM 625 Trends and Challenges for Global Aviation Maintenance Organizations 3 Credits (3,0)
Today the technology, processes and organizational structural changes facing global aviation maintenance entities are evolving faster than in previous times. To respond appropriately to the trends and challenges aviation maintenance leaders must be abreast of the issues in order to respond with agility and acuity. In this course, current emerging trends such as prognostics, Artificial Intelligence (AI), cybersecurity, additive manufacturing, sustainability, drones as maintenance tools as well as other topics will be investigated to gain a better understanding of not only impacts to aviation maintenance organizations but the opportunities.

MAVM 644 Integrated Logistics In Aviation Management 3 Credits (3,0)
This course centers on elements of a modern integrated logistics system. The organizational structure, inventory management, principles of warehousing, traffic management, international logistics, and quality management principles as they apply to logistics are key elements. The impact of just-in-time systems and quality management principles on physical distribution and their relationship with integrated package and cargo carriers, advancements in intermodal transportation, and the deregulation of the transportation industry are probed. The characteristics of system design to meet requirements of reliability, maintainability, and supportability are examined, as is the economic feasibility of a logistics system, including Life-Cycle Cost Analysis methods. The explosion of computer technology and its effect on electronic data interchange capability as they influence logistics policies and practices are explored. The use of computer software to solve logistics problems is introduced.

Aviation Safety (MSAS)

Courses

MSAS 611 Aviation/Aerospace System Safety 3 Credits (3,0)
History of system safety. Risk management, hazard analysis, and task analysis. The impact of system safety throughout life cycle of the system. Role of system safety in aircraft certification. Impact of new technology on aviation/aerospace system safety.

MSAS 612 Aviation/Aerospace Industrial Safety Management 3 Credits (3,0)
Health, safety, and environmental issues in workplace aviation and aerospace nonflight situations. History of industrial safety. Roles and relationships between government, corporation, safety management and the worker. Non flight-related federal, state, and local regulatory requirements and advisories. Developing management leadership and employee involvement in managing health, safety, and environmental (HSE) issues. Workplace industrial risks. Training programs to sustain HSE programs.

MSAS 615 Aviation/Aerospace Accident Investigation and Analysis 3 Credits (3,0)
Collecting, preserving and reconstructing accident scene data. Regulations governing accident reporting and investigation. Roles of federal and international agencies. Methods, techniques, and procedures for accident investigation. Witness interview techniques. Accident scene safety. Crash survivability.

MSAS 621 Aviation/Aerospace Safety Program Management 3 Credits (3,0)
Planning and managing an effective aviation safety program. Principles and theories of key aviation Safety Management System elements. Monitoring and measurement of aviation safety performance. Aviation safety team member positions, typical roles, job description, responsibilities, personnel requirements, and functions of personnel involved in the aviation safety management process. Safety audits and inspections, performance criteria and evaluation programs, job safety analysis, and trend analysis programs. Aviation safety promotion and safety culture.

MSAS 627 Aviation Safety Data Management and Analysis 3 Credits (3,0)
Collection, management, analysis and dissemination of aviation safety data. Current aviation safety data sources and analysis tools used to isolate aviation safety issues and determine solutions. Parties responsible for managing aviation safety data. Presentation of data to various stakeholders. Processes in place to guarantee data integrity, security, and privacy.

Business - GR (BUSW)

Courses

BUSW 604 International Business Administration 3 Credits (3,0)
Analyze major issues in the operation of international business including structure, location, and strategic planning; evaluate foreign market entry methods, foreign currency exchange issues, hedging, and the International Monetary Fund; analyze human resource issues including culture, communications, labor force management, teamwork, and ethics; evaluate trade theories, tariffs, and other barriers to trade.

BUSW 635 Business Strategy for Managers 3 Credits (3,0)
Long-term planning and management tools to formulate the organization's strategic vision and policies. Application of the concepts are applied to the domestic and international activities of organizations to create a sustainable competitive advantage.Pre-Requisite: Should be last course taken of the MBAA core.

BUSW 699 Special Topics in Business Administration 1-3 Credit (1-3,0)
In this course, students elect to perform a special, directed analysis and/or independent study in an area of particular interest. Candidates selecting this elective must prepare a detailed proposal for the desired project and present the proposal to the graduate program chair or department chair for faculty review. Proposals must be submitted at least four weeks prior to the start of the term in which the elective is being taken.

Business Administration - GR (MBAA)

Courses

MBAA 612 Air Carrier, Passenger, and Cargo Management 3 Credits (3,0)
The course provides students with a broad perspective of passenger and cargo air carrier management. Topics include the role of air transportation in global economic development, alternative strategic approaches to route structure and product design, fleet selection, finance, and revenue management. Distribution systems including the role of travel agencies, freight forwarders, global distribution systems, and Internet portals are explored. The regulatory foundation of international aviation, the effects of liberalization and privatization, and emerging global alliances receive attention. The course concludes with a review of the evolving role of governments, airports, and air carriers in protecting the security of passengers and cargo.

Business Analytics - GR (BUAN)

Courses

BUAN 505 Information Analytics and Visualization in Decision Making 3 Credits (3,0)
One of the most potent models of the decision process is the OODA Loop -- that we Observe, Orient, Decide, and then Act. Key to this or any other control and decision (or cybernetic) process is that vast quantities of raw sensory data about the outside world must be processed, abstracted, and then presented in contrast and conjunction with the knowledge previously generated and retained. This two-step process -- the reduction, analysis, filtering and abstracting of data into knowledge, and its presentation in formats and fashions that support the decisions that must be made -- is the subject of this course. The relationships between such analysis and visualization will be examined in the context of business and organizational decision-making and decision support systems concepts.

BUAN 522 Business Analytics, Social Network and Web Analytics 3 Credits (3,0)
Analytics is the application of techniques to identify important observations and patterns in data. Analytical techniques can be used to overcome the practical challenges presented by data, such as the challenges presented by data volume, variety, velocity, and other properties. This includes application of techniques of data reduction, filtering and analysis in order to identify, measure and assess key business indicators. This course focuses on the business rationale for and application of analytics including exploration of how decision-making processes can and should be driven by the results of well-crafted analytics processes. In particular, the course focuses on both the need for organizations to more fully understand, appreciate and exploit so-called "soft" or "unstructured" data -- the things human beings say to each other, in uncontrolled and unformatted ways, on various social media. Search histories and other "temporary" data, not normally revealed by traditional search engines, will also be examined.

BUAN 523 Data Mining for Business Analytics 3 Credits (3,0)
Data mining is both finding the right data in one's file systems or data warehouses, by applying smarter search and filtering criteria, as much as it is the reduction, analysis and presentation of that data in meaningful ways. While many of these techniques are statistical in nature, many rely on applied artificial intelligence algorithms - so-called "machine learning" - to help the organization's managers, accountants and doctors in "discovering" new knowledge in the sea of data that they already have, but cannot digest without significant software help.This course surveys methodologies useful for data mining for business analytics and guides the student in identifying the data mining process from the data exploration phase to the different predictive techniques.

BUAN 524 Applied Business Intelligence and Analytics 3 Credits (3,0)
Business intelligence (or BI) and analytics is both a process and a product. The product is the timely, precise, high-value and actionable business insights that management needs to make decisions. The process is the gathering, collating, analyzing, and assessing of many different kinds of information that lead to those insights. Business intelligence processes and analytics products can have a profound impact on corporate strategy, performance and competitiveness; and much like intelligence processes and products in the military and national security arenas, BI and analytics can have positive or negative impacts upon the organization depending upon how it is done and how it is used (or misused). This course presents students with both the theoretical concepts and practical applications of BI and analytics, and examines some predictive analytics techniques using SAS(c) Enterprise Miner and Text Miner.

BUAN 530 Business Analytics for Managers 3 Credits (3,0)
Business analytics refers to ways a manager can use data to gain insights and make better decisions. This course will help the student think critically about data and data analysis in an effort to solve managerial problems using different organizational data streams. In addition, the use of key performance indicators along with data presentation tools such as scorecards and dashboards will help managers engage in evidence-based decision making.

Co-Operative Education & Internship - GR (COIN)

Courses

COIN 696 Graduate Internship 1-3 Credit (1-3,0)
Temporary professional or industrial work appointment made available to students enrolled in graduate programs at the University. An internship provides graduate students with an opportunity to extend their academic endeavors through the application of the theories and philosophies studied in the classroom to specific professional activities coordinated by the University between offering organizations and the graduate student. Prior approval of the graduate program chair is required.

Emergency Services - GR (MSES)

Courses

MSES 510 Crisis Emergency Risk Communication 3 Credits (3,0)
This course focuses on communication during crisis in the context of emergency services. Students will analyze the goals of Crisis Emergency Risk Communications. The intended audiences of these communication efforts are emergency service workers at all levels of an organization.

MSES 520 Psychological Issues Among Emergency Service Personnel 3 Credits (3,0)
This course explores issues related to the reactions of emergency service personal responding to serious crisis events. It provides perspectives on psychological effects and covers supportive and practical assistance available in the aftermath of disasters as well as more commonplace critical events, e.g., dealing with the psychological aftermath of accidents, PTSD, robberies, suicide, homicide, drug related issues, or community violence. The course examines such issues from the perspective of emergency service personnel and organizations, including, working conditions unique to their respective positions, common and novel stressors inherent in their work, normal and abnormal adaptation to occupational stress and trauma, and research pertinent to resilience and recovery in emergency personnel. Students learn the effects of these issues on psychological functioning (cognitive and affective), risk factors and assessment, clinical intervention, operational support, the role of organizational culture and resources for follow-up care and treatment.

MSES 530 Statistics in the Public Sector 3 Credits (3,0)
Provides students with analytical knowledge and tools necessary to acquire, manage and analyze data from new and existing sources. Students will learn how to evaluate the quality of analyses conducted by others and how to communicate statistical data to decision-makers in the public sector.

MSES 550 Atmospheric Conditions in Emergency Services 3 Credits (3,0)
An overview of meteorological processes, focusing on the considerations and impacts of weather and climate in emergency management, planning, and services. Topics include: atmospheric structure and circulation, atmospheric kinematics and thermodynamics, mid-latitude and tropical cyclones, convective and non-convective weather features, local wind phenomena, climate, and fundamental concepts in weather analysis and forecasting. Assignments and projects will focus on application using internet-based weather products, providing the student with practical experience in making informed weather-sensitive decisions.

MSES 560 Ethics in the Public Sector of Emergency Services 3 Credits (3,0)
This course explores basic ethical principles with a specific focus on the public sector of emergency service occupations. Ethical challenges, as they relate to the emergency services, including both emergency related incidents and ethics that govern the operation of an emergency services department or public sector organization will be covered. Students will apply fundamental ethical theory to the real-world situations encountered in these occupations.

MSES 690 Capstone 3 Credits (3,0)
This master's degree program is designed for individuals seeking advanced knowledge in emergency services, hazard mitigation and preparedness, disaster response, recovery, and homeland security. With its emphasis on critical thinking, leadership skills and current research, the degree is most appropriate for those who wish to extend their education beyond foundational fire and emergency services science, theory and practice. The student will receive advanced knowledge in all parts of Emergency Services, Emergency Management, and Homeland Security. All three areas are components of disasters and large- scale events. This degree will prepare students for possible careers in fire and emergency services, disaster management, emergency management, higher education and research, public policy development, organization management, leadership, and terrorism response. The Capstone is the last course taken in the MSES program. All coursework must be complete before attempting the capstone.

Engineering Management (EMGT)

Courses

EMGT 500 Managing in the STEM Environment 3 Credits (3,0)
Application of management skills specific to the STEM environment. Technical communication skills are emphasized as a component of STEM management professionalism.

EMGT 505 Professional Standards 1.5 Credit (1.5,0)
Application of ethical approaches to situations encountered in the STEM environment. Application of ethical thinking in workplace dilemmas. Introduction of professional ethical codes.
Prerequisites: EMGT 500.

EMGT 510 Project Scheduling 1.5 Credit (1.5,0)
Projects are defined, and the project schedule characterized by scope, project activities, and resource assignments.
Prerequisites: EMGT 500.

EMGT 520 Quality for Projects and Operations 3 Credits (3,0)
Quality thought leaders introduced as a foundation for quality management systems. Foundational quality management techniques such as statistical process control.
Prerequisites: EMGT 500.

EMGT 620 Technology and Innovation Management 3 Credits (3,0)
Creation of technology roadmaps. Implementation of configuration policy and practice in complex systems. Introduction to intellectual property development, distribution and protection. Analysis of strategic frameworks and organizational structures for innovation.
Prerequisites: EMGT 500.

