

1992-93 CATALOG

CHART A UNIVERSE OF OPPORTUNITIES IN
AVIATION/AEROSPACE



EMBRY-RIDDLE
AERONAUTICAL UNIVERSITY





EMBRY-RIDDLE

AERONAUTICAL UNIVERSITY

**Leading The World In
Aviation And Aerospace Education**

EXECUTIVE OFFICES

Embry-Riddle Aeronautical
University
600 S. Clyde Morris Boulevard
Daytona Beach, FL 32114-3900
(904) 226-6000

WESTERN U.S. CAMPUS

Embry-Riddle Aeronautical
University
3200 Willow Creek Rd.
Prescott, AZ 86301-3720
(602) 776-3728

EASTERN U.S. CAMPUS

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

COLLEGE OF CONTINUING EDUCATION

Embry-Riddle Aeronautical
University
600 S. Clyde Morris Blvd.
Daytona Beach, FL 32114-3900
Sources of Information
Reference page 199

In Europe contact:

Embry-Riddle Aeronautical University
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APO AE 09196
Telephone Number:
Wiesbaden Civilian: 0611-810608
Wiesaden Military: 339-3723

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*Embry-Riddle Calendar 1992-93

Academic Year

FALL SEMESTER 1992

August 22-25	Registration
August 26	Classes begin
August 28	Last day for late registration
September 7	HOLIDAY — Labor Day
November 26-27	HOLIDAY — Thanksgiving
December 4	Last day of classes
December 5, 7-10	Final Examinations
December 12	Commencement

SPRING SEMESTER 1993

January 5-6	Registration
January 7	Classes begin
January 11	Last day for late registration
February 15	HOLIDAY — President's Day
April 8-9	HOLIDAY — Spring Break
April 16	Last day of classes
April 17, 19-22	Final Examinations
April 25	Commencement

SUMMER SEMESTER (TERM A) 1993

April 30	Registration for Terms A, B
May 3	Classes begin
May 5	Last day for late registration
May 31	HOLIDAY — Memorial Day
June 18	Last day of classes
June 19-21	Final Examinations

SUMMER SEMESTER (TERM B) 1993

June 23	Registration for Term B
June 24	Classes begin
June 28	Last day for late registration
July 5	HOLIDAY — Independence Day
August 11	Last day of classes
August 12-13	Final Examinations

- * Daytona Beach and Prescott Campuses only. College of Continuing Education 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, 1992 for all College of Continuing Education locations. It is effective August 22, 1992 for the Daytona Beach and Prescott Campuses.

Orientation

Orientation programs for all new students are planned and scheduled by each campus, and are conducted before registration each semester. A special orientation program for new foreign students is held prior to the general orientation required for all new students. New students will receive specific information regarding the date, time, and place of orientation activities for their campus from Admissions approximately thirty calendar days in advance of the activities.



MESSAGE FROM THE PRESIDENT

I hope that as you review this Embry-Riddle catalog, you will note that the field of aviation/aerospace offers a variety of opportunities to talented, hard working individuals. This industry is poised for an era of prosperity which will require managers, engineers, communications experts, repair personnel and pilots. The leaders of aviation/aerospace will turn to Embry-Riddle Aeronautical University graduates, as they have since 1926, to meet these professional needs.

The reason for this demand is that **EMBRY-RIDDLE IS AVIATION/AEROSPACE**. The vast majority of our faculty combine excellent academic credentials with years of experience in aviation/aerospace. Our curriculum is designed with the assistance of advisory committees comprised of aviation/aerospace professionals from industry, government and academics. Likewise, our research efforts, our local teacher training institutes, and our international network of professional programs all stress aviation/aerospace themes. In addition, virtually all of our 25,000 recorded alumni serve in and open doors to the aviation/aerospace industry.

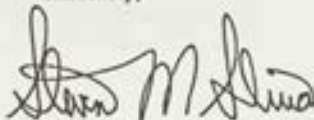
This industry is equally concerned with a culturally balanced future. They ask that Embry-Riddle look especially closely at the recruitment and development of women, minorities, non-traditional and disadvantaged students. So the future of aviation/aerospace is open to anyone who is willing to adapt and excel in a field which is characterized by constant change.

This fact of change compels us to stress comprehensive education at Embry-Riddle. We believe, for example, that flight ratings alone are not enough. At Embry-Riddle, students must instead "learn how to learn" so that when technologies become obsolete, they can adapt and prosper.

Neither will students face the educational challenge alone. Embry-Riddle provides counseling and academic advising services as well as comfortable student-teacher ratios to foster achievement and camaraderie. Such camaraderie extends to the many student activities, athletics and community service opportunities which are available. Yet the linchpin unifying all of these activities is the love of aviation/aerospace.

The University's future is anchored in an equally sound past. Embry-Riddle has thrived through 65 years and has operated 'in the black' every year for more than a decade while continuing to remain in the lower-one-third of comparable schools in tuition costs. This success has been the result of financial prudence, a willingness to listen, and the ability to adapt to the greater trends of change. These qualities we infuse in our students as well. Embry-Riddle continues, then, to be a sound investment. We invite you to face the challenges and reap the rewards of an Embry-Riddle education.

Sincerely,



Steven M. Sliwa, Ph.D.
President

AVIATION AND EMBRY-RIDDLE: THE LIFELONG PARTNERSHIP

At the beginning of this century there were no flying schools, much less an aviation university. It was not until 1903 that The Brothers Wright achieved sustained 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 same 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 special kinds of 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 airplane dealership, airmail service, flight training and mechanic school. The original Embry-Riddle operations fit that mold precisely.

Exactly 22 years after the historic flight of the Wright Flyer, on December 17, 1925, 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.

While the school prospered, it was a volatile time for aviation enterprises. They came and went with regularity. Even Embry-Riddle was not unaffected.

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

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 of all kinds. Some 25,000 men were trained by Embry-Riddle during the war years.

From the end of the war until Embry-Riddle located in Daytona Beach, Florida, the school expanded its international outreach while strengthening its academic programs. The move to Daytona Beach in 1965, under Jack R. Hunt as President, permitted Embry-Riddle to consolidate its flight, ground school and technical training in one location. This move, accomplished in borrowed trucks with borrowed

dollars from Daytona civic leaders, proved to be a moment of singular importance. It signaled the rebirth of Embry-Riddle once again 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.

In 1978 Embry-Riddle opened a western campus in Prescott, Arizona, on the 510 acre site of a former college. The superb flying weather, expansive grounds and many buildings make the Prescott campus an outstanding companion to the University's eastern campus.

