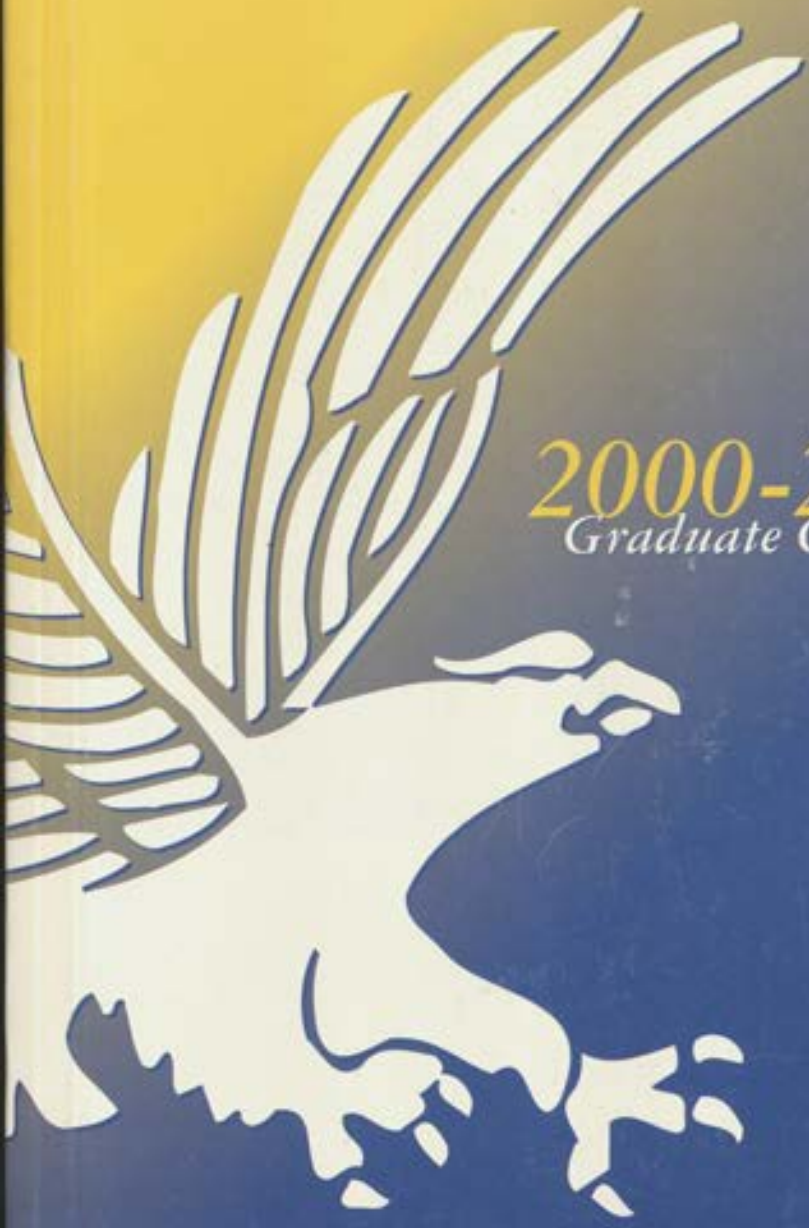
EMBRY-RIDDLE
AERONAUTICAL UNIVERSITY



2000-2001
Graduate Catalog

www.embryriddle.edu

EMBRY-RIDDLE
AERONAUTICAL UNIVERSITY

Master of Aeronautical Science

Master of Aerospace Engineering

Master of Science in Aerospace Engineering

Master of Business Administration in Aviation

Executive Master of Business Administration

Master of Science in Human Factors and Systems

Master of Science in Industrial Optimization

Master of Safety Science

Master of Software Engineering

Master of Science in Technical Management

Daytona Beach Campus
Embry-Riddle Aeronautical University
600 S. Clyde Morris Boulevard
Daytona Beach, FL 32114-3900
Graduate Admissions
(904) 226-6115 or (800) 388-3728
FAX: (904) 226-7111
Financial Aid: (800) 943-6279
E-mail: gradadm@db.erau.edu
http://www.db.erau.edu

Prescott Campus:
Embry-Riddle Aeronautical University
3200 Willow Creek Road
Prescott, AZ 86301-3720
(520) 708-3728 or (800) 888-3728
E-mail (admissions):
admit@pr.erau.edu
http://www.pr.erau.edu

Extended Campus
Embry-Riddle Aeronautical University
600 S. Clyde Morris Boulevard
Daytona Beach, FL 32114-3900
(904) 226-6910 or (800) 522-6787
E-mail (admissions): ecinfo@db.erau.edu
http://www.ec.erau.edu

In Europe Contact:
Embry-Riddle Aeronautical University
CMR429
APO AE 09054
Telephone Number from U.S.:
011-49-631-98843
E-mail:
Europe_region_manager@cts.db.erau.edu

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2000-2001 CALENDAR

Fall Semester 2000 *(September 5 - December 13)*

August 30-Sept 1 ..... Orientation and Registration
September 4 ..... HOLIDAY-Labor Day
September 5 ..... Classes begin
November 3 ..... University Day
November 22-24 ..... HOLIDAY-Thanksgiving
December 7 ..... Last day of classes
December 8 ..... Study day
December 9, 11-13 ..... Final examinations
December 16 ..... Graduation

Spring Semester 2001 *(January 8- April 28)*

January 5-6 ..... Orientation and Registration
January 8 ..... Classes begin
January 15 ..... HOLIDAY-Martin Luther King Day
February 19 ..... HOLIDAY-President's Day
March 12-16 ..... HOLIDAY-Spring Break
April 17 ..... Last day of classes
April 18 ..... Study day
April 19-20, 23-24 ..... Final examinations
April 28 ..... Graduation

Summer Semester (Term A) 2001 *(May 7-June 25)*

May 3-4 ..... Orientation and Registration
May 7 ..... Classes begin
May 28 ..... HOLIDAY-Memorial Day
June 21 ..... Last day of classes
June 22 ..... Study day
June 23, 25 ..... Final examinations

Summer Semester (Term B) 2001 *(June 28 - August 17)*

June 26-27 ..... Orientation and Registration
June 28 ..... Classes begin
July 4 ..... HOLIDAY-Independence Day
August 14 ..... Last day of classes
August 15 ..... Study day
August 16-17 ..... Final examinations
August 19 ..... Graduation

This 2000-2001 calendar applies to the Daytona Beach campus. It is presently under review and is subject to change. Extended Campus students should contact the local Embry-Riddle resident center director for the academic calendar applicable to their specific location.

EFFECTIVE DATE: This catalog becomes effective July 1, 2000, for the Daytona Beach Campus and Extended Campus.

2000-2001 Graduate Program Calendar

Daytona Beach Campus

	Fall Semester 2000	Spring Semester 2001	Summer Semesters 2001
Deadlines			
Admission			
For U.S. Students	8/1/00	12/1/00	4/1/01
For International Students	6/1/00	10/1/00	2/1/01
Graduation Application	10/6/00	2/16/01	6/15/01
Thesis Defense	10/6/00	2/16/01	6/15/01
Orientation	9/1/00	1/8/01	----------

Failure to meet these deadlines may prevent admission as a regular graduate student for the semester.

To be considered a Fall or Spring graduate, thesis defense must take place by specified dates.

To be considered a Summer A or Summer B graduate, students should check with their graduate program coordinator.

GMAT

For information on GMAT Administration, please contact ETS at (609) 771-7330.

Extended Campus

Graduation Application Deadlines

Graduation Date	*Deadline Date*
August 30	June 30
November 30	September 30
January 30	November 30
March 30	January 31
May 30	March 31

MESSAGE FROM THE PRESIDENT

Changes in technology are swift and frequent. At Embry-Riddle Aeronautical University, we pride ourselves on responding to these changes and, in many cases, leading the charge. We offer a number of challenging graduate degree programs in aviation, business, computer science, engineering, and human factors which prepare graduates to become effective leaders of aviation professionals in a rapidly growing and ever-changing environment.

Graduate students at Embry-Riddle associate with others who share their commitment to excellence. They learn and work with a faculty of distinguished aviation professionals, many of whom have enjoyed successful careers in aviation and remain at the forefront of the industry. And all of our students -- undergraduate and graduate alike -- participate with faculty on interdisciplinary research teams. This depth and breadth of experience gives students at Embry-Riddle a unique education and a link to lifelong learning.

To complement their classroom activity, Embry-Riddle offers students a range of research and study facilities. These include a large, diverse fleet of aircraft, modern laboratories in the Airway Science Simulation Laboratory, the Center for Aerospace Safety Education, the Center for Applied Human Factor Research, and the Lehman Engineering and Technology Center. Our Academic Computing Labs, Jack Hunt Memorial Library, and network of computing services are the envy of students and faculty across the country.

Our strong ties to the aviation industry ensure exciting off-campus work opportunities on government and industry projects across the United States and worldwide. Several million dollars in sponsored research funds from industry and government sources also provide our students with research assistantships and on-campus job opportunities.

We recognize that those who undertake graduate studies have varying schedules and study needs. To respond, we have diversified our offerings to allow almost anyone to pursue their educational goals. For those who can make a full-time commitment, we offer graduate programs at our residential Daytona Beach, Fl, campus. For those who must combine their studies with current employment, we offer programs at more than 100 Extended Campus sites throughout the world. And for those who cannot come to us, our flexible distance learning technologies take the classroom to them.

As a member of the Embry-Riddle family, students learn to develop communication and teamwork skills, along with practical application of technical skills. That membership also includes help with their job searches from our Career Services office and our vast, influential alumni network.

A graduate education at Embry-Riddle provides students with the necessary tools to emerge successfully as leaders who are prepared to make a difference.

Best wishes for a success in your educational pursuits. I look forward to seeing you on campus.

George H. Ebbs,
President

PURPOSE OF THE UNIVERSITY

Embry-Riddle Aeronautical University is an independent, non-sectarian, non-profit, coeducational university with a history dating back to the early days of aviation. The University serves culturally diverse students pursuing careers in aviation and aerospace. Residential campuses in Daytona Beach, Florida, and Prescott, Arizona, provide education in a traditional setting, while an extensive network of education centers throughout the United States and abroad serves civilian and military working adults.

It is the purpose of Embry-Riddle to provide a comprehensive education that prepares graduates for productive careers and responsible citizenship to support the needs of aviation, aerospace engineering, and related fields. To achieve this goal, the University is dedicated to the following:

To offer undergraduate and graduate degree programs that prepare students for immediate productivity and career growth while providing a broad education, with an emphasis on communication and analytical skills.

To emphasize academic excellence in the teaching of all courses and programs; to recruit and develop excellent faculty and staff; and to pursue research and creative activities that maintain and extend knowledge in aviation, aerospace, and related disciplines.

To promote ethical and responsible behavior among students and graduates in local/national/international aviation and in the community at large.

To develop mature, responsible graduates capable of examining, evaluating, and appreciating the economic, political, cultural, moral, and technological aspects of humankind and society, and to foster a better understanding of the free enterprise system and its social and economic benefits.

To develop and effectively deliver educational programs for the adult student and professional at the undergraduate and graduate level, including off-campus degree programs, short courses, independent studies, non-credit programs, seminars, workshops, and conferences.

To support each student's personal development by encouraging participation in programs and services that offer opportunities for enhanced physical, psychological, social, and spiritual growth; and to complement the academic experience by contributing to the development of a well-rounded individual prepared for personal and professional success.

To engage in research, consulting services, and related activities that address the needs of aviation, aerospace, and related industries.

EMBRY-RIDDLE AT A GLANCE

Aviation and Embry-Riddle: The Lifelong Partnership

At the beginning of this century no flying schools existed, much less an aviation university. It was not until 1903 that the Wright brothers achieved sustained, controlled flight by a powered aircraft and, in so doing, changed life on this planet forever.

It did not take long for aviation to come of age. By 1914, regular passenger service had been inaugurated in Florida between St. Petersburg and Tampa. Later that year, war came to the European skies. The combined effect of military and commercial demands produced a dynamic new industry.

Unlike many other developments at the end of the Industrial Revolution, aviation required a special education—learning how to fly, learning about safety and weather, and learning about engines from skilled maintenance to the outer limits of performance.

This need for trained pilots and mechanics quickly led to the establishment of a new type of school, one focused totally on aviation. In the beginning, these organizations were often a combination of airplane dealership, airmail service, flight training, and mechanic school. The original Embry-Riddle operations fit that mold precisely.

On Dec. 17, 1925, exactly 22 years after 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. The following spring, the company opened the Embry-Riddle School of Aviation.

Although it was a volatile time for aviation enterprises, the school prospered. Others came and went regularly, but Embry-Riddle was not affected.

Within three years, the school had become a subsidiary of AVCO, the parent of American Airlines. The school remained dormant during most of the 1930s, mirroring the casualties of the Great Depression. By the end of the decade, however, World War II erupted in Europe and the demand for skilled aviators and mechanics grew significantly. Embry-Riddle's second life was about to begin.

The Lunken Airport operation had long since disappeared, but in Florida, Embry-Riddle opened several 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. Some 25,000 men were trained by Embry-Riddle during the war years.

After the war, under the leadership of John and Isabell McKay, Embry-Riddle expanded its international outreach while strengthening its academic programs. In 1965, with Jack R. Hunt as president, Embry-Riddle consolidated its flight, ground school and technical training into one location. Accomplished in borrowed trucks with borrowed dollars from Daytona civic leaders, this move proved to be a moment of singular importance. It signaled the rebirth of Embry-Riddle and the start of its odyssey to world-class status in aviation higher education. Within three years, Embry-Riddle was accredited by the Commission on Colleges of the Southern Association of Colleges and Schools. Two years later, Embry-Riddle became a university.

Also under President Hunt's leadership, Embry-Riddle opened a western campus in Prescott, Arizona, on the 510-acre site of a former college. With superb flying weather, expansive grounds, and many buildings, the Prescott campus has been an outstanding companion to the University's eastern campus.

Continuing the legacy left behind by Hunt was Lt. General Kenneth L. Tallman, who was president of Embry-Riddle for five years. He came to the University after a distinguished 35-year military career, which included service as Superintendent of the U.S. Air Force Academy. Under Tallman's leadership, a School of Graduate Studies and the Electrical Engineering degree program were introduced. He led the University into research, with the addition of an Engineering Physics degree. He also developed stronger ties between Embry-Riddle and the aviation/aerospace industry.

Dr. Steven Sliwa led the University from 1991 through 1998. Sliwa, the University's third president, is best known for creating an entrepreneurial environment and for developing strategic partner-

ships with industry. These partnerships included a joint venture with FlightSafety International; a partnership with Cessna Aircraft Company; a technology alliance with IBM; and an exclusive educational partnership with AOPA. He also spearheaded a $100+ million capital expansion program, which included an $11.5 million congressional line-item appropriation. In addition, new academic and research programs were created at his direction to respond to structural changes in the industry while increasing market share in the University's core programs. Dr. Sliwa successfully launched the Center for Aviation Training at Embry-Riddle (CATER), a division of the University dedicated to domestic and international contract training.

In September of 1998 the University chose Dr. George H. Ebbs to become its fourth president, believing he has the vision and experience necessary to successfully guide the University into the year 2000 and beyond. Ebbs was formerly the CEO and president of the Canaan Group, a management consulting firm that provides business strategy, market analysis, organizational development, and business process improvement services to executives in the commercial aviation industry.

Before establishing the Canaan Group, Dr. Ebbs served as senior vice president of Booz-Allen & Hamilton, Inc. Other positions he has held include vice president and managing officer at Fry Consulting Group and senior facilities engineer for the Boeing Company, where he worked on the supersonic transport proposal to the US Government. He has also served on the faculties of Columbia University's Graduate School of Business and the Polytechnic Institute of Brooklyn.

Embry-Riddle is a global institution which holds a prominent position in aviation/aerospace education. The University is the world's largest independent aeronautical university and boasts a student body of 21,000 who come from all 50 states and more than 100 nations. The University offers over 30 degree programs, with 10 offered at the master's level. Many students receive their degrees from over 100 education centers located in the United States and Europe. Embry-Riddle also provides flexible educational services to thousands of working adults through the Extended Campus.

Accreditations and Affiliations

Embry-Riddle is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award degrees at the associate, bachelor's, and master's levels. The Master of Business Administration (MBA/A) is accredited on the Daytona Beach campus by the Association of Collegiate Business Schools and Programs (ACBSP), and by the Council on Aviation Accreditation (CAA).

Research and Creative Activities

An important role for any university is the creation of new knowledge. At Embry-Riddle this function is closely tied to the graduate program with a strong emphasis on applied research. The University's up-to-date laboratories, wind tunnels, computer equipment, flight simulators, and fleet of aircraft provide a perfect setting for research projects involving students working under the direction of faculty members. Much of this work is funded by the University, but in the past several years the amount of externally funded work has been steadily growing. Areas of investigation include aerodynamics, acoustics, structures, propulsion, satellite development, space physics, aviation weather, simulation, pilot and air traffic controller training, human factors affecting the cockpit, air crew, the National Airspace System, software engineering, safety research, and aviation business management.

The pace of research in aviation and related fields at Embry-Riddle is expected to continue accelerating. Development and use of the extensive, and often unique resources available at the University, will increase. The combination of the University's technically advanced resources, highly skilled faculty, staff, and students with strong spirits of inquiry, will make lasting contributions to air travel safety and efficiency, fulfilling in part Embry-Riddle's role as a world leader in aviation and aerospace higher education.

Embry-Riddle At A Glance

Graduate Students

Many graduate students have established careers in flight, aviation management, maintenance, maintenance management, air traffic control, computer science, software engineering, and engineering. Their experience enhances the interaction within the classroom by providing insight from their current experience within the military and civilian aviation industry.

Alumni Association

Upon graduation, the alumni of Embry-Riddle Aeronautical University join a very "elite" network comprised of over 42,000 members who share that special bond of being an Embry-Riddle Aeronautical University alumnus. The Office of Alumni Relations maintains contact with this network, supplying services to the members of the alumni body, and providing opportunities to them through organized programs to assist themselves, their fellow alumni, and their alma mater.

Services and Opportunities Available to the Alumni:

Alumni Chapters: Alumni Chapters form the grass roots level of support for Embry-Riddle, promoting the welfare and interests of the University and its alumni in local communities across the nation and around the globe. They encourage alumni in their area to become acquainted, engage in community activities, take part in career networking opportunities, and enjoy social activities, all in the name of Embry-Riddle.

Career Networking: Where once students looked to their alma maters for help only in finding their first postgraduation jobs, more recently it has become customary for graduates to turn to their universities for job assistance throughout their careers. At Embry-Riddle, graduates may use the Career Services Office for assistance with resume development, tips on job searches, establishing a job file, and career networking.

Communications: The "Alumni Network Newsletter" is published four times a year and provides the alumni with an up-to-date calendar of University events, athletic team scores and schedules, alumni class notes, and University happenings. The "Leader" is a bi-annual magazine that features in-depth stories on alumni, the industry, and the University. Communication with the University can also be maintained by means of the Internet. Embry-Riddle has a home page on the World Wide Web that can be accessed as http://www.erau.edu.

The excellence of any educational institution depends heavily upon the quality, interest, and participation of its alumni. Embry-Riddle's alumni participate as guest speakers, serve on advisory councils, supply media experts, and are active in many other activities. They provide role models for the current students to emulate, thus continually elevating the status of the University. For more information, please contact the Office of Alumni Relations at 904-226-6160, or 800-727-3728.

CAMPUS INFORMATION

Daytona Beach Campus

The Daytona Beach campus is located next to the Daytona Beach International Airport. The high-technology industry in the Orlando area, as well as nearby Kennedy Space Center, provide the University with an outstanding support base.

The Lehman Engineering and Technology Centers on both the Daytona Beach and Prescott campuses feature laboratories with the latest research and computer equipment. Distance learning, a cornerstone of 21st century education at Embry-Riddle, is now available through an electronic link between the residential campuses. As a result, faculty members at one campus are able to teach students at another campus, enabling students at different locations to work together on joint projects. It also allows the University to demonstrate its world leadership in distributed design and management education. The building has subsonic and supersonic wind tunnels and a smoke tunnel as well as structures, materials, aircraft design, and composite materials laboratories. A grant from the National Science Foundation made possible the purchase of the first stereolithography unit to be used by students in this country. The revolutionary process lets design students produce prototypes of aircraft structures and test their designs in a short period of time.

The Lindbergh Center provides modern classroom facilities. The computer science complex provides hands-on experience with mainframe and personal computers.

Embry-Riddle is proud of its multi-million dollar Airway Science Simulation Laboratory at Daytona Beach, which simulates the elements of the National Airspace System. This center for aviation research and education contains state-of-the-art equipment used for instruction in air traffic control, pilot simulation, weather information, airports and airways, and pilot and aircraft performance.

The John Paul Riddle Student Service Center offers a full-service cafeteria, fully equipped bookstore, mailroom, health services, records and registration, parking office, Safety, information center, communication office, Flight Deck grill, Landing Strip snack bar, student activities offices, conference rooms, and the Department of Judicial Affairs.

Spruance Hall, at the main entrance to the campus, incorporates a floor plan designed for student convenience. The building houses the admissions office, student financial services, student employment, cashier, financial aid, career services office, and some classrooms. The office of the President is also located in the building.

The Jack R. Hunt Memorial Library is a 48,000-square-foot facility with a seating capacity of 800. The building holds more than 90,000 books, as well as periodicals, documents, newspapers, microfilm, media programs, and a historical aviation collection with materials

from 1909 to the present. Complete service is provided seven days a week throughout the academic term, with extended hours during final examinations. A computer link is maintained with the Southeastern Library Network (Solinet), which connects thousands of libraries worldwide for shared cataloging, reciprocal borrowing of documents, reports, conference proceedings, journal articles, doctoral dissertations, and many other kinds of information.

Additional facilities include a multi-functional auditorium and instructional media center, a field house with adjacent athletic fields, and an Interfaith Chapel.

Extended Campus

For 30 years Embry-Riddle has recognized that the people who work in aviation and aerospace regard education and professional development as top priorities. Opportunities to learn and grow are actively sought because aviation and aerospace are linked to advancing technology and must respond quickly to changes in their environments.

However, not long ago the educational goals of working adults were often frustrated. Common hurdles in aviation jobs, included irregular work schedules, frequent travel, job relocations, and family responsibilities. Navigating around the obstacles to get an education was difficult because few colleges or universities were configured to respond to the needs of adult learners. Few classes were scheduled at times these people could attend.

Embry-Riddle established the Extended Campus to serve the needs of adult learners. Innovation has been, and continues to be, the primary catalyst for the growth and success of the Campus. Three pathways to higher education have been developed to deliver courses and programs to students wherever they may be:

- Classroom instruction at approximately 130 resident centers and teaching sites,
- Distance learning classes through the resident centers,
- Distance learning classes anywhere in the world.

The Campus maintains a comprehensive system of academic control to insure that the same learning objectives are consistently achieved regardless of where or by what means the content of a course may be taught. The same degree curricula, academic policies and academic standards are utilized by all University campuses. Procedures may differ somewhat to accommodate variances in structure, organization and location.

Extended Campus

Students may transfer among the campuses confident that academic work will be of comparable quality and, for the most part, integrate with the courses to be taken at the new location. The applicability of University and transfer courses may vary slightly in one or two degree programs due to specialized accreditation. Acceptance and application of Embry-Riddle courses by other institutions is in accordance with the policies of the individual institution.

Selection of Extended Campus faculty is based on academic credentials and professional experience. Emphasis is given to aviation relevance and knowledge and understanding of current information and issues. Appointment and certification are determined in accordance with the criteria and standards followed throughout the University.

Extended Campus classes are scheduled to accommodate the needs of adult students, most of whom participate on a part-time basis. Terms are shorter than the standard semester but more class time is scheduled per week. The same amount of classroom instruction is provided for each course as would be provided in a full semester. Classes may be scheduled in the early morning, during lunch periods, in the evening, or on a series of weekends. The length and starting and ending dates of terms vary by location.

The Jack R. Hunt Library

The Jack R. Hunt Library assists students, faculty, and staff of the Extended Campus with access to materials, to support their informational, instructional, and research needs. The library provides resident centers with aviation-related reserve book collections, periodical subscriptions, Aviation Tradescan Index subscriptions, and a videotape collection. The library also develops and publishes a video catalog, a substantial assembly of aviation reference materials referred to as the Riddle Aviation Collection (RAC), and library guides for each resident center. Additionally, the library offers an article reprint service, reference services, inter-library loan services, and has a home page on the World Wide Web.

Prescott Campus

Primarily oriented towards undergraduate education, and located in one of the most picturesque portions of the Grand Canyon State only 100 miles north of Phoenix, the mile-high Prescott campus covers 510 acres.

The aerospace engineering laboratories provide extensive and significant hands-on experience for students. The wind tunnel laboratory contains a research quality subsonic wind tunnel with a 3x4 ft. test section. In addition, a state-of-the-art 1x1 ft. test section is used extensively to investigate the principles of aerodynamics.

A modern supersonic wind tunnel and a shock tube allows investigations of flow with shock. A materials laboratory contains the latest equipment to study the properties of materials, including heat treatment. The engineering graphics and the aircraft design labs have modern computer-aided design equipment. The aircraft structures and composite labs analyze structural aspects of aerospace vehicles, and include an electron microscope capable of magnifying images 70,000 times.

Five modern laboratories support academic instruction in electrical engineering through demonstrations, designs and experiments with aerospace electronics applications. The basic circuits and electronic devices lab, the digital circuits and microcomputer applications lab, the communications system lab, the analog/digital control system lab, and the power and electronics lab all provide resources for avionics design and other student projects.

The Flight Training Center, which is located at Ernest A. Love Field just minutes from the campus, includes the flight operations center, flight line, ramp, and simulator laboratory. Flight instruction is provided in a modern, well equipped fleet of single and multi-engine aircraft.

Admission To The University

Most graduate students at Embry-Riddle are enrolled in one of our Master's degree programs. The University also offers students who do not wish to pursue a graduate degree the opportunity to enroll and take classes as non-degree students.

Embry-Riddle seeks graduate students of good character who have demonstrated scholastic achievement and capacity for future growth. Our admission process is aimed at identifying the best students who show the potential to succeed in one of our graduate programs. We use the guidelines in the next section to determine which applicants are to be granted full admission to a graduate program. Students who fail to meet these guidelines, but who are judged to have potential for success in a graduate program may be granted conditional admission (subject, of course, to openings in the graduate program). Students admitted under conditional status will have to prove their ability to pursue a graduate program by meeting specific performance criteria after matriculation at the University.

Admission actions are often taken in the anticipation of the applicant successfully completing the baccalaureate or some other admission requirement. Admission granted by such actions is provisional, and is automatically rescinded should the applicant fail to meet the requirement before the specified date for the start of graduate study.

Specific programs may require that potential degree candidates display a mastery of a number of topical areas critical to the initiation of graduate level study in their fields. Candidates are informed of these requirements along with their notification of acceptance.

Any questions relating to the criteria or any other aspect of the admissions process should be addressed to the Graduate Admissions Office on the Daytona Beach campus, the appropriate center director for the Extended Campus, or the Admission Office for the Extended Campus.