Finance and Economics - GR (FINE)

Courses

FINE 518 Corporate Finance 3 Credits (3,0)
Theoretical and practical approaches to effective financial management. Planning, analysis, and control of investments (e.g., capital budgeting, risk and diversification); short and long-term financings (e.g., debt and equity); financial derivatives (e.g., options and futures); making ethical financial decisions. Pre-Requisite: ACCT 510 if student is in the 2021-2022 catalog or newer.

FINE 523 Advanced Aviation Economics 3 Credits (3,0)
This course pursues an economic analysis of the global airline industry. Topics include the history and economic rationale of government regulation and the effects of worldwide liberalization, demand for air transportation and modeling, pricing and revenue management, supply and route architecture, cost structure and methods of control, and fleet selection and financing.

FINE 610 Budgeting and Finance for R&D 3 Credits (3,0)
Financial analysis common to STEM context. Time Value of Money analysis including the impact of inflation and taxation. Modeling of financial scenarios using software applications.
Prerequisites: EMGT 500.

FINE 615 Investments 3 Credits (3,0)
The course provides a survey of investments including security markets, investment vehicles, investment analysis, and portfolio management. Specific topics include the concept of risk and return, types of financial instruments, security valuation, mechanics of trading, the survey of investment companies, asset allocation for individual and institutional investors, the concept of efficient markets, equity and bond portfolio management, and portfolio performance evaluation. The course is taught from the viewpoint of both an individual and institutional investor. The course uses case studies from the airline and aerospace industries, Web-based investment simulation, and current economic and capital market information to provide practical application of the course materials.
Prerequisites: FINE 518 or FINE 610.

FINE 618 Advanced Corporate Finance 3 Credits (3,0)
The air travel industry is complex, capital-intensive and in the midst of volatile, international markets. Industry players rely on financial instruments to raise capital and manage risk. Using MBAA 518 as a foundation, this course examines the financial structures, tools and models used by industry. It covers leasing, fractional ownership, mergers and acquisitions, bankruptcy, risk management, foreign exchange, capital allocation, and cash and tax management. The course uses articles and cases to explore advanced financial concepts vital to the industry.
Prerequisites: FINE 518 or FINE 610.

FINE 628 Introduction to Financial Engineering: Futures and Options 3 Credits (3,0)
This course examines the use of forwards, futures, SWAPS and other financial derivatives for hedging, arbitrage and speculative purposes in the global environment. The course focuses on how firms use these instruments to manage risks such as exchange rate risk, interest rate risk and commodity price risk. The emphasis is on understanding the mechanics, valuation and management techniques behind financial engineering using these derivatives.
Prerequisites: FINE 518 or FINE 610.

FINE 653 International Finance 3 Credits (3,0)
Apply international financial considerations in the development of corporate financial policy; exchange rate behavior, risk, management and asset management from a global perspective.
Prerequisites: FINE 518 or FINE 610.

FINE 673 Global Economic Analysis 3 Credits (3,0)
Builds three economic models for markets in real goods and services, credit, and foreign exchange. Apply models to government economic policy initiatives and external shocks on an economy.

High Reliability Organization (HROM)

Courses

HROM 510 Enterprise Risk Management 3 Credits (3,0)
Risk identification, assessment, and response across an enterprise. Quantitative and subjective tools to define and quantify strategic, operational, and functional risk. Evaluation of the risk appetite. Integration of risk in the decision-making process.
Prerequisites: Admission to MBAA MSEM or MSM.

HROM 520 Organizational Resilience 3 Credits (3,0)
Organizational resilience and agility in a High-Reliability Organization (HRO) context. An in-depth study of the thinking and actions of reliable and resilient people and organizations. Leading in a complex environment including change management, promoting innovation, crisis and disruption management, and the creation of a culture of resilience.

HROM 530 Modeling and Decision-Making 3 Credits (3,0)
Introduction to statistical techniques and decision-making tools for the high-reliability organization.

Human Factors (MSHF)

Human Factors Courses

MSHF 606 Human Cognition 3 Credits (3,0)
This course examines human cognitive processes, both simple and complex, and normal human cognitive functioning. It provides an overview of what human cognition is and what it involves. It examines the processes by which humans gather data and information, including how humans sense and perceive the surrounding environment to how humans recall and process data and information from all forms of memory. The course also examines the impacts of constructs such as attention, sensation, and perception on those processes. Next it examines how humans organize knowledge in the mind, as well as the impact language has on doing so. It also examines the impact of reasoning and creativity on the processes of risk assessment, problem solving, and decision making. Finally the course provides an overview of human decision making strategies, including the differing requirements, strengths, and weaknesses of each strategy, as well as of strategies for decision making in dynamic environments.

MSHF 612 Human Performance, Limitation, and Error 3 Credits (3,0)
This course examines the psychological and physiological performance capabilities of humans as related to human cognition. It also examines the limitations of that performance, both common and individual, and how these limitations are impacted by systemic variables such as the environments in which humans work and individual behavioral attributes. It then examines how human performance capabilities and limitations can collectively result in human error as well as examining the types and nature of those errors.
Prerequisites: MSHF 606 for MSHF.

MSHF 618 Virtual Environments, Simulation and Robotics 3 Credits (3,0)
The course examines the application of virtual, robotic, and simulated environments as a means to further the fields of aerospace, medicine, and engineering, through the enhancement of communications, operations, and training interfaces between humans and computers or other complex systems. The course researches applications in advanced robotics, simulation, and virtual environments and then analyzes and evaluates their benefits and challenges to the human interface and effective environments. Systemic resolutions to challenges are also investigated.
Prerequisites: MSHF 606 and MSHF 612 for MSHF.

MSHF 624 Ergonomics and Biomechanics 3 Credits (3,0)
This course examines in depth the principles and applications of ergonomics and biomechanics in engineering, aerospace, industrial hygiene, occupational safety and health, and other technical industries. The course focuses on the biomechanical foundations of design of the workplace, tasks and tools, and analyzes human anatomy, anthropometry, kinematics, and musculoskeletal disorders. The course also explores the regulatory environment, identifying and evaluating risk factors, and implementing ergonomic hazard controls.
Prerequisites: MSHF 606 and MSHF 612 for MSHF.

MSHF 640 Human Physiology and Adaptation 3 Credits (3,0)
This course examines in depth the principles and critical elements of human physiology, to include how the human body maintains a steady state while adapting to outside conditions, a process called homeostasis. Included are human performance capabilities, challenges and adaptations in low and high-altitude/space flight, low-pressure and low-gravity environments, and other at-risk for human habitation environments. Specific topics include the physics of atmosphere, radiation environments, acceleration physiology, systemic physiological responses, sensorimotor interactions, environmental pathologies (e.g. circadian dysrhythmia, spatial disorientation, hypoxia, visual anomalies), and the effects of stimulants, disease and injury on human systems.
Prerequisites: MSHF 606 and MSHF 612 for MSHF.

MSHF 641 Systems Psychology 3 Credits (3,0)
This course emphasizes human performance and behavior as a component of larger systems of various complexities, and how human factors engineers integrate the human as a primary component in these systems. The course provides a working knowledge in areas of systems engineering and dynamics, engineering psychology, and systems analysis. Topics of emphasis examine systems theory, cognitive systems and human performance engineering, perception and control, system life cycle dynamics, and design synthesis and system validation to optimize properties and capabilities. A focus on current and emerging human systems incorporates human factors engineering principles in the design of complex enterprises by applying trade-off analysis, reliability analysis, and structural behavior modeling. Methods in the course employ scenario-based platforms and integrated learning from related disciplines.
Prerequisites: Student must be admitted to MSYSE or MSHF MSHF 606 and MSHF 612 for MSHF.

MSHF 646 Industrial Applications in Aerospace 3 Credits (3,0)
This course examines human factors principles and elements in developing and designing effective processes and applications for the aerospace industry. The course provides a working knowledge in areas of cognitive neuroscience and cognitive engineering, performance analysis, modeling, intelligent systems, and control design. Topics of emphasis examine neuroengineering, simulation and virtual environments, distributed cognition, adaptive technology, investigative approaches, engineered standards, human-robot collaboration, and other aerospace applications incorporating human factors considerations. The course builds a foundation for researching and designing operational applications in several venues for the aerospace industry. An orientation focusing on current and emerging technologies assesses approaches to integrate human factors elements and to collaborate effectively within the industry environment. Methods in the course employ scenario-based platforms and synthesizing learning from multiple disciplines.
Prerequisites: MSHF 606 and MSHF 612 for MSHF.

MSHF 647 Human Factors in Complex Systems 3 Credits (3,0)
An examination of organizations and sustainable systems as socio-technical systems, including socio-technical approaches to design, implementation, and management is provided. The exploration of the understanding of effective interactions among people who work across organizational, geographical, cultural, technological, and temporal boundaries, as a means to design effective complex socio-technical systems is the focus of the course. Discussions include participative design and decision-making; quality of work life; semi-autonomous work groups; organizational ecology; and collective resource approaches to planning.
Prerequisites: Student must be admitted to MSYSE or MSHF MSHF 606 and MSHF 612 for MSHF.

MSHF 652 Crew Platform/Control Room Automation, Design, and Integration 3 Credits (3,0)
Human performance and error, as well as other human factors considerations involved in the automation, design, and systems integration of crew platforms and control rooms across a broad spectrum of industries are examined. The focus of this examination is on the elements enabling improvements in the efficiency, effectiveness, and safety of operations as related to human performance. The impact of design variables and choices on normal human cognitive, physiological, psychological, and physical human performance, limitations, and error are examined in both theory and practice and included in the development of either a crew platform or control room design document.
Prerequisites: MSHF 606 and MSHF 612 for MSHF.

MSHF 653 Cognitive Systems Engineering 3 Credits (3,0)
Cognitive systems engineering with a focus on workplace environments and concerns with complex sociotechnical domains where interactions are based on expected behaviors of humans and automated agents will be studied. A foundation for cognitive systems engineering using formal methods of analysis and design to assure that cognitive work performed is efficient, robust, and safe will be provided. Topics of emphasis examine decision making in complex and dynamic information environments, distributed collaboration, networked systems, cognitive modeling, and the nonlinear nature of human cognition. Cognitive states, processes, and strategies to perform work and develop design solutions for decision and planning tools that support expert human cognition, including the system life cycle are addressed. Methods in the course employ scenario-based platforms and synthesizing learning from multiple disciplines.
Prerequisites: Student must be admitted to MSYSE or MSHF MSHF 606 and MSHF 612 for MSHF.

MSHF 691 MSHF Graduate Capstone Course 3 Credits (3,0)
The Master of Science in Human Factors Capstone Course is the culminating effort of the student's entire learning experience. The student will complete an individual project that provides significant evidence of experience in Human Factors. Students will work with designated faculty to formulate, develop, and complete the Human Factors individual project. The completion of the Capstone Course is designed to document significant evidence that all Program Outcomes have been met, and provides the student evidence of experience to show to current and prospective employers. The Capstone Course will be taken at the end of the student's degree program. NOTE: For Capstone Option students, MSHF 691 must be taken as the final course in the MSHF program. With approval from the Program Chair, a student may undertake MSHF 691 in parallel with ONE final course only.

Human Resources Management/ Development - GR (HRMD)

Courses

HRMD 549 Personnel Management 1.5 Credit (1.5,0)
Discussion of feedback, communication, planning, and training with relation to multiple populations and talent. Analysis of performance management systems culminating in the creation of performance management plans. Evaluation of talent and effective succession planning.

HRMD 607 Human Resource Development 3 Credits (3,0)
Examine the primary roles of human resource development (HRD) in organizations to include theories and applications to manage continuity and change in the workplace; Focus is on the assessment, design, training, and implementation of HRD practices to foster collaborative change across the organization.

HRMD 608 Human Resources Management 3 Credits (3,0)
Management of human resources. Interrelationship of managers, organizational staff, and/or specialists. Management theories; human resource planning; recruitment and selection; training and development; compensation and benefits; safety and health; employee relations.

HRMD 678 Talent Acquisition and Workforce Planning 3 Credits (3,0)
Strategic approach to identifying, attracting, selecting, and retaining talent. Staffing strategy for business strategy. Forecasting, recruiting, staffing, and development of employees. Strategic staffing, legal aspects of staffing; job analysis; forecasting; strategic sourcing; selection; workforce planning; workforce flow.