Embry-Riddle also operates continuing education centers at military bases in the U.S. and Europe and at several civilian locations. This global network, which was formerly the International Campus, has been reorganized and is now called the College of Continuing Education, and provides flexible educational services to thousands of working adults. Complementing this outreach operation is an independent studies program for those not able to attend regularly scheduled classes, and a center for professional programs to serve the special needs of industry groups through seminars and workshops.

As we head into the 21st century, a new president, Dr. Steven M. Sliwa, brings not only his varied experience but also a new enthusiasm for excellence to the university. Prior to assuming the Embry-Riddle presidency in July, 1991, Dr. Sliwa accumulated extensive experience in education, educational and engineering software companies, and in aerospace and aviation related businesses, including the National Aviation and Space Administration. He has been honored by NASA for outstanding leadership and engineering performance, including the NASA Doctoral Fellowship.

Lt. General Kenneth L. Tallman, president for five years prior to Dr. Sliwa's appointment, was honored by the Federal Aviation Administration (FAA) for his dedication to aviation education and research just before he retired from Embry-Riddle. He came to the University after a distinguished 35 year military career, which included serving as Superintendent of the U.S. Air Force Academy. Under Lt. Gen. Tallman's leadership, a School of Graduate Studies and the Electrical Engineering degree program were introduced. He led the university into research in aviation and into the aerospace arena with the addition of the Engineering Physics degree. Additionally, he developed stronger ties with the aviation and aerospace industry to enhance the university.

Jack R. Hunt, president of the University for twenty years, brought Embry-Riddle from a small fledgling institute into an aviation university unlike any other in the world. During his presidency he worked to increase enrollments, improve facilities, and bring about more involvement with military and civilian aviation.

Embry-Riddle today is a truly global institution in the forefront of aviation and aerospace education. The university is the largest independent aeronautical institution in the world, with an enrollment of 19,000 students. All 50 states and more than 80 nations are

represented. Faculty and staff number more than 1,400. The annual budget is \$82,000,000. Degree programs are offered in 18 areas, with four offered in the master's level.

PREEMINENT IN AVIATION HIGHER EDUCATION

Embry-Riddle is preeminent in aviation higher education. We intend to keep it this way. The University is planning now for the educational needs of aviation and aerospace in the year 2000 and beyond. Our goal is to have the laboratories, courses, simulators, aircraft and faculty to continue providing the superior services the aviation industry has come to expect. This is your assurance that as an Embry-Riddle student you will receive the needed education and skills to compete successfully for the best positions that the aviation industry has to offer. You will be one of the best because Embry-Riddle was your University.

Accreditations and Affiliations

Embry-Riddle Aeronautical University 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 level. The Bachelor's Degree programs in Aerospace Engineering at the Daytona Beach and Prescott campuses are accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET). The Bachelor's Degree program in Aircraft Engineering Technology at the Daytona Beach campus is accredited by the Technology accreditation Commission (TAC) of ABET.

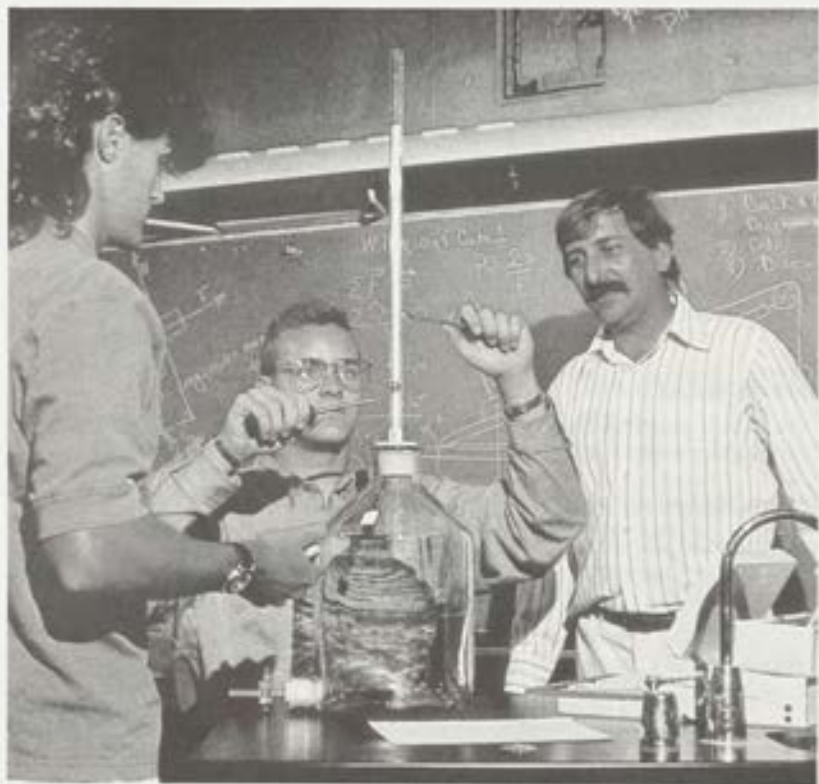
Federal Aviation Administration (FAA) approved certification programs include Maintenance Technology (Airframe and Powerplant) and Flight (Private, Commercial, Instrument, Multi-Engine, Flight Instructor and Instrument Flight Instructor ratings) and Dispatcher's Program. Additionally, a number of the University's degree programs have been identified by the FAA as meeting the criteria of the model Airway Science Curriculum which was developed by the FAA in conjunction with the University Aviation Association. This recognition provides additional career opportunities for Embry-Riddle graduates.

Embry-Riddle is also a member institution of the Servicemembers Opportunity College's (SOC) and participates in programs at the Associate (SOCAD and SOCNAV) and Bachelor (DFS and SOCNAV-4) degree levels to help those in the military service to acquire a higher education.

Cost Information

Please refer to the Financial Information brochure inserted in this catalog regarding tuition, fees, housing and meal plans. If this brochure is missing, please call the University Director of Admissions at 1-800-222-ERAU to request a copy.

Admission To The University



College of Continuing Education Students — Consult the College of Continuing Education section (page 191) of this catalog for additional information which specifically applies to College of Continuing Education Students.

GENERAL PROCEDURES

Daytona Beach and Prescott campuses — U.S. citizens, resident aliens and international students.

To apply for admission to programs at the Daytona Beach, Florida or Prescott, Arizona campus, send all required items listed to:

Embry-Riddle Aeronautical University
Director of University Admissions
600 S. Clyde Morris Blvd.
Daytona Beach, FL 32114-3900 1-800-222-ERAU

IMMUNIZATIONS

ALL applicants will need to furnish immunization histories in compliance with ERAU's immunization requirements.

FRESHMAN APPLICANTS

Freshman applicants are those who have completed high school and have attempted less than 12 semester hours, or equivalent, of academic credit from another institution of higher education.