General Criteria

Applicants must possess an earned baccalaureate degree or equivalent.

If earned in the United States, this degree must be from an appropriately accredited college, university, or program.

If earned outside the United States, the degree must be from an institution that offers a degree program that is equivalent to one in an appropriately accredited college, university, or program in the United States. Such equivalency will be judged on the basis of past admission experience. Applicants educated at foreign schools with which Embry-Riddle is unfamiliar may be required to obtain an evaluation by submitting official certified documentation of their educational achievements to an international education evaluation organization specified by Embry-Riddle.

A well-defined process will be used to determine whether or not a student is fully qualified for admission to specific graduate program. Criteria for making this judgement will include: academic record, work experience, professional activities, publications, recommendations, written statements, and interviews, as appropriate.

Program Specific Criteria

Master of Aeronautical Science (MAS)

The Master of Aeronautical Science (MAS) degree program is designed to provide the aviation/aerospace professional with a rigorous academic approach to a generalist education oriented degree. It provides an unequaled opportunity for flight crew members, air traffic control personnel, flight operations specialists, industry technical representatives and aviation educators to enhance their knowledge and pursue additional career opportunities.

Entry into the MAS program requires possession of an under graduate foundation in the areas of college-level mathematics, introduction to computers, economics, behavioral science, and aviation rules and regulations.

Master of Science in Aerospace Engineering (MSAE) and Master of Aerospace Engineering (MAE)

An applicant's baccalaureate degree should be a Bachelor of Science Degree in Aeronautical of Aerospace Engineering, or equivalent. If earned in the United States, the degree must be from an ABET accredited program.

Students with a Bachelor of Science or equivalent degree in other engineering disciplines, mathematics, or physical science, who otherwise meet the requirements for full admission, may also be admitted to the MSAE or MAE program.

Master of Business Administration in Aviation (MBA/A)

Applicants for admission to the MBA/A program on the Daytona Beach campus are expected to take the Graduate Management Admission Test (GMAT) prior to matriculation. The minimum acceptable score for the GMAT is 450. Daytona Beach students who have not taken the GMAT will not be permitted to register for MBA/A classes after their first semester in the MBA/A program.

Executive Master of Business Administration for Aviation and Aerospace Professionals (EMBA)

Applicants must possess extensive work experience, some at the management/supervisory level or equivalent.

A sponsorship agreement or letter of support from the applicant's organization must be provided.

A personal interview with the department chair or designee is generally required.

Master of Industrial Optimization (MSIO)

The Master of Science in Industrial Optimization degree program is designed to provide recent engineering and science graduates, as well as mid-career engineers and scientists, an opportunity to develop skills in optimization, statistics, and quality control and improvement that can be applied to product and process design and improvement. Engineers and scientists completing this program can assume key positions in engineering and scientific research.

Master of Safety Science (MSSS)

(Beginning Fall, 2001 at the Prescott Campus)

The Master of Science in Safety Science (MSSS) degree program is designed to provide the safety and aviation professional with an experiential and practical educational experience to enhance the practice of safety. The degree will produce educated safety professionals who are (1) skilled in providing safety management expertise and (2) who can provide leadership and guidance in compliance issues involving EPA, OSHA, DOD, FAA, DOE and state health, hygiene, and workplace standards. These safety professionals will be prepared for service in aviation and aerospace in a variety of organizations to include: government which includes the military; industry, including aircraft manufacturing; the air carriers; insurance; and any other aviation related business in which the prevention of accidents is of significant importance.

Master of Software Engineering (MSE)

Admission to the MSE degree program requires a strong background in computer science.

Master of Science in Technical Management (MSTM)

An admissions interview is required.
The MSTM degree program is delivered through the Extended Campus, and only on-site at selected industry locations.

Conditional Admission

1. Students who fail to satisfy the guidelines for full admission, but who are judged to have potential for success in a graduate program may be granted conditional admission. Students admitted under conditional status must prove their ability to pursue a graduate program by meeting specific performance criteria after matriculation at the University.
2. Students admitted on conditional status will be monitored closely as to scholarly performance. Students who are admitted conditionally will be on conditional status until they have completed twelve hours of graduate work. During this period, students must maintain a B average or better, and receive no more than one grade of C and no grade of F.
3. The conditions of admission will be communicated to applicants in the letter of admission. Students are fully admitted to the program when the conditions have been properly satisfied.

Admission To The University

Non-Degree Seeking Students

1. Admission as a non-degree seeking student must be approved by the appropriate dean of academics or designee.
2. Students who meet the general admission criteria may, based upon a assessment of their preparedness to take graduate courses, be admitted as non-degree seeking students. An application, including all undergraduate and graduate transcripts from a regionally accredited post-secondary institution, must be submitted to be considered for admission as a non-degree seeking student.
3. Non-degree seeking students will be limited to a total of 12 hours of graduate credit.
4. Should a non-degree student subsequently apply for entry into a degree program, additional admission requirements must be met.

Procedures For Admission

Applications will not be processed until all required documents are received. Applications received after the submission deadlines stated in the following sections will be processed as quickly as possible, but acceptance for admission may not be early enough for the applicant to begin the program as soon as desired.

Daytona Beach applicants should submit their applications for admission to:

Embry-Riddle Aeronautical University
Graduate Admissions Office
600 S. Clyde Morris Blvd.
Daytona Beach, Florida 32114-3900
Toll Free (800) 388-3728 or
Worldwide (904) 226-6115
FAX: (904) 226-7111
Financial Aid (800) 943-6279
Email: gradadm@db.erau.edu
http://www.db.erau.edu

Information regarding admissions procedures/policies for the Executive MBA option are documented separately. Please contact the following office for information:

Embry-Riddle Aeronautical University
Business Administration Office
Executive Management Institute
600 S. Clyde Morris Blvd.
Daytona Beach, Florida 32114-3900
Worldwide (904) 226-7946
FAX: (904) 226-7984
Email: emi@.db.erau.edu

Admission To The University

To apply for admission to graduate programs offered by the Extended Campus, all required documents must be submitted to the resident center which the applicant plans to attend. A listing of the centers offering graduate programs may be found in the back of this catalog, or you may contact the Extended Campus Admissions, Records and Registration Office.

Embry-Riddle Aeronautical University
Extended Campus
Admissions, Records and Registration
600 S. Clyde Morris Boulevard
Daytona Beach, FL 32114-3900
Graduate (904) 226-6910 or (800) 522-6787
E-mail (admissions): ecinfo@db.erau.edu
http://www.ec.erau.edu

United States Citizens and Permanent Residents of the United States

All of the following items must be received by the Graduate Admissions Office at the Daytona Beach campus, the appropriate resident center, or the distance learning office at least 30 days before the first day of the initial term in which the applicant plans to enroll:

1. Completed application form and application fee.
2. The Daytona Beach campus requires a statement of objectives, and three letters of recommendation.
3. Official transcripts must be received directly from all colleges or universities where course work was attempted: i,e.,
   a. Institutions where the baccalaureate degree was earned;
   b. All graduate course work attempted; and
   c. Undergraduate courses which may be prerequisites for graduate courses.
4. Official test result reports sent directly from the testing authority for DANTES or CLEP examinations applicable to undergraduate prerequisite requirements.
5. GMAT scores (minimum acceptable score is 450), as appropriate.

International Applicants

International applicants are those non-resident, non-immigrant applicants entering the United States on visas valid for educational purposes. Embry-Riddle is authorized under Federal laws to enroll non-immigrant alien students. International applicants may enroll at the Daytona Beach campus. Those students interested in attending the Extended Campus in the United States or Europe are advised to contact the Extended Campus Records and Registration Office for information and special approval.

Admission To The University

The following items must be received at the Graduate Admissions Office, Daytona Beach campus, or the Extended Campus Records and Registration Office at least 90 days before the first day of the initial term in which the applicant plans to enroll:

1. Completed application form and application fee.
2. The Daytona Beach campus requires a statement of objectives, and three letters of recommendation.
3. Official transcripts must be received directly from the college or university where course work was attempted: e.g.,
   a. Institutions where the baccalaureate degree was earned;
   b. All graduate course work attempted; and
   c. Undergraduate courses which may be prerequisites for graduate courses.
4. If the baccalaureate degree was earned outside the United States, the degree must be from an institution that offers a degree program that is equivalent to one in an appropriately accredited college, university, or program in the United States. Such equivalency will be judged on the basis of past admission experience. Applicants educated at foreign schools with which Embry-Riddle is unfamiliar, may be required to obtain an evaluation by submitting official certified documentation of their education achievements to an international education evaluation organization specified by Embry-Riddle.

   Josef Silny & Associates*
   email: info@jsilny.com
   (request course-by-course evaluation and CGPA)

   Academic Credentials
   Evaluation Institute (ACEI)
   email: acei@acei1.com
   (request course-by-course evaluation and CGPA)

   Global Credential Evaluators Inc.
   email: www.gcevaluators.com/app.html
   (request course-by-course evaluation and CGPA)

   * Preferred Evaluation Service

5. International students whose native tongue is not English, must demonstrate their mastery of the English language by:
   a. Achieving a score of 550 or above (paper test) or 213 (CBT) on the Test of English as a Foreign Language (TOEFL), or
   b. Showing that they have successfully completed a year at a United States college or university, or

c. Show that English was the sole language of instruction at the foreign college or university from which they graduated.

6. Bank letter, affidavit of financial support, or official notification of public or private organizational sponsorship. Daytona Beach applicants without sponsorship must remit a $5,000 deposit. In addition, international students must be fully prepared upon arrival at the University to meet all normal living expenses and manage their finances throughout their stay.

Upon notification of acceptance for graduate study, international applicants must remit the required advance tuition deposit. Upon receipt of the deposit, the University will send written confirmation of enrollment eligibility and will issue the Certificate of Eligibility (U.S. Immigration and Naturalization Service Form I-20). The I-20 Form must be in the students' possession before departure and presented to the nearest U.S. embassy or consulate to obtain the necessary entry visa before departure to the United States.

The foregoing rules and procedures apply equally to international students already studying in the United States who wish to pursue graduate study at Embry-Riddle. The only exception is that they must follow the required procedures to obtain approval of the U.S. Immigration and Naturalization Service for the transfer. Students should seek the assistance of the international student advisor at the school from which they wish to transfer.

Admission Time Limit

Applicants who have been accepted for admission into Embry-Riddle graduate programs must enroll in Embry-Riddle graduate courses within one year from the date of the letter notifying them of acceptance. Those who do not enroll within the specified time period must reapply for admission according to the regulations and procedures in effect at the time of reapplication.

Admission Deposit For Daytona Beach Campus

Students accepted for admission must submit a $150 advance tuition deposit no later than 30 calendar days before matriculation. This deposit confirms admission to the University and is credited toward the first semester's tuition.

The deposit will be held in the student's account for one year should the student enroll during that year. After one year, the deposit is forfeited.

A student who cancels the application at any point in the admissions process may reactivate the application at any time up to one year from the date of acceptance. After one year, a new application, fee, and supporting documents must be submitted.

Credit for Prior Academic Work and For Courses Taken at Other Institutions

Students applying prior academic work toward their Embry-Riddle graduate program requirements must submit appropriate documentation for such credit as part of the admission process. The request must be in writing and accompanied by official transcripts or equivalent evidence of such work. Requests must be approved by the Daytona Beach department chair (Extended Campus program chair) or designee prior to matriculation at Embry-Riddle.

Prior academic work and courses taken at other institutions by Veteran students and/or other eligible students receiving Veterans' Education Benefits "will be evaluated" and credit granted as appropriate and reported to the DVA as required by law.

Credit (called transfer credit) may be received for graduate work done at another appropriately accredited college or university.

Credit (called advanced standing credit) may be received for learning taken outside of the traditional classroom environment. Such learning must be recommended for acceptance in graduate programs by academically recognized national organizations (e.g. the American Council on Education).

Credit (called escrow credit) may be received for certain graduate courses taken by Embry-Riddle undergraduates.

Credit may be received for certain graduate courses taken as non-degree graduate work or as part of another (completed or non-completed) Embry-Riddle graduate degree program. When transferring from one Embry-Riddle graduate program to another this credit may include prior work on a GRP or thesis.

The combined total of credit applied to an Embry-Riddle graduate degree may not exceed twelve credit hours.

In order to satisfy a graduate degree program requirement, the academic work for which such credit is sought must be determined to be specifically relevant to the applicant's graduate degree program at Embry-Riddle. The content of the applicable course or other program should be used to determine the nature of the credit to be applied to the student's degree requirement. The appropriate department chair or designee (Daytona Beach) or Dean of Academics or designee (Extended Campus) shall make these determinations.

Credit will be granted only if the student demonstrated performance expected of a graduate student at Embry-Riddle (in the case of graduate courses, this normally means 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 undergraduate degree will normally not be accepted towards the requirements for a graduate degree.

Credit will generally be accepted only for courses that were completed within the seven year period immediately preceding the date the application is received at the appropriate admissions office. 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.

Permission to obtain graduate credit for courses to be taken outside the University after matriculation must be granted by the department chair or designee (Daytona Beach) or by the Dean of Academics or designee (Extended Campus).

The last nine hours of graduate credit on a degree program must be earned at Embry-Riddle.

Intra-University Transfer

Graduate students who have matriculated on either the Daytona Beach or Extended Campuses who are continuously enrolled students, and who have met their financial obligations on the campus where they matriculated, may transfer from one campus to the other. Transfers are not automatic and certain conditions must be met. Additionally, a vacancy must exist in the program to which the student wishes to transfer, either permanently or as a visiting student.

The time required for the transfer of the necessary records is apt to be lengthy and students will not be allowed to attend classes until all elements of the process are complete. Students are urged to begin this process at least 45 days before the first day of classes in order to avoid any interruption in the progress toward their degree.

ACADEMIC REGULATIONS AND PROCEDURES

Academic Regulations and Procedures

All University graduate academic and non-academic procedures and regulations are subject to change. Therefore, all procedures and regulations in effect at a given time may not be reflected in the current catalog. When such changes do occur, notice of the change may be in the form of an addendum or in the next catalog. Catalog addenda are effective on the date published unless otherwise stated.

Student Responsibilities

Students are responsible for being fully informed about all procedures and regulations governing their participation in Embry-Riddle's graduate programs. The necessary information may be found in the current graduate catalog, Student Handbook, orientation and information packets published and distributed by the campuses and resident centers, and periodic announcements published by the University. A student who requires clarification of any policy or regulation should seek help from his/her academic advisor, or the office of Records and Registration. University regulations will not be waived because a student is unaware of established standards and procedures.

Academic Advising

At the Daytona Beach campus, the graduate program coordinator is the student's academic adviser. At Extended Campus locations, the resident center director is responsible for academic advisement. Distance learning students should contact the office of distance learning for academic advisement. Academic advisers help students choose and schedule courses that meet their educational goals. Daytona Beach campus requires the adviser's signature on all registration and add/drop forms.

Academic advisers post a schedule of office hours, and students should feel free to call on their advisers when assistance or discussion is needed.

Registration

Students are required to register for each term of enrollment. Tuition deposits, registration, and fee payments must be completed according to instructions published by the office of Records and Registration. Students are not officially enrolled until they complete all phases of registration, including financial requirements.

Late registration will be allowed during the first three days of classes if unusual circumstances prevent the student from registering during the normal registration period. Registration will not be allowed after the last day for late registration, as designated

in the academic calendar of this catalog. Extended campus students requiring information about registration procedures should contact the appropriate resident center or the distance learning office.

Schedule of Classes

A schedule of classes is prepared for each term at all locations served by the University. The University reserves the right to make necessary and appropriate adjustments to the published schedule to include cancellation or rescheduling of any class.

Academic Integrity

Embry-Riddle Aeronautical University is committed to maintaining and upholding intellectual integrity. The faculty, departments, divisions, or campuses of the University may impose sanctions on students who commit the following academic integrity violations.

1. Cheating - the use of inappropriate sources of information on a test or being a party to obtaining or possessing an examination before the time the examination is scheduled.
2. Plagiarism, presenting as one's own the ideas, words, or products of another.
3. Forgery and unauthorized alteration or misuse of one's own or another's academic records or transcripts.
4. Knowingly furnishing fake or misleading information to the University when seeking admission to the University or campus.
5. Forging, altering, falsifying, destroying, or unauthorized use of a University document, record, or identification. This includes using the logo, stationery, or business cards of the University or otherwise identifying oneself as an agent of the University for personal, non-University business.
6. Misuse of computing facilities and/or security violations, including attempted violations of computing facilities.

Sanctions may include a failing grade on the assignment, a failing grade for the course, or dismissal from the University.

Exclusion From Courses

A student making no real progress in a course or whose behavior is detracting from the course may be excluded from the course by the appropriate dean of academics with a grade of "W" or "WF". Students have five calender days following written notification of this exclusion in which to appeal. Until the final disposition of the appeal, the student is considered enrolled in the course.

Academic Regulations and Procedures

Course Loads

The normal maximum course load for graduate students is nine credit hours per term. If a student demonstrates exceptional academic performance, the department chair or designee or the Extended Campus resident center director may approve a maximum one-course overload. The department chair or designee, or the resident center director may restrict a student's enrollment when deemed in the best interests of the student.

Full-time enrollment criteria varies by the length of the term.

The Grading System

The following indicators 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
F	Failure	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	N/A
P	Passing grade (credit)	N/A
IP	In Progress	N/A
S	Satisfactory (non-credit)	N/A
T	Transfer Credit	N/A

Grade Reports

Grade reports are issued at the end of each term. All reports of grades are mailed directly to the student at the most current address on file in the office of Records and Registration. Students are solely responsible for informing the office of address changes.

The University is prohibited from releasing grade information without the express written authorization of the student. Such authorization must be granted each term because blanket authorizations are prohibited by law.

Academic Regulations and Procedures

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.

Grade Point Averages: GPA, CGPA

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 hours attempted in that period. The CGPA is determined by dividing the total number of grade points by the total number of hours attempted at the University. Grade points and hours attempted are accrued in courses graded A, B, C, F, and WF only.

Thesis Grading

A final grade of P or F is awarded upon completion of the thesis. If the student is making progress, a grade of IP is awarded at the end of each term. If the student has not made progress, a grade of F will be issued and will result in a change from IP to F for all thesis credits. A student enrolled for a thesis will receive a grade each term, as determined by the student's thesis committee. If the student is making progress toward completion of the thesis, a grade of IP will be will be issued. If the student has not made progress, a grade of F will be issued and will result in a change from IP to F for all thesis credits. The thesis option is not available to Center for Distance Learning students.

Graduate Research Project Grading

A final grade of P or F is awarded upon completion of the graduate research project. If the student is making progress, a grade of IP is awarded at the end of each term. If the student has not made progress, a grade of F will be issued and will result in a change from IP to F for the original three hours, and from IP to N for all remaining credits. Students who do not complete their graduate research project within the number of credit hours required by their degree program, are normally required to register for one credit hour for every subsequent term.

Internship Grading

A final grade of P or F is awarded upon completion of a graduate internship.

Dropping a Course

Students may drop a course, with no notation of course enrollment on their transcripts, during the drop period only. On the Daytona Beach campus, the drop period extends through the third week of Spring and Fall terms and the second week of Summer terms.

Auditing a Course (AU)

Because students audit a course solely to enhance their knowledge, 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.

Withdrawing from a Course (W)

Students receive a grade of W if they withdraw from a course before the tenth week of Spring and Fall terms and the fifth week of Summer terms. If they withdraw from a course after this period, they receive a grade of F. If students stop attending their classes and fail to withdraw from the University, a grade of F is assigned for each course in which they were enrolled.

Students are not permitted to drop or withdraw from a course while a charge of academic dishonesty is pending. Students who withdraw from a flight course before the initial attempt at the final phase check receive a grade of W.

Because the length of academic terms varies within the Extended Campus, the withdrawal period also varies. Generally, students who withdraw up to the middle of the term, unless otherwise established by any contract or memorandum of understanding/agreement, receive a grade of W.

Incomplete Grades (I)

In exceptional cases, faculty may assign the temporary grade of incomplete (I) if a student is unable to complete the required work in a course because of medical emergency, death in the family, military duty, or other extenuating circumstances. If a student does not complete the course within the specified period, the grade of I automatically converts to an F.

The period to convert an I in a graduate course extends through a time period determined by the instructor, but no later than three calendar months following the end of the term in which the I grade was assigned.

The resident center director or the Extended Campus Department of Admissions, Records and Registration may restrict the enrollment of students who have outstanding incompletes or a history of repeated incompletes.

Repeating a Course

Students may petition to repeat one course in which a grade of less than a B was earned for the purpose of improving their grade point average. Both grades earned appear on the transcript, but only the replacement grade is included in the calculation of the grade point average.

Undergraduate Enrollment in Graduate Courses

During their senior year, Embry-Riddle undergraduate students may elect to take selected Embry-Riddle graduate courses, normally 500 level, for credit towards their undergraduate or graduate degree. Extended Campus students must be within two courses of completing the requirements for the bachelor's degree. Any graduate course used to fulfill undergraduate elective requirements cannot be used for graduate credit.

Academic Warning and Dismissal

Warning

Students on full-status whose cumulative grade point average (CGPA) falls below 3.00 are placed on Academic Warning. Students on Academic Warning must raise their cumulative grade point average to 3.00 within the next twelve hours of graduate work.

Dismissal

1. Students on conditional status who fail to satisfy the conditions of their admission.
2. Earn less than a B in three graduate courses;
3. Earn an F in any two graduate courses;
4. Are on academic warning and fail to earn a 3.00 CGPA within the next twelve hours of graduate work;
5. Earn less than a 2.5 cumulative grade point average;

Students may appeal their first academic dismissal from the University by submitting a petition in writing detailing the existence of any exceptional mitigating circumstances to the Associate Provost of Graduate Programs and Research or designee within 30 days of the receipt of the dismissal notice. The Associate Provost or designee will refer the student petition to the appropriate appeals committee for recommendation. Upon recommendation of the appeals committee, the

Dean or designee reviews the case and makes the final determination of the action to be taken. Such action will be taken in a timely manner not to exceed 30 days of the receipt of the petition. If confirmed, academic dismissal is final.

Students whose academic dismissal is final will not be readmitted to the University for two years. Unless readmitted to the University, such students will not be permitted to take any further graduate courses with the University.

Dismissal for Cause

The University reserves the right to 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.

Withdrawal For Academic Misconduct

Students may be forced to withdraw from the University for habitual delinquency from class, habitual idleness, or any other fault which prevents the student from fulfilling the purpose implied by registration at the University. Students who are forced to withdraw during a given term will have the notation "Academic Misconduct (date)" entered on their permanent academic record following the semester in which the action occurred. Grades of "W" or "WF" (withdrawal) will be entered for each of the courses in which students were registered. Students who have been forced to withdraw must apply for readmission to the appropriate dean of academics in the same manner as a dismissed student.

Transfer Between Graduate Degree Programs

A graduate student may apply at any time to transfer from one program to another. The department responsible for the new program, however, has the prerogative to accept or reject the student's request, and to determine the courses applicable to the new program. Daytona Beach campus students should contact the appropriate graduate program coordinator. Extended Campus students should contact the resident center director, and distance learning students should contact the distance learning office.

When a student elects to transfer from one degree program to another, the catalog in effect when the transfer is approved, is applicable.

Academic Regulations and Procedures

Additional Graduate Degrees

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

Catalog Applicability

1. A petition to come under the provisions of a later catalog requires approval from the department chair or designee.
2. Former graduate students who re-apply for admission to the University will, if readmission is granted, come under the provisions of the catalog in effect at the time of readmission.
3. Students who change from one graduate degree program to another come under the provisions of the catalog in effect on the date of the change of program petition was approved.

Degree Completion Time Limit

All requirements for an Embry-Riddle master's degree must be completed within seven years from the date of initial enrollment.

Loss of Graduate Status and Readmission

Under certain circumstances (other than graduation), a graduate student may lose graduate status and will no longer be considered a student at Embry-Riddle. This can occur when:

A. A student voluntarily withdraws from the University.
B. A student is dismissed from the University and the dismissal becomes final
C. A student fails to meet the requirement for continuous enrollment. This occurs when a student does not enroll in at least one term in a two year period.
D. A student does not complete the degree requirements of a graduate program within seven years of starting the graduate program.

Students who fail to maintain continuous enrollment for any reason are required to apply for readmission under the catalog in effect at that time.

Withdrawal from the University

Daytona Beach students who leave the University for any reason must officially process a withdrawal clearance through the office of Records and Registration. When a student withdraws from the University after the end of the scheduled withdrawal period, a WF

grade will be assigned for all courses in which the student is enrolled unless an exception is granted for medical reasons or other extenuating circumstances by a Dean.

Extended Campus students should contact their resident center representative for information regarding withdrawal.

Graduation Requirements

The following summary of graduation requirements is provided for all students. An Embry-Riddle Masters Degree will be conferred upon the successful completion of the general requirements of the University and the specific requirements of the degree sought.

1. All course, thesis, GRP, and other academic requirements, as appropriate, must be met.
2. The student is not on Academic Warning.
3. All debts and obligations to the University are satisfied.
4. The student is not under University investigation for misconduct or other disciplinary matters.
5. A student must be enrolled in the term in which he/she graduates
6. An application for graduation must be initiated by the student and received within the time limit specified by the appropriate campus record office.
7. Participation in graduation exercises will not be permitted, a diploma will not be awarded, nor a transcript annotated as complete, until all the degree requirements have been satisfied.

Graduation Honors

Students who have completed a graduate degree program and who have excelled academically throughout their graduate careers are recognized through the publication of graduation honors. To be eligible, graduate students must have completed their degree program with a cumulative grade point average of 4.00 based on grades received in all courses that apply to specific degree requirements.

Privacy of Student Records

The University respects the rights and the privacy of students in accordance with the Family 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 nondisclosure request. Students are required to file request for nondisclosure on an annual basis. Directory information consists of the student's name, address, telephone number, date and place of birth, major field of study, participation in officially recognized activities and sports, weight and height of members of athletic teams, dates of attendance, degrees and awards received, the most recent education institution attended by the student, and other similar information.

FERPA allows disclosure of educational records or components thereof under certain conditions. Students desiring additional information regarding FERPA should contact the office of Student Services.

Student Grievances

It is the policy of Embry-Riddle Aeronautical University to administer its educational programs in a fair, equitable, academically sound manner and in accordance with the appropriate regulations and criteria of its governing board, accrediting associations, and federal and state laws and regulations. To this end, graduate students are provided an opportunity to express any complaint, grievance, or dispute that upon investigation may be redressed.

Mandatory Drug Testing

Success in the aviation industry requires a commitment to excel and the discipline to avoid unsafe practices. The use of illegal drugs constitutes an unsafe practice and is incompatible with an aviation environment. Therefore, the University reserves the right to immediately suspend or dismiss any student who uses or possesses illegal drugs.

In the effort to maintain a work and educational environment that is safe for its employees and students, the University has established a mandatory student drug testing program. The cost of drug testing is the responsibility of the University. Embry-Riddle has contracted with a professional testing service as the certified laboratory for the collection and analysis of test specimens. This testing service will adhere to all requirements for chain of custody, test reporting, and specimen retention in accordance with proposed DOT and FAA regulations.