HRMD 679 Comprehensive Reward Systems 3 Credits (3,0)
Current approaches to total compensation; theory and practice of compensation; benefits; rewards. Reward systems as employee motivation; compensation policy and design. Strategic approach to reward strategies linked to business and people strategies. Strategic compensation; rewards; motivating work environment; government and union influences; job evaluation; pay structures; market analysis; incentives; variable pay; compensation administration; executive compensation.

Human Security and Resilience (MHSR)

Courses

MHSR 501 The Internet, Security, and Governance 3 Credits (3,0)
This course examines how the Internet and associated communication technologies have created new means for people to organize, both within their local communities and across great distances, changing the nature of the relationship between society and the institutions of government. The Internet has allowed people to communicate often without detection, resulting in both positive and negative effects; e.g., Internet- based communications have been a significant factor in the growth of transnational terrorism and popular uprisings, such as the Arab Spring. In response, governments have often attempted to control the Internet, in some cases to aid legitimate law enforcement, in others to repress restless populations seeking change. State institutions can also use these technologies to create more effective governance and better responses to humanitarian crises.

MHSR 510 Introduction to Human Security 3 Credits (3,0)
In contrast to traditional state-centered models of security, human security focuses on the individual and his/her multifaceted security needs. This course provides an overview of the emerging Human Security paradigm, including the development of the concept and the difficulties of both defining and measuring human security. Each of the component parts of human security, such as economic vulnerability and food vulnerability, and the challenges to alleviate them, are explored more deeply through case studies. Low levels of human security are often associated with high levels of instability and conflict. This course will address the debate within the international community on the actions that more powerful states should take to address human security deficits in places with little government capacity.

MHSR 515 International Law and U.S. Security Policy 3 Credits (3,0)
The course examines the role of international law, U.S. foreign policy, and international institutions in responding to terrorism, crime, complex emergencies, disasters and crises. It analyzes the challenges and difficulties in achieving unified response and the administrative and legal barriers that must be overcome. The course discusses how U.S. laws and policies intersect with international norms and regimes in a US security context, including existing multinational treaties such as UNCLOS and the Antarctic Treaty System, International Cybercrime Treaty, the Biological Weapons Convention or the Chemical Weapons Convention, and international humanitarian law. Particular attention is paid to privacy laws. The conflicts that are caused by disparate laws and policies will also be explored, as well as challenges to solutions.

MHSR 520 Principles of International Conflict Resolution 3 Credits (3,0)
The course exposes students to the different kinds of organized, violent conflicts that exist in today's world and surveys different theories seeking to explain why and how these conflicts have occurred. The course examines how states and other international actors such as the United Nations have sought to resolve these conflicts and establish stable societies in their wake. The course discusses diplomatic, economic, legal, military, and nation-building approaches to conflict resolution, and uses case studies to demonstrate their application to recent conflicts.

MHSR 530 Environmental Security 3 Credits (3,0)
Students will learn how environmental issues may give rise to socio-political instability around the world. This course explores how development and execution of U.S. domestic and foreign policy, and ultimately, U.S. national security, can be impacted by emerging threats to states from environmental health issues, infrastructure vulnerabilities, and natural resource shortages caused by rapid industrialization, population growth, and urbanization in less developed countries. It will also examine transnational threats from deforestation and global warming. Students will have the opportunity to link their experiences in localities across the globe to course themes through projects and problem-based learning activities.

MHSR 540 Foundations of Resilience 3 Credits (3,0)
Resilience embraces the concepts of awareness, detection, communication, reaction (and if possible avoidance) and recovery. The term also suggests an ability and willingness of societies and other groups to adapt over time to a changing and potentially threatening environment. The course includes risk management principles, communication of risk, crisis management, information management and assurance, and approaches for developing resilient critical infrastructures, strategies, and organizations.

MHSR 550 Resilience Planning and Administration 3 Credits (3,0)
Building and promoting resilience to man-made and natural disasters requires high levels of coordination, planning, and administration at every level, from individuals, neighborhoods, and businesses, to local, state, and national government leaders and agencies. The course includes an overview of resilience planning and administration toolkits, bottom-up strategies, and milestone legislation and international agreements, including the Stafford Act, Disaster Mitigation Act of 2000, The Post-Katrina Emergency Management Reform Act, the National Disaster Recovery Framework, Disaster Recovery Reform Act of 2018, the Hyogo Framework for Action, and the Sendai Framework.

MHSR 680 Topics in Human Security and Resilience 3 Credits (3,0)
This course will provide students with the opportunity to explore current and emerging topics in human security, resilience, critical infrastructure security, and several other topics as they develop. As the discipline of human security and resilience is dynamic and complex, not all relevant topics can be integrated into the MHSR core curriculum. The main function of this course is to provide a platform to explore pertinent and topical expressions, policies, challenges or dangers to security/resilience as they occur across the globe. As such, each semester will thoroughly explore a given topic and learn how the topic presents national security or homeland security challenges to the US. Students will be expected to synthesize relevant literature and analyze trends and data in order to make the connections to US security.

MHSR 690 MHSR Capstone 3 Credits (3,0)
This course provides students with the opportunity to integrate all disciplines and competencies that they have learned in the program, plus incorporate their past experiences and professional goals into a single work-based project, internship experience, or other appropriate activity. In cooperation with an advisor, the student will design, research, and implement a project that is comprehensive in nature and which addresses, to the extent feasible, all core areas of knowledge around which the program has been built.

Information Security and Assurance - GR (MISA)

Courses

MISA 501 Assured Business Systems: Managing and Protecting the Information Systems Enterprise 3 Credits (3,0)
This course provides the two major foundation elements for the MSISA program. It first reviews the many ways in which computation, communications and information systems are used to identify and solve problems, recognize opportunities and generate competitive advantage. It then focuses attention on the importance of assuring that those systems achieve the reliable decision support that organizations require. It does this by looking first at the risks to those systems - risks incurred by their builders and designers through poor design or undisciplined use that can present hackers, criminals and one's own employees the opportunity to cause harm. It then uses the concepts of the "enterprise perspective" to demonstrate the various information systems used to lead, manage and operate a variety of organizations, while exploring the need for organizations large or small, public or private, to sustain their own existence through continuity planning and risk management.

MISA 502 Risk Management and Business Continuity 3 Credits (3,0)
Business continuity is the study and practice of making smart risk management decisions that protect and enhance the organization's ability to survive and flourish despite the hazards of the real world. This view of resilience focuses on getting the organization's mission accomplished in part because the organization is flexible enough, responsive enough to meet changing circumstances. Risk management, therefore, is about identifying potential events that could impede the accomplishment of those objectives, and then making cost-effective choices as to whether to absorb, ignore, transfer or mitigate that potential impact. This planning and decision making is an ongoing task that management must perform - well in advance of the occurrence of a hazard, during the event itself, and after the repairs and remediation are complete. While there are many schools of thought about risk, and therefore many categorization schemes about risk, this course takes the perspective that risk is about decision making, and therefore information risk is the fundamental risk that must be managed. The course assesses the different perspectives on information risk -- asset-based, threat-based, process-based, or outcomes-based -- and then looks to the different strategies that can be used to deal with such risks and their potential costs and impacts. Students will then examine the central role that information risk management plays in organizational continuity, and how this dictates the need for effective continuity planning.

MISA 503 Informatics: Security Implications of Cross-Disciplinary Computing 3 Credits (3,0)
Informatics is the study of natural and engineered information systems and how people and organizations use them to leverage what they know to solve problems and create opportunities. Countering the threats and hazards that face a modern information-based organization requires the same kind of interdisciplinary approach. Many "threat actors" are using an informatics frame of mind to consider, plan and conduct their attacks; this course challenges the information systems security and decision support assurance professionals to respond by applying that same informatics paradigm across the range of organizational processes and behaviors, from risk mitigation and management to strategic, tactical and operational planning.

MISA 504 Enterprise Systems Architectures for Information Assurance 3 Credits (3,0)
Protection of information in systems architectures is a complex, multidisciplinary challenge. Maintaining the confidentiality, integrity, and availability of critical information in interconnected, dynamic architectures presents multiple dimensions of risk to the systems architect. It also challenges the architecture team that typically consists of product managers, designers, developers, project, program management as well as sales and marketing to clearly understand the technology, processes and tools needed for the architecture when delivering the architecture design to customers and suppliers. This course examines information assurance challenges in the context of complex systems with interconnected processes, complex product and technology design and enterprise domains. Topics to be covered include systems architectures, information assurance objectives, and systemic risk.

MISA 505 Incident Management and Information Forensics 3 Credits (3,0)
The compromise, theft, or sabotage of information systems vital to the organization's activities and objectives can have a profound effect on an enterprise. Investigating such incidents requires a special form of problem-solving that combines technical, legal and organizational skills and insights to solve the right problem without creating more in its wake. This calls for information systems forensics specialists, people who know how to find and follow the evidence, and managers who know why, when and how to put the forensics process to work in defense of the organization.This course explores system forensics processes and tools, and the implications this has both for the information security professional as well as the organization. The first part of the course includes a study of foundational concepts of the nature of security incidents, forensics techniques, and the evidentiary process. It considers the various roles that forensic specialists play in preparing the organization to deal with incidents including controlling, conducting and reporting on the investigation and resolution of information systems incidents. The second part of the course provides an opportunity for students to apply foundation concepts against sample and potential incidents, drawing from case studies and media reports. Students will consider various types of information systems forensic evidence and apply various tools and forensic analysis skills for incident investigation. Additional topics include communicating investigations and findings to organizational leadership as well as emerging technical frontiers of computer forensics.

MISA 506 Cyber Law, Cyber Compliance, and Information Assurance 3 Credits (3,0)
Virtually every aspect of the way in which organizations collect, generate, use, modify and dispose of information as a part of their daily operations is quite likely the subject of laws, regulations, government policies, or other aspects of modern society. As governments continuously reset the balance between protecting the rights and needs of the individual citizen, vs. the need for business and government to get things done in cost-effective ways, these laws and regulations place dynamic, evolving functional requirements demands on the information systems that organizations must use. This course examines the many different regulatory regimes levied upon organizations by the marketplaces they operate in -- and guides the student in identifying key management considerations that should drive information systems design and operational use. One key fundamental concept emerges: information assurance, in assuring management that all of these compliance issues are effectively dealt with, is in and of itself a risk management decision.

MISA 507 Quality Management for Information Assurance 3 Credits (3,0)
Quality management provides a systems engineering approach that focuses on process design to achieve objectives, without having to rely upon exhaustive testing or inspection of outputs to achieve desired outcomes. This course applies this concept across the life cycle of information in organizations, and the information systems that generate and make that information useful -- including the information systems used to keep the "front-line" systems alive and secure.

MISA 523 Information Advantage -- Defensive: Countering Self-Deception and External Deceptions 3 Credits (3,0)
Defending the image and reputation of an organization, and assuring the value of the business intelligence it gathers and creates, is critical to protecting and enhancing that organization's competitive advantage within the marketplace. As such, leaders must effectively manage information and mitigate the risk of deception within internal and external environments. Managing the perception of an organization's image and reputation requires a proactive approach given advances in technology and globalization. This course borrows heavily from the traditions of information warfare practiced over centuries and translates them into a business and organizational context. Perception management topics will include a comprehensive review of threats, risk analysis, control techniques, and managerial/crisis issues. This course also offers defensive skills, tools and processes necessary to eliminate or counter the negative ramifications of erroneous information, corrupt practices and espionage. From a management perspective learners will explore strategic methods designed to protect intelligence and maintain an information advantage.

MISA 531 Secure Information Systems Design 3 Credits (3,0)
Designing information systems with security and assurance goals in mind provides an important foundation to deploy secure solutions and support ongoing assurance in systems operations. Approaches that, in contrast, minimize the gathering of security requirements during design stages can be expected to result in substantial effort to engineer security into an existing system as the system is deployed. Adoption of secure design practices enables a much more efficient path to the deployment of secure systems. Secure design is an important concern for business analysts as they identify functional requirements, as well as to developers as they transform requirements and design elements into a working system. IT management strives to implement and deploy the system using secure systems design principles. But most importantly, it is as the business owners and operational managers assume functional ownership of deployed systems, and use it as they strive to build a resilient enterprise, that secure information systems design principles realize their greatest payback.

MISA 532 Integrated Threat Warning and Attack Assessment for Enterprise Information Systems 3 Credits (3,0)
Tools, techniques, and workflows that combine all-source intelligence into real-time detection, characterization, and notification of attacks on organizational information systems. Visualizations, alarms, dashboards, and displays used by security operations centers (SOCs) to identify precursors and indicators of such attacks and assess their ongoing impacts to systems and resources. Use of SOC visualizations and data as part of keeping organizational managers and leaders informed and in command of a cybersecurity incident, assessing its impact, and recovering from it.