To apply for admission as a freshman, you must provide the following items:

1. Completed application form and \$30 application fee (non-refundable) as early as possible prior to desired enrollment date;
2. Official copy of high school (and prior college) academic records (must be sent directly to Embry-Riddle by the high school or the college);

OR

Evidence of completion of the General Education Development Test (GED). (Scores must be sent directly by the testing agency.);

3. ACT or SAT scores (must be sent directly to Embry-Riddle by the testing agency or included on the official high school transcript). Students should contact their high school guidance counselor or principal to determine the location of the nearest testing center. Students registering for the test should indicate in the proper space that a report of the scores should be sent to Embry-Riddle
4. FAA Medical Certificate, Class I or II, at least 60 calendar days prior to desired enrollment date (**required only of flight students accepted for admission**);
5. Students for whom English is not the primary language must either attain a minimum score of 500 on the Test of English as a Foreign Language (TOEFL), or achieve a grade of "C" or

higher in a college level English composition course to be considered for admission. Results must be sent directly to Embry-Riddle by the testing agency.

ALL APPLICABLE ITEMS MUST BE RECEIVED BEFORE THE UNIVERSITY WILL CONSIDER A STUDENT FOR ADMISSION. APPLICATIONS AND OTHER DOCUMENTS REQUIRED FOR ADMISSION RECEIVED FEWER THAN 30 CALENDAR DAYS PRIOR TO THE DESIRED ENROLLMENT DATE WILL BE PROCESSED, BUT STUDENTS MAY ENCOUNTER DELAYS IN THE DATE OF ADMISSION AND ENROLLMENT IN THE DESIRED DEGREE PROGRAM.

TRANSFER STUDENT APPLICANTS

Transfer students are those who have earned at least 12 semester hours, or equivalent, of academic credit from another institution of higher education.

To apply for admission as a transfer student, students must provide the following items:

1. Completed application form and \$30 application fee (non-refundable) as early as possible prior to the desired enrollment date;
2. Official transcripts from all other previously attended institutions of higher education (**transcripts must be sent to Embry-Riddle directly from the institution**);
3. Upon request only, the catalog(s) from such institutions with the descriptions of courses satisfactorily completed marked therein;
4. ACT or SAT scores may be required for those students who have not earned college credit equivalent to the beginning courses in English and mathematics required in the student's degree program;
5. Students for whom English is not the primary language must either attain a minimum score of 500 on the Test of English as a Foreign Language (TOEFL), or achieve a grade of "C" or higher in a college-level English composition course to be considered for admission. Results must be sent directly to Embry-Riddle by the testing agency;
6. FAA Medical Certificate, Class I or II, at least 60 calendar days prior to desired enrollment date (required only of flight students accepted for admission).

ALL APPLICABLE ITEMS MUST BE RECEIVED BEFORE THE UNIVERSITY WILL CONSIDER A STUDENT FOR ADMISSION. APPLICATIONS AND OTHER DOCUMENTS REQUIRED FOR ADMISSION RECEIVED FEWER THAN 30 CALENDAR DAYS PRIOR TO THE DESIRED ENROLLMENT DATE WILL BE PROCESSED, BUT STUDENTS MAY ENCOUNTER DELAYS IN THE DATE OF ADMISSION AND ENROLLMENT IN THE DESIRED DEGREE PROGRAM.

NON-TRADITIONAL STUDENT APPLICANTS

Embry-Riddle acknowledges that full-time employment experience often provides the motivation and discipline to enroll and succeed in college which may not be reflected in the high school academic background. Embry-Riddle considers applicants who have been out of high school and employed full-time for at least 3 years to be non-traditional students. Students who believe they meet these criteria are encouraged to apply as a non-traditional student and must provide the following:

1. Completed application form and \$30 application fee (non-refundable) as early as possible prior to desired enrollment date.
2. Evidence of high school graduation or completion of the General Education Development Test (GED). (Scores must be sent directly by the testing agency.)
3. Documentation of full-time employment experience by the employer(s).

NON-DEGREE SEEKING APPLICANTS

Embry-Riddle recognizes the needs of working adult learners for retaining or enhancement of professional skills and facilitates the entrance of this type of student to the University. Students who meet University admissions requirements are permitted to enroll in courses as special students in a non-degree seeking status. These students are permitted to continue their enrollments as non-degree students as long as they maintain satisfactory academic status or until they file a formal application for admission as a degree candidate. An adult learner desiring non-degree student status can receive information from the University Director of Admissions.

ADMISSION DEPOSITS

Students accepted for admission must submit a \$150 advance tuition deposit to the University Director of Admissions within 30 calendar days of notice of acceptance in order to confirm the offer of admission. The advance tuition deposit is refundable, provided the Director of University Admissions is notified in writing of the student's intention not to enroll at least 60 calendar days before the first day of registration for the semester in which the student was to have first enrolled.

If the accepted student misses the deadline for the advance tuition deposit refund, the deposit is held in the student's account for one year should the student decide to enroll at the University during the period. After one year, that deposit is permanently forfeited.

An accepted student who cancels an application at any point in the admission process may reactivate the application at no additional charge during the ensuing 12 months at any time up to the admission deadline for the same semester of the next academic year. After that time, a new application, fee, and supporting documents must be submitted.

INTERNATIONAL (FOREIGN) APPLICANTS*

* Refers to non-resident, nonimmigrant students on a United States F-1 or J-1 visa.

International students applying for admission must provide all items listed below:

1. A completed Embry-Riddle application for admission and \$50 application fee (non-refundable) at least 150 calendar days prior to desired enrollment date;
2. An official copy of high school academic records (must be sent directly to Embry-Riddle by the high school);
3. Students for whom English is not the primary language must either attain a minimum score of 500 on the Test of English as a Foreign Language (TOEFL), or achieve a grade of "C" or higher in a college-level English composition course to be considered for admission. Results must be sent directly to Embry-Riddle by the testing agency;
4. For international transfer students, a detailed evaluation of foreign transcripts by Educational Evaluators International, Inc., P.O. Box 5397, Los Alamitos, CA 90721 **OR** Education Credentials Evaluators, Inc., PO Box 17499, Milwaukee, WI 53217 is required. The evaluation will be sent directly to Embry-Riddle by the evaluator. (These agencies charge a fee for this service.);
5. A bank letter and affidavit of financial support **OR** scholarship letter;
6. FAA Medical Certificate, Class I or II will be required prior to beginning flight training (**required only of flight students accepted for admission**).

THE ITEMS ABOVE MUST BE RECEIVED BEFORE THE UNIVERSITY WILL CONSIDER THE STUDENT FOR ADMISSION.