Scope

The drug testing program applies to all students whose catalog applicability is 1990-91 and later and who engage in flight training at the University on or after January 1, 1991. Students who have catalog applicability before the 1990-91 academic year have the option of participating in the random drug testing program.

As outlined by regulations set forth by the Department of Transportation (DOT) and the Federal Aviation Administration (FAA), the University tests for marijuana, cocaine, opiates, amphetamines, and phencyclidine (PCP) as follows:

1. Random testing of students engaged in flight training.
2. Required post-accident testing for students involved in an aircraft accident. Students are tested for drugs within 32 hours after an accident. An accident is defined as any occurrence associated with the operation of an aircraft that results in any person suffering death or serious injury, or where the aircraft receives substantial damage as determined by the National Transportation Safety Board. The accident

can occur at any point between the time a person boards the aircraft with the intention of flight and the time all have disembarked.

In the event that drug testing is required, students who fail to comply with testing procedures, refuse to be tested, or test positive for illegal drugs are subject to the following actions:

1. Students who fail to comply with all University directives concerning the place of testing, the manner in which they are to arrive at the test site, and any other related matters are subject to disciplinary action up to and including dismissal from the University.
2. Students who refuse to be tested after being requested to do so by the University will be dismissed by the University.
3. Students whose test results show positive for the use of an illegal or non-prescribed drug, as verified by a medical review officer, will be dismissed from the University.

Testing

The cost of drug testing is the responsibility of the University. Embry-Riddle has contracted with a professional testing service as the certified laboratory for the collection and analysis of test specimens. This testing service will adhere to all requirements for chain of custody, test reporting, and specimen retention in accordance with proposed DOT and FAA regulations.

Notification

Students applying to attend the Daytona Beach campus are notified of the drug-testing requirement. In addition, during official orientation all matriculating students are given a copy of the University publication titled Substance Abuse Policy and Mandatory Drug Testing Policy and Procedures. The drug testing policy is also explained on appropriate flight-course registration forms.

Student Education and Assistance

Embry-Riddle Aeronautical University promotes substance abuse awareness by sponsoring educational programs and distributing literature. The University is additionally committed to assisting students in the resolution of problems associated with substance abuse and encourages students to seek additional help through referrals from University Health Services and Counseling departments.

FINANCIAL INFORMATION

University Expenses

Embry-Riddle Aeronautical University is committed to providing high-quality education at a reasonable cost. For more detailed information about tuition, fees, and other University expenses, please call (800) 943-6279.

Extended Campus students should contact the resident center where they will be attending, or the distance learning office.

Daytona Beach Campus

Fall 2000/Spring 2001 Tuition

All degree programs: $685 per credit hour

Summer 2001 Tuition

All degree programs: $685 per credit hour

Some programs may be offered off campus at a different rate.

Bills for tuition and fees, issued at the end of registration, are payable on the first day of class. If full payment cannot be made by this date, tuition payment agreements on outstanding balances are available at the rate of 1.5% per month. Tuition payment agreements are available in the Student Accounting Office.

Flight Course Fees

Although not part of any graduate curriculum, graduate students on the Daytona Beach campus of Embry-Riddle Aeronautical University are allowed to take flight courses and earn flight ratings from the private pilot through instrument and multi-engine. These courses are not part of the graduate curriculum and cannot be used as credits toward a graduate degree.

All flight instruction is paid for as it is received. Actual costs to complete each course depends on the course requirements and the student's ability. For more information, please contact the Flight Department at (904) 226-6800.

Financial Information

Room, Board, and Fees

The following fees will be incurred each semester by any student attending the Daytona Beach campus and should be used when estimating the cost of attendance.

On-campus housing, standard double occupancy (per semester) $1,450

Dining Services

A variety of meal plans are offered. The 14 meal plan with $200 in Riddle Dining Dollars is recommended for students living on campus. All plans may be supplemented with Eagle Dollars or Dining Dollars to add flexibility. All meal plan purchases may be charged to your account. Please refer to the dining service brochure for a complete description of plans and services.

Fees

Graduate Internship fee (Fall and Spring)	$685
Graduate Internship fee (Summer A or B)	$345
Annual Vehicle Registration fee	
Automobiles	$ 25
Motorcycles	$ 5
Health Service fee	$ 40/semester
International Student Insurance Fee	$ 160/semester
International Student Service fee	$ 50/semester
Transcript fee, academic or financial (per transcript)	$ 5/semester
Commencement fee (non-refundable)	$ 40/semester
Duplicate Diploma	$ 15/semester
Technology Fee (not applicable Summer)	$ 80/semester

Refund Policy

During the Fall and Spring semesters only, Daytona Beach students who officially withdraw from all classes are eligible for partial refund of tuition. Spring and Fall tuition refunds for reduction of hours, are not available after the last day of add/drop. Summer term refunds are calculated on a per-course basis.

During all terms the effective date of the withdrawal, as determined by the Records and Registration office, governs refund computations.

A. The following are refundable according to the Withdrawal/Refund Schedules below:

1. Tuition
2. Housing fees (less $200 housing processing fee)
3. International Student Service fee
4. Health Service fee

Withdrawal/Refund Schedule

Fall/Spring/Summer C Semesters

Period I	Class days 1 - 3	100%*
Period II	Class days 4 - 10	80%
Period III	Class days 11 - 15	60%
Period IV	Class days 16 - 20	40%
Period V	Class days 21 - 25	20%
Period VI	Class days 26 and after	0%

*Less $100 administrative fee

Summer A/B

Period I	Class days 1 - 3	100%*
Period II	Class days 4 - 6	80%
Period III	Class days 7 - 9	60%
Period IV	Class days 10 - 12	40%
Period V	Class days 13 - 15	20%
Period VI	Class days 16 and after	0%

*Less $100 administrative fee

Department of Education Withdrawal/Refund Schedule

Students receiving financial aid who withdraw will be subject to the refund policies specified by the U.S. Department of Education. Refunds for first time students who withdraw on or before the 60% point of the enrollment period will be determined by calculating the amount due under the "pro-rata" schedule. Refunds for all other students who officially withdraw on or before the 60% point of the enrollment period will be determined by calculating and comparing the amounts due under the federal refund schedule and the University refund schedule.

Financial Information

Pro Rata Schedule

Week 1	90%
Week 2-3	80%
Week 4	70%
Week 5-6	60%
Week 7-8	50%
Week 9	40%
Week 10	30%

Federal Refund Schedule

Week 1-2	90%
Week 3-4	50%
Week 5-8	25%

Students who have housing contracts must contact the Housing Office to release their obligation. Any refunds will be determined at that time.

Requests for refunds which are not covered by the provisions cited above must be submitted in writing to the University's Refund Committee through the Cashier's Office. Before any request for refund will be considered by the Refund Committee, proper documentation in the form of a clearance or change of registration must be completed.

Requests for refunds due to circumstances clearly beyond the student's control, such as illness, required military service, etc., must be accompanied by appropriate documentation such as a physician's statement, military orders, etc.

A request for refund must be submitted within 60 days of the date the student completed a change of registration.

Refund petition requests will normally be processed within ten business days.

Personal appeals for denied requests, must contain additional documentation not previously presented.

Student Accounts

At the time of acceptance for admission, a University account is opened for each student. This account remains open until graduation. The primary use of this account is for University charges and payments. If an account shows credit balances, a student may request a refund in the form of cash or a check. Each student is encouraged to open and maintain an account at a local bank for personal matters.

Payment Procedures

Cash, Visa, MasterCard, Discover, AMEX, and personal checks are acceptable forms of payment. Payments made by mail should be addressed to the campus Cashier's Office and timed to arrive prior to the first day of class. Charges incurred subsequent to registration are due 30 days from the date of invoice or the last day of class, whichever occurs first. All payments should include student's name and identification number.

Books and Supplies

Purchases are made directly from the University Bookstore. Cash, checks, Visa, MasterCard and AMEX are accepted. Students whose estimated financial aid is higher than the total amount for tuition and fees may request an advance at the Cashier's Office which can be used for books.

Delinquent Accounts

When a student's account is delinquent, registration for that term is subject to cancellation and registration for any subsequent semester will be denied. A delinquent student account will result in suspension of all academic processing and information on class performance, grades, and transcripts will be withheld. Continued delinquency may result in administrative withdrawal from the University. Administrative withdrawal will not relieve a student of the obligation to pay outstanding debts. Sums remaining unpaid will be charged interest at the maximum rate allowed by law. The student is also subject to the costs of collection, including collection agency fees and reasonable attorney's fees for making such collection. Delinquent accounts may be reported to one or all three major credit bureaus.

Financial Information

Extended Campus

Tuition

All Courses ..... $238-$450 per credit hour

Withdrawal/Refund Schedule

Students enrolled through a U.S. Resident Center or the Distance Learning Office

First Week .....
After first week 100%
*Unless specified by M.O.U., contract, or state regulations. 0%

Non-Military students enrolled in Georgia, Kentucky, Mississippi,or California

Refund tables available at the local centers.

Military Students and Dependents Enrolled under the DOD European Contract

Prior to the first class meeting 100%
Up to 1/8th of class meetings 75%
1/8th to 1/4th of class meetings 25%
More than 1/4th of class meetings 0%

Students receiving financial aid who withdraw during their first term are subject to the refund policy specified by the U.S. Department of Education. Refer to the Department of Education Withdraw/Refund Schedule.

Fees

Application Fee	$ 30
International Application Fee	$ 50
Late Registration Fee	$ 25
Transcript Fee (per transcript)	$ 5
Commencement Fee (non-refundable)	$ 40
Duplicate Diploma	$ 15
Previously Earned Diploma	$ 40
Extension Fee	$ 35
MSTM Transfer Credit Fee (per hour)	$ 50
Extended Campus Co-Op (per 3 credits)	$238

Financial Assistance

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

Financial Information

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 awards are meant to supplement what the student and family can contribute toward costs and rarely cover all educational expenses.

A complete description of financial assistance programs and optional financing programs available to students and their parents is published annually by the Financial Aid Office. Students should consult this publication for information about eligibility criteria, application procedures, and deadline dates. Students who expect to need help in meeting their financial obligations are encouraged to seek such assistance through one or more of the programs available for this purpose.

Eligibility Requirements

To be considered eligible to apply for most financial programs, students must:

1. Be U.S. citizens or eligible non-citizens;
2. Cannot be accepted conditionally in a program.
3. Be enrolled or accepted for enrollment as at least a half-time student in a degree program. For financial aid purposes, graduate students must register for a minimum of 6 graduate hours during the summer terms. Students may register for 6 graduate credit hours in one term, or 3 graduate credit hours in Summer A and in Summer B. Financial aid regulations do not consider 3 graduate credit hours as half-time during the summer terms.
4. Be making satisfactory progress toward a degree;
5. Be registered with Selective Service if required to do so;
6. Establish financial need;
7. Not be in default on a loan or owe a repayment on a previous financial aid award received at any institution.

The Application Process

Financial applications are mailed to students after they apply for admission to the University. Renewal applications will be mailed to returning students by the Department of Education. Returning students who do not receive a renewal application may pick up their application materials at the Financial Aid Office. Notices will be posted on campus to remind students of the availability of the forms. Students attending the Extended Campus may request their financial aid materials through the resident center or contact the Financial Aid Office directly or apply through the internet: www.fafsa.ed.gov..

Financial Information

Extended Payments

Students who use financial assistance to pay their University expenses may have the payment date extended for the amount of their award if their funds are not ready to be disbursed by the date payment is due. This is called a payment extension. Any difference between the total charges and the amount of the extension granted must be paid according to the University's payment procedure. Financial assistance is credited to student accounts after the official registration period.

To qualify for a payment extension, students must have applied for financial assistance and must have received final approval of their award.

Programs Available

The major categories of financial assistance programs include loans, grants, scholarships, and student employment. Loans from state and federal government sources or from private lenders must be repaid, however, the interest rate is usually low and the repayment period is extended. Grants and scholarships do not have to be repaid, nor does the income earned through student employment. Most of these programs are based on the student's financial need.

Loans

Federal—
- FSSL (Federal Stafford Student Loan)
- FUSSL (Federal Unsubsidized Stafford Student Loan

Employment

Embry-Riddle—
- Embry-Riddle Student Employment
- Off-Campus Referral Program

Financing Options
- EXCEL Loan
- Knight Extended Repayment Loan
- Educational Line of Credit
- Citiassist Optional Loan
- Key Bank Achiever Loan

Scholarships

University scholarships are awarded to students according to their academic achievement and high probability of success in an aviation career. Students may submit a Scholarship Application after completing at least one semester with a cumulative grade point average of at least 3.00. Scholarships are very competitive. For more information about scholarships, students should contact the Financial Aid Office of the campus they plan to attend.

Athletic Grants

The University offers a limited number of Athletic Grants for qualified students. Awards are available for baseball, basketball, golf, soccer, tennis, wrestling, cross country track, and women's volleyball. The maximum value permitted by the NAIA is the actual cost of tuition, room, board, books, and fees. However, most grants are awarded as partial tuition waivers. To qualify, students must meet both University and NAIA eligibility requirements. Specifically, NAIA requires that student-athletes must be graduate students at the institution from which they earned their undergraduate degree, and have a maximum of ten semesters of full-time student status in which to compete. The grants are highly competitive and interested students should contact the Athletic Department for specific details.

Other Financial Assistance Programs

Veterans' Education Benefits

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

For further information concerning approved programs and the application process, eligible persons should contact the Veterans' Certifying Official at the campus they plan to attend.

Students must be pursuing a degree in a specific program to be eligible to receive benefits. Admission procedures for veterans and other eligible persons are the same as those for other students. Students who do not satisfy all requirements for full admission may be certified for two terms; however, they may be required to repay the DVA for some or all benefits received if they do not achieve full admission status during that time.

Title 38, United States Code, sections 3474 and 3524, requires that education assistance to veterans and other eligible persons be discontinued when the student ceases to make satisfactory progress toward completion of the training objective. Accordingly, benefits will be interrupted for residential campus students who remain on academic probation beyond two semesters and for Continuing Education students who remain on academic probation beyond two consecutive periods of 12 credit hours. The DVA will be appropriately notified of the unsatisfactory progress. A specific request must be submitted by the student to reinstate benefits. The DVA will determine eligibility for reinstatement of benefits.

Veterans' progress will be measured according to University standards as published in this catalog and the rules and regulations of the DVA 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 are responsible for notifying the 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 program. Students who receive DVA 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.

Military Tuition Assistance

Military tuition assistance may be available to graduate students on active military duty. For further information, students should contact the educational services officer at their assigned installation.

Graduate Assistantships

Graduate assistantships are academic appointments that are reserved for qualified graduate students at the Daytona Beach campus. A graduate teaching assistant helps in teaching undergraduate students in specified courses or laboratories under the general supervision of a faculty member. A graduate research assistant is involved in research activities under the direction of a faculty member or a research associate. A graduate administrative assistant assists departments or faculty with curriculum development, special projects, and other duties as assigned. To be eligible for a graduate assistantship, a student must have full graduate status in a degree program, and must have maintained a CGPA of 3.00 out of a possible 4.00 or above, through the end of the semester (graduate or undergraduate) preceding the appointment, and must demonstrate adequate communication and technical skills.

Each department is responsible to post availability of Graduate Assistantships. Students interested in applying should submit a resume directly to the department. Incoming students should contact departments directly for availability of assistantships.

Full graduate assistantships carry a stipend set by the University and a tuition waiver for up to nine (9) graduate credits per semester. Graduate assistants with such appointments are expected to devote twenty (20) hours each week to effectively carry out their assignments. Under some circumstances, partial assistantships providing either tuition or a stipend may be granted. In such cases, expected time to be devoted is set by the assigning department. Graduate assistants are permitted to accept other University employment, however, University policies limit all students to a total of 25 hours of work per week including the Graduate Assistantship. All graduate teaching, research, and administrative assistantships, both full and partial, require that the recipient be registered for at least six (6) graduate credits at Embry-Riddle for any semester of their appointment. Summer registration is not required, but encouraged.

Presidential Fellowships

The Presidential Fellowship Program was established to provide graduate students the opportunity to work with the President and other officers of the University. The Presidential Fellow will learn about and contribute to the management of the University. To be eligible, a student must be in the Master of Business Administration in Aviation (MBA/A) degree program, the Master of Aeronautical Science (MAS) degree program, Management Specialization, or the Master of Science in Human Factors and Systems. A Presidential Fellow will receive a tuition waiver and stipend set by the University and must enroll for six graduate credits for each semester of the appointment. Interested students should contact the Daytona Beach Graduate Programs and Research office located in Lehman Center, Room 360, for additional application information.

STUDENT LIFE AND SERVICES

Student Services and Activities

Embry-Riddle Aeronautical University believes that a well-rounded education goes beyond the classroom. The opportunities for co-curricular involvement are limitless. Daytona Beach students are encouraged to take advantage of the services described in this section to make the most of their academic experience. Except where noted, this service applies to Daytona Beach students only.

STUDENT ACTIVITIES

The Department of Student Activities provides graduate and undergraduate students the opportunity to get involved in activities and programs outside the classroom. One of the primary ways to get involved is through student organizations. Currently, more than 100 chartered student organizations exist including fraternities, sororities, sports clubs, special interest groups, honorary societies, aviation clubs, military organizations, and religious clubs. Involvement in these groups develops social responsibility, group dynamics, social interaction, leadership, communication, and decision-making skills. To inform students about the many student organizations, the department sponsors an Activities Fair at the beginning of the Fall and Spring semesters. The staff is available to assist students in joining a club and to establish new student groups. The department also provides a variety of opportunities for students to develop leadership skills through workshops, seminars, and retreats. The Department also coordinates the annual Homecoming activities, advises Touch-N-Go Productions, and the Phoenix yearbook.

The John Paul Riddle Student Center is the main facility for events such as movies, comedy shows, dances, and others. The Student Center houses the Dean of Student Affairs, Department of Student Activities, Student Government Association, Avion newspaper, Phoenix yearbook, Touch-N-Go Productions, WERU radio station, Information/Telecommunication Center, Health Services, The Hairport, Embry-Riddle Dining Services Offices and a full-service cafeteria. The Student Center Annex houses the bookstore, mailroom, Registration and Records, Admissions, International Student Services, the Landing Strip, catering rooms and snack bar.

Student Services

The Department of Student Services staff are available to assist students with academic and personal problems including personal and family emergencies. The office oversees all non-academic disciplinary matters and maintains disciplinary records. It also offers a variety of other services including the University Information Center operation, Fraternity and Sorority Advising, Substance Awareness Programming, Graduation, Who's Who and referral service for legal matters and credential verifications.

Delta Mu Delta

The Delta Mu Delta National Honor Society is a nationally recognized organization which identifies business administration students who have distinguished themselves scholastically. Founded in 1913, Delta Mu Delta has grown to encompass 76,000 members from over 150 chapters. The Society has established an affiliation with the Association of Collegiate Business Schools and Programs (ACBSP), which requires Delta Mu Delta chapters be established exclusively at colleges and universities with business programs accredited by ACBSP. Graduate students who achieve a 3.65 cumulative grade point average and who complete 12 credit hours of graduate work, are considered for membership in Eta Lambda.

Intramural and Recreational Sports

The Department of Intramural and Recreational Sports at the Daytona Beach campus provides a wide variety of intramural sports and contests throughout the year. Leagues and tournaments emphasize mental, social, and physical well-being. Activities include tennis, volleyball, softball, floor hockey, flag football, basketball, and other sports on request.

An equipment loan program offers many items for free checkout on an overnight basis with a valid University I.D. card. Students are encouraged to utilize all on-campus sports related facilities (i.e., outdoor swimming pool, tennis and basketball courts, playing fields, indoor racquetball, gymnasium and fitness center). Hours vary for each and are posted.

Through arrangements made by the department, discounts to major theme parks and attractions in the area are offered frequently throughout the year.

Student Life and Services

Student Employment

The Student Employment office provides assistance to students seeking part-time employment on or off campus at the Daytona Beach and Prescott locations. On-campus employment is available to students regardless of financial need. Working on or off campus not only gives students more financial support, but also helps them develop self-confidence, gain valuable employment and credit references, establish a work record, and acquire useful skills in time management, financial planning, and communication.

At ERAU, because students work and serve each other, a sense of community is created. Students are participants in the life and work of the university as well as consumers of the educational program. Embry-Riddle depends upon student workers for much of the work essential to sustain day-to-day operations.

Embry-Riddle Aeronautical University adheres to the principle of equal employment opportunities for all students.

Safety and Security

Safety and security at Embry-Riddle Aeronautical University are provided by the University's Safety Department. The Safety department is an in-house segment of the University consisting of both full-time officers and part-time student assistants. The Safety department includes patrol and escort services, parking and traffic services, life safety systems, crime prevention, communications/dispatch services, and locksmith services.

The patrol and communications sections provide 24-hour service to the University campus and its satellite locations. Safety officers respond to routine requests for safety service and emergency conditions throughout the University. They also conduct field investigations as required and provide specialized security service to the University's flight line. The parking and traffic services section manages campus parking, traffic, and associated enforcement functions. It also provides support for special events. The crime prevention section actively engages in safety education and crime prevention programs for students, faculty, and staff. The department maintains a close liaison with the Daytona Beach Police department and the Daytona Beach International Airport Police department to provide the safest possible learning environment.

Campus Ministry

Campus Ministry recognizes that the typical student feels challenged by the many questions, experiences, and world views encountered on campus. It also recognizes that students are faced with a consuming social life and the subtle influence of peers. Campus Ministry tries to offer a stabilizing influence as the student explores the power of religion in a wide variety of programs. Special opportunities for deepening faith are offered during the regular scholastic year. Jewish, Catholic, Muslim, and Protestant prayer rooms are available in the University's Interfaith Chapel. Catholic and Protestant services are available each Sunday or students may choose to affiliate themselves with a church off campus.

Disability Support Services

Recognizing that students with disabilities may require assistance with access, academic modifications, and lifestyle adjustments, the University has appointed the director of Health Services as the coordinator of Disability Support Services at the Daytona Beach Campus.

Students, including those assigned to the Extended Campus, who require assistance must request it and document their disabilities. Students' needs are addressed on an individual basis. Services include, but are not limited to resource information, assistance with barrier-free access, advocacy, testing modifications, and referrals.

Students who require reasonable accommodations may contact Disability Support Services for additional information on services and eligibility requirements.

Health Services

Maintaining good health promotes a productive academic experience. The Health Services staff is committed to facilitating students' wellness through direct care, education, and assistance with lifestyle modification.

Services include assessment, prescriptive and nursing care, referrals, wellness education and counseling, women's health care, immunizations, medical grounding of flight students, and assistance with aerospace medical concerns.

Prospective flight students should be aware that certain sensory impairments, medical, neurobiological and psychological conditions and prescriptive medications might delay or preclude certification by the FAA. These issues should be discussed with an Aviation Medical Examiner (AME) to ensure participation in flight instruction. Students may also contact the Health Services clinical staff for information regarding eligibility for medical certification.

Health insurance is strongly recommended for all students. Individual policies should be reviewed prior to enrollment to ascertain adequate coverage and determine approved providers should off campus referrals be indicated or desired. A campus group policy is available for purchase with rates determined annually. Information about benefits and premiums is available at Health Services.

The Counseling Center

The Counseling Center staff helps students improve their personal, emotional, and academic well being. Professionals trained in counseling help students discuss their concerns and explore solutions. Counseling is available without cost to students, and content and records of sessions are confidential. The issues addressed in counseling vary from adjustment to college life, study skills, relationship problems, and stress to more serious problems. Students may participate in individual counseling sessions or attend instructional seminars or self-improvement groups. The Counseling Center's resource library also offers help through books, brochures, handouts, tapes, and videos covering a variety of subjects.

The ERAU Residence Life Program

Embry-Riddle Aeronautical University provides campus housing for approximately 1,900 students. A variety of housing styles and options are available to students, including suites, efficiency apartments and traditional residence hall designs. All on-campus student rooms are equipped with satellite TV, telephone service, and computer links for electronic mail and the World Wide Web. The Embry-Riddle Housing department supports the "Living-Learning" philosophy and provides facilities and services to promote student academic success including tutoring labs, study rooms, and meeting rooms. Recreational facilities, fitness rooms, game rooms and laundry facilities are located throughout the campus housing system.

Accommodations for disabled students are available in all campus residence halls. Requests for these spaces should be made to the director of housing.

All University residence halls are supervised by a resident director and are managed by a specially selected and trained staff of resident advisors. The University-managed housing system is supported by a full-time professional staff trained in counseling and student development.

Room Cost and Availability

Campus housing costs from $1,450 per semester and include all utilities and amenities. Campus housing contracts are for a full academic year (fall and spring semesters). Housing accommodations for graduate students, married students and other non-traditional students are very limited and available on a first come, first served basis. The Department of Housing also provides referral to local agencies for assistance in locating private accommodations in the Daytona Beach area. For further information regarding housing, please contact the housing department at (904) 323-8000. Housing information is also available on-line at the ERAU web site.

Eagle Card

The Eagle Card serves as a student's identification and is required for borrowing library books, cashing checks and attending University sponsored events. Its optional debit card feature makes purchasing goods and services on campus easy and provides a convenient way to track expenses. Students simply deposit money into an Eagle Dollars account and, when a purchase is made at a campus dining location, the bookstore, a designated vending machine, etc., the amount of the purchase is deducted from the value remaining on the account. For added convenience, all monies deposited but not used are carried forward from semester to semester.

Dining Services

Several unique facilities provide a wide variety of dining services on the Daytona Beach campus. The Court Cafe, located in the Student Village, offers light breakfast and lunch selections daily as well as a variety of speciality outlets for evening service. Spitfires offers traditional dinner meals and highlights Value Meal packages. Popular chicken, beef, and international entrees are offered nightly with fresh vegetables, breads, starches, and beverages. Stone Willy's Legendary Pizza offers 12 varieties of individual pizzas as well as daily pasta and sauce combinations, salads, breads, and beverages. Aviator Subs has a line of fresh sandwiches and specialty items, while Breyers® Gourmet Ice Cream and Seattle's Best Coffee® provide the finishing touches. Full scale breakfasts, lunches, and dinners are available on weekends and holidays.

The Food Court, located in the Student Center, offers a tremendous variety of speciality food outlets during breakfast, lunch, and dinner meals to include: World's Fare, Culinary Classics, American Grill, Healthy Choice Deli®, Clubhaus Gourmet Sandwiches, Sicily Pizza, Showtime Cooking, Baker's Dozen, Dunkin Donuts®, and the Garden Spot. Several weekly dining specials, such as trivia contests, buffets, and seasonal pace-changing events are offered in the Food Court.

The Landing Strip Servery, also located in the Student Center, showcases a snack bar, Grab and Go Deli, and Stone Willy's Pizza.

Propellers, a free-standing restaurant located behind the Hunt Library, features flame broiling with fillets of pork, beef and chicken and a special "broasted" golden-battered chicken concept, cooked fresh every hour. Milkshakes and Caesar Salads are also popular fare.

Open daily until midnight, the Village Market (convenience store) offers all necessities such as personal hygiene items, laundry aids, newspapers, bottled water, milk and dairy products, meats, cereals, snacks and other items for which students have made special requests.