MISA 533 Product and Systems Safety and Reliability: Issues for Information Assurance 3 Credits (3,0)
Technical risk is created whenever computing systems are integrated with products and services, as a computing failure cascades into the failure of the product or service that relies upon the technology. The management of cascading technical risks becomes more urgent, and therefore challenging, in the realm of safety-critical systems, where failure could potentially result in significant damage, physical losses, or loss of life. Ever-increasing reliance on computerization for the control of physical assets such as vehicles and production facilities creates an increased need to address product and systems safety and reliability. Information assurance principles can and should be applied throughout such environments to ensure continuous, reliable system function.

MISA 534 Aviation / Aerospace Issues for Information Security 3 Credits (3,0)
During the past decade, airlines have made substantial investments in information technology solutions. These solutions extend throughout the airline's environment and contribute to improved operational efficiency, safety, and customer satisfaction. Securing these investments and protecting the information that these systems manage requires knowledge, leadership, and an effective information security system. The introduction of advanced e-enabled airplanes and systems will provide an increased level of operational efficiency for the airlines. However, this means increased interaction with many information systems that are outside the traditionally defines airline security perimeter. This course provides an overview of information security for the air transport industry and for airline operators. It outlines the requirements for an information security framework, discusses how digital airplanes influence airline, airport and air transport system information security and describes a general information security strategy for aviation and airlines.

MISA 541 International Considerations for Information Assurance and Protection 3 Credits (3,0)
Globalization of information resources within enterprises and across the world via the Internet increases systems complexity, including the distribution of system users, data, and architecture across national boundaries. Increasing global distribution of information presents substantial assurance challenges. The resulting information systems environment is multi-national, and therefore under the scope of multiple political and legal jurisdictions, may support users from numerous national and organizational cultures, and may be subject to a wide variety of threats to local users and system components. Management is faced with significant obstacles to ensuring physical and cyber security of systems resources and the protection of information assets in an environment of sometimes limited transparency. Recognition of emerging risks and appropriate enterprise response across a global environment has become a functional requirement for organizations of all sizes that seek to build the most efficient and effective information systems regardless of the physical location of people, processes, and computing resources.

MISA 543 Assured Strategic Messaging: Keeping the Message Intact and Effective 3 Credits (3,0)
This course studies the role and impact of communication in achieving organizational goals through effective messaging. The communication strategy will focus on proven, effective strategies for understanding stakeholder information needs and translating them into clear and differentiated messaging. Specific attention will be placed on the following topics: identifying key internal and external audiences, developing communication goals and objectives, devising appropriate messaging, and creating a plan to reach designated stakeholders that uses the most efficient communication strategies and tactics. In addition, the course will explore industry trends, including the technological convergence of communication modes (voice, video and data), enterprise wide connectivity, distributed network environments, and the Internet.

MISA 544 The High-Reliability Enterprise Model 3 Credits (3,0)
Reliable and resilient enterprises are those that are built to withstand negative forces and events, which can also make them more agile, better suited to take advantage of unforeseen opportunities. This course demonstrates that the development of secure and reliable products and services, and the continuous operation of critical internal systems, is best achieved in an organizational environment that prioritizes information assurance. Organizational approaches to the implementation of standards, best practices, and quality principles are essential considerations and provide the foundation that enables and promotes the building of reliable, trustworthy systems. Dimensions of information quality, overall quality management, process maturity, and others combine to set an organizational tone that supports assurance objectives and drive enterprises to the effective management of enterprise risks.

Logistics and Supply Chain Management - GR (LGMT)

Courses

LGMT 500 Introduction to Supply Chain Management and the Profession 3 Credits (3,0)
Basic principles of supply chain management. Introduction to the profession of supply chain management. The evolution and objectives of supply chain management; the major stages and processes involved in planning and managing supply chains; the strategic fit and performance metrics associated with the supply chain.

LGMT 525 Management Science for Operations 3 Credits (3,0)
Mathematical and scientific tools in managerial decision-making. Fundamentals of operations research methods to support logistics and supply chain management operations. Decision theory, queuing theory, forecasting models, inventory theory, linear and integer programming, transportation and assignment models, and network models, including project management calculations (time and cost) using PERT and CPM. Quantitatively based analytical methodologies, interpreting quantitative results, and communicating conclusions. Pre-Requisite: Prerequisite waived for non-MSLSCM students and previous years' catalog students.
Prerequisites: LGMT 500.

LGMT 526 Business Analytics for Operations 3 Credits (3,0)
Performance measuring, optimization models, and simulation techniques commonly adopted by and integrated into logistics and supply chain decision-making. Technical aspects of data analysis and modeling in network transportation systems, including optimizing scheduling, fleet assignment, routing, ordering, and irregular operations. Simulation models and data visualization techniques and applied to logistics and supply chain management processes and operations. Pre-Requisite: Prerequisite waived for non-MSLSCM students and previous years' catalog students.
Prerequisites: LGMT 500.

LGMT 540 Procurement for Logistics Managers 3 Credits (3,0)
Principles of procurement in supply chain management. Legal and financial implications of the procurement function; Integration of procurement with operations, logistics, and quality; the use of Procurement pricing strategies for different transportation modes; and the role of purchasing in evaluating capital investments as well as professional services. Business processes associated with procurement with SAP. Pre-Requisite: Prerequisite waived for non-MSLSCM students and previous years' catalog students.
Prerequisites: LGMT 500.

LGMT 550 Production and Material Control 3 Credits (3,0)
The systems perspective of production and operations. Management of product, process, and supply chain design and operations. Measurement and analysis of internal processes. Pre-Requisite: Prerequisite waived for non-MSLSCM students and previous years' catalog students.
Prerequisites: LGMT 500.

LGMT 560 Transportation 3 Credits (3,0)
The technical, operational, and economic characteristics of the different freight and package transportation modes and their application in integrated physical distribution systems. Regional, national, and international passenger transportation and the impact of the different transportation modes, transportation intermediaries, and intermodality on small package, freight, and passenger systems. National and international regulatory constraints and their impact on passenger transportation and global supply chain management. Carrier and shipper strategies; alliance management and the use of third parties; transportation metrics; transportation security; and the role of information technology in modern transportation management. Pre-Requisite: Prerequisite waived for non-MSLSCM students and previous years' catalog students.
Prerequisites: LGMT 500.

LGMT 600 Enterprise Process Integration using SAP S/4 HANA 3 Credits (3,0)
The course will cover the different business processes using the integrated process view of an organization. The students will get an understanding of each business process within the context of its role across different functional areas in an organization. Students will utilize their knowledge of different SAP modules to initiate, manage and complete integrated transactions with one running case and number of real-world examples.
Prerequisites: LGMT 540.

LGMT 630 Enterprise Process Configuration using SAP S/4 HANA 3 Credits (3,0)
This course will provide the students knowledge and skills required to configure an ERP system to execute an organization's business processes using SAP S/4 HANA.
Prerequisites: LGMT 600.

LGMT 651 Supply Chains in the Global Environment 3 Credits (3,0)
The economic impact of global logistics. The role of logistics and supply chain management in meeting the demands of the global enterprise, from the sourcing of raw materials through the delivery of the finished products to the customer. Pre-Requisite: Prerequisite waived for non-MSLSCM students and previous years' catalog students.
Prerequisites: LGMT 500.

LGMT 692 Logistics and Supply Chain Management Simulation 3 Credits (3,0)
Demonstrate logistic and supply chain management knowledge gained throughout the program. Permission of the instructor for waiver of prerequisites is NOT applicable for this class. Pre-Requisite: Taken as the last course in the MSLSCM degree program.

Management - GR (MGMT)

Courses

MGMT 510 Management and the Organization 3 Credits (3,0)
Functional managerial skills in different organizational contexts. Implementation of EBM (Evidence-based management) inside the organization. Global and domestic lensing. Discussions comparing and contrasting best practices, applied to current events.

MGMT 532 Philosophy, Principles, and Practices in Management of Quality 3 Credits (3,0)
The content of this course incorporates multiple aspects of the management of quality and the integration of quality considerations into all other management decision processes. The primary thrust of the course is an in-depth analysis of quality management concepts, methods, and techniques from a systems perspective. Areas of emphasis are leadership, strategy development and deployment, quality management tools, customer focus, supplier performance, management communications, projects, and training and development. The course encompasses the body of knowledge required in the Certified Quality Manager certification.

MGMT 535 Theory and Application of Managerial Communications 3 Credits (3,0)
Impact of communication in managing contemporary organizations; provides a survey of the technical aspects of communications; develops students managerial and strategic communication skills for effective communication; discussion of why good communication skills are important in business, why effective communication can be difficult, how communication is used in teams, what issues exist in intercultural communication.

MGMT 550 Managerial Communications 3 Credits (3,0)
Effective messaging strategies, utilizing data for communication. Experience with tools to communicate. Analysis of communication strategies with a view toward effectiveness in critical communications and negotiations. Incorporation of diverse strategies to communicate to multiple audiences.

MGMT 610 Business Process Management 3 Credits (3,0)
Examination of excellence frameworks to apply process-based thinking to improve effective process performance and thus organizational performance. Examination of risk management approaches for managers to mitigate risk events as part of a process management strategy.

MGMT 672 Planning and Execution of Strategy 3 Credits (3,0)
The course emphasizes the value and process of strategic management concepts by examining how each functional area of management is integrated into an organization's overall competitive advantage. Students are exposed to new subject matter, while being expected to integrate and apply prior learning experiences into the strategic decision making process. Students will enhance their risk taking and problem solving skills through simulations, case studies, real-life activities, and discussion formats. Technology is leveraged to offer an engaging and interactive learning community.

MGMT 680 Strategic Action 3 Credits (3,0)
Implementation of vision and mission into action-oriented steps, particularly in consideration of teams, virtual workspace, and technology. Demonstration of business analytics' value and use. Application of change management practices. Incorporation of operations management strategies to improve performance and efficiency.

MGMT 691 Management Capstone Course 3 Credits (3,0)
In this course students are required to author and defend a scholarly paper that requires substantial research to generate solutions to a real-world managerial problem. The student will be exposed to the technical aspects of writing to include problem definition, analysis, and presentation of solutions utilizing structured methods of evaluation. This course shall be taken at the end of the student's program and will give the student the opportunity to apply management concepts learned throughout the MSM program.

MGMT 699 Special Topics in Business Administration 1-3 Credit (1-3,0)
In this course, students elect to perform a special, directed analysis and/or independent study in an area of particular interest. Candidates selecting this elective must prepare a detailed proposal for the desired project and present the proposal to the department chair for faculty review. Proposals must be submitted at least four weeks prior to the start of the term in which the elective is being taken.

MGMT 700 Thesis Research 1-6 Credit (1-6,0)
A written document on an aviation/aerospace topic is supervised throughout its preparation by the student's Thesis Committee. If the document demonstrates the student's mastery of the topic and is of satisfactory quality for publication, it will be submitted.

Mathematics - GR (MATH)

Courses

MATH 502 Boundary Value Problems 3 Credits (3,0)
Basic technique of solving boundary-value problems of partial differential equations by employing the methods of Fourier series, orthogonal functions, operational calculus including Laplace transforms, other integral transforms and Cauchy's residue calculus. Applications to heat transfer, fluid mechanics, elasticity and mechanical vibrations. Computer applications.

MATH 546 Application-Based Advanced Engineering Mathematics 3 Credits (3,0)
This course is designed to present a general approach of introducing a survey of core advanced engineering mathematics topics. The general approach is sought is to present a representative physical circumstance then subsequently develop the mathematical representation (mathematical model) fitting that circumstance noting areas where approximations are needed and introduced or dismissals are applied.

Management Information Systems - GR (MMIS)

Courses

MMIS 501 Business Systems: Managing the IS Enterprise 3 Credits (3,0)
This course provides the foundation for the MSMIS program by reviewing the many ways in which computation, communications and information systems are used to identify and solve problems, recognize opportunities and generate competitive advantage. It uses the concepts of the "enterprise perspective" to demonstrate the various information systems used to lead, manage and operate a variety of organizations. It then uses the "enterprise as system" model to show how all organizations large or small link into the information and knowledge systems of the organizations they interact with -- suppliers, customers, regulators, and their competitors. It also lays the foundations for further examination of key issues, such as information quality and information assurance, throughout the MSMIS program. Throughout, the concept of business processes -- and the engineering and re-engineering of these processes -- provides the unifying focus.