If accepted for admission, international students must:

1. Submit an advance deposit of \$5,000 (U.S. currency) to the University Director of Admissions. Upon receipt, the University will send a letter confirming enrollment and issue a Form I-20; Certificate of eligibility;
2. Present the Certificate of Eligibility to a U.S. Embassy or consulate to obtain a visa for entry into the United States. (The I-20 must be in the student's possession prior to departure from the home country.)
3. Provide confirmation from a physician, of a tuberculosis (BCG) vaccination, or a negative T.B. test or chest x-ray done within 6 months prior to arrival at ERAU. Also, documentation of immunity to vaccine preventable diseases as described elsewhere under Admission Requirements and in material sent from the school.

RETURNING STUDENT APPLICANTS

A Daytona Beach or Prescott campus student whose attendance at the University is interrupted may be required to apply for readmission. A new Application for Admission must be filed with the University Director of Admissions. (See Continued Enrollment.)

TRANSFER CREDIT

1. Transfer credit may be granted under the following conditions.
 - (a) Only the credit hours for courses completed with a grade of "C" or better, or the equivalent, as determined by Embry-Riddle are transferable.
 - (b) Grades are not transferable. (See section on Graduation Honors for the exception.)
 - (c) Previous flight experience may be accepted in accordance with the Embry-Riddle policy as stated in the Advanced Standing section of this chapter.
 - (d) Credit hours are transferable if earned at collegiate institutions which are accredited by the appropriate regional accrediting agency. Academic credit earned 10 calendar years or more prior to a student's enrollment at Embry-Riddle must be validated through examination for any course which is a prerequisite for a course remaining to be completed in the student's degree program. Students who cannot demonstrate the required prerequisite knowledge must repeat the equivalent Embry-Riddle course. Embry-Riddle has sole discretion in determining which and how many transfer credit hours will be accepted toward degree requirements.
 - (e) Embry-Riddle evaluates previous academic credit on a course-by-course basis. Acceptable transfer work will be indicated on the Embry-Riddle transcript. If the work is not acceptable in the student's degree program at Embry-Riddle, the work will be considered as electives in excess of minimal degree requirements. The level of credit (upper and lower division) is determined by the college or university initially granting the credit, regardless of the level of the Embry-Riddle equivalent course.
2. Students who have been granted credit for the first-level English and mathematics courses appropriate to their degree are exempt from placement testing requirements. All other students, except those who are exempted on the basis of their ACT or SAT scores, will be required to take the examinations described under Basic Skills Requirement and will be subject to Embry-Riddle regulations governing these tests.
3. Embry-Riddle may, at its discretion, require an evaluation examination for any course submitted for transfer credit if there is doubt concerning the equivalency of the transfer course with a similar course offered at Embry-Riddle.

4. The transfer student's records (transcripts, etc.) will be evaluated according to the rules, regulations and policies in the catalog and in university policies in effect at the time of admission as a degree candidate. After evaluation, the student will be advised by the University of the status of credit transferred.

ADVANCED STANDING

Advanced standing results from credit for prior learning awarded for postsecondary education, work and/or training experience or from programs completed prior to enrollment at Embry-Riddle. Normally, all documentation of previous course work, military experience, credit by examination, and any FAA certificates should be submitted for evaluation along with the formal application for admission to the University.

At the Daytona Beach and Prescott campuses, all academic evaluations for advanced standing will be completed **prior to the end of the student's first semester** of attendance at (or readmission to) the University. Formal application for advanced standing for flight training must be made prior to the end of the student's first semester of attendance at the Daytona Beach or Prescott campus. College of Continuing Education students should submit this documentation with their application for admission as degree-seeking candidates. The student will be provided a copy of the completed official evaluation and given 30 calendar days (College of Continuing Education: 60 calendar days) to question the credit awarded.

Advanced standing and transfer credit, granted in accordance with these procedures, will be authenticated by the Admissions Office and maintained by the campus Records Office for official records purposes. An evaluation form will be provided to the student.

Examination scores, training in military service schools, and professional experience may be submitted as a basis for admission to an advanced level. Credit may be awarded as follows:

1. The university offers advanced placement credit toward a college degree to those students who present official College Entrance Examination Board (CEE) Advanced Placement Test scores of 5, 4 or 3 on any examination, and 2 or better on the mathematics examinations.
2. Embry-Riddle generally follows the standards recommended by the American Council on Education for awarding credit for the College Level Examination Program (CLEP) General examinations. Scores on these tests must be submitted prior to initial enrollment as a degree candidate to be officially evaluated for credit. The disciplines and hours of credit recognized by Embry-Riddle for these examinations are as follows:

Communications	6 credit hours
Humanities	6 credit hours
Social Sciences	6 credit hours
Natural Sciences	6 credit hours

Mathematics

6 credit hours

3. The University has approved certain CLEP subject examinations, Defense Activity for Non-Traditional Educational Support (DANTES) examinations, and American College Testing program proficiency examinations (ACT PEP) for award of credit as applicable to the student's program. Except for College of Continuing Education students, scores on these examinations must be submitted prior to initial enrollment as a degree candidate to be officially evaluated for credit. Credit for these examinations may not be applied toward the last 30 credit hours required for a baccalaureate or the last 15 credit hours required for an associate degree.
4. Training in military service schools will be considered for credit by each curriculum division, based on the recommendation of the American Council on Education.
5. Applicants with prior learning from certain professional experience in areas related to the curriculum in which they request enrollment may be allowed credit toward advanced standing. Prior learning which satisfies educational objectives of courses in the applicant's curriculum may be credited for advanced standing.
6. Advanced standing may be granted on the basis of flight-related experienced and training acquired prior to enrollment at Embry-Riddle. The student must provide documentation to substantiate his/her background to the appropriate Embry-Riddle authority **during the first semester of attendance at the University**. If the student has attended an FAA approved flight school, a transcript of all flight training, signed by the school's Chief Instructor, must be provided.
7. Degree programs for which holders of the FAA A&P Certificate may receive advanced standing are Aircraft Maintenance, Aviation Technology, Aviation Maintenance Management, and Professional Aeronautics.
8. Advanced standing information for the Professional Aeronautics degree is contained in the description of that degree in the Degree Programs chapter.

COURSE EQUIVALENCY EXAMINATION

A student who possesses qualifications not listed above and who believes that his or her background warrants consideration for advanced standing may submit appropriate evidence of experience for evaluation, or the student may request administration of a course equivalency examination for specific courses. Flight experience will be evaluated in accordance with procedures outlined in the Advanced Standing section of this chapter.