A variety of meal plans are offered, and may be supplemented with Eagle Dollars to add flexibility and versatility to meal plan holders. All meal plan purchases can be charged to student accounts and are available throughout the school year

Mail

Prior to a student's arrival, all personal mail, UPS, Federal Express, deliveries, etc., should be addressed as follows:

Student Name
"New Student"
Embry-Riddle Aeronautical University
600 S. Clyde Morris Boulevard
Daytona Beach, FL 32114-3900

All students are assigned a mailbox which is issued during orientation. Students are required to check mail on a daily basis. University and personal communications are placed in the student mailboxes on a daily basis.

International Student Services

The Office of International Student Services assumes primary responsibility for the general welfare of international students. The staff conducts international student orientation to familiarize students with the University and the American educational system and also assists with local housing, transportation, and other adjustment arrangements. Services include advising related to immigration regulations, financial and personal matters, and preparation of specialized letters and documents required by foreign governments, sponsors, the U.S. government, and the University. The office coordinates campus and community programs and trips designed to facilitate cultural interchange. The Friendship Family Program matches students with community families to share friendship across cultures. A highlight of the year is International Day which features exhibits, food, and entertainment presented by students of the nationalities represented on campus. Foreign journals and newspapers are available in the office to help students stay informed of events in their countries. All international students are expected to check in on arrival with passport and immigration documents to our office (Student Center Annex; (904)-226-6579). Extended Campus students may contact the Extended Campus Admissions and Records/Registration office for more information.

Career Services Office

The Career Services office provides career development and job search services to students of the Daytona campus, Extended Campus and alumni. The office maintains a web site with links to job search services, corporate information, job hotlines and other career development tools. A staff of career counselors also offers one-on-one career guidance and counseling.

An Industry/Career EXPO brings over 100 employers to the Daytona campus each fall. On-campus interviews are scheduled year-round.

The internship education program assists hundreds of students each year obtain work experience in their chosen field. Students receive academic credit for the experience and are often paid salary, and benefits. Students are encouraged to participate in the program.

Career and Placement Service
(904) 226-6054
E-mail: careers@cts.db.erau.edu

Student Life and Services

Center for Aviation Training at Embry-Riddle (CATER)

The Center for Aviation Training at Embry-Riddle (CATER) offers specialized training programs to meet the continuing education and training needs of corporations, governments, and individuals. CATER conducts the flight training program at the Deland Municipal Airport which is located approximately 20 minutes west of the University. Currently all other certificate programs are located on Embry-Riddle's Daytona Beach campus.

Thought CATER you can partake in a great variety of aviation training programs, which include flight, maintenance, dispatcher, and English training. Our flight training programs are conducted on FAR Part 61 and/or Part 141 depending on the preference of the customer. CATER also provides the option of customized flight training programs for individual or group needs.

To find out more information, please contact us at 904-226-7212, our toll-free number at 1-877-904-3746, or email us at cater@db.erau.edu.

Embry-Riddle Language Institute

The Embry-Riddle Language Institute offers an intensive program in English as a second language for prospective students and other aviation professionals. Classes provide instruction for communication in reading, writing, speaking and listening, as well as courses focusing on grammar, computer skills, and TOEFL practice. Classes are small in the year-round program, providing opportunities for individual attention. A rich social and cultural program provides many opportunities for interaction with native English speakers and a computer laboratory provides additional learning options. Students who are successful in ERLI may earn a Recommendation for English Language Proficiency without a TOEFL score.

In addition, Embry-Riddle offers specialized courses in Aviation English.

To find out more information, please contact us at 904-226-6192, or email us at erli@cts.db.erau.edu.

Division of Continuing Education

The Division of Continuing Education extends the resources of the University by offering seminars, workshops, training and development, and aviation education programs. Program topics relate to, but are not limited to, the course work offered through the various departments of the University, such as flight, aviation maintenance, aviation engineering technology, aerospace engineering, aviation business administration and aeronautical and aerospace science.

In addition, the Division of Continuing Education links the resources of the University to the need for aviation professionals and educational programs, including the development of specialized training courses. Consulting services to the international education and aviation community also are made available on a contract basis. Call (904) 226-6186 or FAX (904) 226-7630 for more information.

ACADEMIC PROGRAMS

Academic Programs

Introduction

Status quo is virtually an unknown concept in the aviation industry. The technology with which aviation works and the national and international regulations by which it must abide are subject to rapid, frequent, and sweeping change. Aviation touches every sphere of modern personal and business life and, therefore, must be sensitive to and respond to stimuli from a variety of unrelated sources. A healthy aviation industry is critical to the nation's economic well-being and security.

Embry-Riddle Aeronautical University graduate degree programs are designed to stress pragmatic solutions to the managerial, technological and organizational challenges in the aviation and aerospace industry today. The problems presently confronting industry are brought into the classroom for analysis, making use of the latest theories, tools, and techniques available to engineers, operations personnel and managers. Case studies, simulations, computer-aided analysis, and computer-assisted design, as well as experiential exercises are interspersed throughout the curricula to achieve a balance between theory and the realities of the aviation/aerospace industrial world of the 21st century.

Opportunities are provided within each degree program to tailor the curriculum to meet specific, individual career objectives. Classes are scheduled to accommodate both full and part-time study. Many of the graduate courses are non-sequential, allowing study to begin in any term. Electives needed to complete the requirements of any graduate degree are selected from among the 500/600 numbered courses (except BA 503, and the AED course series) listed in this catalog.

Graduate Internships

Graduate internships are externally funded, temporary professional or industrial work appointments available to graduate students. There are two types of internships: resident and non-resident. Resident internships are professional work activities supported by the University or industry, and conducted on-campus under the supervision of a faculty/staff sponsor. Non-resident internships are professional work activities conducted off-campus at the supporting organization facility, or equivalent. Full-time employees of the offering organization are not eligible for an internship appointment, and cannot receive elective credit for their professional work service.

Graduate students who have full graduate status in a degree program and are in good standing with a minimum of 12 completed graduate credit hours, and who earn a cumulative GPA of 3.00 on a 4.00 basis are eligible for graduate internships. Students must demonstrate adequate communication and technical skills.

Students accepted in the internship program must register for the approved number of credit hours in the appropriate departmental internship course, and pay all tuition and fees. Graduate academic credit is awarded at a rate of one credit hour for every 200 clock hours of work completed, up to a maximum of three credit hours in one semester. Three internship credit hours may normally be applied as an elective towards a degree program. Students are advised to consult with their graduate program coordinator for availability of internship credits, toward their specific degree program.

Thesis and Graduate Research Project Options

Requirements

Thesis and Graduate Research Project Option

Students who elect a thesis or graduate research project must obtain approval of the research topic. The University encourages graduate students to select thesis and graduate research project topics that permit them to participate in faculty research. Once approved, a research advisor and one or more additional committee members are selected and approved by the department chair or designee. Normally, if a student is working with a faculty research team as part of his/her thesis or graduate research project, the faculty member who is directing the student's research should generally be the student's research advisor.

The graduate research project option may not be available for all programs.

Aeronautical Science Degree (MAS)

DAYTONA BEACH

Applied Aviation Sciences
DEPARTMENT CHAIR:
T. Brady

GRADUATE PROGRAM COORDINATOR
M. Smith

EXTENDED CAMPUS

Aeronautical Science
DEPARTMENT CHAIR:
P. Bankit

GRADUATE PROGRAM CHAIR
S. O'Brien

INTRODUCTION

The Master of Aeronautical Science (MAS) degree program is designed to provide the aviation/aerospace professional with a rigorous academic approach to a generalist education oriented degree. It provides an unequaled opportunity for flight crew members, air traffic control personnel, flight operations specialists, industry technical representatives and aviation educators to enhance their knowledge and pursue additional career opportunities.

Entry into the MAS program requires possession of an undergraduate foundation in the areas of college-level mathematics, introduction to computers, economics, behavioral science, and aviation legislation, rules, and regulations.

There are seven specializations from which the student may choose: Aeronautics, Aviation/Aerospace Education Technology, Aviation/Aerospace Management, Aviation/Aerospace Operations, Aviation/Aerospace Safety Systems, Human Factors in Aviation Systems, and Space Studies. The specializations are not necessarily offered at all campus locations. Students must complete the Advanced Aviation/Aerospace Science core consisting of twelve credits. Students then complete twelve credits which make up the selected specialization. The remaining credits consist of electives, and either a thesis or a graduate research project.

MAS students can also complete courses leading to a dual specialization. The dual specialization is declared prior to the completion of the degree program.

Degree Requirements

Aeronautics Specialization*

Advanced Aviation/Aerospace Science Core		Credits
MAS 602	The Air Transportation System	3
MAS 603	Aircraft and Spacecraft Development	3
MAS 604	Human Factors in the Aviation/Aerospace Industry	3
MAS 605	Research Methods and Statistics	3

Aeronautics Specialization		Credits
Students must complete 12 credit hours from the following list of courses:		
MAS 509	Advanced Aerodynamics	3
MAS 510	Advanced Aircraft Performance	3
MAS 515	Aviation/Aerospace Simulation Systems	3
MAS 516	Applications in Crew Resource Management	3
MAS 517	Advanced Meteorology	3
MAS 560	Rotorcraft Operations	3
MAS 607	Advanced Aircraft/Spacecraft Systems	3

Electives		Credits
Option I		
MAS/BA	Electives (500-600 level)	6
AND		
MAS 700	Thesis	6
OR		
Option II		
MAS 690	Graduate Research Project	3
AND		
MAS/BA	Electives (500-600 level)	9

Total Required	36

***Not offered at the Daytona Beach campus during the 2000-2001 academic year.**

Aviation/Aerospace Education Technology Specialization*

Advanced Aviation/Aerospace Science Core		Credits
MAS 602	The Air Transportation System	3
MAS 603	Aircraft and Spacecraft Development	3
MAS 604	Human Factors in the Aviation/Aerospace Industry	3
MAS 605	Research Methods and Statistics	3

Education Technology Specialization		Credits
Students must complete 12 credit hours from the following list of courses:		
MAS 514	Computer-Based Instruction	3
MAS 515	Aviation/Aerospace Simulation Systems	3
MAS 550	Aviation Education Foundations	3
MAS 614	Advanced Aviation/Aerospace Curriculum Development	3
MAS 652	Continuing Education's Role in Aviation	3
MAS 654	Adult Teaching and Learning Techniques	3
MAS 663	Memory and Cognition	3

Electives		Credits
Option I		
MAS/BA	Electives (500-600 Level)	6
AND		
MAS 700	Thesis	6
OR		
Option II		
MAS 690	Graduate Research Project	3
AND		
MAS/BA	Electives (500-600 Level)	9

Total Required		36

***Not offered on the Daytona Beach campus during the 2000-20001 academic year.**

Aviation/Aerospace Management Specialization

Advanced Aviation/Aerospace Science Core		Credits
MAS 602	The Air Transportation System	3
MAS 603	Aircraft and Spacecraft Development	3
MAS 604	Human Factors in the Aviation/Aerospace Industry	3
MAS 605	Research Methods and Statistics	3

Management Specialization		Credits
Students must complete 12 credit hours from the following list of courses:		
BA 511	Operations Research	3
BA 521	Global Information and Technology Management	3
BA 607	Human Resource Development	3
BA 632	Seminar in Aviation Labor Relations	3
BA 645	Airport Operations and Management	3
MAS 508	Advanced Airport Modeling	3
MAS 609	Aircraft Maintenance Management	3
MAS 611	Aviation/Aerospace System Safety	3
MAS 612	Aviation/Aerospace Industrial Safety Management	3
MAS 636	Aviation/Aerospace Planning Systems	3
MAS 641	Production and Procurement Management in the Aviation/Aerospace Industry	3
MAS 643	Management of Research and Development for the Aviation/Aerospace Industry	3
MAS 644	Integrated Logistics Support in Aviation/Aerospace	3

Electives		Credits
Option I		
MAS/BA	Electives (500-600 Level)	6
AND		
MAS 700	Thesis	6
OR		
Option II		
MAS 690	Graduate Research Project	3
AND		
MAS/BA	Electives (500-600 Level)	9
Total Required (At least 18 credits must be MAS courses)		**36**

Aviation/Aerospace Operations Specialization

Advanced Aviation/Aerospace Science Core		Credits
MAS 602	The Air Transportation System	3
MAS 603	Aircraft and Spacecraft Development	3
MAS 604	Human Factors in the Aviation/Aerospace Industry	3
MAS 605	Research Methods and Statistics	3

Operations Specialization

Students must complete 12 credit hours from the following list of courses:

		Credits
MAS 508	Advanced Airport Modeling	3
MAS 515	Aviation/Aerospace Simulation Systems	3
MAS 560	Rotorcraft Operations	3
MAS 606	Aviation/Aerospace Communication/Control Systems	3
MAS 608	Aviation/Aerospace Accident Investigation and Safety Systems	3
MAS 620	Air Carrier Operations	3
MAS 622	Corporate Aviation Operations	3
BA 511	Operations Research	3

Electives

		Credits
Option I		
MAS/BA	Electives (500-600 Level)	6
AND		
MAS 700	Thesis	6
OR		
Option II		
MAS 690	Graduate Research Project	3
AND		
MAS/BA	Electives (500-600 Level)	9
Total Required		36

Center for Aerospace Safety Education

In order to network the University's safety-related resources, Embry-Riddle has established a Center for Aerospace Safety Education (CASE). The Center is guided by an Advisory Board of national reputation which meets semi-annually to provide direction and oversight.

Safety is integrated into all programs throughout the University curriculum. Daytona Beach campus resources emphasize systems safety (human factors and information technology) in the National Airspace System. The Extended Campus with its connection to Army, Navy, and Air Force operations throughout the world, provides real-world expertise and dissemination. Flight qualifications are not required for this degree.

Aviation/Aerospace Safety Systems Specialization

Advanced Aviation/Aerospace Science Core		Credits
MAS 602	The Air Transportation System	3
MAS 603	Aircraft and Spacecraft Development	3
MAS 604	Human Factors in the Aviation/Aerospace Industry	3
MAS 605	Research Methods and Statistics	3

Safety Systems Specialization		Credits
Students must complete 12 credit hours from the following list of courses:		
MAS 508	Advanced Airport Modeling	3
MAS 608	Aviation/Aerospace Accident Investigation and Safety Systems	3
MAS 611	Aviation/Aerospace System Safety	3
MAS 612	Aviation/Aerospace Industrial Safety Management	3
MAS 613	Airport Operations Safety	3
MAS 634	Aviation/Aerospace Psychology	3

Electives		Credits
Option I		
MAS/BA	Electives	6
AND		
MAS 700	Thesis	6
OR		
Option II		
MAS 690	Graduate Research Project	3
AND		
MAS/BA	Electives (500-600 Level)	9

Total Required	36

Human Factors in Aviation Systems Specialization

Advanced Aviation/Aerospace Science Core		Credits
MAS 602	The Air Transportation System	3
MAS 603	Aircraft and Spacecraft Development	3
MAS 604	Human Factors in the Aviation/Aerospace Industry	3
MAS 605	Research Methods and Statistics	3

Human Factors Specialization		Credits
Students must complete 12 credit hours from the following list of courses:		
MAS 634	Aviation/Aerospace Psychology	3
MAS 643	Management of Research and Development for the Aviation/Aerospace Industry	3
MAS 660	Sensation and Perception	3

MAS 661	Human-Computer Interaction	3
MAS 663	Memory and Cognition	3
MAS 665	Applied Experimental Design	3

Electives

Option I		Credits
MAS/BA	Electives	
AND		6
MAS 700	Thesis	
OR		6
Option II		
MAS 690	Graduate Research Project	
AND		3
MAS/BA	Electives (500-600 Level)	9

Total Required 36

Space Studies Specialization*

Advanced Aviation/Aerospace Science Core

		Credits
MAS 602	The Air Transportation System	3
MAS 603	Aircraft and Spacecraft Development	3
MAS 604	Human Factors in the Aviation/ Aerospace Industry	3
MAS 605	Research Methods and Statistics	3

Space Studies Specialization

		Credits
MAS 511	Earth Observation and Remote Sensing	3
MAS 512	Space Mission and Launch Operations	3
MAS 513	Space Habitation and Life Support Systems	3
MAS 601	Applications in Space: Commerce, Defense, and Exploration	3

Electives

Option I		Credits
MAS/BA	Electives	
AND		6
MAS 700	Thesis	
OR		6
Option II		
MAS 690	Graduate Research Project	
AND		3
MAS/BA	Electives (500-600 Level)	9

Total Required 36

*Not offered on the Daytona Beach campus during the 2000-2001 academic year.

Aerospace Engineering Degrees (MSAE/MAE)

DEPARTMENT CHAIR: *Reda R. Mankbadi*
GRADUATE PROGRAM COORDINATOR: *H. Eslami*

INTRODUCTION

The Master of Science in Aerospace Engineering (MSAE) and the Master of Aerospace Engineering (MAE) provide formal advanced study, preparing students for careers in the aerospace industry and research and development. Both degree programs are planed to augment the individual student's engineering and science background with adequate depth in areas of aeroacoustics, nondestructive testing, aerodynamics, design and optimization, propulsion, aerospace structures, composite structures, computational fluid dynamics, or other areas of aerospace engineering. Candidates for both degrees can select courses with the goal of building a graduate program that supports their interests in the aerospace engineering profession, or that prepares them to continue on to doctoral studies.

Both degree programs require a minimum of thirty-three credit hours of graduate course work.

DEGREE REQUIREMENTS

MSAE (thesis option)
12 hrs. required core
12 hrs. elective
9 hrs. thesis
33 hrs

MAE (non-thesis option)
12 hrs. required core
21 hrs. elective
33 hrs

Required Courses
One (1) Math course and two (2) courses outside the area of specialization.

Elective Courses
The remaining courses are normally selected from the following list with the advise of the graduate advisor:

		Credits
MA 502	Boundary Value Problems	3
MA 504	Theory of the Potential	3
MA 506	Probability for Engineers	3
MA 508	Applied Stochastic Processes	3
MA 510	Optimization Techniques	3
AE 508	Heat Transfer	3
AE 510	Aircraft Structural Dynamics	3
AE 502	Strength and Fatigue of Materials	3
AE 504	Advanced Compressible Flow	3
AE 506	Airplane Dynamic Stability	3

AE 512	Combustion I	3
AE 590	Graduate Seminar*	1-3
AE 601	Combustion II	3
AE 602	Continuum Mechanics	3
AE 604	Finite Element Fundamentals	3
AE 606	Finite Element Aerospace Applications	3
AE 608	Introduction to Computational Aerodynamics	3
AE 610	Computational Aerodynamics	3
AE 612	Analysis of Aircraft Plate and Shell Structures	3
AE 614	Analysis of Aircraft Composite Structures	3
AE 616	Advanced Aircraft Structural Dynamics	3
AE 620	Boundary Layer Theory	3
AE 640	Turbine Engine Propulsion Systems	3
AE 642	Rocket Engine Propulsion Systems	3
AE 696	Graduate Internship in Aerospace Engineering	1-3
AE 699	Special Topics in Aerospace Engineering	1-3
AE 700	MSAE Thesis	9

* State-of-the-art design topics are regularly offered through the graduate seminar course, and may be a component of the student's study program.

Master of Business Administration in Aviation MBA/A

DAYTONA BEACH
DEPARTMENT CHAIR:
Bruce Chadbourne

EXTENDED CAMPUS
DEPARTMENT CHAIR:
V. Mitchell

GRADUATE PROGRAM COORDINATOR:
Dr. Blaise Waguespack

INTRODUCTION

The Master of Business Administration degree program is designed to emphasize the application of modern management concepts, methods, and tools to the challenges of aviation and general business. The special intricacies of aviation are woven into a strong, traditional business foundation and examined in greater detail through the wide variety of specified electives.

The demand for professional managers continues to grow in response to the increasing need to improve the efficient and effective use of scarce resources, of operating in an atmosphere of heightened national and international competition; of accommodating the expansion of emerging nations, and of responding to the call to preserve the fragile environment. The MBA curriculum is oriented toward the needs of the strategic decision-maker in the management hierarchy.

Versatility and analytical resourcefulness are two of the key aims of the MBA. While the curriculum is highly structured, part of it can be individually molded to satisfy personal interests.

Specific prerequisite knowledge for each graduate course in the MBA/A is contained in the Course Description section of this catalog. Students should assume responsibility to see that prerequisites are satisfied. However, students who still lack prerequisite knowledge in one of the following areas, may be be asked to register for one or all modules contained in BA 503 (A through F): management, quantitative methods, marketing, accounting, economics, and/or finance. The prerequisite knowledge for any graduate course must be satisfied before enrollment in the course is permitted. The MBA/A option is offered as a two year (average) residency program at the Daytona Beach campus, and at selected Extended Campus resident centers.

Through the University's Business Administration Department at the Daytona Beach campus, the MBA/A is nationally accredited by the Association of Collegiate Business Schools and Programs (ACBSP) and Council on Aviation Accreditation (CAA).

Degree Requirements

Master of Business Administration in Aviation

Aviation Business Core		Credits
BA 511	Operations Research	3
BA 514	Strategic Marketing Management in Aviation	3
BA 517	Accounting for Decision Making	3
BA 518	Managerial Finance	3
BA 520	Organization Behavior, Theory, and Applications in Aviation	3
BA 521	Global Information and Technology Management	3
BA 522	Business Research Methods *	3
BA 523	Advanced Aviation Economics	3
BA 635	Business Policy and Decision Making	3
Total Core Hours		**27**

Aviation Business Specified Electives		Credits
BA 590	Graduate Seminar	1-3
BA 603	Aerospace Production and Operations Management	3
BA 604	International Management and Aviation Policy	3
BA 609	Airline Operations and Management	3
BA 632	Seminar in Aviation Labor Relations	3
BA 645	Airport Operations and Management	3
BA 655	Aviation Law and Insurance	3
BA 699	Special Topics in Aviation Business Administration	1-3

* Extended Campus students may substitute MAS 605.

Students may petition for substitution of an internship for 3 hours of specified electives.

Research Options		Credits
BA 700	Thesis	6
OR		
BA 690	Graduate Research Project	3

On the Extended Campus, students must choose a Thesis or Graduate Research Project option.

Alternate course options may be available with prior approval of Graduate Program Coordinator.

The GRP option is not offered at the Daytona Beach Campus.

Total Required:

Thesis/all course work option	**39**
Graduate Research Project option	**36**

Executive Master of Business Administration for Aviation and Aerospace Professionals (EMBA)

DAYTONA BEACH
DEPARTMENT CHAIR:
Bruce Chadbourne

EXTENDED CAMPUS
DEPARTMENT CHAIR:
V. Mitchell

GRADUATE PROGRAM COORDINATOR:
Dr. Blaise Waguespack

INTRODUCTION

The Executive MBA for Aviation and Aerospace Professionals is a 14-month program is designed to accelerate career progression, and to prepare promising executives to assume leadership roles in their organizations. The program is conducted in large part on Embry-Riddle's Daytona Beach campus. The program includes a series of six two-week residential sessions, held approximately every 10 weeks. Between these residency sessions, participants are expected to complete course-related reading, both individual and group assignments and, finally, the comprehensive Executive Project. During these interim periods, participants remain in contact with professors and one another via phone, fax, email and discussion forums and chat rooms on course Web pages.

Prior to each residency session, EMBA participants receive a packet of instructional materials, giving them sufficient time to prepare for the forthcoming classes. During residency sessions, classes meet during the normal business day, so that evenings can be devoted to individual study and group projects.

The curriculum of the EMBA provides a solid foundation of knowledge in such areas as strategic management, leadership, communication, teamwork and other mainstream executive disciplines, all presented in the context of the aviation and aerospace industry. Four specific areas of focus drive the curriculum: Organizational Evolution, Cross-Functional Competencies, Leadership and Entrepreneurship, and Global Strategic Thinking.

The Executive Project, as the program's capstone activity, is designed to benefit both the participant and the sponsoring organization by giving the participant the opportunity to apply the knowledge and diagnostic competencies learned throughout the program to a specific business issue of the sponsor. Issues are selected by the sponsor and participant, and approved by the faculty advisor early in the program. Working from the perspective of a consultant, the participant thoroughly investigates the issue and proposes specific actions, using the analysis, planning, and man-

agement tools developed during each course. Continuous guidance and feedback are provided by the faculty advisor and sponsor during the project. The completed project requires a comprehensive written report, as well as a formal oral presentation.

Through the University's Business Administration Department at the Daytona Beach campus, the Executive MBA is nationally accredited by the Association of Collegiate Business Schools and Programs (ACBSP).

Degree Requirements

Required Courses		Credits
EMBA 540	Organizational Communication & Information Systems	3
EMBA 542	Accounting for Decision Making	3
EMBA 544	Quantitative Analysis for Management Decision Making I	2
EMBA 545	Quantitative Analysis for Management Decision Making II	2
EMBA 546	Production/Operations Management	3
EMBA 548	Global Economic Analysis for Managers	3
EMBA 550	Global Marketing Management	3
EMBA 552	Managerial Finance I	2
EMBA 553	Managerial Finance II	2
EMBA 554	Leadership and Entrepreneurship	3
EMBA 660	Applications of Organizational Behavior	3
EMBA 662	Personal Communication and Teamwork	3
EMBA 664	Global Market Forces and Ethical Responsibility	3
EMBA 668	Culture and the Diverse Workforce	3
EMBA 670	Technology and Innovation Management	3
EMBA 672	Designing the High Performance Organization	3
EMBA 674	Strategic Management I	2
EMBA 675	Strategic Management II	2
EMBA 700	Executive Project	3
Total Required		**51**

Human Factors and Systems Degree (MSHFS)

Department Chair: *J. Williams*

Graduate Program Coordinator: *J. A. Wise*

Introduction

The Department of Human Factors and Systems offers graduate instruction leading to the Master of Science degree in Human Factors and Systems with distinct tracks in (a) human factors engineering, and (b) systems engineering. These programs are designed to meet the highest academic rigors (i.e., fully prepared for doctoral level studies), while at the same time preparing the students for immediate employment in real world, cost sensitive and operationally driven aviation/aerospace environments.

The human factors engineering track will develop a graduate with the capacity to design, conduct, and apply human factors research in support of the design of simple and complex systems. It will develop a student's ability to work as a human factors professional in aviation and aerospace environments based on their academic preparation, and active participation in human factors projects at the graduate level. A variety of research, consulting, and internship arrangements are included in the program.

This track is based on the scientist-practitioner model of the American Psychological Association (APA) and adheres to guidelines established by the committee for Education and Training of APA's Division 21 (Applied Experimental and Engineering Psychology). The program has been designed to meet the accreditation requirements of the Education Committee of the Human Factors and Ergonomics Society, as well as the International Ergonomics Association.

Students receive education in the content and techniques of human factors including statistical and quantitative procedures, experimental design, survey methods, computer techniques and other research methodologies.

The systems engineering track provides a systemic focus to the transformation of an operational need into a defined system configuration through the iterative process of functional analysis, synthesis, optimization, and design integration.

Academic Programs

History indicates that a properly coordinated and functioning system, that has a minimum of undesirable side effects, cannot be achieved unless the system designer is 1) sensitive to operational feasibility during the early stages of system development and 2) assumes the responsibility for user-centered life cycle engineering. Therefore, a major focus of the system engineering track is an appreciation of the total life cycle of the system, including design, development, testing, production, operations, sustaining support, and disposal.