MMIS 503 Data & Information Modeling & Management 3 Credits (3,0)
The Era of instantaneous Data is here. Data is a strategic organizational asset and a central resource used in business intelligence (BI) and analytics to generate actionable information to decision-makers. Many companies rely on Excel Spreadsheets for data management and analytics. Excel Spreadsheets conceal a churning sea of data, flowing through the enterprise databases, that need to be combined and synchronized to generate a single, accurate vision of the data. Current data infrastructure designs are crucial but inefficient for a company to become data-driven. Often, organizations have several databases that are built in a silo type of environment where data is not easily linked so that the full picture of the organization's status is available. The focus of this course is centered on the core skills of identifying organizational information requirements, information modeling and all principles related to managing and storing organization data and information. Students will gain insight into understanding how data fundamentally affects a business. These core data management and design skills cross all disciplines, from financial data to customer related data. In addition, recent developments related to big data (and tools for their analysis) will be introduced.

MMIS 504 Knowledge Management: Quality Management for the IS Enterprise 3 Credits (3,0)
Knowledge Management (KM) provides a disciplined approach to recognizing and exploiting the value-added transformation of raw data -- numbers, names, or quantities -- into progressively more useful and more powerful forms of understanding. KM has its roots in a variety of different disciplines. Using the overall framework of Quality Management, and its emphasis on learning organizations, this course provides a comprehensive overview of the field of knowledge management integrating theory, practice, history, issues, terms and a future outlook examining organizational change and organizational learning.

MMIS 506 Systems Analysis and Design 3 Credits (3,0)
Systems analysis and design is the science and art of examining a problem and creating the most effective solution. It is a science in that quantitative analysis, strongly supported by theory and practice, can dictate correct and complete solutions that can be cost-effective. It is also an art, in that organizational culture, prerogatives, and perceptions about value and risk quite often play a major role in how systems design and implementation decisions are made. This course considers systems development methods and analysis and design techniques using a practical rather than technical approach. Learners engage in hands-on learning and work in teams to complete a real-world project using contemporary analysis and design methodologies and tools.

MMIS 507 Information Systems Strategic Planning 3 Credits (3,0)
Strategic planning is the art and science of setting the enterprise's vision and allocating resources to achieve the vision. When formulating information systems strategies, organizations seeks to identify emerging opportunities to leverage new technologies that may add substantial value but also dramatically change the organization. Strategic planning includes choosing which goals and objectives to accomplish, sets criteria for how well they must be accomplished to satisfy other needs, and sets forth the activities to make these "game-changing" events happen effectively and affordably. Many strategic opportunities may present themselves to an organization, or may be discovered by a variety of introspective or business intelligence activities. Making the decision to take advantage of such opportunities is deciding to make strategic change happen. Strategic opportunities may exist because of fundamental changes in technologies, market preferences, government and regulatory actions, and other factors. The strategic planner knows that nothing remains the same, and that while no plan survives contact with reality, the planning process itself provides insight and the opportunity to choose wisely. Strategic planning for information and information systems entails applying the concepts of strategic business planning to the subset of organizational activity that generates, analyzes, maintains, and produces information and knowledge to support strategic decision making. Information systems strategic planning can address, but is not limited to, choices about fundamental information technologies, systems architectures, and information risk mitigation approaches.

MMIS 521 Data Warehousing and Information Quality 3 Credits (3,0)
The term "data warehouse" conveys many different meanings, which this course will examine in some depth. Whether the warehouse provides a historical look back through the organization's transaction histories, or acts as an amalgam of many different data sets, from many different organizations, the key question the organization has to ask is why. Why build a data warehouse? Many different business processes are involved with and affected by the accumulation, extraction (mining), and interpolation of data that might exist between the real data points (data farming). Information quality, as a design discipline and as a management attitude, provides essential emphasis on assuring the right data comes in, to properly-designed and verified correct business decision processes, so that the right decisions can come out of the data warehouse and its operational use. Of all the many attributes and facets of data warehousing, data quality is undoubtedly the utmost significant one. Basically, this is because if the data is wrong, we place our organization at greater risk if we rely on the data warehouse for decision support. Over the past decade, a large number of vendors have saturated the market with several data warehousing products, and it is difficult to evaluate their offerings and help one's organization choose wisely. Students will explore these issues by looking at selected steps in typical data warehousing projects, focusing on organizational objectives and needs, while examining the details of how data warehouses are designed, built, used and maintained. Administration, security, information quality and other key issues will also be placed in this project framework.

MMIS 531 Information Systems Project Management 3 Credits (3,0)
Managing information technology requires ideas and information that go beyond standard project management. Because the project management field and the technology industry change rapidly, this course provides up-to-date information on how good project management and effective use of software can help you manage projects, especially information technology projects. This course provides an information system orientation for project management. It stresses information systems as a whole, not just software development. The course explains some of the key concerns of project manager as the project develop through the project life cycle.

MMIS 541 Information Risk Management 3 Credits (3,0)
MIS risk and emergent systems properties, such as resilience, reliability, availability, and security. Different risk management frameworks and methods, their challenges, and applicability. Failure of many MIS risk management implementations to demonstrate their return on investment to organizational stakeholders. Techniques to identify and address bias and calibration issues inherent in these frameworks that support planning for continuous improvement in the management of information systems risk.

MMIS 552 Information Systems and Information Technology Governance 3 Credits (3,0)
Governance is the broad category of policies, plans and procedures that help translate an organization's strategic objectives and plans into the management and control of the people, systems and resources allocated to those plans. Governance is thus strongly linked to organizational compliance with many kinds of government regulations and statutory requirements which aim to control or mitigate risk -- risk to investors, customers, employees and society at large. Two strongly competing governance models bring very different perspectives to this course. The first is data or information governance, which focuses on how the organization does an information or knowledge quality management process. The second is often called information technology governance, even though it focuses on the delivery of information services -- or knowledge work -- to the organization via systems and technologies.

MMIS 553 Change Management and Configuration Control 3 Credits (3,0)
Organizational change is constant for organizations that wish to remain viable and competitive in changing markets. Unfortunately, the literature suggests that change efforts often fail even when the ideas were positive. Unlike other industries, the IT industry generally has a shorter life cycle and organizations generally see IT-related changes more frequently than other types. Therefore, changes must be led, managed, and controlled throughout the organization to achieve success. This course presents techniques for reducing social and systemic resistance to change, and provides effective tools for accomplishing change management and configuration control. These tools can be applied to small and large systems at any level of an organization, including the organization itself. The course will focus on the use of knowledge management systems and other information technology protocols to enable change.

MMIS 561 Global Information and Technology Management 3 Credits (3,0)
Organizations are using information technology (IT) to transform themselves into global enterprises via key ventures in global e-business, e-commerce and other IT initiatives. IT is a critical component of enterprise success and plays a key role in enterprise globalization, as organizations deploy global IT architectures. The continuous integration of new technologies requires effective management practices to support emerging architectures and organizational objectives.

MMIS 690 Management Information Systems Capstone 3 Credits (3,0)
This course will offer students the chance to integrate all the knowledge and skills that have been presented in this program in addition to their own experience and professional goals into a single MIS project. Students will work with faculty to create and complete a substantive MIS project. The completion of the Capstone is considered a significant milestone demonstrating that all of the program outcomes have been achieved.

Marketing - GR (MKTG)

Courses

MKTG 510 Economics of Marketing 1.5 Credit (1.5,0)
How economics impacts marketing. Impact of macro and micro economic factors, market structures, and supply and demand on a firm's pricing, promotion and distribution decisions.

MKTG 511 Science of Selling 1.5 Credit (1.5,0)
Professional sales and sales management strategies, techniques, and tools that fuel this key top-line revenue-driven subset of marketing. Sales programs; optimizing sales performance; customer lifetime value.

MKTG 512 Delivering Customer Solutions 1.5 Credit (1.5,0)
Strategic decisions necessary to develop product and service solutions that generate customer value in a competitive marketplace. Market analysis; new product development; product lifecycle; service management; service quality; communicating customer value.

MKTG 514 Professional Service Marketing 3 Credits (3,0)
Marketing course that explores service marketing attributes in a customer driven context. Service quality elements are analyzed using the Gap model as a framework to examine the differences between marketing tangible goods and services.
Prerequisites: MKTG 510 and MKTG 511 and MKTG 512 or MKTG 311.

MKTG 630 Customer Value 3 Credits (3,0)
Marketing specialization course for the MBAA Program that examines ways that high performing companies consistently meet and exceed customers' wants and needs. Customer value themes address how companies respond to change, customer loyalty, and more.
Prerequisites: MKTG 510 and MKTG 511 and MKTG 512 or MKTG 311.

MKTG 632 Global Marketing 3 Credits (3,0)
Global perspective on marketing management strategies. Current issues and events in the international market. Legal, regulatory, political, language, and other cultural factors influencing products and services for firms operating globally.Pre-Requisite: MKTG 510, MKTG 511, MKTG 512 or MKTG 311 or equivalent course.

MKTG 633 Digital Marketing 3 Credits (3,0)
Digital marketing and technology have changed the way customers, retailers, manufacturers, and marketers operate. Topics include how technology is influencing the way customers shop, how products and services are marketed, and how customer information can create value. Digital marketing strategy; analytics, search engines, social media, web and mobile design; and reputation management.
Prerequisites: MKTG 510 and MKTG 511 and MKTG 512 or MKTG 311.

MKTG 640 Analytics in Marketing Decision-Making 3 Credits (3,0)
This course focuses on how data analytics can be used to improve marketing decision-making and the challenges that analytics represent for modern businesspeople. The course incorporates real-world examples, datasets, and cases to place data analytics techniques in context, to develop analytics thinking and to expose students to business and government data-based decision-making. Students will also acquire hands-on experience with analytical tools and software, including marketing metrics, marketing modeling software and web/social media measurement tools.
Prerequisites: MKTG 510 or MKTG 311.

Meteorology - GR (WEAX)

Meteorology Courses

WEAX 517 Advanced Meteorology 3 Credits (3,0)
A graduate-level treatment of major topics in meteorology with an emphasis on aviation weather hazards. Topics include, but are not limited to: atmospheric structure and circulation, atmospheric kinematics and thermodynamics, mid-latitude and tropical cyclones, convective and non-convective weather features, local wind phenomena, and fundamental concepts in weather analysis and forecasting. Students will also be introduced to the use of numerical weather prediction products in weather forecasting. Assignments and projects will focus on conducting basic atmospheric analysis and forecasting using internet-based weather data and forecasting products, and provide the student with practical experience in making informed weather-sensitive decisions.

Organizational Behavior and Leadership - GR (OBLD)

Courses

OBLD 500 Leadership Foundations in Research 3 Credits (3,0)
Foundational concepts for the Master of Science in Leadership Program. Discovery of critical thinking framework, fallacies, digital literacy tools, library research, and writing using the APA style manual. Application of intellectual elements, standards, virtues, and barriers within different leadership contexts, such as coaching, mentoring, sense-making, storytelling, communication, and global citizenry.

OBLD 511 Organizational Leadership 3 Credits (3,0)
Exploration of leadership in organizations. Evaluation of organizational leadership theory and research. Examination of internal and external organizational factors impacting leadership effectiveness. Analysis of leadership requisite for equitably and strategically leading a diverse workforce in a variety of workplaces.
Prerequisites: OBLD 500.

OBLD 519 Organizational and Employee Behavior 1.5 Credit (1.5,0)
Organizational and employee behavior intervention strategies for managers. Equitable organizational design, recovery, and renewal for global workforce. Challenges and subjectivity in human behaviors and cultural, social, and ethical value formation and implementation.

OBLD 520 Organizational Behavior 3 Credits (3,0)
Focus on current theoretical and practical organizational issues through a managerial lens; human development; effective work elements; professional and personal leadership.

OBLD 521 Leadership Communication 3 Credits (3,0)
This course explores the impact of communication in leading contemporary technical organizations and provides a broad survey of the technical aspects of communications. Emphasis is placed on the application of theory to practice to develop students' managerial and strategic communication skills so that they may grasp not only how, but also what, why, when, and by what means leaders effectively communicate. Students will have the opportunity to gain an understanding of why good communication skills are important in business, how communications today is affected by technology, why effective communication can be difficult, how communication is used in teams, and what issues exist in overcoming intercultural communication barriers. Students will practice communicating conclusions to problems in concise and persuasive writing and speaking. Written assignments involve preparing technical reports and use of APA style manual.
Prerequisites: OBLD 500.