Applications to take course equivalency examinations are to be filed at the campus Records Office or Resident Center. A non-refundable fee is charged for administering each written examination. The fee for

a flight course equivalency examination depends upon aircraft utilization. An examination may be taken only once for each course. A student who fails an examination must enroll in and complete the course in order to receive credit for it. A student may not take a course equivalency examination for a course which the student has previously failed.

DEGREE COMPLETION PROGRAM/ ACTIVE DUTY MILITARY PERSONNEL

All branches of the Armed Services offer various "Bootstrap" and degree-completion programs to qualified personnel. Embry-Riddle offers assistance to the military applicant wishing to participate in one of these programs.

Upon receipt of the student's application and all supporting documents, the University will evaluate previously completed college courses, military education and experience to determine eligibility for advanced academic credit.

Each applicant receives a copy of the University evaluation form stating specifically the courses for which credit has been granted. Applications must be submitted at least 90 calendar days prior to the proposed enrollment date.

REGISTRATION FOR HANDICAPPED STUDENTS

Early registration for handicapped students may be arranged through the University Director of Admissions. Staff members will be available to provide necessary assistance to handicapped students for early registration.

MANDATORY STUDENT DRUG TESTING

Purpose

Embry-Riddle Aeronautical University seeks to maintain a work and educational environment that is safe for our employees and students.

Scope

This mandatory program applies to all students whose catalog applicability is 1990-91 and later, and who engage in Flight Training at Embry-Riddle on or after January 1, 1991. Students who have a catalog applicability prior to the 1990-91 academic year and who engage in Flight Training at ERAU, have the option of participating in the random testing program.

Policy

Embry-Riddle will test for the following drugs as outlined by the Department of Transportation (D.O.T.), and Federal Aviation

Administration (F.A.A.) regulations; marijuana, cocaine, opiates, amphetamines, phencyclidine (PCP).

The cost of drug testing will be the responsibility of Embry-Riddle. The university will provide the following types of drug testing:

1. **Random Testing** of Students engaged in flight training.
2. **Post-Accident Testing** will be required for any student who is involved in an aircraft accident. The student will be tested for drugs within 32 hours after an accident. An accident is an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and the time all such person(s) have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage as determined by the National Transportation Safety Board.

Actions to be taken for positive test results, refusal to be tested, and failure to comply with testing procedures:

1. 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 suspended from the University.
2. Refusal to be tested when requested by the University will result in the student being suspended from the University.
3. When testing is required, the student will comply with all directives of the University concerning the place of testing, the manner in which the student is to arrive at the place of testing, and any other related matter. Failure to comply, will result in the student being subject to disciplinary action up to and including suspension from the University.

Testing

Embry-Riddle has contracted with a professional testing service as the certified laboratory for the collection and analysis of specimens. This testing service will conduct all requirements for chain of custody, testing, reporting and specimen retention in accordance with proposed D.O.T., F.A.A. regulations.

Notification

1. Students applying to attend the Daytona Beach and Prescott Campuses will be given notice by the University of the drug testing requirement.
2. Students currently enrolled on the Daytona Beach and Prescott Campuses will be notified prior to program implementation of the drug testing requirement.
3. Students will be notified on appropriate flight course registration forms of the drug testing requirement.
4. All matriculating students on the Daytona Beach and Prescott Campuses will be given a copy of ERAU's Substance Abuse Policy and Mandatory Drug Testing Policy and Procedures during their orientation to the University.

Student Education And Assistance

Embry-Riddle will provide for student education through program development and literature distribution.

The University stands willing to assist in the resolution of problems associated with substance abuse and encourages students to seek help via referrals from the Health Services and Counseling Departments.

Guide To The Curriculum



DEGREE PROGRAMS

Embry-Riddle Aeronautical University reserves the right to terminate or modify program requirements, content and sequence of program offerings from semester to semester for educational, financial or other reasons which it determines are sufficient to warrant such action.

The University currently offers the following majors and degrees:

Engineering

- B.S. in Aerospace Engineering — D,P
- B.S. in Electrical Engineering — P
- B.S. in Engineering Physics — D

Business and Administration

- B.S. in Aviation Business Administration — D,P,C
- A.S. in Aviation Business Administration — C
- B.S. in Aviation Maintenance Management — D,C,P
- B.S. in Management of Technical Operations — D,P,C

Aeronautical Science (Flight)

- B.S. in Aeronautical Science — D,P
- B.S. in Aviation Technology (Maintenance/Flight) — D
- B.S. in Aviation Technology (Flight/Avionics) — D
- *A.S. and B.S. in Professional Aeronautics — D,P,C

Maintenance

- A.S. in Aircraft Maintenance — D,C
- Associate in Aviation Maintenance Technology — D
- B.S. in Aviation Maintenance Management (Maintenance) — D,C
- B.S. in Aviation Technology (Maintenance/Avionics) — D
- B.S. in Aviation Technology (Maintenance/Flight) — D

Avionics

- B.S. in Avionics Engineering Technology — D
- A.S. in Avionics Technology — D
- B.S. in Aviation Maintenance Management (Avionics) — D
- B.S. in Aviation Technology (Avionics/Flight) — D

Aircraft Engineering Technology

- B.S. in Aircraft Engineering Technology — D

Computer Science

B.S. in Aviation Computer Science — D,P

Graduate Programs

M.S. in Aerospace Engineering — D

Master of Business Administration in Aviation — D,C

Master of Aeronautical Science — D,C

C Available at College of Continuing Education Locations.

P Available at the Prescott campus.

D Available at the Daytona Beach campus.

* Associate degrees are not offered at the Prescott Campus

BASIC SKILLS REQUIREMENT

Embry-Riddle recognizes the importance of communications and related skills in all areas of aviation. Successful pilots, airport managers, aviation maintenance technicians or other aviation professionals must possess these skills in order to perform their jobs effectively. Because of this, Embry-Riddle requires all students to demonstrate proficiency in the areas of writing and reading and quantitative skills. Proficiency may be demonstrated either by passing the basic skills placement tests, making qualifying scores on SAT or ACT tests, or transferring credit for first-level English and mathematics courses. If proficiency is not demonstrated as stated above, students **must** enroll in the basic skills courses described below.

The reading and study skills course (HU 017) offers methods of developing the reading and listening skills necessary for effective communications. The developmental English course (HU 006) teaches students in writing. The quantitative skills courses (MA 005, MA 006) help to prepare students for the introductory mathematics courses in the various curricula such as MA 111 and MA 120.

Proof of proficiency in the above basic skills areas is required during the student's first semester. New students (including transfer students) must either register for the basic skills courses or successfully complete the University placement tests before they will be permitted to complete their registrations. Students may exempt these basic skills courses based on their ACT or SAT scores.