The track addresses considerations of human factors, reliability, maintainability, logistic support, safety, producibility, economic, and related parameters as they apply to system design, integration, and evaluation. The goal of the track is to produce graduates who understand the proper balance between operational, behavioral, economic, and logistic factors.

Finally, the systems engineering track produces graduates that can move easily across disciplines. The graduates will understand the relative capabilities and limitations of each and thus know where trade-offs can effectively be made. This interdisciplinary pre-requisite also requires that the graduate be able to use the tools and techniques of the various disciplines in both traditional and non-traditional applications.

Degree Requirements

Human Factors Engineering Track

Core Courses		Credits
HFS 500	Systems Concepts, Theory, and Tools	3
HFS 510	Research Design and Analysis I	3
HFS 600	Human Factors in Systems	3
HFS 610	Research Design and Analysis II	3
HFS 615	Sensation and Perception	3
HFS 620	Memory and Cognition	3

Electives*		Credits
BA 511	Operations Research	3
HFS 515	Ergonomics	3
HFS 520	Team Resource Management	3
HFS 525	Human and Organizational Factors in Technological Systems	3
HFS 530	Systems Psychology	3
HFS 590	Graduate Seminar	3
HFS 625	Applied Testing and Selection	3
HFS 630	Cognitive Systems	3
HFS 635	Human Computer Interaction	3
HFS 640	Aviation/Aerospace Psychology	3
HFS 645	Underpinnings of Human Factors and Ergonomics	3
HFS 650	Human Factors of Aviation/Aerospace Applications	3
HFS 696	Internship in human factors and systems (Highly recommended)	3
HFS 699	Special Topics in Human Factors and Systems	3
MAS 611	Aviation/Aerospace System Safety	3
MAS 612	Aviation/Aerospace Industrial Safety Management	3
MSE 500	Software Engineering Discipline	3
MSE 560	Human Factors in Software Engineering	3
TM 605	Organization Theory in a Technical Environment	3
TM 610	Managing Effective Technical Work Teams	3

* Electives are selected with the consent of the student's graduate advisor. Other elective courses may be selected with the approval of the graduate advisor.

		Credits
HFS 700	Thesis	6
Total Required		36

Systems Engineering Track

Core Courses

		Credits
HFS 500	Systems Concepts, Theory, and Tools	3
HFS 505	System engineering I	3
HFS 510	Research Design and Analysis I	3
HFS 600	Human Factors in Systems	3
HFS 605	System engineering II	3
HFS 610	Research Design and Analysis II	3

Electives *

		Credits
BA 511	Operations Research	3
BA 520	Organization, Behavior, Theory, and Applications in Aviation	3
BA 521	Global Information and Technology Management	3
HFS 525	Human and Organizational Factors in Technological Systems	3
HFS 530	Systems Psychology	3
HFS 640	Aviation/Aerospace Psychology	3
HFS 645	Underpinnings of Human Factors and Ergonomics	3
HFS 650	Human Factors of Aviation/Aerospace Applications	3
HFS 696	Internship in human factors and systems (Highly recommended)	3
HFS 699	Special Topics in Human Factors and Systems	3
MAS 611	Aviation/Aerospace System Safety	3
MAS 612	Aviation/Aerospace Industrial Safety Management	3
MAS 641	Production & Procurement Management in the Aviation/Aerospace Industry	3
MAS 643	Management of Research & Development in the Aviation/Aerospace Industry	3
MSE 500	Software Engineering Discipline	3
MSE 520	Formal Methods for Software Engineering	3
MSE 540	Simulation and Software Engineering	3
MSE 545	Specification and Design of Real-Time Systems	3
MSE 560	Human Factors in Software Engineering	3
TM 505	Computer Applications in Systems Management	3
TM 510	Project Development Techniques with Statistical Applications	3
TM 610	Managing Effective Technical Work Teams	3
TM 615	Planning for Systems Development and Operations	3
TM 645	Advanced Operations Research and Management Science	3
TM 645	Advanced Operations Research and Management Science	3

* Electives are selected with the consent of the student's graduate advisor. Other elective courses may be selected with the approval of the graduate advisor.

		Credits
HFS 700	Thesis	6
Total Required		36

Industrial Optimization Degree (MSIO)

Department Chair: *I. Hirmanpour*
Graduate Program Coordinator: *D. Osborne*

Introduction

The Master of Science in Industrial Optimization degree program is designed to provide recent engineering and science graduates, as well as mid-career engineers and scientists, an opportunity to develop skills in optimization, statistics, and quality control and improvement that can be applied to product and process design and improvement. Engineers and scientists completing this program can assume key positions in engineering and scientific research.

The MSIO degree program achieves its purpose by the extensive use of aviation/aerospace-related case studies that enable the students to gain practical skills in analyzing and solving current aviation/aerospace problems requiring the application of optimization tools and or statistics. Throughout the program, application software and teams are used, enabling students to solve problems in an environment that simulates process and product design and improvement organizations in aviation and aerospace.

MSIO students will have the opportunity to strengthen and expand discipline-specific skills by taking several courses in their field of expertise (engineering, computer science, business, physics) as part of the program, while developing the mathematical foundation necessary to solve complex application problems within their field.

The curriculum is structured into four groups: fundamentals, core, capstone, and electives. All students must complete two required fundamental courses, developing skills in mathematical methods and statistics, followed by three required core courses in optimization, mathematical programming and decision making, and statistical quality analysis. Additionally, all students must complete a capstone course in multivariate optimization.

The MSIO program offers students three program options: a thesis option requiring 30 credit hours; a research project option requiring 33 credit hours; and a course-only option requiring 36 credit hours. For those students choosing the thesis option, 6 credit hours of specified electives and a 6 credit hour thesis are required. For those students choosing the research report option, 12 credit hours of specified electives and a 3 credit hour research report are required. For those students choosing the course-only option, 18 credit hours of specified electives are required and a department-administered comprehensive exam must be satisfactorily completed prior to graduation.

Degree Requirements

Fundamentals Courses		Credits
MA 503	Mathematical Methods	3
MA 505	Statistics	3
		6

Core Courses		Credits
MA 510	Fundamentals of Optimization	3
MA 520	Mathematical Programming and Decision-Making	3
MA 605	Statistical Quality Analysis	3
		9

Capstone Course		Credits
MA 610	Multivariate Optimization	3

Additional Requirements		Credits
Thesis Option:		
MA 700	Thesis Research	6
	Electives	6
		12
Graduate Research Project Option:		
MA 690	Graduate Research Project	3
	Electives	12
		15
Course -Only Option		
	Electives	18
		18

Specified Electives:

Elective courses may be selected from the ERAU Graduate Catalog in the software engineering, aerospace engineering, aeronautical science, or business administration disciplines. These courses should be selected in consultation with the student's Graduate Advisor, who must approve the course choices.

Total Required	30 -36

*Safety Science Degree (MSSS)**

DEPARTMENT CHAIR: *J. Baker*

GRADUATE PROGRAM COORDINATOR: *R. Johnson*

INTRODUCTION

The Master of Science in Safety Science (MSSS) degree program is designed to provide the safety and aviation professional with an experiential and practical educational experience to enhance the practice of safety. The degree will produce educated safety professionals who are (1) skilled in providing safety management expertise and (2) who can provide leadership and guidance in compliance issues involving EPA, OSHA, DOD, FAA, DOE and state health, hygiene, and workplace standards. These safety professionals will be prepared for service in aviation and aerospace in a variety of organizations to include: government which includes the military; industry, including aircraft manufacturing; the air carriers; insurance; and any other aviation related business in which the prevention of accidents is of significant importance.

The MSSS degree prepares graduates for several professional job settings such as: Director of Safety at an airline, operational and maintenance safety personnel, aviation industry ground and industrial safety personnel, flight safety personnel, aircraft accident investigators, designers, and manufacturers. It offers an unparalleled opportunity to explore not only the theoretical, but the hands-on and pragmatic discipline that safety has become. Particularly in light of the public and government interest in safety within the aerospace industry, this degree offers safety professionals the advanced credentials necessary to succeed in the practice of safety.

Entry into the MSSS program requires possession of an undergraduate foundation in the areas of college-level mathematics, introduction to computer applications, behavioral science, and statistics.

The MSSS is a 36 credit hour program of study composed of a Core (12 credit hours), a Research Core (6 to 9 credit hours), and Electives which may be concentrated in an Area of Emphasis (15-18 credit hours). For those students who have an aviation background, MAS 602, The Air Transportation Industry, 3 credit hours, may be waived.

The degree has been designed to allow the student the maximum flexibility. Within the area of emphasis, the student may choose those courses which best fit his/her individual professional development needs.

* To be offered at the Prescott, AZ campus, Fall 2001.

Degree Requirements

Safety Science General Core		(12 Credit Hours)
MAS 602*	The Air Transportation Industry	3
MAS 604	Human Factors in the Aerospace Industry	3
MAS 611	System Safety Engineering and Risk Management	3
MSF 615	Aerospace Occupational Safety and Health Program Management	3
Safety Science Research Core (6 to 9 Credit Hours)		
MAS 605	Research Methods and Statistics	3
AND		
Option 1		
MSF 700 Thesis		6
OR		
Option 2		
MSF 690	Graduate Research Project	3
OR		
MSF 680	Integrated Safety Operations	3
Electives - Aviation/Aerospace Safety Analysis and Investigation Area of Emphasis		**(15 to 18 cr. hrs.)**
BA 655	Aviation Law and Insurance	3
MAS 613	Airport Operations Safety	3
MSF 530	Aircraft Accident Investigation	3
MSF 580	Industrial Hygiene and Environmental Protection	3
MSF 630	Aircraft Accident Analysis	3
MSF 635	Advanced Aircraft Survivability and Design	3
MSF 645	Aircraft Fire Survival Analysis and Design	3
MSF 655	Airline and Operations Safety Management	3
MSF 675	Aviation Maintenance Safety	3
MSF 685	Aviation Security	3
Electives - Safety Program Management Area of Emphasis		**(15 to 18 cr. hrs.)**
MSF 580	Industrial Hygiene and Environmental Protection	3
MSF 630	Aircraft Accident Analysis	3
MSF 685	Aviation Security	3
MSF 686	Emergency Preparedness and Planning	3
TM 503	Project Development Techniques with Statistical Applications	3
TM 605	Organizational Theory in a Technical Environment	3
TM 621	Regulations, Ethics, and the Legal System	3
TM 635	Financial and Managerial Accounting and Controls for Technical Management	3

*** Advanced standing credit for this course may be granted for those who have an aviation background.**

Total Required **36**

*Software Engineering Degree (MSE)**

DEPARTMENT CHAIR: *I. Hirmanpour*
GRADUATE PROGRAM COORDINATOR: *S. Khajenoori*

INTRODUCTION

The Master of Software Engineering (MSE) degree program is designed to give recent college graduates, or college graduates who have had several years of professional life, an opportunity to enhance their careers and work in the cutting edge of modern software development. Software engineers who complete the program can rapidly assume positions of substantial responsibility within a software development organization.

The MSE degree program achieves its purpose by providing students not only with the technical tools and techniques of the field, but also with the skills in communication, group interaction, management, and planning. The program emphasizes a process centered quantitative approach to the engineering of software systems. The goal of the program is to provide graduates with an in-depth understanding of tools and techniques, along with appropriate processes, for the management of software development, elicitation and analysis of requirements, architecture and design, implementation verification and validation of software systems. In addition, the program pays special attention to the issues related to communications and teamwork.

A special emphasis is on real-time embedded software systems encountered in such applications as the FAA A.T. Control Computer System, aircraft avionics, NASA Space Station, and others. In addition, the MSE curriculum takes full notice of the Software Engineering Institute's (SEI) Capability Maturity Model (CMM) by incorporating the key practices throughout the course work.

The curriculum is structured into two groups of courses: core (15 credits) and specified electives (12 credits). In addition, each student is required to complete a graduate research project (3 credits). Students may elect to take an MSE elective in lieu of the graduate research project. Courses available as specified electives include metrics and statistical methods for software engineering, performance analysis of software systems, concurrent and distributed systems, software safety, and formal methods for software engineering.

* A five-year Computer Science/Master of Software Engineering program is available. Please see the undergraduate catalog for details.

Degree Requirements

Required Courses		Credits
Students must complete 15 credit hours of core courses.		
MSE 500	Software Engineering Discipline	3
MSE 510	Software Project Management	3
MSE 530	Software Requirements Engineering	3
MSE 555	Object-Oriented Software Construction	3
MSE 610	Software Systems Architecture and Design	3

Specified Elective Courses		Credits
Students must complete 12 to 15 credit hours from the following list of courses:		
MSE 520	Formal Methods for Software Engineering	3
MSE 535	Graphical User Interface Design and Evaluation	3
MSE 545	Specification and Design of Real-Time Systems	3
MSE 550	Current Trends in Software Engineering	3
MSE 580	Software Process Definition and Modeling	3
MSE 585	Metrics and Statistical Methods for Software Engineering	3
MSE 590	Graduate Seminar	3
MSE 625	Quality Engineering and Assurance	3
MSE 640	Concurrent and Distributed Systems	3
MSE 650	Software Safety	3
MSE 655	Performance Analysis of Real-Time Systems	3
MSE 660	Formal Methods for Concurrent and Real-Time Systems	3
MSE 699	Special Topics in Software Engineering	3

Note: Other electives may be authorized based on the students' background, program of study, performance during MSE, and advisor approval.

Thesis/Graduate Research Project		Credits
MSE 690	Graduate Research Project	3

In addition to 15 credit hours of core courses, students must take 15 credit hours of electives, **OR** 12 credit hours of electives and a graduate research project. If the graduate research project is selected, students must consult with their advisor and the MSE Program Coordinator for the most recent requirements on how to conduct their graduate research project.

Total Required 30

Technical Management Degree (MSTM)

EXTENDED CAMPUS

DEPARTMENT CHAIR: *V. Mitchell*

GRADUATE PROGRAM COORDINATOR: *W. Harsha*

The Master of Science in Technical Management (MSTM) degree program is a unique educational program developed in cooperation with aviation and aerospace industry representatives. The program aims at entry- or mid-level managers who aspire to greater management responsibilities.

The curriculum has been designed as a cohesive and integrated educational experience, from the introductory preparatory skills courses to the capstone student project submitted before the end of the final course. The degree requires 42 credit hours and strongly emphasizes building communications (writing and speaking), and management skills needed in technically-oriented enterprises. Students can expect assignments requiring projects, reports, and presentations to exercise the knowledge and skills they have learned. The student capstone project is integrated throughout the program and is focused on addressing real world technical management issues in the work place.

The MSTM degree program is delivered on-site at selected industry and government locations where a group of students have made the commitment to start and complete the program. Various organizations have been willing to provide classroom facilities. The program was designed and structured so that each class of students maintains its integrity from start to degree completion. Students can anticipate completion of degree requirements in less than two years while continuing to work. The faculty who teach in the program are recognized experts in the field.

Corporations or individuals interested in learning more about the Master of Science in Technical Management degree program are invited to write or call:

Embry-Riddle Aeronautical University
Extended Campus
Admissions, Records and Registration
600 S. Clyde Morris Blvd.
Daytona Beach, Florida 32114-3900
(904) 226-6910 or (800) 522-6787
E-mail: ecinfo@db.erau.edu

Degree Requirements

Required Courses		Credits
TM 501*	Computer Skills for a Technical Environment	3
TM 502*	Communication Skills in a Technical Environment	3
TM 503*	Quantitative Methods and Statistics	3
TM 605	Organization Theory in a Technical Environment	3
TM 610	Managing Effective Technical Work Teams	3
TM 616	Production Operations Management	3
TM 621	Regulations, Ethics and the Legal System	3
TM 625	Marketing in the Technical Environment	3
TM 630	Technical Management Information Systems	3
TM 635	Financial and Managerial Accounting and Control for Technical Managers	3
TM 641	Project Management: Concepts and Practices	3
TM 646	Operations Research and Management Science	3
TM 651	Quality Management and Quality Control	3
TM 660	Project Development Techniques	2
TM 660L	Technical Management Research Project	1
Total Required		42

* Successful completion necessary in order to proceed in the MSTM program.

Special Academic Programs and Opportunities

Study Abroad

Embry-Riddle Aeronautical University offers students in engineering and computer science the chance to study for a year in Europe at minimal cost. Qualified students receive language and cultural training and enroll at a selected institution in France or Germany. While abroad, students study subjects applicable to their degree programs at the University. During the last three months of their year abroad, students complete a paid internship in European industry, working on technical problems related to their field of study. After successful completion of the program, students receive the Euronational Certificate.

Embry-Riddle Industrial Consortium (ERIC)

Embry-Riddle University in cooperation with the Volusia Manufacturers Association (VMA) has formed a regional industrial consortium to serve and help local industry. The University's entire resource base is made available to the consortium for proactive problem solving and information retrieval.

The Embry-Riddle Industrial Consortium (ERIC) is managed through a university center called the "Office Serving Industry Requests for Information and Services (OSIRIS)". OSIRIS is directed by Dr. R. Luther Reisbig, a professor of Engineering. Mr. Lou Fifer serves OSIRIS as Director of Marketing and Community Relations. Mr. Fifer is also the President and CEO of the Volusia Manufacturers Association.

Many Volusia County industries have fewer than 500 employees. Smallness translates into limited resources. ERAU offers resource help to local industry in: a) engineering; b) marketing; c) computer software/hardware; d) computer networking; e) electronic devices; f) data base design/utilization; g) operations research; h) logistics; i) human factors; j) communications; k) product design; l) product development/testing; m) materials science; n)research; o) management; and more.

COURSE DESCRIPTIONS

Course Descriptions

Embry-Riddle Aeronautical University course offerings are listed in alphabetical order, according to the following course designations:

AE	Master of Aerospace Engineering/ Master of Science Aerospace Engineering
AED	Aviation Education
BA	Master of Business Administration in Aviation
HFS	Master of Science in Human Factors and Systems
MA	Mathematics
MAS	Master of Aeronautical Science
MSE	Master of Software Engineering
MSF	Master of Safety Science
TM	Master of Science in Technical Management

The following courses are not necessarily offered every term, nor are they necessarily offered at all campus locations.

AE - Aerospace Engineering

AE 502

Strength and Fatigue of Materials
3 Credits
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. Prerequisite: Consent of the department.

AE 503

Natural Sciences with Aviation Applications
3 Credits
An applications course providing educator's who have a background in science with the opportunity to experience real-world applications using aviation and aerospace concepts. This applications course also provides strategies and techniques to facilitate the use of aviation/aerospace applications in natural science instruction in the classroom. Prerequisite: basic algebra and trigonometry.

AE 504

Advanced Compressible Flow
3 Credits
Classification and solution of compressible flow problem, basic conservation laws, and fundamental theorems of compressible flows. Wave phenomena; normal and oblique shocks. Method of characteristics and wave interactions. Perturbation theories and similarity rules. Linearized supersonic flow, axisymmetric flow wing theory and wave drag. Nonlinear theories of transonic and supersonic flows. Prerequisite: Consent of the department.

AE 506

Airplane Dynamic Stability
3 Credits
Small-disturbance theory and linearized solutions of the general equations of motions. Aerodynamic derivatives, derivative analysis, aerodynamic transfer functions. Dynamic stability of uncontrolled longitudinal and lateral motions. Computer solution of dynamic stability problems. Inverse problems. Automatic stability and control. An introduction to automatic flight controls and feedback control system analysis. Prerequisite: Consent of the department.

AE 508

Heat Transfer
3 Credits
One and two-dimensional steady and unsteady-state conduction heat transfer including an introduction to finite difference and finite element methods of analysis. Free and forced convection heat transfer. Radiation heat transfer. Prerequisite: Consent of the department.

AE 510

Aircraft Structural Dynamics
3 Credits
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. Prerequisite: Consent of the department.

AE 512

Combustion I
3 Credits
Equilibrium and kinetics of combustion processes. Law of mass action, Arrhenius reaction rate law, heat of reaction, and adiabatic flame temperature. Conservation equations of reacting flows. Applications of conservation equations. Prerequisite: Consent of the department.

AE 590

Graduate Seminar
1-3 Credits
A study of the most current advancements in a particular field of study as determined by the instructor of the course. The course will have a different topic each term depending upon the varied interests of the students, the graduate faculty, or the research requirements of the Aerospace Engineering department. Prerequisite: Consent of the department.

AE 601

Combustion II
3 Credits
Several simplified but important steady flow combustion problems will be studied. The concept of flame stabilization will be explored. The final part of the course will deal with combustion problems in unsteady flow systems. Prerequisite: Graduate standing.

AE 602

Continuum Mechanics
3 Credits
Kinematics and deformation of a continuum. Balance principles for mass, momentum and energy. Constitutive equations. Application of the theory to solid and fluid media. Prerequisite: Consent of the department.

AE 604

Finite Element Fundamentals
3 Credits
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. Prerequisite: Graduate standing.

AE 606

Finite Element Aerospace Applications
3 Credits

Development of finite element representation of continuum using Galerkin and variational techniques. Boundary elements. Applications to statics and dynamics of solids, structures, fluids and heat flow. Includes the use of finite element codes. Prerequisite: Graduate standing.

AE 608

Introduction to Computational Aerodynamics
3 Credits

Potential flow theory. Panel methods. Applications of numerical methods and the digital computer to inviscid flow analysis. Lifting line, vortex lattice fundamentals. Use of computer codes. Prerequisite: Graduate standing.

AE 610

Computational Aerodynamics
3 Credits

Application of vortex lattice, panel element and boundary element methods to incompressible and compressible three-dimensional aerodynamics flow problems. Wing and wing-body analysis. Incorporation of boundary integration for more complete modeling. Prerequisite: Graduate standing.

AE 612

Analysis of Aircraft Plate and Shell Structures
3 Credits

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. Prerequisite: Graduate standing.

AE 614

Analysis of Aircraft Composites Structures
3 Credits

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. Prerequisite: Graduate standing.

AE 616

Advanced Aircraft Structural Dynamics
3 Credits

Analysis of structures subjected to dynamic loads. Hamilton's Principle and Lagrange's equations. Rayleigh's principle. Numerical evaluation of natural frequencies and modes. Mode superposition and direct integration methods for dynamic response. Finite element modeling. Component mode synthesis. Computer applications. Prerequisite: Graduate standing.

AE 620

Boundary Layer Theory
3 Credits
Navier-Stokes equations for laminar and turbulent flows. Boundary layers. Jets, wakes, elementary turbulence modeling. Skin friction, separation, drag and aerodynamic heating. Approximate and exact finite-difference solutions including the effect of suction and blowing. Solutions of turbulent boundary layer equations. Prerequisite: Graduate standing.

AE 640

Turbine Engine Propulsion Systems
3 Credits
Advanced theory of turbojet, multi-spool fan jet, variable cycle engines, and bypass air-breathing propulsion systems. Design and off-design performance analysis, theory and design of inlets, compressors, burners, and turbines. Component matching, cooling, regenerative systems, test methods and corrections. Engine poststall behavior. Prerequisite: Graduate standing.

AE 642

Rocket Engine Propulsion Systems
3 Credits
Analysis of combustion and expansion processes. Thrust nozzle performance analysis and design techniques. Characteristics of liquid propellants and liquid propellant rocket motors. Characteristics of solid propellants and interior ballistics of solid propellant rocket motors. Cooling techniques. Thrust vector control methods. Prerequisite: Graduate standing.

AE 696

Graduate Internship in Aerospace Engineering
1-3 Credits
Temporary professional or industrial work appointments 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 common to the work place. They are academic/professional activities coordinated by the University between offering organizations and the graduate student. Prerequisite: Graduate standing.

AE 699

Special Topics in Aerospace Engineering
1-3 Credits
Guided independent study of selected topics not offered in regularly scheduled classes. Arrangements and work requirements established by prior agreement of instructor and students. Students should expect to spend at least sixty hours of research for each credit hour. Prerequisite: Graduate standing.

AE 700

M.S.A.E. Thesis
9 Credits

AED - Aviation Education

The University recognizes that certified elementary and secondary school educators interested in incorporating aviation/ aerospace concepts into their existing curricula, may not have the necessary background or resources to fulfill this desire. Courses developed and offered as summer workshops address these deficiencies during a time that is compatible with educators' schedules. The course length of two weeks fulfills the requirements of the Florida Department of Education for earning three graduate course credits, or sixty in-service points. These courses may not fulfill other States' Department of Education requirements.

AED 501

Aviation/Aerospace Foundations for the Elementary Curriculum

3 Credits

A foundations course that provides elementary teachers, who have little background in integrating aerospace and aeronautical concepts into the classroom curriculum, with an opportunity to enhance their knowledge in these areas. This course includes such subjects as engineering, space sciences, historical aviation/aerospace applications, meteorology, astronomy, environmental sciences, aviation literature, and human physiology. This course also provides a survey of methods and demonstrations to adapt materials to the educators' respective grade level. Credit for this course is not applicable to the requirements of any Embry-Riddle degree.

AED 502

Aviation/Aerospace/Earth Science Foundations for the Secondary Curriculum

3 Credits

A foundations course that provides a comprehensive examination of aviation/aerospace teaching concepts using state-of-the-art simulator applications, and emphasizing the classroom organizational skills needed in today's high technology environment. Topics from engineering, space sciences, historical aviation/aerospace applications, meteorology, geography, environmental sciences, geology, and human physiology are examined in detail. Each student has the opportunity to become familiar with a specific area of aviation, by developing a sample curriculum that is presented to the rest of the class at the end of the course. Each student uses simulators, videos, computers, and other resources to supplement his/her academic instruction. Credit for this course is not applicable to the requirements of any Embry-Riddle degree.

AED 503

Natural Sciences with Aviation Applications
3 Credits

An applications course providing educators who have a background in science with the opportunity to experience real-world applications using aviation and aerospace concepts. This applications course also provides strategies and techniques to facilitate the use of aviation/aerospace applications in natural science instruction in the classroom. Prerequisite: Basic algebra and trigonometry.

AED 601

Advanced Pedagogical Applications of Aviation/Aerospace Concepts
3 Credits

An advanced course that provides educators with background in mathematical, meteorological, engineering, psychological and physiological principles as applied to the aviation and aerospace fields. The course also provides educators with techniques and strategies used to implement aviation and aerospace concepts into the classroom. Prerequisites: AED 501 and/or AED 502, or Flight Training. Credit for this course is not applicable to the requirements of any Embry-Riddle degree.

BA - Business Administration in Aviation

BA 503

Business Foundations
1-6 Credits

This course examines in depth the major competencies which have been identified as essential prerequisite knowledge for a graduate student enrolled in the MBA/A degree program to successfully complete the course work. The course is broken down into six stand-alone modules in the discipline areas of management/quantitative methods, marketing/accounting, and economics/finance. Each student will only take those modules which have been identified through advisement as being required. Emphasis is placed on understanding the core knowledge and skills in each of the disciplines. Credit for this course is not applicable to the requirements of any Embry-Riddle degree.