OBLD 535 Leadership & Organizational Design 3 Credits (3,0)
Learn the various ways organizations structure and adapt to their environment. How leaders and followers participate in designing and developing effective organizations of all types. Organization design and accompanying theories focus on macro level. Examine the whole organization and relationship to its environment. Topics include: organization design factors and theories; how organizations adapt to environments to survive and thrive; role of organizational culture; principles of organizational development; leadership skills in planning organizing, and supporting organizational activities for different sizes and types of organizations.
Prerequisites: OBLD 500.

OBLD 632 Strategic Decision-Making for Leaders 3 Credits (3,0)
Leading a team, board, or organization involves making critical decisions and evaluating the decisions of others. With fast-changing environments, decisions are made under severe time constraints and with insufficient information. Data literacy is essential for leaders and decision-driven data analytics are necessary for organizational effectiveness. Topics include approaches to the decision-making process, application of data in decision making, using analytics to make decisions, and organizational decision-making.
Prerequisites: OBLD 500.

OBLD 633 Adaptive Leadership in Complex Environments 3 Credits (3,0)
In constantly changing environments, leaders routinely create and revise strategies. This course explores the role of leaders in developing unity, focus, credibility, and direction within organizations. Students will be exposed to several strategic frameworks and develop an understanding of which models might be useful in certain situations. Students also learn how to scan the environment; develop and deploy coalitions; identify critical success factors and barriers to implementation, and create viable actions plans.
Prerequisites: OBLD 500.

OBLD 634 Leadership Ethics and Corporate Social Responsibility 3 Credits (3,0)
Students are introduced to several topics that form the foundation for Leadership Ethics and Corporate Responsibility. Topics include: personal dilemmas, morals, virtues, organizational dilemmas, and societal issues. The course focuses on the role of ethics in decision-making on three levels: the individual, the organization, and society.
Prerequisites: OBLD 500.

OBLD 635 Organizational Change 3 Credits (3,0)
Use of leadership system and strategies to advance organizational objectives. Theories and concepts of planned change. Anticipate the need for change; champion change agendas; diagnose organizational issues and spot opportunities; develop change action plans, strategies, and techniques; and assess, monitor, and stabilize changed organizations.
Prerequisites: OBLD 500.

OBLD 641 Resonant Leadership: Leading Change 3 Credits (3,0)
The objectives of this course are to broaden and deepen the student's self-awareness and prepare them to be a life-long learner. Success in today's organizations depends on your ability to learn and adapt quickly to new and changing situations. The course is based on a model of self-directed learning and development. Gaining self-awareness and being mindful of oneself is extremely valuable in understanding and formulating your own career and life vision, in assessing your skills and abilities and in designing plans to reach your objectives. From mastery of this basic process comes the ability to manage change and lead others effectively.
Prerequisites: OBLD 500.

OBLD 671 Entrepreneurship and Leadership 3 Credits (3,0)
In this course, students explore the roles and interrelationships of leadership and entrepreneurship in successful enterprises in a global environment. The primary focus is on analyzing the leadership skills and entrepreneurship that enhance organizational success. Topics to be explored are the approaches and models of leadership, entrepreneurship, organization change, implementing an entrepreneurial strategy inside existing organizations, product innovation and technology, and developing new ventures. In addition, students gain insight to the important elements required for a supportive environment needed to sustain the corporate entrepreneurship process. Lastly, the entrepreneurship orientation of organizations for the future is discussed.

OBLD 690 Graduate Leadership Capstone 3 Credits (3,0)
Communicate vision and values through leadership storytelling. Pre-Requisite: Completion of all Leadership Program Courses.

Project Management - GR (PMGT)

Project Management Courses

PMGT 500 Foundations of Project Management 3 Credits (3,0)
In this course, students will be introduced to the project management profession and international methodologies. The role of the project manager will be examined through performance and personal competencies. Additionally, the organization's governance is considered as a foundation for project success.

PMGT 510 Management Science for Project Managers 3 Credits (3,0)
Students in this course are introduced to management science processes, tools and techniques used in decision making and analysis with emphasis on the project management context. Techniques include probability, decision theory, decision making in the context of uncertainty, queuing theory, forecasting models, inventory theory, and linear programming. Computer techniques are used to solve problems and to communicate the results in a clear and understandable fashion. Emphasis is placed on using quantitatively bases analytical methodologies, interpreting quantitative results, and communicating conclusions.
Prerequisites: PMGT 500 and MGMT 672 and OBLD 632.

PMGT 520 Fundamentals of Project Scope, Schedule, Cost, and Resource Management 3 Credits (3,0)
In this course, students study project management with focus on the development and management of project scope, schedule, cost, and resources, following global project management standards and the profession's ethical framework. The course includes an emphasis the technical planning of integration, scope, schedule as they are applied to initiating, planning, execution, monitoring and controlling, and closing of projects. The integration of technical skills, general management skills, and project management skills for successful project completion is emphasized.
Prerequisites: MSPM: PMGT 510 MSEM: LGMT 525.

PMGT 530 Fundamentals of Project Quality, Communication, Stakeholder, Resource, and Procurement Management 3 Credits (3,0)
In this course, students study project management with focus on the development and management of project quality, communication, stakeholder, resource, and procurement management, following global project management standards and the profession's ethical framework. The course includes an emphasis the technical planning of integration, scope, schedule as they are applied to initiating, planning, execution, monitoring and controlling, and closing of projects. The integration of technical skills, general management skills, and project management skills for successful project completion is emphasized.
Prerequisites: PMGT 520.

PMGT 549 Applied Project Management 1.5 Credit (1.5,0)
Exposure to project management tools, techniques, and practices. Utilization of project management software. Discussion and application of key performance metrics for success.

PMGT 613 Assessing and Managing Project Risk 3 Credits (3,0)
More difficult economic conditions, increasing competition, and exponentially expanding technology create greater uncertainty and risk in projects. With these complex challenges come complex threats and opportunities. Uncertainty and associated risks have become more complex as project spans organizational, national, and cultural bounds. In this course, the student will investigate the iterative nature of planning, identification, qualitative and quantitative analysis, response, and control of risk events for both threats and opportunities. Additional course skills will include contingency and reserve development and the use of Project Management Information Systems (PMIS).
Prerequisites: PMGT 530.

PMGT 614 Directing and Controlling Projects 3 Credits (3,0)
In this course, students will gain increased knowledge and experience in the art and science project management. Emphasis is placed on directing and controlling projects. The student the opportunity to understand the necessity for managing increasingly complex projects required in an increasingly complex business environment. Practical exercises using project management software will be used to challenge the student to develop higher levels of project management ability. Exercises will require critical thinking and problem-solving techniques required in complex projects.
Prerequisites: PMGT 613.

PMGT 652 Concepts and Practices of Project Management 3 Credits (3,0)
This course provides graduate students, who are not enrolled in a project management degree program, an appreciation for the depth and breadth of the project management profession. The course will address the complete project model including initiating, planning, executing, monitoring and controlling and closing. Emphasis will be placed on gaining a knowledge of common terminology, principles, techniques and tools that are found global standards for project management.

PMGT 670 Contemporary Project Management 3 Credits (3,0)
This course is designed to assist students synthesize what has already been learned about projects and project management and apply that knowledge to contemporary and evolving project concepts. Topics will change from term to term to continue to make the course relevant, but may include alternative lifecycles, project management competency, innovation management, and global project management topics to name a few. Assignments will be conducted with in the context of critical review of the relevant research and theory, as well as current practice, and global standards.
Prerequisites: PMGT 614 or PMGT 652.

PMGT 680 Advanced Project Procurement 3 Credits (3,0)
In this course, students study project procurement management with focus on the request for proposal, proposal response, contracts, and quality techniques, following global project management standards and the profession's ethical framework. The course includes an emphasis on risk management, in its application to the project lifecycle, as the foundation of a procurement strategy.
Prerequisites: PMGT 614.

PMGT 690 Project Management Capstone 3 Credits (3,0)
This course is designed to provide the student the opportunity to apply knowledge gained throughout the degree program. Demonstration of the study of project management, paying particular attention to technical project management, project leadership, and business strategy. Pre-Requisite: The Project Management Capstone is the last course taken in the MSPM Program. All coursework must be complete before attempting the capstone.

Research - GR (RSCH)

Courses

RSCH 650 Research Methods and Analysis 3 Credits (3,0)
This course is designed to equip students with the theoretical techniques and skills to identify and evaluate qualitative and quantitative research problems. The course introduces both qualitative and quantitative data analysis. Sampling and data gathering in systematic manners are incorporated into research methodologies. The use of numerical analysis on qualitative data is covered to result in significance solutions and recommendations.

RSCH 665 Statistical Analysis 3 Credits (3,0)
The review, design, planning, analysis and statistical interpretation of data to support research studies and industrial applications. Students will build on statistical theory and learn advanced techniques that can be applied to problem solving, research analysis and numerical interpretation of data. Students will learn to identify parametric and non parametric statistics, develop correlation methods for linear and non linear data, and statistical significance testing between samples and within samples. Students will undertake projects using computer programs for data that is derived or given. Statistical results will be presented in tabular, graphical and numerical ways in accordance with the American Psychological Association format.

RSCH 670 Research Methods 3 Credits (3,0)
This course is designed to equip students with the theoretical techniques and skills to identify research problems and apply appropriate qualitative and quantitative research methods. The course presents strategies of inquiry for evaluating research problems that require numerical and non-numerical data analysis in order to understand relationships among quantitative variables and themes of qualitative data. The course develops the student's understanding of sampling, data collection, and analysis for incorporation into research methodologies. Format and structure of scholarly reports, meeting the conventions of the student's field of study, are presented to elevate the student's understanding of research frameworks involving problem identification, review of literature, research methodology, and reporting results, conclusions, and recommendations.

RSCH 700A Thesis I 3 Credits (3,0)
This course is the first of a two-course sequence (RSCH 700A and RSCH 700B) to complete the degree program through the accomplishment of a thesis. The student will propose and begin to develop a written document on a aviation/aerospace topic, supervised throughout its preparation by the student's Thesis Committee. The document is intended to demonstrate the student's mastery in a topic related to their program of study and be of satisfactory quality for publication. Following satisfactory performance within this course, the student will continue to RSCH 700B for the completion and submittal of the thesis. NOTE: For Thesis Option students, RSCH 700A and RSCH 700B must be taken in that order, as part of the research specialization sequence following RSCH 670.
Prerequisites: RSCH 670.

RSCH 700B Thesis II 3 Credits (3,0)
This course is the second of a two course sequence (RSCH 700A and RSCH 700B) to complete the degree program through the accomplishment of a thesis. The student will complete their thesis under the supervision of the student's Thesis Committee. The document is intended to demonstrate the student's mastery of the topic and be of satisfactory quality for publication. Following satisfactory performance within this course, the student will be permitted to graduate from the program.
Prerequisites: RSCH 700A.

Safety - GR (SFTY)

Courses

SFTY 530 Safety, Health and Environmental Legislation, Litigation & Compliance 3 Credits (3,0)
This course is a survey of the complex regulatory and legal settings surrounding occupational safety, health and environmental management. Occupational safety, health and environmental regulations, and how they affect industry, legal responsibility, and accountability; ethical considerations in and external to the organization; and the international environment and how it may affect projects are all examined.

SFTY 540 Disaster Preparedness and Emergency Response 3 Credits (3,0)
This course is designed to increase the student's knowledge of disaster preparedness and emergency response procedures, safety and health hazards and controls, and enforcement issues. Topics include elements of an emergency response plan, training requirements, the incident command system, medical surveillance, and post-emergency recovery. Major elements involved in disasters and emergencies, systems use, and attention to essential human services are covered.

SFTY 570 Fire Safety Management 3 Credits (3,0)
This course is designed to teach the essentials of fire protection and prevention in the context of safety, health and environmental management. The course will provide an introduction to fire behavior and combustion to include fire chemistry, fire dynamics and concepts related to the development and spread of fire. The course will also address fire prevention methods, fire detection systems and fire protection including control systems, fire suppression and extinguishment. Lastly, the development of fire safety programs will be addressed, along with emergency action plans and response.

SFTY 580 Environmental Protection for the Safety, Health and Environmental Manager 3 Credits (3,0)
This course is designed to equip students with the knowledge, skills and techniques used by the safety, health and environmental manager to protect workers, the community and the environment from environmental hazards; to facilitate a strategic approach to environmental conservation and sustainable business practices; and, to comply with EPA, OSHA and state and local regulations. Prevention and mitigation of environmental problems will be paramount in the course, but management techniques and programs focused on containment and clean-up of spills and releases will also be addressed.