Students for whom English is not the primary language will be tested and required to demonstrate advanced English proficiency by achieving a satisfactory score on the test. Students lacking in such proficiency will be required to take appropriate basic skills courses in their first semester of attendance at ERAU. These may include HU003, HU004, and HU013 in addition to the courses described above.

NOTE:

The basic skills courses do not apply toward minimum degree requirements and are not computed into the student's Grade Point Average (GPA).

GENERAL EDUCATION REQUIREMENTS

Embry-Riddle's baccalaureate programs are intended to provide students the opportunity to acquire (1) sufficient specialization for students to enter the aviation field; (2) sufficient general management and/or technical training for students to advance in their chosen career field; (3) sufficient general education background for the student to lead a meaningful, responsible life in a complex democratic society; and (4) sufficient communications background for students to give, receive, or exchange information effectively.

The following general education requirements must be completed by all candidates for the bachelor's degree:

DISCIPLINE	CREDITS
Mathematics	6
Communicative Skills (HU122, HU219, HU221)	9
Computer Science	3
Social Sciences (Selected from SS110, SS120, SS210, SS220, EC200, EC210, EC211)	6
Humanities (HU123 or HU140 or HU141 plus an HU/SS300-400 level elective)	6
Physical/Life Sciences (One course must include a laboratory.)	6
	--- 36

AEROSPACE ENGINEERING

Embry-Riddle offers the Bachelor of Science degree in Aerospace Engineering at the Daytona Beach and Prescott campuses. The Aerospace Engineering program provides the student the opportunity to acquire specific aerospace design skills, as well as a broad exposure to theory and modern analysis, measurement, communications and computational techniques essential for a wide range of entry level engineering positions in the aerospace industry.

ELECTRICAL ENGINEERING

Embry-Riddle offers a Bachelor of Science degree in Electrical Engineering at the Prescott campus. The Electrical Engineering program provides the student with the opportunity to acquire a broad background in circuit theory, communication sciences, computers, control systems, electromagnetic fields, energy sources and systems,

materials and electronic devices. The student also gains specialization in avionics appropriate for entry level engineering positions in the aerospace industry. This added emphasis in avionics places the ERAU Electrical Engineering program in a unique position compared to others and increases student employment opportunities after graduation.

ENGINEERING PHYSICS

The Bachelor of Science in Engineering physics, offered only on the Daytona Beach Campus, is designed to develop sufficient depth in both engineering skills and science in order to produce students who are able to relate basic knowledge to practical problems in engineering. The engineering physicist will have the training of an applied physicist; the ability and the inclination to attack novel as well as routine problems, particularly in the aeronautical and aerospace areas; and the flexibility to extend the basic knowledge to any branch of engineering and science. This strong background in basic physics and engineering methodology will prepare the engineering physics student for a position in industry or for further study at the graduate level.

AIRCRAFT ENGINEERING TECHNOLOGY PROGRAM

Embry-Riddle offers the Bachelor of Science degree in Aircraft Engineering Technology at the Daytona Beach Campus.

The ACET program is designed to provide the student with a solid foundation in math and the natural sciences as well as a broad exposure to technology courses that address the application of scientific and engineering principles. The program provides a strong background in such areas as Applied Aerodynamics, Structural and Systems Analysis, Aircraft Performance and Design as well as Quality Assurance, Testing and other disciplines that are necessary for a wide variety of careers in the Aviation Industry.

AVIONICS ENGINEERING TECHNOLOGY

The Avionics Engineering Technology program prepares individuals for challenging careers in aviation high technology as avionics technologists and technicians. The program provides an understanding of electronics theory, avionics system theory, avionics equipment operation and repair, system design analysis, logistic support and a strong foundation in general education. The University also offers a program in Avionics Technology that leads to an Associate in Science

degree. Avionics Technology may also be selected as an area of concentration in various degree programs.

AVIATION COMPUTER SCIENCE PROGRAM

The curriculum for the Bachelor of Science degree in Aviation Computer Science includes courses in software development, computer architecture, graphics, operating systems and database management. The program provides a blend of theory and applications which prepare students for a variety of computer science positions in scientific and business fields, and lays the foundation needed for graduate studies in computer science. The elective courses in the program allow the students to pursue specific interests in computer science such as applications in aviation or aerospace technology.

AIRWAY SCIENCE PROGRAM

The Federal Aviation Administration has initiated the Airway Science curriculum as a method of preparing the next generation of aviation technicians and managers. It is a rigorous program that stresses hard science, the human side of management, knowledge of computers and, of course, aviation. Embry-Riddle is one of a few of the nation's institutions of higher learning which have been approved by the FAA and the University Aviation Association to offer such a program.

Graduates of an FAA approved Airway Science degree program are eligible to fill positions with the FAA in a number of career specializations. In order to be employed by the FAA, graduates of this program must possess an FAA Class II Medical Certificate and meet FAA psychological standards.

The Airway Science Program is offered as an option in the Aeronautical Science, Aviation Computer Science, Aviation Business Administration, and Aviation Maintenance Management degree programs. Interested students should contact their academic advisor or program chair.

AEROSPACE STUDIES PROGRAM

A new Bachelor of Science degree in Aerospace Studies will be available for Fall, 1992. Students may select three areas of specialized study from the following list: Space Studies, Mathematics, Humanities, Aviation Safety, Psychology, Air Traffic Control, Aviation Business Administration and Computer Science. The enclosed Addendum to the 1992-93 Catalog describes the program curriculum.

AIR TRAFFIC CONTROL PROGRAM

The primary mission of the Federal Aviation Administration (FAA) is to provide for the safe and efficient use of the nation's airspace. To accomplish this mission, the FAA operates a network of air traffic control facilities that include flight service stations, air traffic control towers, and en route air traffic control centers. Air traffic control (ATC) systems, including the hardware, software, and human resources required to operate the systems, are a primary component of the National Airspace System (NAS) which also includes airports, air route structures, communications, weather services, and navigational aids. The NAS is currently transitioning into one of the most challenging periods in its entire history. Airline Deregulation, the Professional Air Traffic Controller Organization (PATCO) strike, and the \$32 billion NAS Plan Upgrade have combined to exert unprecedented demands on the FAA. Sharp increases in aviation user demand have doubled the number of air travelers in the last ten years but the air traffic control specialist (ATCS) work force is still significantly below the levels of ten years ago. The advanced technology that will result from the NAS upgrade will significantly change the role of controllers — and the way they are trained — adding additional demands for innovative and effective management of this valuable national resource known as the NAS.