BA 511

Operations Research
3 Credits

An advanced study in the use of mathematical and scientific tools and techniques in managerial decision making. Operations research seeks to determine how best to design and operate a system, usually under conditions requiring the allocation of scarce resources. Emphasis will be on the applications of these methods in aviation, and aviation-related industries. Topics include: linear programming, probabilistic dynamic programming, game theory, forecasting, queuing theory, transportation, decision making under uncertainty, network models, and Markov Chains. Prerequisites: Satisfactory completion of Business Foundation courses, and/or permission of the Graduate Program Chair.

BA 514

Strategic Marketing Management in Aviation
3 Credits

The traditional role of marketing management is enlarged to include the development, implementation, and control of marketing strategies in the dynamic aviation/aerospace organization. Emphasis is on the application of the strategic marketing process in the turbulent global aviation business environment. Strategic marketing decisions, analysis, and issues are integrated with the goal of achieving customer satisfaction to gain a sustainable competitive advantage within the aviation industry. Prerequisites: Satisfactory completion of Business Foundation courses, and/or permission of the Graduate Program Chair.

BA 517

Accounting for Decision Making
3 Credits

A study of management's use of accounting information to make decisions related to planning, controlling, and evaluating the organization's operations. Using electronic spreadsheets, the budgeting function and use of performance reports is demonstrated. The behavior and management of costs, as well as techniques used to evaluate and control results of operations, are discussed. Topics include: cost-volume-profit analysis, activity based costing in production and service companies, decentralized operations, and differential analysis techniques. Through the use of case studies, current readings, and course projects, emphasis is placed on aviation, and aviation-related industries. Prerequisites: Satisfactory completion of Business Foundation courses, and/or permission of the Graduate Program Chair.

BA 518

Managerial Finance
3 Credits

A study of the theoretical and practical approaches to effective financial management. Planning, analyzing and controlling investment, and short and long term financing are examined for decision making purposes. Emphasis is placed on the application of these methods in the aviation, and aviation-related industries. Topics include: capital budgeting, risk and diversification, asset liability management, airport financing, aircraft financing, financial derivatives and financial engineering, swaps, options and financial future, and international finance. Prerequisites: Satisfactory completion of Business Foundation courses, and/or permission of the Graduate Program Chair.

BA 520

Organization, Behavior, Theory, and Applications in Aviation
3 Credits

This course focuses on current organizational issues which have a direct impact on management in the aviation industry. The emphasis is on human development and the development of effective work elements, as well as the personnel concerns which must be resolved for successful leadership. Topics will provide insights to behavior, structure, authority, motivation, leadership, organizational development, and social responsibility. Prerequisites: Satisfactory completion of Business Foundation courses, and/or permission of the Graduate Program Chair.

BA 521

Global Information and Technology Management
3 Credits

The course will develop knowledgeable and effective users of information technology in aviation and aerospace management occupations. A combination of technical and managerial material is presented. This material is necessary to achieve an understanding of the operations and strategic uses of management information systems within the aviation industry. Emphasis is placed on the use of computers as an information processor, decision tool, and as a means of linking management more closely to the organization. In addition, topics relating to the management of information resources are presented. Prerequisites: Satisfactory completion of Business Foundation courses, and/or permission of Graduate Program Chair.

BA 522

Business Research Methods
3 Credits

An Introduction to the art and science of solving aviation business research problems and making students better users of research. Topics include: research design, the scientific method and other research methodologies, problem formulation, operational definition, measurement and its impact on error and design, classification and modeling. The application of statistics, sampling surveys, decision analysis, management science techniques, and the use of statistical/operations research computer software are studied. An introduction of a style manual for the preparation of a research proposal. Weekly lab session required. Prerequisites: Satisfactory completion of Business Foundation courses, and/or permission of Graduate Program Chair.

BA 523

Advanced Aviation Economics
3 Credits

A study of economic applications to the aviation and aerospace industry. Students will examine the evolution of market forces in the industry with particular emphasis on airlines, airports, and manufacturing. Concepts of yield management, air passenger demand forecasting, price

and cost study, airport economics, air and land space optimization strategies, government's role in aviation, international implications of competition and government regulation, economic analysis of safety, and other relevant industry issues are examined. Emphasis is placed on an increasingly international air transportation environment. Prerequisites: Satisfactory completion of Business Foundation courses, and/or permission of the Graduate Program Chair.

BA 590

Graduate Seminar
1-3 Credits

A study of the most current advancements in a particular field of study as determined by the instructor. The course will have a different topic each term depending upon the varied interests of the students, the graduate faculty, or the research requirements of the Aviation Business Administration department. Prerequisites: As announced by the instructor conducting the seminar.

BA 603

Aerospace Production and Operations Management
3 Credits

An advanced study of production and operations management as it relates to the planning, coordinating, and executing all activities that create goods and services within a global aeronautic/aerospace environment. Special quantitative and qualitative emphasis is placed on the blending of the concepts of industrial engineering, cost accounting, reliability and availability, and general management within the context of core production and control decision activities, such as capacity planning, product design, layout of facilities, selecting of locations for facilities, quality assurance, fleet planning, scheduling, inventory management, and project management. Special emphasis is placed on the examination of recent trends in global competition, increased reliance of quality for competitive technology transfer into production systems, and the increased value added by worker involvement in problem solving and decision making. Prerequisites: Satisfactory completion of Business Foundation courses, and/or permission of the Graduate Program Chair.

BA 604

International Management and Aviation Policy
3 Credits

An advanced study of 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. Prerequisites: Satisfactory completion of Business Foundation courses, and/or permission of the Graduate Program Chair.

BA 607

Human Resource Development

3 Credits

This course emphasizes the integration of the individual into the organization by studying the current and fundamental issues in organization theory and organizational behavior as they relate to the individual. The effectiveness of the individual in the organization is examined in terms of personal traits such as communicative abilities, leadership style and potential, and beliefs about organizational ethics and social responsibility. Prerequisite: Successful completion of Business Foundation courses and/or permission of Graduate Program Chair.

BA 609

Airline Operations and Management

3 Credits

An integrated study of airline operations and functions. Domestic and international regulation of air carriers and the industry's changing structure due to alliances and globalization are addressed. Airline economics, airline marketing and pricing, computer reservation and revenue management systems, fleet planning and scheduling, aircraft maintenance, aircraft finance, labor relations, organizational structure, and strategic planing are studied. Prerequisites: Satisfactory completion of Business Foundation courses, and/or permission of the Graduate Program Chair.

BA 625

Airline Marketing

3 Credits

A study of the functions and basic concepts of marketing air transportation services. Discussion includes passenger and cargo markets, determinants of travel demand, growth factors, seasonality, and cargo traffic categories characteristics. Product and service elements, roles of advertising and travel agents, marketing unit structure, pricing and cost environment, and schedule planning are also among the topics examined. Prerequisites: Demonstrated completion of Business Foundation courses, and/or permission of the Graduate Program Chair.

BA 632

Seminar in Aviation Labor Relations

3 Credits

A study of union movement, labor legislation, representation elections, the collective bargaining process, contract administration, and conflict resolution. The focus of the course will be on current issues in labor relations, and the evolution of private and public sector bargaining practices in the aviation industry. The impact on human resource management is analyzed. Prerequisites: Satisfactory completion of Business Foundation courses, and/or permission of the Graduate Program Chair.

BA - Business Administration

BA 635

Business Policy and Decision Making

3 Credits

A capstone course in the MBA/A program that expands on the skills, knowledge, and abilities the students have achieved in their core courses. Students will examine applications of long-term planning and management tools in aviation related industries, and be able to formulate the strategic vision and policies to achieve such a perspective. Concepts of strategic management, total quality management, continuous quality improvement, reengineering, customer-driven management, and other evolving management methodologies will be examined. Applications of the concepts will be applied to the domestic and international activities of airlines, airports, manufacturing and government to sustain a long term competitive advantage. Prerequisites: Completion of all MBA/A core courses.

BA 645

Airport Operations and Management

3 Credits

A study of the management and operation of public use airports. Specifically, traffic forecasting, sources of revenues and expenses, management of passenger and cargo terminal buildings, ground handling of passengers and baggage, ground access systems, and the U.S. Federal Aviation Administration Regulations dealing with airport operations. Current problems with environmental impact, land-use planning and control, airport capacity and delay, public relations, airport finance, airport privatization, liability, and economic impact will be covered. Prerequisites: Satisfactory completion of Business Foundation courses and/or permission of the Graduate Program Chair.

BA 655

Aviation Law and Insurance

3 Credits

Examination of the governmental regulatory functions affecting statutory and administrative law pertaining to aviation. The national and international impact of these laws on aviation policies and operations are studied. The legal aspects of business contracts, negotiable instruments, and commercial code as they relate to aviation are analyzed. The course concludes with an overview of the principles of insurance and risk applied to aviation. Prerequisites: Satisfactory completion of Business Foundation courses and/or permission of the Graduate Program Chair.

BA 690

Graduate Research Project
3 Credits

A written document on an aviation/aerospace topic which exposes the student to the technical aspects of writing. This course is included in the MBA/A curriculum to provide the student with the opportunity to pursue 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. (Graduate Research Project not offered at Daytona Beach campus during the 1998-1999 Academic Year.) Prerequisite: ABA 522 or MAS 605.

BA 696

Graduate Internship in Aviation Business Administration
1-3 Credits

Temporary professional or industrial work appointments 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 common to the work place. They are academic/professional activities coordinated by the University between offering organizations and graduate student.

BA 699

Special Topics in Business Administration
1-3 Credits

The election 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. Prerequisites: Satisfactory completion of Business Foundation courses, and/or permission of the Graduate Program Chair.

BA 700

Thesis Research
6 Credits

A written document on an aviation/aerospace topic supervised throughout its preparation by the student's Thesis Committee, which demonstrates the student's mastery of the topic and is of satisfactory quality for publication. Prerequisite: ABA 522 or MAS 605.

EMBA - Executive Business Administration

EMBA 540

Organizational Communication and Information Systems

3 Credits

The information age is vastly different from the industrial age, and information is rapidly being accepted as a key economic resource alongside traditional factors of industrial production. Course participants undertake an advanced study of information management trends, technologies, and their strategic uses in aviation and aerospace industry settings. The case method is used to investigate rapidly-emerging topics such as cyberspace and the Internet, as well as more traditional subjects such as the use of state-of-the-art hardware and software suites to find and sustain a competitive edge. Complete information systems, and the structures, dynamics, and linkages of global, information-based organizations, are afforded special attention.

EMBA 542

Accounting for Decision Making

3 Credits

This course examines the role of accounting in the information flow of the organization, and emphasizes the needs and requirements of aviation and aerospace executives in their efforts to measure and control performance. The focus is on understanding how information is generated, assessed for reliability, and utilized for performance assessment and resource allocation within an aviation/aerospace context. Participants cover the basic concepts, standards, and practices of financial reporting from the point of view of an executive user. The impact of managerial decisions on financial statements, as well as the impact of accounting policy on corporate strategy are addressed. Topics include analysis of basic financial statements, valuation problems, cost analysis, activity-based costing, the use of budgets, and the design of management control systems. Specific aviation applications are emphasized throughout the course.

EMBA 544 and 545

Quantitative Analysis for Management Decision Making I & II

4 Credits

This course develops the theory and methods of business decision making, including intelligence, design, and choice, with special emphasis on aviation and aerospace applications. Participants will master the conceptual application of statistical methods and reasoning in the context of an aviation business environment. This course is designed to improve the industry managers' decision-making skills as they encounter uncertainty and competing decisions. Topics include statistical sampling and estimation, regression analysis and forecasting, decision theory, game theory, linear programming, and queuing theory.

EMBA 546

Production/Operations Management
3 Credits

Aviation industry trends point to the re-emerging importance of finding ways to add value in the technologies and techniques that transform basic resources into marketable products and services. This course is an advanced study of production and operations management as it relates to the planning, coordination, and execution of all activities that create goods and services in the global aviation/aerospace industry. A strategic perspective of operations is maintained throughout. Case analysis and group participation are used to investigate topics such as manufacturing, capacity planning, facility layout, location planning, services scheduling, inventory management, aircraft maintenance, and the quality imperative.

EMBA 548

Global Economic Analysis for Executives
3 Credits

This course defines the importance of the global external economic constraints in which business decisions are made. Participants will develop an awareness of the broad implications of market mechanisms as the guiding force in the world economy. Participants will use quantitative tools and techniques to solve a variety of global economic problems faced by today's managers. The unique economic challenges facing aviation and aerospace executives will be emphasized. Topics to be examined include profit maximization and cost minimization, input and output pricing, price determination under different market structures, national economic measures, monetary and fiscal policy, interest rates, international economics, stabilization policies, and labor economics.

EMBA 550

Global Marketing Management
3 Credits

As global competition becomes the norm in the aviation and aerospace industry, it is increasingly important for firms to focus on building and maintaining successful customer relationships. This course examines how firms respond to internal and external forces that impact global marketplace behavior, meet increasing customer expectations, and manage competitive pressures. Strategic models and frameworks are examined for their usefulness in aiding the aviation or aerospace executive to meet the demands of the global customer. Topics to be covered include environmental scanning, market research, consumer and organizational markets, segmentation and database marketing using the computer reservation system, marketing communications, building a global image, and product positioning and pricing.

EMBA 552 and 553

Managerial Finance I & II
4 Credits

This course explores the principal challenges faced by corporate finance managers in their quest to maximize shareholder value. Participants develop an analytical framework using the fundamental building blocks of financial theory, including the concepts of risk, return, and the time value of money. Course content focuses on investment and financing decision making in areas such as capital budgeting, capital structure, dividend policy and working capital management. Additional topics include the costs and benefits of using financial instruments to manage risk, the impact of financial markets, financial institutions and government policy on strategic decisions such as corporate restructuring, mergers and acquisitions, and joint ventures in the international marketplace. Specific industry-related topics, such as aircraft and airport financing, are also covered.

EMBA 554

Leadership and Entrepreneurship
3 Credits

Leadership and entrepreneurship require creating organizational direction, setting strategy, and developing new ventures. In the increasingly-competitive global economy, aviation and aerospace managers must develop the necessary skills to lead organizational development and change, and to motivate their employees to innovate. This course explores the interpersonal competencies necessary for effective leadership in situations requiring motivation of both individuals and teams. In addition, the course examines how these competencies enhance a positive environment for organizational change and entrepreneurship. Through case analysis and simulation, concepts such as managerial leadership, individual and team motivation, venture capital, global partnerships, innovation venture, formation of wealth among venture founders and investors, and the entrepreneurial act will be applied to aviation and aerospace industry problems.

EMBA 660

Applications of Organizational Behavior
3 Credits

The successful manager has subordinates that willingly put forth their best effort to accomplish organizational goals. Achieving this managerial success requires knowledge of individual and group behavior. Global competition in the aviation/aerospace industry demands that firms balance the demands of higher productivity and lower costs. This course is designed to provide executives with a thorough understanding of the application of organizational theories and concepts to issues facing the aviation and aerospace industry such as motivating and managing part time, temporary, and contract employees. Selected readings, individual and group exercises, and case analysis will be used to investigate topics such as individual motivation, decision making, group dynamics, and communication. A special section on human resource management will deal with issues of personnel selection and placement, team design, performance appraisal, and labor relations.

EMBA 662

Personal Communication and Teamwork

3 Credits

As aviation and aerospace organizations continue to evolve, executives who wish to lead the organization must understand and appreciate the role of effective personal communication. Teamwork is becoming increasingly important for global organizations as hierarchical management structures are replaced by cross-functional teams composed of multi-cultural employees selected from varying organizational departments. This course examines the role of communication in managing teams, and its impact on team dynamics. How a manager/coach/team leader communicates with team members, and the effect of that leader's communication on group participation and performance is investigated. Topics include interpersonal communication skills in a global organization, communication skills within a group setting, team building, group dynamics, and role incongruity.

EMBA 664

Global Market Forces and Ethical Responsibility

3 Credits

Aviation and aerospace executives face a new set of global market challenges at an ever- increasing pace. Managers must address many legal, ethical, technological, and competitive issues. These global forces must be dealt with, while at the same time recognizing the increased burden placed on organizations to conduct their activities in a legal and responsible manner. This course leads the participant in an examination of societal, government, and legal forces and their impact on the formulation of global strategy. Participants will analyze how to recognize and respond to these forces. Topics include governments and the law, demographic trends, telecommunications and the growth of satellite communications, the growth of the Internet as a global marketplace, and societal and ethical responsibility.

EMBA 668

Culture and the Diverse Workplace

3 Credits

Today's workforce is more diverse than in the past. In the increasingly global aviation/aerospace industry, this workforce spans continents and cultures. Managing this new workforce creates new problems and new opportunities for organizations and the people who run them. This course examines the issues of national and organizational culture in the context of the modern workplace. Executives will investigate cultural differences that affect perception, motivation, performance, and team effectiveness in the global workplace. They will also develop an in-depth portrait of the organizational culture of selected firms. These portraits will be used to illustrate the role of organizational culture, as well as to demonstrate ways to maintain, strengthen, and change culture. Other topics include communicating in a diverse environment, the global transfer of organizational culture and practices, and conflict resolution.

EMBA - Executive Business Adm.

EMBA 670

Technology and Innovation Management

3 Credits

Technology is a ubiquitous global force that must be understood to be managed well. This course examines strategic and tactical problems found in aviation/aerospace industry scenarios where innovation in products and processes is critical, and where the technical performance of products and services is a main criteria of success in time-constrained projects. The strategic view emphasizes evolutionary models of technological evolution and revolution, and addresses issues such as paradoxical management, technology transfer, intellectual property protection, and the productivity dilemma. The tactical view emphasizes contemporary tools and techniques for managing projects, and addresses issues such as project selection, concept-to-commercialization product development, organizational forms and processes, monitoring and auditing, and project termination.

EMBA 672

Designing the High Performance Organization

3 Credits

This course is an advanced study of the theory and principles behind organizational design. An examination of real-world organizational structures will be used to illustrate the role of structure in effective internal and external communications, information gathering, service delivery, and financial and managerial control. Executives will investigate the impact of reengineering and organizational change on employee and firm performance. There will be an in-depth study of transformations in the constraints and opportunities facing firms in the aviation/aerospace industry that necessitate change, and the signs of dysfunctional structures. Other topics include designing the global corporation, designing for innovation, and designing for a networked organization. There will be a special focus on the role of strategic alliances, including partner selection, desired outcomes, and alliance stability.

EMBA 674 and 675

Strategic Management I & II

4 Credits

This is an integrative course that promotes the development of a cross-functional management perspective. Participants focus on the analysis of the firm's external and internal environments to identify and create competitive advantage in a global context. Aviation and aerospace business case studies will be used to explore the issues of defining corporate objectives, evaluating opportunities and threats, and formulating strategies and tactics. The course content emphasizes the cultural, ethical, political and regulatory facets of the global business environment, and highlights the need for leadership and organizational evolution in the successful management of strategic change. Topics include total quality management, continuous quality improvement, reengineering, and other evolving management methodologies.

EMBA 700

Executive Project
3 Credits
As the program's capstone activity, the executive project is designed to benefit both the participant and the sponsoring organization by giving the participant the opportunity to apply the knowledge and diagnostic competencies learned throughout the program to a specific business issue of the sponsor. Issues are selected by the sponsor and participant, and approved by a faculty advisor, early in the program. Working from the perspective of a consultant, the participant thoroughly investigates the issue and proposes specific actions, using the analysis, planning, and management tools developed during each course. Continuous guidance and feedback are provided by the faculty advisor and sponsor during the project. The completed project will require a comprehensive written report, as well as a formal oral presentation.

HFS - Human Factors and Systems

HFS 500

Systems Concepts, Theory, and Tools
3 Credits
The ability to think at a systems level will be developed. Formal systems principles; systems requirements analysis; knowledge acquisition techniques; information modeling; information management; decision support; systems evaluation.

HFS 505

Systems Engineering I
3 Credits
Practical application of design, build, and test processes applied to systems that incorporate hardware, software and human components. Focus is on the integration of system components throughout the product life cycle. Lab is a required part of this course. Prerequisites: HFS 500, Systems Concepts, Theory, and Tools.

HFS 510

Research Design and Analysis I
3 Credits
Foundation and procedures of research techniques, tools, and methods. Course reviews the principle concepts of research design and evaluation. The application of experimental, case study, survey, and non-experimental techniques are explored. Identification, isolation, and treatment of dependent and independent variables is covered. Use of existing published research or data is used to highlight principles. Lab is a required part of this course. Prerequisite: Completion of an undergraduate course in statistics. (This course same as MAS 665.)

HFS - Human Factors and Systems

HFS 515

Ergonomics
3 Credits

This class will address the basic concepts of ergonomics and their application to design of human-machine systems and products. Consideration of human physiological, biomechanical, and biological capabilities and limitations in design for human efficiency, safety and comfort; anthropometry. Ergonomic issues related to the design of control and display systems, instrument panels, workplaces, seating and tools will be addressed. Prerequisites: HFS 500, Systems Concepts, Theory, and Tools, and completion of an undergraduate course in human factors.

HFS 520

Team Resource Management
3 Credits

This course addresses the social psychology underpinnings of what is commonly referred to as team resource management and cockpit resource management (CRM). The class will review and discuss the basic theoretical concepts from social psychology and related them to the effective operation of aviation teams. It will identify and discuss the basic issues associated with the effective evaluation of CRM type programs.

HFS 525

Human and Organizational Factors in Technological Systems
3 Credits

Theoretical paradigms in human computer interaction and their application to interface design; advanced interface technologies such as multimodel input/output, hypertext, and knowledge-based systems.

HFS 530

Systems Psychology
3 Credits

This course will be designed to provide the student with a very level view of human factors and ergonomics and how they fit into the overall system design and evaluation process. This class will address the human's role and effectiveness as a system constituent. It will take a very high level, systemic, and theoretical approach, rather than a detailed empirical one. It will provide an overview of the system science, and the time-phased, iterative systems approach. It will also review the assumptions and limitations of the analytic tools used to incorporate people into complex systems including systems test and evaluation tools.

HFS 590

Graduate Seminar
3 Credits
A study of current topics and advancements in human factors, aviation psychology, and related areas as determined by the instructor of the course. The course will have a different topic each time it is offered depending on the varied interests of the faculty, students, or availability of visiting professors. Prerequisite: As announced by the instructor conducting the seminar.

HFS 600

Human Factors in Systems
3 Credits
Survey of human factors literature. Introduction to topics including human capabilities and human interfaces with human-machine systems, workload, anthropometrics, perception, workspace design, visual momentum. The course will study the human limitations in the light of human engineering, human reliability, stress, and human physiology. The course will discuss human behavior as it relates to the aviator's adaptation to the flight, air traffic, and maintenance environments

HFS 605

Systems Engineering II
3 Credits
Studies on the value of prototyping in the application of design, build, and test processes. In-depth focus on the innovation of conceptual designs in short time-cycle engineering. Lab is a required part of this course. Prerequisites: HFS 500, Systems Concepts, Theory, and Tools and HFS 505 Systems Engineering I.

HFS 610

Research Design and Analysis II
3 Credits
This course is the advanced program in experimental design and analysis. The focus in this course is the design, planning, and considerations involved in complex, multivariate experiments. Major areas of examination will include factorial designs, nested variables, linear models, multiple regression, measures of covariance, and latin square designs. Considerations in selecting the appropriate experimental design is the focus of this course. Examination of appropriate statistical techniques is integrated with the theoretical and practical concepts of experimental design. Lab is a required part of this course. Prerequisite: HFS 510 Research Design and Analysis I.

HFS 615

Sensation and Perception
3 Credits
This class will address advanced issues in human information processing with specific regard to the physical and psychological variables

associated sensory and perceptual phenomena. Attention will be paid to all of the human sensors, with particular focus on perceptual issues related to system design, evaluation, and certification. While all the senses will be covered special attention will be paid to the visual and auditory senses. Lab is a required part of this course. Prerequisite: Completion of an undergraduate course in the area of sensation and perception. (This course same as MAS 660.)

HFS 620

Memory and Cognition
3 Credits

This course will examine the tremendous gains in memory and cognition research to obtain an understanding of how these theoretical and empirical advances have been, or might be, applied to problems of human-machine interactions and system design. Topics include the total range of memory and cognitive processes and their potential application to systems design–sensation perception, pattern recognition, attention, language, memory, concept formation, thinking, decision making, problem solving, time-sharing, reaction time, action, manual control, and the impact of automation. Lab is a required part of this course.
Prerequisites: Completion of an undergraduate course in the area memory and cognition. (This course same as MAS 663.)

HFS 625

Applied Testing and Selection
3 credits

Issues in selecting and testing applicants for a broad range of aviation and related industries positions is the focus of this course. An examination of the methodologies used since World War I through the present is covered. The change in methodologies used and the level of sophistication of assessment techniques involved is examined across pilot, air traffic controller, maintenance, and aviation security screener personnel. A significant portion of this course is devoted to an understanding of the performance assessment techniques used to evaluate selection systems as well as the personnel selection instruments used. Problems in both criterion and assessment measurement are discussed in detail.
Prerequisites: HFS 510 Research Design and Analysis I and HFS 610 Research Design and Analysis II.

HFS 630

Cognitive Systems
3 Credits

The course addressed applied cognitive science, that draws on the knowledge and techniques of cognitive psychology and related disciplines to provide the basis for principle-driven design. Specifically it will address human cognitive behavior in complex worlds, that exist without the artificial boundaries of the laboratory. It specifically addresses those worlds where there have multiple agents (i.e., cognitive systems) and which are problem driven and tool constrained. The course will also address the impact of mismatches between the models

of the designers, their software, and the users. Prerequisites: HFS 600 Human Factors in Systems and HFS 620 Memory and Cognition.

HFS 635

Human-Computer Interaction
3 Credits

This course stresses the importance of good interfaces and the relationship of user interface design to human-computer interaction. Other topics include: interface quality and methods of evaluation; interface design examples; dimensions of interface variability; dialogue genre; dialogue tools and techniques; user-centered design and task analysis; prototyping and the iterative design cycle; user interface implementation; prototyping tools and environments; I/O devices; basic computer graphics; color and sound. A lab is required part of this course. Prerequisites: Completion of an undergraduate course in human factors or human computer interaction. (This course same as MAS 661.)

HFS 640

Aviation/Aerospace Psychology
3 Credits

This is a survey course that covers the primary areas of work in the aviation psychology specialization. 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 from semester to semester depending on the focus of current research environment. This course has a strong emphasis on methodological issues, problematic research concerns, and statistical issues. The majority of coursework involves extensive readings in the specialization from conference proceedings, journal articles and training manuals. A critical analysis of research is the focal point for this course. Prerequisite: Completion of an undergraduate course in the area of aviation/aerospace psychology.

HFS 645

Underpinnings of Human Factors and Ergonomics
3 Credits

Survey of historic human factors literature particularly those papers considered classics. The class will review of the key personalities, papers, theories, and research programs that provide the basis of current theory and best practice. The key historic papers addressing human capabilities, human-machine systems, workload, anthropometrics, perception, workspace design, visual momentum will be read and critically discussed. The course pay particular attention to the key research addressing aviation psychology, cockpit design, cognitive engineering, and human physiology.