SFTY 590 Hazard Control Methods in Occupational Safety and Health 3 Credits (3,0)
This course focuses on the application of scientific, engineering and technical principles and methods used to identify, evaluate and control workplace safety and health hazards. Hazard elimination and engineering controls are emphasized in the course. General industry topics, such as the following, are addressed: job safety analysis; inspections and audits; facility design, layout and maintenance; machine safeguarding; walking and working surfaces; materials handling; production operations; and, occupational health hazards and controls.

SFTY 600 Occupational Safety and Health Management 3 Credits (3,0)
This course provides a broad overview of occupational safety. It begins with an exploration of the history of the subject, moves through the OSH Act, workers' compensation, safety program development and management, and finally addresses hazards and controls. The application of safety and health management principles to the management of complex technical industries is covered.

SFTY 611 Industrial Hygiene and Toxicology 3 Credits (3,0)
This course addresses the technical concepts and application of industrial hygiene and toxicology as it pertains to preventing occupational illnesses. Topics include the recognition of occupational health hazards, hazard evaluation through screening and sampling, and the prevention and control of occupational health hazards in order to mitigate occupational illnesses. The course also prepares the student to select, interpret and apply federal and state occupational health and safety laws and regulations.

SFTY 619 Human Factors and Ergonomics 3 Credits (3,0)
This course emphasizes the role of human factors in workplace and work task design with emphasis on complex technical industries. Topics include traditional material such as anthropometry, control/display design, visual and auditory acuity and their importance in work design, circadian rhythms and their implications for work design and shift work, psychomotor skills, and learning and memory. Also included are concepts of physiological aspects in ergonomics and the anthropometric principles in workspace and equipment design.

SFTY 630 System Safety Programs 3 Credits (3,0)
This course emphasizes the specialized integration of systems engineering and sound management practices into all phases of a system's life cycle, to achieve acceptable risk, given the confines of operational effectiveness and fiscal responsibility. Hazard recognition, assessment and risk mitigation strategies and resources are applied to systems from conception and design phases to operational and disposal phases, as a means to minimize legal risk and maximize safety and health.

SFTY 691 Graduate Capstone Course 3 Credits (3,0)
The Master of Science in Occupational Safety Management Graduate Capstone Course is the culminating effort of the student's entire learning experience. The student will complete a project that includes identifying an occupational safety and health research problem; completing a thorough review of the scholarly literature; formulating and testing hypotheses or research questions; collecting and appropriately analyzing qualitative or quantitative data; and, interpreting and reporting research findings using scientific judgement to improve the field of occupational safety and health or to provide solutions to an occupational safety and health problem. The Capstone Course will be taken as the last class in the student's degree program.

Space Operations (MSPO)

Courses

MSPO 500 Overview of the Space Ecosystem 3 Credits (3,0)
This course provides a comprehensive strategic perspective on the global space economy by evaluating the entire market ecosystem. This course begins with a history of development of government and commercial space programs and proceeds from there to undertake comprehensive analyses of the major space market segments including consideration of: market attractiveness, market size and growth, market actors, upstream and downstream markets, and the analytic tools to perform market analyses. Fundamentals of strategy, business and finance will also be covered.

MSPO 505 The Launch Industry 3 Credits (3,0)
The course provides students with a focused, integrated perspective of the launch industry. The course derives its focus from the fact that the scope is confined to launch. Adjacent sectors are only considered in their interfaces with the launch industry. The course is integrated in its consideration of the full range of knowledge of the launch industry in a single course.

MSPO 510 The Satellite Communications Industry 3 Credits (3,0)
The course provides students with a focused, integrated perspective of the communications satellite industry. The course derives its focus from the fact that the scope is confined to communications satellites. Adjacent sectors are only considered in their interfaces with the communications satellite industry. The course is integrated in its consideration of the full range of knowledge of the communications satellite industry in a single course.

MSPO 511 Earth Observation and Remote Sensing 3 Credits (3,0)
This course will provide an overview of the full scope of the satellite remote sensing industry including history, technology, operations and business. The course will cover a range of markets including commercial, government civil, and national security.

MSPO 512 Space Mission and Launch Operations 3 Credits (3,0)
This course introduces the student to launch, mission operations, and facilities for manned and unmanned missions at U.S. and foreign sites. Satellite and spacecraft launch facility system discussion covers safety, meteorology, communications, and tracking, as well as navigation and control systems. Examples of mission control, operations, and systems include spacecraft project descriptions and control site operations. U.S. mission operations will include NASA, DoD, and commercial space operations and launch sites. Legacy spacecraft operations including the Space Shuttle (STS) and Russian Soyuz are examined along with future commercial space transportation programs.

MSPO 513 Space Habitation and Life Support Systems 3 Credits (3,0)
This course addresses the problems related to spaceflight induced changes in the major body systems that need to be solved in this decade, to develop countermeasures for maintaining the health of crewmembers on long duration space operations. Physiological elements of zero gravity environment, radiation hazards, and protection measures are explored, along with physical and chemical closed loop life support systems for long duration space missions. More elaborate life support systems for larger manned missions and colonies are outlined for further student development.

MSPO 515 Cybersecurity Applications in Space 3 Credits (3,0)
This course provides a comprehensive study of cybersecurity as it relates to both military and civilian space system applications. The course reviews cybersecurity principles; space system design, manufacturing, and operational considerations; technical and environmental constraints for both planetary orbits and deep space trajectories; cyber threats and attack vectors; risk mitigation and resilience; cybersecurity standards and regulations.

MSPO 520 Space Technology and Systems 3 Credits (3,0)
The concepts and technologies of modern space technology and systems that combine science and engineering will be examined in this course. The course material will focus on the scientific and engineering fundamentals of launch vehicle and spacecraft systems and subsystems and their interactions.

MSPO 525 Space Law and Policy 3 Credits (3,0)
This course covers the complex interplay between geopolitics, international law and national space innovation systems which underlies all space activities. The course is effectively divided into 3 segments: 1) the geopolitical history of space, 2) principles of space law, and 3) national space innovation systems.

System Engineering (SYSE)

Courses

SYSE 500 Fundamentals of Systems Engineering 3 Credits (3,0)
This course provides the student with a broad introduction to the fundamental principles, processes, and practices associated with the application of Systems Engineering across the system life cycle. The student will develop an understanding of the skills necessary to translate needs and priorities into system requirements, and develop derived requirements, forming the starting point for engineering of complex systems. Key topics include methods and standards; concept definition; interface definition; requirements development and management; system baseline definition and management; system architecture development; integrated schedule management and analysis; risk assessment; systems integration, verification and validation; mathematical and graphical tools for system analysis and control, testing and evaluation of system and technology alternatives; reliability and maintainability; design trade-offs and trade off models. The course will cover the integrative nature of systems engineering and the breadth and depth of the knowledge that the systems engineer must acquire concerning the characteristics of the diverse components that constitute the total system.
Prerequisites: MSHF 606 and MSHF 612 for MSHF.

SYSE 505 System Safety and Certification 3 Credits (3,0)
Concepts, principles, methods and process applied for development of safety-critical and mission-critical software-intensive systems. The issues of system safety, requiring additional analysis and design techniques, are discussed from the perspective of computer hardware and software. The course discusses the safety requirements, hazard and risk analysis, failure modes and effect analysis, fault tolerance, basics of hardware and software reliability, levels of integrity, nature of faults and redundancy, and issues of verification, validation and certification. Safety standards across application domains, including SAE, ARP4754 & ARP4761 and RTCA DO-178C & DO-254 for safety considerations in development of aircraft systems are analyzed. The related certification roles, process, objectives, and activities are discussed. Selected software tools supporting safety and reliability assessment of hardware laboratory experiments with tools, and producing appropriate reports.

SYSE 515 Mathematical Applications in Systems Engineering 3 Credits (3,0)
This course uses an applied and context-driven approach to understanding key topics from the calculus, economics and probability and statistics series for engineers. Students seeking a refresher course or needing an introduction to fundamental topics in economics, probability and statistics and calculus in the context of systems engineering will develop analytical skills for system planning, design and analysis, and other business and technical activities within the engineering process.

SYSE 530 System Requirements Analysis and Modeling 3 Credits (3,0)
This course is concerned with the development, definition, and management of requirements for system or product. Topics include the system requirements process, requirements elicitation techniques, alternative requirements analysis techniques, requirements specification, requirements verification and validation, requirements management, and requirements standards and tools. Issues such as stakeholder identification, risk analysis, trade off analysis as it relates to the requirements will be covered.

SYSE 560 Introduction to Systems Engineering Management 3 Credits (3,0)
This course addresses the fundamental principles of engineering management in the context of systems engineering and explores issues related to effective technical planning, scheduling and assessment of technical progress, and identifying the unique challenges of the technical aspects of complex systems and systems of systems and ability to control them. Topics will include techniques for life cycle costing, performance measurement, modern methods of effective engineering management, quality tools, quality management, configuration management, concurrent engineering, risk management, functional analysis, conceptual and detail design assessment, test evaluation, and systems engineering planning and organization, communication and SE management tools and techniques. The course covers an examination of processes and methods to identify, control, audit, and track the evolution of system characteristics throughout the system life cycle. The course includes the development of a Systems Engineering Management Plan, Integrated Master Schedule and/or Integrated Master Plan.

SYSE 610 System Architecture Design and Modeling 3 Credits (3,0)
This course is focused on concepts and techniques for architecting systems and the process of developing and evaluating architectures. The course includes generating a functional, physical and operational architecture from a top level operations concept for the allocation and derivation of component-level requirements. Variety of modeling and analysis approaches will be discussed as well as the generation of analyzable architecture models for evaluating the behavior and performance of candidate system concepts. Additional topics include interface design; architecture frameworks; enterprise engineering; design for reliability, maintainability, usability, supportability, producibility, disposability, and life cycle costs; validation and verification of systems architecture; the analysis of complexity; methods of decomposition and re-integration; trade-offs between optimality and reusability; the effective application of COTS; and practical heuristics for developing good architectures. Specialized areas of design and architecture may be addressed, such as spacecraft design, design of net centric systems, or smart engineering systems architecture.

SYSE 625 System Quality Assurance 3 Credits (3,0)
This course presents the managerial and mathematical principles and techniques of planning, organizing, controlling and improving the quality, safety, reliability and supportability of a system throughout the system life cycle. The course focuses on the importance of structuring and controlling integration and test activities. Topics include establishing a baseline control during the integration and test phases; cognitive systems engineering and the human-systems integration in complex systems environments; establishment of criteria for planning tests; the determination of test methods; subsystem and system test requirements; formal methodologies for measuring test coverage; sufficiency for test completeness; and development of formal test plans to demonstrate compliance. Also covered are methods of developing acceptance test procedures for evaluating supplier products. The quality related topics including fitness for use, quality costs, quality planning, statistical quality control, experimental design for quality improvement, concurrent engineering, continuous improvement and quality programs such as ISO 9001:2000, ISO 14001, CMMI, Malcolm Baldridge and TQM. Reliability related topics covered include reliability prediction using discrete and continuous distribution models. Supportability related topics include system supportability engineering methods, tools, and metrics and the development and optimization of specific elements of logistic support. Quality and safety is a key theme throughout the course.

SYSE 660 Organizational Systems Management 3 Credits (3,0)
This course introduces concepts of organizational management and leadership, which are approached from a systems and complex systems perspective to explain the behavior of systems. Focus areas will include strategic management, organizational transformation, and organizational environments. Models will be drawn from a variety of areas including marketing, finance, organizational behavior, and strategic and operational management.

SYSE 697 Systems Engineering Project 3 Credits (3,0)
This course consists of a project in systems engineering that the student will undertake at the conclusion of the academic coursework for this program. It will culminate in a written document on a project chosen and carried out by the student under the guidance of the student's Systems Engineering Project Advisor. The project will be expected to demonstrate the student's mastery of his topic, and must be of a quality suitable for publication. Prerequisite: Students must be admitted to MSYSE and must have completed all other program course requirements including the approved elective set. This course must be the final course to complete the MSYSE program but a project advisor may be requested and a project proposal can be submitted at any time during the last course (core or elective) in which the student is enrolled prior to this course.
Prerequisites: student must be admitted to MSYSE.

Unmanned and Autonomous Systems (UASE)

Courses

UASE 501 Introduction to Unmanned Aircraft Systems Design 3 Credits (3,0)
Broad overview of unmanned aircraft system (UAS) design. Survey major UAS sub-systems including airframe, propulsion, power, communication, embedded computer hardware/software, detect-and-avoid, automation, and ground control station. Literature and case studies exploring current engineering practices, technologies used, and past lessons learned. Culminates with development of design specification for a UAS given requirements specification and knowledge acquired in the course.