In response to the high-demand, short-supply air traffic controller situation, the FAA has turned to selected universities that have existing aviation and Airway Science Programs with a solicitation to develop a pre-hire air traffic control training program. As the nation's premier aviation-oriented university, Embry-Riddle has responded to the FAA proposal with a comprehensive ATC minor that will prepare graduates for careers in the next-generation ATC system or for a career in the growing number of aviation-related industries involved in providing the technology and management of the NAS. The broad-based general education of the university degree also integrates the capacity of mathematical reasoning, communication skills, analysis, problem solving, and the synthesis of knowledge from other disciplines studied.

Qualification requirements to become an FAA Air-Traffic Control Specialist (ATCS) includes 1) passing a written aptitude test, 2) passing a Class II physical examination, 3) be at least 18 years old but no older than age 30, 4) be a U.S. citizen, and 5) have combined education and experience which demonstrates potential for learning and performing Air Traffic Control work.

The air traffic control minor is offered as an option in the Aviation Business Administration, Aviation Computer Science, Aeronautical Science, or any Bachelor of Science program allowing a selection of minors. Interested students should contact their academic advisor or program chair.

AVIATION MAINTENANCE TECHNOLOGY PROGRAMS

Maintenance technology training may be taken as an integral part of the Associate in Aviation Maintenance Technology, the Associate in Science in Aircraft Maintenance, Bachelor of Science in Aviation Technology, and the Aviation Maintenance Management programs. In addition, the AMT courses may be pursued as an area of concentration in other selected degree programs, or selected courses may be used as elective credit in most ERAU degree programs.

AIRFRAME AND POWERPLANT TECHNOLOGY

Embry-Riddle offers two distinct types of AMT degree programs for students who wish to prepare for the FAA Airframe and/or Powerplant (A&P) examinations and/or pursue degree programs which require that knowledge and skill. AMT degree programs are not available at the Prescott campus.

Type 147: This program, offered only at the Daytona Beach campus, presents a carefully selected blend of theory and practical applications, which provide the student an opportunity to prepare for, and upon successful completion establish eligibility to take the FAA Airframe and/or Powerplant examinations. Students perform actual repair and overhaul of engines and accessories, including those used in Embry-Riddle's fleet of aircraft. Other academic courses may be taken concurrently (including avionics technology) to minimize the time and expense necessary to meet degree requirements. The Samuel Goldman AMT Center at the Daytona Beach campus is fully approved under Part 147 of the Federal Aviation Regulations and holds Air Agency Certificate No. NX4T404M and FAA Repair Station Certificate No. NX42404M.

Type 65: Embry-Riddle offers special AMT courses to students in the College of Continuing Education who are experienced but unlicensed aircraft maintenance specialists. These courses deal largely with the theory and concepts of all aspects of airframe and powerplant maintenance and with the problems, considerations and practices involved in maintaining aircraft in an airworthy condition. The courses, together with on-the-job experience and/or successful completion of the A&P examinations, may be applied toward meeting the requirements of various ERAU degree programs. Type 65 courses are offered at various centers of the College of Continuing Education.

AVIATION TECHNOLOGY

The Bachelor of Science degree in Aviation Technology uniquely prepares the student for a career in aviation by merging Avionics/Aircraft Maintenance, Avionics/Flight or Aircraft Maintenance/Flight options with general education courses. Graduates of the

Aviation Technology program are qualified for challenging careers with major airlines, fixed base operations, aircraft manufacturers and aerospace industries.

BUSINESS ADMINISTRATION PROGRAMS

The University offers a variety of degree programs to prepare students for managerial roles in the aviation industry. The Bachelor of Science in Aviation Business Administration is the primary four-year degree allowing students to prepare for a career in any aspect of business. The program is available with areas of concentration in Aviation Management, Aviation/Aerospace Logistics, and Aviation Aerospace Management Information Systems. The four-year degree program in Aviation Maintenance Management is more narrowly focused on the supervisory role and technological requirements of aviation maintenance activities. All programs provide sufficient electives for students to pursue certain individual specializations for career objectives within the field. The four-year degree program in Management of Technical Operations provides students who already possess technical skills and knowledge in a variety of aviation specialty areas with the managerial knowledge and expertise to effectively manage that technical specialty.

FLIGHT PROGRAMS

All flight training which is encompassed in various degree programs at Embry-Riddle utilizes late-model, fully equipped training aircraft. Aircraft type and flight configuration are selected to fit the given training location and environment.

Mockups, procedures trainers, part-task trainers, and simulators provide the student with a safe, flexible and cost-effective training environment. As with aircraft types, the controlled environment training configuration is suited to the location and training environment.

The ERAU flight training program uses the "Gemini-Flight" concept whereby two students fly together on dual instructional flights. One student flies the aircraft, and the other student participates from the rear seat while the instructor conducts the lesson. The concept increases and reinforces the learning experience of both students without additional expense to the students.

Flight training may be taken as an integral part of the Aeronautical Science degree program, as an area of concentration in other selected degree programs, or as elective credit on a space-available basis in most degree programs. The student is cautioned to investigate the applicability of specific courses to specific degree programs prior to making the commitment and investment.

The flight training programs at the Daytona Beach and Prescott Campuses operate under different FAA Flight Standards District Offices and therefore may differ in specific rules, regulations and requirements. **THE STUDENT WILL BE RESPONSIBLE FOR ADHERING TO ALL RULES, REGULATIONS AND PROCEDURES CONTAINED IN THE LOCAL CAMPUS BULLETIN AND FLIGHT OPERATIONS MANUAL.** The University and FAA rules and regulations are incorporated herein by this reference.

ADULT EDUCATION

The University recognizes that many working adults who are eager to pursue higher education in aviation may be prevented from enrolling in a conventional university program with routine daytime class schedules because of occupational or personal commitments. Embry-Riddle's College of Continuing Education schedules classes in the evenings and on weekends to complement the work schedules of this working adult student population. Likewise, term lengths vary from 8 to 12 weeks. The network of more than 90 resident centers in the U.S. and Europe facilitates degree completion for military and civilian students whose education would otherwise be disrupted by the change of job location.

GRADUATE PROGRAMS

For the bachelor degree holder seeking advanced study in aeronautical science, engineering or management of aviation, three degree program alternatives are available at the master's level.*

For more information and an application form, contact one of the following:

1. The: University Director of Admissions
Embry-Riddle Aeronautical University
Daytona Beach, Florida 32114-3900
(For all graduate programs available at the Daytona Beach Campus) 1-800-222-ERAU
2. The nearest College of Continuing Education Resident Center location,

OR

College of Continuing Education
Admission, Records & Registration Department
Embry-Riddle Aeronautical University
600 S. Clyde Morris Blvd.
Daytona Beach, Florida 32114-3900
904-226-6910

*The Master of Science in Aerospace Engineering is available only at the Daytona Beach campus.