HFS - Human Factors and Systems

HFS 650

Human Factors of Aviation/Aerospace Applications
3 Credits

This class will address the basic concepts of the application of human factors principles and theories to the effective design and operation of various aviation/aerospace applications. It will address these areas from both an historical perspective and in relation to the future operational concepts of the applications. Issues to be addressed could include: function allocation between human and machine, human computer interface, work environment (e.g., stress circadian rhythms), person-to-person communications, performance measurement, and research and development needed. Prerequisite: Completion of an undergraduate course in human factors.

HFS 696

Graduate Internship in Human Factors and Systems
3 credits

Supervised placement in an industrial, governmental, or consulting setting. Student completes a specific project under the supervision of an organizational sponsor and a faculty member. Prerequisite: as announced by the instructor.

HFS 699

Special Topics in Human Factors and Systems
3 Credits

Completion of an area of study under the direct supervision of a faculty member. The course requirements and area of study are negotiated between the faculty member and the student with the approval of the department chair.

HFS 700

Thesis
1-6 credits

The performance and a written description of a master's level research project. The topic of the thesis will be approved and supervised throughout its preparation by the student's major professor and thesis committee. This project will provide evidence of the student's ability to perform applied research at the graduate level. Prerequisite: Completion of all core courses in Human Factors Engineering track or Systems Engineering track.

MA - Mathematics

MA 502

Boundary Value Problems
3 Credits
Basic techniques 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. Prerequisite: MA 441 or equivalent.

MA 503

Mathematical Methods
3 Credits
Visual representation of data; fitting curves to data; single variable calculus; differentiation and integration; functions of several variables; level curves and level surfaces; partial derivatives; vectors and matrices; gradient; directional derivative; maximum/minimum for functions of two variables; multiple integration; Lagrange multipliers; linear systems of equations; matrix operations, LU-decomposition; eigenvalues and eigenvectors.

MA 504

Theory of the Potential
3 Credits
Potential theory and Green's function. Method of characteristics and solution in the large of Cauchy's initial value problem for first and second order equations. Numerical methods. Application to fluid mechanics, electromagnetic fields, heat conduction, and other areas. Computer applications. Prerequisite: MA 502.

MA 505

Statistics
3 Credits
Descriptive statistics and graphical depiction of data; confidence intervals and hypothesis testing for the mean, difference between two means, variance, ratio of two variances, proportion, and difference between two proportions; simple and multiple regression, including model development, inferences, residual analysis, oulier identification, and verification of assumptions; fundamental concepts of design of experiments; justification of linear models; construction and analysis of basic designs including one-way, block designs, and Latin squares; multiple comparisons. Corequisite: MA 503 or MA 441.

MA - Mathematics

MA 506

Probability for Engineers

3 Credits

Foundations, combinations, conditional probability, expectations and applications to discrete sample spaces. Random variable in one or more dimensions. Various continuum distributions. Characteristic functions. Applications to engineering problems. Computer applications. Prerequisite: MA 441 or equivalent.

MA 510

Fundamentals of Optimization

3 Credits

Overview of several important general types of optimization problems; development of mathematical models; linear programming; the simplex method; introduction to sensitivity analysis, networks; applications involving Maple and Excel. Prerequisite: MA 503.

MA 520

Mathematical Programming and Decision-Making

3 Credits

A continuation of MA 510. Development of mathematical modeling techniques with an emphasis on integer programming, nonlinear programming, and multiple criteria decision making techniques; case studies from aviation/aerospace involving mathematical programming and decision-making. Prerequisite: MA 510.

MA 605

Statistical Quality Analysis

3 Credits

Fundamental concepts of statistical quality control, including Shewhart charts, cusum charts, EWMA charts, multivariate charts, tolerance limits, and capability analysis. Further development of concepts in statistical design of experiments including use of factorial designs, fractional factorial designs, and use of central composite designs. Several nonparametric statistical techniques, including sign test, signed-rank test, rank-sum test, Kruskal-Wallis test, runs test, and Kendall's Tau. Advanced regression topics, including the use of transformations, weighted least squares regression and detection of influential points. Throughout the course, industrial applications will be emphasized, including the use of several case studies. Prerequisite: MA 505.

MA 610

Multivariate Optimization

3 Credits

Multiple objective optimization with an emphasis on response surface methodologies and goal programming; inclusion of group decision-making techniques in model development; case studies from aviation/aerospace emphasizing multivariate model development and determination of optimal solutions. Prerequisites: MA 520 and MA 605.

MA 690

Graduate Research Project
3 Credits
An applied problem on an aviation/aerospace topic that requires use of optimization and/or quality improvement skills. A student pursuing the research project track of the MSIO must select this course.

MA 699

Special Topics in Mathematics
1-3 Credits
Students may elect to perform a special, directed analysis and/or independent study in an aviation area of particular interest. A detailed proposal of the desired project must be developed and presented to the department chair or center director for faculty review and recommendation, three weeks prior to the end of registration for the term.

MA 700

Thesis
6 Credits
Written and defended documentation of a research project conducted under the supervision of a faculty committee. The research must be at the level of a published paper in an appropriate journal, as determined by the faculty committee.

MAS - Aeronautical Science

MAS 508

Advanced Airport Modeling
3 Credits
A study of advanced airport and airspace planning to support day-to-day operations, resource allocation, and strategic analysis. Emphasis is put on the use of computer software to create working airport and airspace models to solve common airport and airspace operational problems. Airport and airspace background material and procedures will be covered in supplemental lectures. The Total Airport and Airspace Modeler (TAAM) software will be used as the primary planning and analysis tool. TAAM is the most advanced and comprehensive interactive software available for this type of analysis. Students are taught how to use the TAAM software on a UNIX-based SUN workstation. To accomplish this task, students will be divided into research teams for purposes of developing a simulation and conducting the group object portion of the course. Each team will be assigned a project of completing a realistic working simulation model of an actual airport which they will then use to solve an operational problem. Prerequisites: Demonstrated knowledge of flight rules and regulations, and basic knowledge of the aviation industry, airports, and commercial aircraft used in the National Air Transportation System.

MAS - Aeronautical Science

MAS 509

Advanced Aerodynamics

3 Credits

A study of current flight applications and problems that 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. Prerequisite: Demonstrated knowledge of basic aerodynamics.

MAS 510

Advanced Aircraft Performance

3 Credits

An analysis of performance characteristics for transonic, supersonic, and near space air vehicles powered by jet or rocket engines. Problems related to high speed and high altitude flight such as aeroelastic effects, compressibility drag, Reynold's Number effects, ram pressure rise, and aerodynamic-heating are explored. Discussions center on current developments and the problems associated with these advancements. Prerequisite: Demonstrated knowledge of basic aircraft performance.

MAS 511

Earth Observation and Remote Sensing

3 Credits

U.S. and international solar system exploration programs are reviewed and related to the current and proposed Earth-research projects. Examination of these research programs will be structured towards defining problems related to environmental changes and resource exploration. Formatted research data from Earth-resource satellites and EOS sources will be used for demonstrating specific research techniques, exploration methods, and economic and social elements of exploration. Prerequisite: Demonstrated knowledge of spacecraft or satellite operations.

MAS 512

Space Mission and Launch Operations

3 Credits

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, navigation and control systems. Examples of mission control, operations, and systems include spacecraft project descriptions, and control site operations. Computer-based simulation instruction provides mission- and site-specific operation detail. Prerequisite: Demonstrated knowledge of spacecraft or satellite operations.

MAS 513

Space Habitation and Life Support Systems

3 Credits

This course addresses the problems related to space-flight induced changes in the major body systems which 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. Prerequisite: Demonstrated knowledge of manned spaceflight programs.

MAS 514

Computer-Based Instruction

3 Credits

This course addresses the design, development, and evaluation of instructional software as it applies to the aviation/aerospace industry. The course offers practice in the systematic design of computer-based instruction with emphasis in tutorials, drill and practice, and simulation. CBI lessons are developed using available authoring systems. Prerequisite: Demonstrated knowledge of basic computer operations.

MAS 515

Aviation/Aerospace Simulation Systems

3 Credits

A comprehensive examination of simulation in modern aviation/aerospace that includes history, state-of-the-art, and current research and development. Discussion focuses on the extent and impact of simulator applications throughout the industry and the effects on training costs and safety. Topics, from the flight crew being checked-out, updated, evaluated, or retrained in aircraft and systems simulators to the simulation models used in management, flight operations, scheduling, or air traffic control, are examined in detail.

MAS 516

Applications in Crew Resource Management

3 Credits

This course will 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, and role management will be studied. Each student will have 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. Additionally, each student will use simulators and computer-based instruction to supplement their academic instruction.

MAS - Aeronautical Science

MAS 517

Advanced Meteorology
3 Credits
Course topics include the derivation and application of the hydrostatic equation, atmospheric kinematics, derivation of the equation of continuity, development of thermal wind, fundamental weather analysis, high altitude and radar meteorology, air pollution, and solar impact on weather. The student practices current weather analysis and short range weather forecasting using much of the latest equipment available in aviation. Prerequisites: Demonstrated knowledge of mathematics and basic meteorology.

MAS 550

Aviation Education Foundations
3 Credits
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 aviation education, its historical and philosophical foundations.

MAS 560

Rotorcraft Operations
3 Credits
The course introduces the complexities of rotary wing flight systems and the advancements made to overcome them. The unique problems facing an organization involved in rotorcraft operations are studied from the initial inception of a program to the government rules and regulations, environmental and noise considerations, special landing and take-off facilities, flight and maintenance ratings, and techniques of control. Special consideration is given to the unique problems and issues facing such rotorcraft operations as police, medical evacuation, forestry service and corporate aviation.

MAS 570

Advanced Avionics
3 Credits
An advanced study of electronic communication, navigation, and landing equipment used in aircraft and spacecraft is the basis for this course. Discussions will include electronic pulse type equipment, surveillance systems, low frequency and area navigation systems, flight control systems, and systems integration. Prerequisite: Demonstrated knowledge of avionics systems.

MAS 590

Graduate Seminar
1-3 Credits
A study of the most current advancements in a particular field of study as determined by the instructor of the course. The course will have a different topic each term depending upon the varied interests of the students, the graduate faculty, or the research requirements of the

Aeronautical Science department. Prerequisites: As announced by the instructor conducting the seminar.

MAS 601

Applications in Space:
Commerce, Defense, and Exploration
3 Credits

The scientific, military, and commercial interests in international and domestic space programs, are examined throughout the history of space flight. The needs of commercial space endeavors, and methods of expanding space technology into manufacturing, are contrasted to the importance of scientific exploration, and the requirements of military space operations. The justification, development, and costs of scientific exploration programs, defense-related projects, and commercial endeavors are used to study the evolution of space missions and the development of future programs. Prerequisite: Demonstrated knowledge of spacecraft or satellite technology.

MAS 602

The Air Transportation System
3 Credits

A study of air transportation as part of a global, multi-modal transportation system. The course reviews the evolution of the technological, social, environmental, and political aspects of this system since its inception at the beginning of this century. The long-term and short-term effects of deregulation, energy shortages, governmental restraints, and national and international issues are examined. Passenger and cargo transportation, as well as military and private aircraft modes are studied in relation to the ever-changing transportation requirements. Prerequisites: Demonstrated knowledge of aviation rules and regulations, and economics.

MAS 603

Aircraft and Spacecraft Development
3 Credits

This course is an overview of aircraft and spacecraft development. Included are vehicle mission, the requirements directed by economics, 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. The course studies the aviation and aerospace maintenance systems from the built-in test equipment to the latest product support activities. Prerequisites: Demonstrated knowledge of college-level mathematics and economics.

MAS 604

Human Factors in the Aviation/Aerospace Industry
3 Credits

This course presents an overview of the importance of the human role in all aspects of the aviation and aerospace industries. It will emphasize the 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. The course will study the human limitations in the light of human engineering, human reliability, stress, medical standards, drug abuse, and human physiology. The course will discuss 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. Prerequisite: Demonstrated knowledge of behavioral science.

MAS 605

Research Methods and Statistics
3 Credits

A study of current aviation research methods that includes techniques of problem identification, hypothesis formulation, design and use of data gathering instruments, and data analysis. Research reports that appear in professional publications are examined through the use of statistical terminology and computations. A formal research proposal will be developed and presented by each student as a basic course requirement. Prerequisites: Demonstrated knowledge of college-level mathematics, including introductory statistics, and basic computer operations.

MAS 606

Aviation/Aerospace Communications/Control Systems
3 Credits

A detailed analysis of current and future developments and trends in the control of air traffic that includes the evolution of current national policies, plans and their objectives. The most recent planned improvements for each major component of the ATC system are examined individually and as part of the system as a whole. Prerequisites: Demonstrated knowledge of flight rules and regulations, and basic navigation.

MAS 607

Advanced Aircraft/Spacecraft Systems
3 Credits

State-of-the-art aircraft/spacecraft systems and projections of research trends for future air vehicle requirements and applications are studied. Topics include the development, capabilities, and limitations of current aircraft/spacecraft propulsion, electrical, environmental, control, hydraulic systems, and sub-systems. The total aircraft design, and the interdependence of aircraft system design constraints are emphasized, as well as current problems and solutions. Prerequisites: Demonstrated knowledge of college-level mathematics, and aircraft systems and components.

MAS 608

Aviation/Aerospace Accident Investigation and Safety Systems
3 Credits

A critical analysis of selected aircraft accidents and an evaluation of causal factors. Particular emphasis is placed on the study of human factors connected with flight and support crew activities in aviation operations. Identification and implementation of accident prevention measures are stressed as integral parts of the development of a complete safety program.

MAS 609

Aircraft Maintenance Management
3 Credits

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. Prerequisite: Demonstrated knowledge of management principles.

MAS 611

Aviation/Aerospace System Safety
3 Credits

This course emphasizes the specialized integration of safety skills and resources into all phases of a system's life-cycle. Accident prevention, beginning with systems engineering together with sound management, are combined in this course to enable the student to fully comprehend their vital roles in preventing accidents. The total program, from basic design concepts through testing, maintenance/systems management, and operational employment, is fully examined and evaluated.

MAS 612

Aviation/Aerospace Industrial Safety Management
3 Credits

The Aviation/Aerospace Industrial Safety Management course examines the modern work setting from an aviation and aerospace safety and health point of view. Examination of the history of industrial safety leads the student to an understanding of why and how aviation/aerospace industrial safety management evolved into an advanced discipline. The roles of, and interactions between government, corporation, safety management and the worker in the dynamic, economy-driven environments of aviation and aerospace, are central themes.

MAS 613

Airport Operations Safety
3 Credits

A study of airport operations safety as applied to day-to-day operations. A review and analysis of all Federal regulations applicable to operations and safety are conducted. Prerequisite: Demonstrated knowledge of performance of airports and airline operations management or related field.

MAS - Aeronautical Science

MAS 614

Advanced Aviation/Aerospace Curriculum Development
3 Credits

This course will investigate the traditional manner of curriculum development, and then proceed to prepare an instructional framework for a variety of aviation and aerospace instructional programs.

MAS 620

Air Carrier Operations
3 Credits

A study of air carrier flight operations systems from the viewpoints of the ground-based dispatcher, operations specialists, managers, and the cockpit flight crew. Topics include advanced flight planning, aircraft performance and loading considerations, impact of weather conditions, and routing priorities. Prerequisites: Demonstrated knowledge of flight rules and regulations, basic meteorology, basic navigation, and basic aircraft performance.

MAS 622

Corporate Aviation Operations
3 Credits

The establishment and operations of a corporate flight department are examined along with the procedures and techniques generally accepted as standards by professional corporate flight operations. Included is a practical view of the corporate aviation mission of management mobility and use of the resources available to accomplish it.

MAS 634

Aviation/Aerospace Psychology
3 Credits

A study of the complexities of human factors research in aviation which draws 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 and attempts to design an occupant "friendly" flight deck module.

MAS 636

Advanced Aviation/Aerospace Planning Systems
3 Credits

Planning and decision-making techniques and strategies used in the aviation industry are emphasized. The types and sources of data needed for decisions about route development and expansion, fleet modernization and new markets are examined. The methods of collecting, analyzing, and applying the data through computer applications, modeling, heuristic, value theory, and payoff tables are studied. The limitations and problems associated with strategic planning are discussed. Prerequisites: Demonstrated knowledge of management principles and economics.

MAS 641

Production and Procurement Management in the Aviation/Aerospace Industry

3 Credits

The evolution of an air carrier aircraft from design concept to delivery is examined from the perspectives of the purchaser, manufacturer, component manufacturers, operators, and certificator/regulator. The study of the process begins with demand analysis and continues through purchase contracting, manufacturing, marketing, certification, pre-delivery activities, and introduction into service. Prerequisites: Demonstrated knowledge of management principles and economics.

MAS 643

Management of Research and Development for the Aviation/Aerospace Industry

3 Credits

The types and sources of aviation/aerospace research and development are analyzed through study of the structure and interrelationship of the industry, educational institutions, and other organizations. Sources and methods of funding, specification determination, the relationship of research and development to procurement and production, and the regulatory factors affecting progress from the initial development to production of the aircraft and components are examined. Concepts of motivation and management as applied to research scientists and engineers will be studied as well as procedures for promoting optimum creativity concurrently with efficient operations. Prerequisites: Demonstrated knowledge of management principles and economics.

MAS 644

Integrated Logistics Support in Aviation/Aerospace

3 Credits

This course is a study of the 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. The economic feasibility of a logistics system, including a Life-Cycle Cost Analysis is explored. 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. Prerequisite: Demonstrated knowledge of management principles and economics.

MAS 652

Continuing Education's Role in Aviation
3 Credits

Emphasis on assessing community needs relative to developing programs in continuing education for the adult learner, evaluation of existing programs, and the processes utilized in developing curricula for an adult continuing education program related to aviation.

MAS 654

Adult Teaching and Learning Techniques
3 Credits

The major instructional strategies used in education with particular emphasis on higher education and adult learning are the core of this course. Multiple approaches as they relate to academic disciplines and grade levels are studied. The unique "cockpit classroom" environment will be discussed and evaluated.

MAS 660

Sensation and Perception
3 Credits

This course examines how the human senses transform stimulus patterns of physical energy into the neural codes that become our perceptions of the world. Topics include: vision, audition, smell, taste, touch, balance; and phenomena common to all sensory modalities: feature enhancement, inhibition, adaptation, and stages of neural coding. Prerequisite: Demonstrated knowledge of basic psychology, or completion of an undergraduate course in psychology. (Same course as HFS 615.)

MAS 661

Human-Computer Interaction
3 Credits

This course discusses the importance of good interfaces and the relationship of user interface design to human-computer interaction (HCI). Topics include: interface quality and methods of evaluation; interface design examples; dimensions of interface variability; dialogue genre; dialogue tools and techniques; user-centered design and task analysis; prototyping and the iterative design cycle; user interface implementation; prototyping tools and environments; I/O devices; basic computer graphics; color and sound. Prerequisite: Demonstrated knowledge of the use of computers, including programming familiarity with a high-level language.

MAS 663

Memory and Cognition
3 Credits

This course examines recent advances in memory and cognition research to obtain an understanding of how these theoretical and empirical advances have been, or might be, applied to problems of human-machine interactions and system design. Topics include the total range of memory and cognitive processes and their potential application to

systems design—sensation perception, pattern recognition, attention, language, memory, concept formation, thinking, decision making, problem solving, time sharing, reaction time, action, manual control, and the impact of automation. Prerequisite: Demonstrated knowledge of basic psychology, or completion of an undergraduate course in psychology. (Same course as HFS 620.)

MAS 665

Applied Experimental Design
3 Credits

The design, conduct, statistical analysis, and interpretation of common behavioral science research designs are covered within the context of aviation science topics. Students learn to differentiate research designs along dimensions of: experimental/non-experimental approaches; questions of group differences and questions of relationships between variables, adequacy of statistical power, "statistical significance" and practical importance. Student projects include conducting statistical analyses and writing research results sections based on standard American Psychological Association format. Prerequisite: MAS 605, or completion of an undergraduate experimental psychology course. (Same course as HFS 510.)

MAS 690

Graduate Research Project
3 Credits

A written document on an aviation/aerospace topic which exposes the student to the technical aspects of writing. This course is included in the MAS curriculum to provide the student with the opportunity to pursue 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. Prerequisite: MAS 605.

MAS 696

Graduate Internship in Aeronautical Science
1-3 Credits

Temporary professional or industrial work appointments 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 common to the work place. They are academic/professional activities coordinated by the University between offering organizations and a graduate student.

MAS 699

Special Topics in Aeronautical Science
1-3 Credits

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 center director or department chair for faculty review and recommendation at least three weeks prior to the end of registration for a term.

MSE - Software Engineering

MAS 700

Thesis
6 Credits
A written document on an aviation/aerospace topic supervised throughout its preparation by the student's Thesis Committee, which demonstrates the student's mastery of the topic and is of satisfactory quality for publication. Prerequisite: MAS 605.

MSE - Software Engineering

MSE 500

Software Engineering Discipline
3 Credits
This course introduces students to the concepts and methods for a disciplined software engineering process. Students will be introduced to the scales down industrial practices for planning, tracking, analysis, and defect management to fit the needs of small-scale program development. The course demonstrates how small project disciplines provide a solid base for larger projects and how it provides a framework for a statistically managed software engineering discipline. Also discussed is the cost and benefit of a Personal Software Process (PSP). Students will work individually to complete the course assignments. Prerequisite: Practical knowledge of a modern programming language (e.g., Ada, C, C++).

MSE 510

Software Project Management
3 Credits
This course addresses management considerations in software systems development. It provides advanced material in software planning mechanisms for monitoring and controlling projects, and leadership and team building. Prerequisites: Basis knowledge of computer science. Prerequisite/Co-requisite: MSE 500.

MSE 520

Formal Methods for Software Engineering
3 Credits
A study of mathematical logic and proof techniques, discrete structures, and other mathematical topics that are used in software engineering; the use of formal methods in software specification; and the use of formal methods throughout the software life-cycle. Prerequisite: CS 222 or consent of Instructor.

MSE 530

Software Requirements Engineering
3 Credits

This course is concerned with the software engineering process of determining what is to be produced and the products generated as a result of following the process. Software requirements engineering is studied as a three step process of requirements, elicitation, analysis/validation and specification. In-depth study of methods such as Prototyping and Scenario Analysis for requirements elicitation, Object- or Function-Oriented methodologies and Quality Function Deployment for requirements analysis and validation, and standards such as ANSI/IEEE Std 830 and DoD 2167A for requirements specification. The course also includes use of Computer Aided Software Engineering (CASE) tools and review techniques (e.g., Peer Review, Inspection, Structured Walkthroughs) in requirements engineering of software systems. Students will participate in individual and group projects on performing software requirements engineering task. In addition, the course requires definition and development of a process guidelines for requirements engineering task. Prerequisite/Corequisite: MSE 500.

MSE 535

Graphical User Interface Design and Evaluation
3 Credits

An introduction to designing, implementing, and evaluating computer-human interfaces with emphasis on graphical user interfaces. The approach is both theoretical and practical. Students participate in small team development of a prototype graphical user interface, using an available interface design software tool such as TAE. A paper evaluating a graphical user interface, as described in the literature and/or evidenced in existing software is required.

MSE 545

Specification and Design of Real-Time Systems
3 Credits

This course addresses basic concepts and methods used in software specification and design of concurrent and real-time systems. The characteristics of concurrent and real-time systems, the role of software design in software development. Review and comparison of a number of software design methods specifically suited for concurrent and real-time systems will be explored. Two of the methods will be analyzed in detail and some case studies will illustrate the design process. The course material may require research in real-time aspects of software design and to produce appropriate reports. Prerequisite: MSE 500.

MSE 550

Current Trends in Software Engineering
3 Credits

Current techniques, methods, procedures and paradigms of software engineering are studied. Students perform literature searches and prepare written and oral reports on current software engineering practices. Prerequisite: MSE 500.

MSE - Software Engineering

MSE 555

Object-Oriented Software Construction
3 Credits

This course addresses basic concepts of object-oriented software development. It provides an integrated view of subjects related to the different phases of software development using object-oriented techniques. The course covers Object-Oriented Analysis and Design (OOA/OOD), Object-Oriented Programming (OOP), and Object-Oriented Testing (OOT) techniques. It discusses and evaluates the suitability of different software development life cycles for object-oriented paradigm. Also covered in the course are object-oriented metrics and case studies in object-oriented software development. Prerequisites: MSE 500, proficiency in use of modern programming languages (e.g., Ada, C, C++).

MSE 580

Software Process Definition and Modeling
3 Credits

This course provides students with the fundamental knowledge for software process definition and modeling. Software process content includes a framework for process definition and modeling, engineering of process, enactment of the processes, and description of the process properties. Other subject related to process definition covered are Process, Process Step, Process Element, and Process Script. The course also addresses various representation to process modeling, such as text-based, template-based, and graphical-based. Executable presentations, in the form of process program, are studied. These executable presentations include process definition and modeling tools, such as State Transition Diagrams, Entry-Task-Validation-Exit, Statecharts, and Petri-Nets, and automated tools for process representations. Prerequisite: MSE 500 or Consent of Instructor.

MSE 585

Metrics and Statistical Methods for Software Engineering
3 Credits

This course is concerned with three related topics of software measurement, statistical tools and methods, and applied experimental design in software engineering. Students will be introduced to the principles and concepts relevant to measurement in software engineering including the representational theory of measurement, collection, analysis and validation of data. Also studied are frameworks such as Goal-Question-metrics and Quality Function Deployment paradigms for guiding measurement efforts. Statistical methods along with Statistical Process Control (SPC) tools such as Control Charts, Fishbon Diagram, scatter Diagrams and advanced subjects such as Taguchi's Robust Design technique and their application in software engineering are covered. Also explored are the concepts of experimental design, analysis of experiments, model building, ethics and presentation of experiments. Prerequisite: MSE 500 or consent of Instructor.

MSE 590

Graduate Seminar
3 Credits

A study of the current advancements in a particular field of software engineering as determined by the instructor of the course. The course will have a different topic each term depending upon the varied interests of students, the graduate faculty, or the research requirements of the Aviation Computer Science Department.

MSE 610

Software Systems Architecture and Design
3 Credits

This course is concerned with the principles and concepts relevant to the software engineering process of designing large programs and systems, and the products generated as a result of enacting the process. Software design is studied as a two-step process of building an abstract model for the software system and refining this model into an implementation form, along with the products of the design process such as high-level and detailed designs. The course provides an introduction to a range of design methodologies, together with a description of their uses and limitations as well as principles that are used to assess the quality of a design process and products. In-depth study of Object- and Function-Oriented design methods, and use of Computer Aided Software Engineering (CASE) tools and review techniques (e.g., Peer Review, Inspection, Structured Walkthroughs) in the design process. Also covered are advanced topics related to software architectures and design patterns. Students will participate in individual and group project on high-level and detailed designs of a software system. The course also includes definition and development of a process guideline for design process. Prerequisite: MSE 530.