UASE 691 Unmanned and Autonomous Systems Capstone Design Project I 3 Credits (3,0)
The Capstone Design Project courses provide a coherent and significant design experience resulting in fabrication of a prototype, and/or publication of refereed article. The emphasis will be on projects which require the synthesis of most of the topics emphasized by this degree including design of airframe, innovative propulsion systems, autonomy, guidance, navigation, and control systems, payloads, networking, electronics, advanced manufacturing, as well as systems engineering and end-to-end integration of components and systems in meeting requirements and specifications. Prerequisite: All preceding coursework in the MSUASE must be completed, prior to enrollment in UASE 691. An interruption in enrollment is permissible between 691 and 692; i.e. student is not required to enroll in term immediately following UASE 691. If such an occurrence is anticipated, it is recommended that an independent project, rather than team option, be pursued.

UASE 692 Unmanned and Autonomous Systems Capstone Design Project II 3 Credits (3,0)
The Capstone Design Project courses provide a coherent and significant design experience resulting in fabrication of a prototype, and/or publication of refereed article. The emphasis will be on projects which require the synthesis of most of the topics emphasized by this degree including design of airframe, innovative propulsion systems, autonomy, guidance and navigation and control systems, payloads, networking, electronics, advanced manufacturing, as well as systems engineering and end-to-end integration of components and systems in meeting requirements and specifications. Pre-Requisite: Successful completion of UASE 691. An interruption in enrollment is permissible between 691 and 692; i.e. student is not required to enroll in term immediately following UASE 691. If such an occurrence is anticipated, it is recommended that an independent project, rather than team option, be pursued.

Unmanned Systems - GR (UNSY)

Courses

UNSY 501 Application of Unmanned Systems 3 Credits (3,0)
This course prepares students to understand the application of unmanned systems and their respective elements and technology to the operational domains, including atmospheric, exo-atmospheric, ground, and maritime environments. It includes applications, business cases, selection criteria, limitations and constraints, and ethical, safety, and legal considerations. Students will research, appraise, and recommend unmanned system tasking, environmental operational requirements, and system collaboration opportunities.

UNSY 502 Current Issues in Unmanned Systems 3 Credits (3,0)
Examines state-of-the-art technologies and issues that affect the unmanned systems industry. Through tailored discussions and written deliverables, students demonstrate knowledge of current topics to include regulation, systems development, systems integration and systems applications. Other topics may be examined at the instructors discretion based on the current state of industry.

UNSY 503 Legal and Regulatory Issues in Unmanned Systems 3 Credits (3,0)
This course examines legal and regulatory policies and issues affecting the growth and operational feasibility of unmanned systems. The evolution of federal law regulating the use of unmanned systems will be examined to determine how past, present and future policies or laws will influence operations within the industry. Students will examine how administrative law process functions and how unmanned systems stakeholders participate in the process. Students will examine various legal issues that impact the unmanned systems industry from various perspectives (e.g., operators, government regulator, industry, local governments).

UNSY 515 sUAS Operation Fundamentals 3 Credits (3,0)
This course introduces graduate students to essential topics, concepts, and airmen knowledge associated with regulatory compliant use of small unmanned aircraft systems (sUAS) within the U.S. National Airspace System. Through participation in a sequence of modules featuring review of referenced documentation and use of interactive modeling and simulation tools, the student will gain exposure and comprehension of regulatory requirement compliance, required aeronautical knowledge, and application of best practices. With the successful completion of this course a student can expect to demonstrate appropriate acquisition of knowledge to prepare for the Federal Aviation Administration Part 107 Remote Pilot Certification examination, while attaining an understanding of key factors supporting productive, purposeful, responsible, and legal operation of sUAS.

UNSY 520 sUAS Practical Application and Assessment 3 Credits (3,0)
This course further prepares graduate students to safely and effectively perform small unmanned aircraft system (sUAS) operations in support of graduate level research and educational goals, through the practical application and practice of fundamental knowledge, skills, and abilities (KSA)s. Students will participate in the review and practice of basic to advanced aircraft controls (manual and automatic), checklist and emergency procedures, flight planning, review of platform specific traits, aerial photography and post-flight processing techniques, pilot application, crew resource management, and instructor-student practical assessment. The use of both interactive scenario-based modeling and simulation and actual (live) sUAS tools helps students to establish and improve unmanned airmanship skills in settings supporting incremental exposure, progression, and assessment combined with instructor-guided feedback and practice. With the successful completion of this course a student can expect to demonstrate appropriate application of unmanned airmanship, while attaining further comprehension of key factors supporting productive, purposeful, responsible, and legal operation of sUAS. Eligibility: Students must be U.S. citizens or permanent residents and must be physically located within the U.S., and hold an FAA Part 107 Remote Pilot Certificate while participating in the UNSY 520 course. Pre-Requisite: FAA Part 107 Remote Pilot Certificate, acquisition of items detailed in the ERAU-Worldwide sUAS Toolkit, and UNSY 515. Those already in possession of an FAA Part 107 Remote Pilot certificate, prior to starting the sUAS Operation concentration/specialization, may complete ASCI 530, in lieu of UNSY 515 to ensure sufficient credit, research experience, and topical exposure.

UNSY 603 Unmanned Systems Operational Configuration 3 Credits (3,0)
Explores unmanned system configuration optimization in support of task-oriented operation in unique and remote environments, adhering to established standards and regulatory requirements. Analyze functional requirements and operational limitations to evaluate available technology and process suitability for optimized task completion. Identify critical system elements and components and addressreal-world operational challenges. Pre-Requisite: UNSY 501.

UNSY 606 Unmanned Systems Interoperability and Control 3 Credits (3,0)
Detailed examination of the technologies, processes, and concepts associated with unmanned systems interoperability and control. Student will examine and evaluate unmanned system command, control, and communication (C3). Application includes identifying current unmanned system interoperability and control issues; recommending strategies or solutions to address issues; and evaluating appropriate system elements, components, or technology to support application and tasking. Prepares students to better understand the implications and capabilities associated with unmanned system C3 configurations, including mechanisms to support optimized system functionality.

UNSY 620 sUAS Operational Planning and Safety Management 3 Credits (3,0)
This course builds upon previously attained small unmanned aircraft system (sUAS) operational knowledge, skills, and abilities (KSA)s within the context of performing effective planning and management for graduate level applied research. It includes comprehensive review and application of sUAS planning and management concepts, topics, and techniques in real-world scenarios featuring team exercises; environmental, platform suitability, and safety analysis; use of interactive modeling and simulation tools; and regulatory compliant live sUAS operation. Students will gain further sUAS operational exposure and practical experience to address common challenges, analyze options, determine feasibility of plans, and implement a final operational plan featuring appropriate application of safety risk management and analytical operational planning. With the successful completion of this course a student can expect to further demonstrate appropriate application of KSAs, while mastering comprehension of key factors supporting productive, purposeful, responsible, and legal operation of sUAS.
Prerequisites: UNSY 520.

UNSY 691 Graduate Capstone Course 3 Credits (3,0)
The Master of Science in Unmanned Systems Graduate Capstone Course is the culminating effort of the student's entire learning experience. The student will complete a project that provides significant evidence of experience in unmanned systems studies. Students will work with designated faculty to formulate, develop, and complete the project. The completion of the Capstone Course is designed to document significant evidence that all Program Outcomes have been met, and provides the student evidence of experience to show to current and prospective employers. The Capstone Course will be taken as the last class in the student's degree program.

Office of Professional Education

The Office of Professional Education (OPE) provides customized corporate training, as well as courses, seminars, and workshops designed for individuals and organizations in the aviation, aerospace, and related industries. All OPE courses impart current knowledge and information and present timely issues relevant to our industry on a wide variety of topics.

To access existing training programs, or to inquire about customized corporate training, contact OPE directly.

OPE training courses and programs offer certificates of completion and/or Continuing Education Units (CEUs). These courses will not count toward any academic degree or program.

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Professional Education Course Descriptions

The courses listed below are non-academic Continuing Education courses. Continuing Education Units (CEUs) are awarded for these courses and cannot be used toward degree requirements.

Aviation Management Certificate

ALF 4000	Air Transportation Fundamentals
ALF 4100	Airline Marketing
MGM 6000	Strategic Planning
MGM 6100	Leadership and Development
MGM 6200	Airline Management
MGM 6300	International Aviation Management

Aviation Awareness Certificate

AAC 1000	Aviation Awareness Certificate

Aviation Cybersecurity

CBR 1000	Understanding Cybersecurity
CBR 1010	Exploring the Internet of Things (IoT)
CBR 1020	Introduction to Aviation Cybersecurity
CBR 1030	Aviation Cybersecurity Threats, Actors, Tools & Techniques

Aviation Maintenance Technology

AMT 4000	737 Familiarization

Aviation English

AVE 2000	Aviation English for Flight Training
AVE 2100	Aviation English Teacher Training Workshop

Business Management

CE 2111	Value Proposition Analysis for Corporate Aviation
CE 2112	Flight Department Finance, Budgeting and Accounting
CE 2113	Community Relations

Leadership

CE 2121	Strategic Vision and Planning
CE 2122	Leadership and Motivation
CE 2123	Managerial Communications
CE 2124	Professional Development
CE 2125	Human Factors

Corporate Aircraft Operations

CE 2131	Standard Operating Procedures and Processes
CE 2132	Scheduling and Dispatch
CE 2133	Record-Keeping and Regulatory Compliance

Human Resource Management

CE 2141	Workload Management and Staffing
CE 2142	Employee Training Programs
CE 2143	Staffing and Team Building
CE 2144	Performance Reviews and Feedback Systems
CE 2145	Compensation and Reward Programs
CE 2146	HRM Laws and Ethics

Corporate Aviation Technical Services

CE 2151	Aviation Safety Programs and Emergency Preparedness
CE 2152	Aviation Maintenance Management
CE 2153	Customer Service Programs
CE 2154	Aviation Security
CE 2155	Vendor Management
CE 2157	Aviation Safety Audits

sUAS for Public Safety Certificate

SUAS 2000	SUAS Ground School
SUAS 3000	sUAS Fundamentals for Public Safety
SUAS 3200	Developing a SUAS Standardization Program

Unmanned Aircraft Systems

SUAS 1000	Understanding Drones: An Introduction to UAS
SUAS 1300	Global Unmanned Aircraft Systems Risk Management
SUAS 1400	sUAS Inspection Course
SUAS 1500	Fundamentals for Starting an sUAS Small Business
SUAS 1600	APSA Basic Proficiency Evaluation for Remote Pilots (BPERP) Certification
SUAS 2500	Introduction and Application of UAS Photogrammetry
SUAS 4000FOI	sUAS Fundamentals of Instruction
SUAS 5000	Incident Evidence Collection and Preservation for Law Enforcement
SUAS 6000	Airworthiness Certification of Unmanned Aircraft Systems

Supply Chain Management

LGM 100	Integrated Logistics Management
LGM 101	IATA Cargo Introductory Course

LGM 102	Logistics Management for Aviation
LGM 103	Cargo Advanced Rating and Marketing

Airport Planning Design and Development

MGM 2500	Airport Planning and Design Course
MGM 2600	Introduction to Airport Terminal Planning
MGM 2700	Airport Sustainability and Environmental Management
MGM 2900	Airport Security Course
MGM 3100	Airport Operational Safety and Certification

Airport Risk Management and Safety Certificate

MGM 2000	Safety Management Systems
MGM 2800	Airport & Aviation Risk Management and Insurance
MGM 2900	Airport Security Course
MGM 3100	Airport Operational Safety and Certification

Aviation Risk Management Certificate

MGM 2000	Safety Management Systems
MGM 2100	Aviation Law and Risk Management
MGM 2300	Risk Management and Hazard Identification
MGM 2800	Airport & Aviation Risk Management and Insurance
MGM 3000	SMS Basics for Public Service Aviation

FBO Management

MSM 1000	Finance and Budgeting for the FBO
MSM 1100	Facilities Management for the FBO
MSM 1200	Fuel Services Management for the FBO
MSM 1300	Leadership for the FBO
MSM 1400	Safety and Security for the FBO

Information Systems & Technologies Applications Non-Credit (ISTA-AIT)

Applied Information Technology - Solutions Architect	
ISTA 2000	Computing Basics
ISTA 2100	Data Processing and Storage Fundamentals
ISTA 2101	Data Processing and Storage Fundamentals Lab
ISTA 2200	Software Development Fundamentals
ISTA 2201	Software Development Fundamentals Lab

Faculty and Administration

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College of Arts and Sciences

- **Departments of:** Behavioral and Social Sciences | Humanities and Communication | Mathematics, Science and Technology | Security and Emergency Services

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