MSE 625

Quality Engineering and Assurance
3 Credits

This course describes the overall approach to specifying software quality, achieving quality, and mapping a quality specification into an engineerable set of activities. It describes the major activities used to cross-check the quality of software artifact and its development process. This course provides a framework for understanding the application of software verifications and validation (V&V) processes and techniques throughout the software development life cycle. Typical products of V&V processes are identified along with their possible V&V objectives. The course will analyze five categories of V&V approaches: 1) technical reviews, 2) software testing, 3) proof of correctness (program verification), 4) simulation and prototyping, and 5) requirements tracing. For each category some representative techniques will be identified and assessed. The course emphasis is on validating the system at the requirements and design stages. This validation is then coherently extended into a discussion of testing concepts, planning and controlling of testing activity, and integration-level testing. The course covers the economics of software quality and provides a guide to organizing the project to achieve quality in both the software product and process. Prerequisite: MSE 530 or consent of Instructor.

MSE - Software Engineering

MSE 640

Concurrent and Distributed Systems

3 Credits

The objective of this course is to teach principles of software development for concurrent and distributed systems. Specification, design, and implementation techniques will be described and illustrated by examples and practical exercises. Principles and practices of concurrent programming, including synchronization and communication issues, and a survey of languages suitable for implementing concurrent solutions will be covered. Prerequisite: MSE 530.

MSE 650

Software Safety

3 Credits

The objective of this course is to teach principles of software development for safety and mission critical systems. Safety related specification, design and implementation techniques will be described and illustrated by examples and practical exercises. Principles and practices of safe software development, including a survey of programming language and operating system level issues for implementing safety related software will be discussed. An essential element of this course is a group project on the development of safety related software, including its design, implementation and testing. Prerequisite: MSE 500 or consent of Instructor.

MSE 655

Performance Analysis of Real-Time Systems

3 Credits

The objective of this course is to teach principles of performance analysis of real-time systems on the design and implementation levels. Performance modeling and analysis techniques will be described and illustrated by examples and practical exercises. Principles and practices of software development to achieve required or optimal performance, including design analysis and assessment of the implementation, will be addressed. An actual project in instrumentation of software for performance evaluation is an essential element of this course. Prerequisite: MSE 640 or consent of Instructor.

MSE 660

Formal Methods for Concurrent and Real-Time Systems

3 Credits

A study of the formal specification of reactive systems, temporal logic, and current research in the specification of concurrent and real-time systems. There also will be some discussion of verifying software designs based on formal specifications. Prerequisite: MSE 520 or consent of Instructor.

MSE 690

Graduate Research Project
3 Credits

A written document on aviation/aerospace software engineering topics which exposes the student to the technical aspects of writing. The document is an individual work based on student involvement in a team software development activity representing a significant element of the software development life cycle. It provides the student with an opportunity to pursue a project of special interest at a practical level. This is a required course for students who choose not to write a thesis.

MSE 696

Graduate Internship in Software Engineering
1-3 Credits

Temporary professional or industrial work appointments 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 common to the work place. They are academic/professional activities coordinated by the University between organizations and a graduate student.

MSE 699

Special Topics in Software Engineering
1-3 Credits

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 department chair for faculty review and recommendation.

MSF - Safety Science

MSF 530

Aircraft Accident Investigation
3 Credits

An examination of investigation as it pertains to aircraft accidents from the perspectives of the administrative, regulatory, and practical field investigation aspects. Emphasis will be on the evidence gathering, preservation, and processing phases of accident investigation. An overview of organizations that conduct and participate in investigation, and an analysis of their roles in those investigations will be completed. Use of a laboratory will provide practical field experience. Research into investigative concepts and techniques will be an integral part of the course.

MSF - Safety Science

MSF 580

Industrial Hygiene and Environmental Protection
3 Credits

A study of the role and responsibilities of an industrial hygienist employed in the aviation community. The course reviews the application of methods for the identification, evaluation and control of industrial hygiene and environmental hazards encountered in the aviation workplace. Specific hazards to be addressed include noise, vibration, ionizing and non-ionizing radiation, thermal conditions, pressure, chemicals, airborne contaminants, and biological substances. Engineering and non-engineering controls as well as regulatory requirements will also be covered.

MSF 615

Aviation Safety and Health Program Management
3 Credits

Addresses the application of management principles and techniques to the management of aviation safety and health programs. Topics include planning, organizing, budgeting, resourcing, training, operating and evaluating management processes as they relate to aviation safety and health programs. Regulatory requirements and other standards along with the measurement and evaluation of safety performance and loss control accountability are included throughout the course.

MSF 630

Aircraft Accident Analysis
3 Credits

A critical analysis of selected aircraft accidents which involves extensive field work, teaming, a thorough investigation, detailed examination, group-process discussions and decision making. Each team of student investigators will produce a professional report which includes the facts, the scenario, an analysis of all potential factors, findings and recommendations. Identification of accident prevention measures as a product of the analysis process is stressed. Identification and analysis of available and future loss-prevention technologies will be completed.

MSF 635

Advanced Aircraft Survivability Analysis and Design
3 Credits

Entails a detailed analysis of the aircraft accident environment with particular emphasis on survivability factors. Explores factors and forces which cause injury, and examines the injury-role played by impact forces and occupiable space compromises. Examines "crashworthiness" and "delethalization" technologies and concepts with a focus on the best ways to protect occupants during a crash. Selected aircraft accidents will be used as case studies. An in-depth review of basic kinematics and development of injury-related information will be completed.

MSF 645

Aircraft Fire Survivability Analysis and Design
3 Credits

Involves a detailed examination of basic fire science and the relationship of fire to aircraft accident survival. Examines current fire crashworthiness factors including fire development and propagation, injury and fatality mechanisms related to fire, and current evacuation systems in use. Focus will be on the configurational, procedural, environmental, and biobehavioral factors that influence survival in a fire situation. Case studies of accidents involving both in-flight and crash-related fires will be utilized. Identification and analysis of available and future fire-protection technologies will be completed.

MSF 655

Airline and Operations Safety Management
3 Credits

This course addresses the application of safety management principles and techniques to the management of airline operations and safety. Topics include hazard identification, accident/incident investigation, flight safety, cabin safety, ground safety and emergency response programs. Regulatory requirements and airline standards as well as accident prevention strategies are included throughout the course. Prerequisite: MSF 615.

MSF 675

Aviation Maintenance Safety
3 Credits

A study of the aviation maintenance safety practices, procedures, and policies in use throughout the aviation industry. Includes the role of maintenance safety to the overall safety management program within the organization. Case studies of maintenance- related accident prevention and loss control scenarios. The influence and role of the regulatory and compliance agencies in aviation maintenance safety.

MSF 680

Integrated Safety Operations - Capstone
3 Credits

Study of management theory, integrated arrangements, common constraints, developmental level, essential guidelines, staff liaison, project improvement, effectiveness audits and collaboration needed to assure success of the safety function. Includes a written document on a safety topic, which exposes the student to the technical aspects of writing. This course is included in the MSS curriculum to provide the student with the opportunity to pursue a project of special interest, but not to the level of a thesis.

MSF 685

Aviation Security
3 Credits

This course will intensively focus on the various aspects of business intelligence and industrial security as they apply to aviation and to aviation safety. Of prime concern are risks, threats, and countermeasures. Topics include intelligence theory and intelligence operations; foreign and domestic organized crime; industrial espionage; riots and disasters; terrorism; sabotage; hijacking; internal security; cybercrime; legal and ethical issues; de facto and regulatory roles of local, regional, national governments, international agencies, and nongovernmental organizations; social and cultural factors; strategic planning and investment vulnerabilities; physical, operations, communications, and personnel securities. Readings, lectures, discussions, and case studies will be supplemented by team exercises resulting in security plans comprising risks, threats, and countermeasures, and evaluative mechanisms.

MSF 686

Emergency Preparedness and Preplanning
3 Credits

This course is designed to increase the student's knowledge of emergency response procedures, safety and health hazards, and enforcement issues for industry. Topics include a thorough discussion of scope, application, definitions, other related standards; elements of an emergency response plan; training requirements; the incident command system; medical surveillance; and post-emergency response. Major elements involved in disasters and emergencies, preparedness planning, systems utilization, and attention to essential human services, with emphasis on community action and the development of successful, cost-effective strategies for implementing emergency and mitigation plans.

TM - Technical Management

TM 501

Computer Skills for a Technical Environment
3 Credits

Introductory graduate level skills in computers are developed through application to current business-related problems. Computer techniques are used to solve problems and enhance technical communications. Computer techniques will be covered as an efficient method to achieve higher level analytical and communicative skills. Emphasis is placed on supporting and enhancing technical communications with computer technology. Computer presentation graphics will be explored as a tool to develop and augment high impact presentations. Successful completion is necessary in order to proceed in the MSTM program.

TM 502

Communication Skills in a Technical Environment

3 Credits

Introductory graduate level skills in business communications are explained through the development of solutions applied to a series of interconnected management science problems. Communicate the results in a clear and understandable fashion. Emphasis is placed on communicating conclusions in concise and persuasive writing and speaking. Written assignments will involve reports, business letters, memoranda, and resumes. Successful completion is necessary in order to proceed in the MSTM program.

TM 503

Quantitative Methods and Statistics

3 Credits

The integration of graduate level skills in quantitative management methods through the development of solutions applied to a series of interconnected management science problems. Computer techniques are also used to solve problems and to communicate the results in a clear and understandable fashion. Emphasis is placed on understanding analytical methodologies, interpreting quantitative results, and communicating conclusions. Descriptive and inferential statistical applications will be explored. Successful completion is necessary in order to proceed in the MSTM program.

TM 605

Organizational Theory in a Technical Environment

3 Credits

Effectively using the organization to build a technical management team. Leadership versus management; conflict between functional management; matrix versus hierarchical organizations; organizational alternatives; human response in the organization; influence and authority in the technical setting; participation; sensitivity to cultural and minority differences; managing technical change and innovation in a large organization; communication in a technical organization; organization culture and tradition; government perspective; industry perspective.

TM 610

Managing Effective Technical Work Teams

3 Credits

This course encompasses the study of managing work teams in the technical environment. Specific topics include: two-way communications and feedback; participative management techniques pertaining to motivation; small-group processes and group decision support systems; attraction and retention of quality personnel; skills in writing employee evaluations, responsibility, authority, accountability; conflict resolution; initiative; creativity; horizontal and vertical communication; personality/temperament; logic versus heuristic/detail versus holistic; management strategies; motivation, recognition, and reward.

TM - Technical Management

TM 616

Production Operations Management
3 Credits
An in-depth analysis of production/operations concepts, methods, and techniques from a systems prospective.

TM 621

Regulations, Ethics, and the Legal System
3 Credits
Understanding the complex regulatory and legal setting surrounding management. The Federal Acquisition regulations and how they affect all projects; legal responsibility and accountability, ethical considerations within and external to the organization, the international environment and how it may affect projects.

TM 625

Marketing in the Technical Environment
3 Credits
Effective use of communications to describe and/or market projects, programs or products to a hostile or friendly audience. Understanding products and the market place; collecting data to accurately reflect the situation; the use of accurate, clear and meaningful presentations; highlighting the positive; reporting the negative; internal versus external presentations; dealing with the media; video and computer techniques; analyzing your audience; communications level; public relations. Students will be required to develop a marketing plan and, working as a team, conduct a marketing research project based upon the needs of their organization.

TM 630

Technical Management Information Systems
3 Credits
This course provides an "end-user" orientation to Management Information Systems with both managerial and technical components. The course will develop managerial skills in using information systems to conduct daily operations, to plan business strategies, and to solve business problems. A systems approach to planning, scheduling and controlling will provide the student with effective decision-making resources. In addition, the course will provide "hands-on" experience with laptop computer exercises in computerized MIS to develop the information management proficiency required by the corporate environment. The emphasis of this course is upon Data Resource Management; Electronic Commerce; Enterprise Collaboration Systems; Telecommunications (Internet, Intranet, Extranet and Client/Server Systems); Decision Support Systems (DSS); Executive Support Systems (ESS); and Security, Control, and Ethical Issues.

TM 635

Financial and Managerial Accounting and Control for Technical Managers

3 Credits

Financial control procedures for a systems approach to program management are presented. Cost elements in manufacturing, research and development, logistic and support services are explored. Included will be the introduction of fixed and variable costs; computing and using overhead; process and job order costing methods; preparation of income statements in the contribution format; ratio analysis; profit planning and its relationship to cost; using spreadsheets for budget and overhead analysis; pricing, capital budgeting and investment decisions.

TM 641

Project Management: Concepts and Practices

3 Credits

This course encompasses the study of project management, paying particular attention to the nine knowledge areas: Scope, Time, Cost, Risk, Quality, Procurement, Human Resources, Communication and Integration, as they relate to the process areas of Initiation, Planning, Execution, Control, and Closure of projects. Examples and student initiated projects and project simulations are utilized to emphasize the integrated relationships. Project management software is utilized throughout the course, particularly to demonstrate the usefulness of automated calculations, record keeping, and reporting as related to planning and controlling projects. Throughout, the merger of technical skills, general management skills, and project management skills for the successful project is emphasized. Where applicable, the information delivered in this course is compliant with ISO 9,000, 10,000 series standards and the Project Management Institute generated Project Management Body of Knowledge.

TM 646

Operations Research and Management Science

3 Credits

Quantitative methods for program management. Forecasting and probability distributions; decisions theory and decision-making under conditions of risk and uncertainty; marginal analysis; linear programming applications including problems of minimization and maximization, transportation and warehousing, assignment and scheduling and ingredient blending; queuing theory and waiting lines; network models such as minimum spanning tree, maximal flow and shortest route techniques; and simulation and modeling; regression analysis; time series analysis.

TM - Technical Management

TM 651

Quality Management and Quality Control
3 Credits

Instilling quality concepts in a project. Continuous improvement; quality management; designing for and cost of quality; organizing for QM; alternative approaches to quality; understanding the corporate culture; developing the quality plan; implementing QM; introducing the concept; work meetings and project teams; informing; motivating; recording; using technology; key approaches and when to use them; reward and recognition; follow-up, evaluation, and feedback.

TM 660

Project Development Techniques
2 Credits

A study of current scientific research methods that includes techniques of problem identification, hypothesis formulation, literature search strategies of libraries and on-lie databases, design and use of date-gathering instruments, formulation of a research model and plan, and appropriate statistical data analysis. The TMRP Guidelines format and American Psychological Association (APA) style will be introduced and followed. A formal Technical Management Research Project proposal will be developed and presented by each student as a basic course requirement. Prerequisite: TM 646.

TM 660L

Technical Management Research Project
1 Credit

A written document on a technical management topic which exposes the graduate student to the technical aspects of writing. This course is included in the MSTM curriculum to provide the graduate student with the opportunity to pursue a project of special interest, but not to the level of a thesis. Prerequisite: TM 660.

EXTENDED CAMPUS

Resident Centers

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	Phoenix	Sky Harbor	(602) 275-5533
	Tucson	Davis-Monthan AFB	(520) 747-5540
Arkansas	Little Rock	Little Rock ANGB	(501) 983-9300
California	Fairfield	Travis AFB	(707) 437-5464
	Ft. Irwin	High Desert	(760) 386-7997
		MCLB Barstow *(teaching site)*	
	Lancaster/Palmdale	Edwards AFB	(661) 258-1264
		NAWS China Lake *(teaching site)*	(760) 939-4557
		Palmdale *(teaching site)*	(661) 947-4025
	Lemoore	NAS Lemoore	(559) 998-6026
	Marysville	Beale AFB	(530) 788-0900
	Pt. Mugu	Ventura	(805) 271-9691
	Oakland	East Bay	(510) 636-2424
	Riverside	March ARB	(909) 653-4074
	Sacramento	McClellan AFB	(916) 920-9620
	San Diego	ASW San Diego	(619) 523-9270
	San Jose	South Bay	(408) 298-7380
Colorado	Ft. Carson	Colorado Springs	(719) 526-3387

Extended Campus

Florida	Cocoa	Space Coast	(407) 783-5020
	Ft. Walton Bch.	Eglin AFB	(850) 678-3137
		Hurlburt Field *(teaching site)*	(850) 581-2106
	Jacksonville	Jacksonville	(904) 779-0246
		LSI	
		(Logistic Services I'ntl) *(teaching site)*	
	Melbourne	Northop-Grumman	
		(MSTM teaching site)	
	Merritt Island	Barry University	
		(MSTM teaching site)	
	Miami	Miami	(305) 871-3855
	Orlando	Orlando	(407) 872-0504
	Panama City	Tyndall AFB	(850) 286-6246
	Pensacola	Pensacola	(850) 458-1088
		Whiting Field *(teaching site)*	(850) 623-7787
		Mobile, AL *(teaching site)*	(334) 441-6737
	Pompano Beach	Fort Lauderdale	(954) 970-8551
	Tampa	MacDill AFB	(813) 828-3772
Georgia	Marietta	NAS Atlanta	(770) 426-9990
		Delta Airlines *(teaching site)*	
	Savannah	Hunter/Stewart	(912) 355-0644
	Valdosta	Moody AFB	(912) 244-9400
	Warner Robins	Robins AFB	(912) 926-1727
		Columbus *(teaching site)*	(706)-685-0105
Hawaii	Honolulu	Hickam AFB	(808) 422-0835
	Kailua	Kaneohe MCBH	(808) 254-2106
	Wahiawa	Wheeler AAB	(808) 624-2334
Idaho	Mountain Home	Mountain Home AFB	(208) 832-2222
Indiana	Indianapolis	Indianapolis	(317) 487-6281
Kansas	Wichita	McConnell AFB	(316) 687-3006
Kentucky	Clarksville	Fort Campbell	(270) 798-2775
	Louisville	Fort Knox	(502) 942-0625
Louisiana	Shreveport	Barksdale AFB	(318) 747-4508
Maine	Brunswick	Brunswick NAS	(207) 721-0664
Maryland	Andrews AFB	Andrews AFB	(301) 735-6340
	Lexington Park	Patuxent River NAS	(301) 863-8776
Michigan	Detroit	Selfridge ANG	(810) 465-3259
Minnesota	Minneapolis	Minneapolis	(651) 905-9595
Mississippi	Biloxi	Keesler AFB	(228) 432-5312
	Columbus	Columbus AFB	(662) 434-6121
Montana	Great Falls	Great Falls	(406) 452-9988
Nebraska	Omaha	Offutt AFB	(402) 292-6655
Nevada	Fallon	Fallon NAS	(775) 423-4018
	Las Vegas	Nellis AFB	(702) 643-0762
New Jersey	Atlantic City	FAA Hughes Tech Center	(609) 485-4517
	Trenton	McGuire AFB	(609) 723-1337

New Mexico	Alamagordo	Holloman AFB	(505) 479-6892
	Albuquerque	Kirtland AFB	(505) 846-8946
	Clovis	Cannon AFB	(505) 784-8763
N. Carolina	Fayetteville	Ft. Bragg	(910) 436-5005
	Fayetteville	Pope AFB	(910) 436-3188
	Goldsboro	Seymour Johnson AFB	(919) 734-9211
N. Dakota	Grand Forks	Grand Forks AFB	(701) 594-5324
	Minot	Minot AFB	(701) 727-9007
Ohio	Cincinnati	Cincinnati	(513) 733-3728
		Wilmington *(teaching site)*	(937) 382-6645
	Fairborn	Wright-Patterson AFB	(937) 878-1908
		Columbus State CC *(teaching site)*	
Oklahoma	Altus	Altus AFB	(580) 481-5991
	Enid	Vance AFB	(580) 213-7320
	Oklahoma City	Oklahoma City	(405) 739-0397
S. Carolina	Charleston	Charleston AFB	(843) 767-8912
		MCAS Beaufort *(teaching site)*	(843) 522-7585
	Sumter	Shaw AFB	(803) 666-7401
		McEntire ANGB *(teaching site)*	
S. Dakota	Rapid City	Ellsworth AFB	(605) 923-4447
Tennessee	Millington	Memphis	(901) 332-4300
		Memphis Airport *(teaching site)*	(901) 332-4300
Texas	Abilene	Dyess AFB	(915) 692-2007
	Corpus Christi	Corpus Christi	(361) 937-4951
	Dallas/Fort Worth	Fort Worth	(817) 737-8180
	Del Rio	Laughlin AFB	(830) 298-3272
	Houston	Houston	(281) 244-9456
	Kingsville	Kingsville	(361) 595-7644
	San Antonio	San Antonio	(210) 659-0801
		St. Philip's College *(teaching site)*	
Utah	Ogden	Hill AFB	(801) 777-0952
Virginia	Hampton	Langley AFB	(757) 764-2662
	Newport News	Ft. Eustis	(757) 887-0980
	Norfolk	Norfolk NAS	(757) 440-5078
		Oceana *(teaching site)*	(757) 437-8061
Washington	Oak Harbor	Whidbey Island NAS	(360) 257-2540
		Paine Field *(teaching site)*	(425) 347-3030
	Seattle	Seattle	(206) 768-6632
	Spokane	Fairchild AFB	(509) 244-3832
	Tacoma	Fort Lewis	(253) 964-4572
		Lakewood- Clover Pk Tech College *(teaching site)*	
	Tacoma	McChord AFB	(253) 589-1728
Wyoming	Cheyenne	F.E. Warren AFB	(307) 634-9693

Extended Campus

For information about resident centers in Europe:

European Regional Office
Embry-Riddle Aeronautical University
Unit 4495
APO AE 09094-4495
Telephone from U.S.: 011-49-631-536-7170/7152
FAX from U.S.: 011-49-631-98450
Military telephone: 489-7170/7152
Internet: europe_director@cts.db.erau.edu

EUROPEAN

COUNTRY	LOCATION	CENTER	TELEPHONE
England	Lakenheath	RAF Lakenheath	011-44-1638-522464
	Mildenhall	RAF Mildenhall	011-44-1638-510955
Germany	Giebelstadt	Giebelstadt AAF	011-49-9334-87578
	Hanau	Hanau AAF	011-49-6183-73156
		Wiesbaden AAF *(teaching site)*	
	Illesheim	Illesheim AAF	011-49-9841-8737
	Katterbach	Katterbach AAF	011-49-9802-8757
	Ramstein	Ramstein AB	011-49-6371-44204
		Heidelberg *(teaching site)*	
	Spangdahlem	Spangdahlem AB	011-49-6565-7297
		Geilenkirchen *(teaching site)*	
Italy	Aviano	Aviano	011-39-0434-660631
		Vincena *(teaching site)*	
	Sigonella		011-39-095-866991
Spain	Rota	Rota NAS	011-34-956-822894

For information about Distance Learning:

Distance Learning Office
1-800-359-3728
www.ec.erau.edu
ecinfo@db.erau.edu

College of Career Education

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Regional Manager, North Central Region.
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Goodrich, Alice A.
Regional Manager, South Central Region.
B.A., Trenton State College; M.B.A., Embry-Riddle Aeronautical University.

Hansen, Janet M.
Regional Manager, Western Region.
A.A., Merced Community College; B.A. and M.A., California State College.

Henkel, Thomas
Regional Manager, Southeast Region.
B.S., University of Maryland; M.S., Troy State; Ed.D, Auburn University.

Johnson, Stephen R.
Regional Manager, European Region.
B.A., University of Louisville; M.S., University of Illinois

McEntee, Joseph J.
Regional Manager, Eastern Region.
B.S., New York University; M.A., The American University.

Stockton, Wendell R.
Regional Manager, Southwest Region.
B.A., Park College.

Wright, Ann
Regional Manager, Northwest Region.
B.A., San Francisco State University; M.S., Chapman University.

Extended Campus

Sources of Additional Information

Extended Campus students may contact the director of any of the offices listed below for more information and guidance:

1. For information about financial aid:
   Financial Aid Office
   Embry-Riddle Aeronautical University
   600 S. Clyde Morris Blvd.
   Daytona Beach, FL 32114-3900
   Telephone: (800) 943-6279

2. For veterans' educational benefits:
   Veterans Affairs Office
   Embry-Riddle Aeronautical University
   600 S. Clyde Morris Blvd.
   Daytona Beach, FL 32114-3900
   Telephone: (904) 226-6350

3. For student financial services:
   Student Financial Services
   Embry-Riddle Aeronautical University
   600 S. Clyde Morris Blvd.
   Daytona Beach, FL 32114-3900
   Telephone: (904) 226-6285

4. Career Services
   Career Services
   Embry-Riddle Aeronautical University
   600 S. Clyde Morris Blvd.
   Daytona Beach, FL 32114-3900
   Telephone: (904) 226-6054

Faculty and Administration

Faculty and Administration

The administration and faculty of Embry-Riddle are listed below. A diamond (◆) denotes the Daytona Beach Campus; an asterisk (*) denotes the Extended Campus; a star (☆) denotes the Prescott Campus. All others are assigned to the University administraton.

Legend

Letter designations for aviation qualifications are as follows:

A	–	Airplane
C	–	Commercial Pilot
G	–	Glider
H	–	Helicopter
I	–	Instrument
L	–	Land
P	–	Private Pilot
S	–	Seaplane
AD	–	Aircraft Dispatcher
IA	–	Inspection Authorization
ME	–	Multi-Engine
SE	–	Single-Engine
A&P	–	Airframe and Powerplant Maintenance Technician
AGI	–	Advanced Ground Instructor
ATP	–	Airline Transport Pilot
BGI	–	Basic Ground Instructor
CFI	–	Certified Flight Instructor
CTO	–	Control Tower Operations
DME	–	Designated Mechanic Examiner
DWE	–	Designated Written Examiner
HTA	–	Heavier Than Air
IGI	–	Instrument Ground Instructor
LTA	–	Lighter Than Air
SME	–	Single and Multi-Engine
FCC	–	Federal Communications Commission
FE	–	Flight Engineer
AC	–	Advanced Graduate Credit

Faculty and Administration

Officers of the University

Bankit, Paul*
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Ebbs, George H.
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Fulkerson, Perry
Vice President, Institutional Advancement. B.A., University of South Florida.

Jost, Robert A.
Vice President, Business and Finance. M.B.A., Stetson University.

Ledewitz, Jeffrey H.
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McDuffee, Paul E.
Vice President, University Relations. M.S., Embry-Riddle Aeronautical University; C-AMEL; SES; I-A; CFI-ASMEL-I; AGI; IGI; C-ASMEL-IA.

Parlier, Charles A.[X]
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Academic Administration

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Faculty and Administration

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Extended Campus

Extended Campus students should contact their resident center director or the distance learning office for academic advisement.

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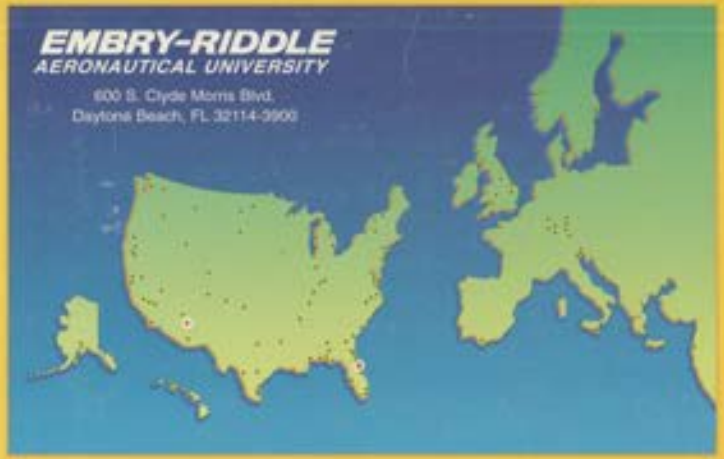

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