Master of Business Administration in Aviation

The Master of Business Administration in Aviation (MBA/A) program blends the development of management skills, tools and techniques with the study of the aviation and aerospace industry. The MBA/A curriculum combines a strong traditional business core with a specialization component in air carrier and corporate aviation operations, airline operations and management, airline marketing, aviation law and insurance, airport management, aircraft maintenance management, supply and distribution, production and procurement, and research and development.

The development of versatility and analytical resourcefulness are two of the key aims of the MBA/A program. The program is fashioned to stress pragmatic solutions to the managerial, technical and operational problems likely to arise in the aviation industry as a result of the frequent and sweeping changes that occur in technology and the national and international regulations with which the industry must abide. Degree requirements offer a thesis or a graduate research project option.

Master of Science in Aerospace Engineering

The Master of Science in Aerospace Engineering (MSAE) provides formal postbaccalaureate study in the areas of knowledge required by engineers engaged in aerospace oriented research, development, and design activities for public and private organizations. The program can be tailored for specialization in the fields of aerodynamics, structures, design, and propulsion. Instruction is available in many areas, including subsonic, transonic, supersonic, and hypersonic aerodynamics; computational aerodynamics; turbine and rocket engine propulsion systems; aerodynamics system design; continuum and fracture mechanics, aeroelasticity; aircraft composite structures; aeroacoustics; performance optimization; automatic flight control systems; and structural dynamics and design and astrodynamics. Both thesis and nonthesis options are available for the MSAE program.

Master of Aeronautical Science

The Master of Aeronautical Science (MAS) is designed to enable the aviation professional to obtain a generalist education oriented towards an operational perspective of the aviation industry. It provides an opportunity for flight crew members, air traffic control personnel, flight operations specialists, industry management and 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 rules and regulations.

There are four specializations which the student may choose from: Aeronautics, Aviation/Aerospace Operations, Aviation/Aerospace Education, and Aviation/Aerospace Management. All students must complete the Advanced Aviation/Aerospace Science core consisting of twelve credits. The student then completes twelve credits which make up the selected Aviation/Aerospace specialization. The remaining twelve credits consist of electives and either a thesis or a research project. If the thesis is chosen, 6 credit hours are allocated for specialized elective courses and 6 for completion of the thesis. If the non-thesis option is chosen, 9 credit hours of specialized electives are required and 3 credit hours are allocated to the graduate research project. The degree can generally be completed in three or four semesters of full time study.

COOPERATIVE EDUCATION

Cooperative Education (Co-op) is a program which allows students to earn academic credit for learning gained through work experience. This program provides an opportunity for students to apply the knowledge and skill they have gained in the classroom to practical situations. In addition to being able to earn up to 6 academic credit hours for each co-op work assignment, students may earn wages commensurate with the work they perform.

To be eligible for admission to the Co-op Program, students must:

1. Attend a Co-op Admission Seminar.
2. Have a cumulative ERAU grade point average (GPA) of 2.50 or higher.
3. Have completed 30 credit hours applicable to their degree programs.

To earn academic credit for co-op work assignments, students must:

1. Secure an acceptable co-op position.
2. Be properly registered for the assignment by the last day of late registration.

Employers make the final hiring decisions. Embry-Riddle does not guarantee placement of students in co-op assignments. Also, the applicability of co-op credits varies among degree programs. Students should review their degree programs and discuss their co-op plans with their academic advisor. Additional information is available at Co-op Admissions Seminars.

Cooperative education is only available to undergraduate students at the Daytona Beach and Prescott campuses. Interested students should contact their Campus Co-op Administrator for more information.

RESERVE OFFICER TRAINING

Not all of the Reserve Officer Training Programs described below are available at all University campuses or locations. The student should contact the University Admissions Office to determine program availability. Reserve Officer Training Programs are subject to control of the service branch which sponsors them and are operated pursuant to the rules and regulations established by the service branch; these may be changed from time to time without notice or obligation.

AIR FORCE RESERVE OFFICER TRAINING CORPS

Embry-Riddle students may enroll in the Air Force Reserve Officer Training Corps (AFROTC) courses and receive open elective course credit in Embry-Riddle programs. Upon graduation, those students who successfully complete AFROTC receive commissions as officers in the United States Air Force.

Any qualified student may pursue this opportunity provided he or she has a minimum of four-semester remaining at the University (AFROTC courses are not offered at ERAU during the summer term). The curriculum offers a choice of either a two or four-year program.

Four-Year Program

Enrollment procedures for the first two years of the four-year program, the General Military Course (GMC), are the same as for any other college course. The student simply selects the appropriate AFROTC class during registration. Students in the GMC are under no obligation to the Air Force and may withdraw from the class in the same manner as they might withdraw from any other course.

Those who decide to continue in the final two years, the Professional Officer Course (POC), receive a monetary allowance and incur an obligation to serve in the Air Force upon commissioning. Prior to entering the POC, each student must pass a medical examination, receive a competitive score on the Air Force Officer Qualifying Test (AFOQT), be selected by a Central Selection Board, and complete a four-week summer field training session at an Air Force base.

Two-Year Program

The two-year program is identical to the last two years of the four-year program but is preceded by a six-week summer field training session at an Air Force base. Two-year program students must also receive a competitive score on the AFOQT, pass an Air Force medical examination, and be selected by a central Selection Board, prior to attending field training.

Finances

Textbooks for all AFROTC courses are free. Students enrolled in the POC receive a \$100-per-month tax-free subsistence allowance (up

to a total of \$1000 per year). In addition, those attending the summer field training receive travel pay to and from the Air Force base hosting the session, free room and board, and pay while attending the session.

Embry-Riddle students have enjoyed a high selection rate for AFROTC scholarships that pay full tuition, lab and incidental fees, textbooks, and the \$100 monthly tax-free subsistence allowance. Four-year scholarships are available, on a competitive basis, to high school graduates, while additional scholarships are reserved for students already enrolled in the AFROTC program at Embry-Riddle.

For information, contact AFROTC Det. 157, Embry-Riddle Aeronautical University, 600 S. Clyde Morris Blvd., Daytona Beach, FL 32114-3900, (904) 226-6878 or AFROTC Det. 28, Embry-Riddle Aeronautical University, Prescott AZ 86301, (602) 778-4130, Ext. 236. Those students enrolled through the South Florida Center should contact AFROTC Det. 155, University of Miami, Coral Gables, FL 33124, or call (305) 284-2870.

ARMY RESERVE OFFICER TRAINING CORPS

The Army Reserve Officer Training Corps (ROTC) program provides an opportunity to acquire the skills and knowledge necessary for commissioning as a lieutenant in the U.S. Army. The program offers both a four-year and a two-year option. The two-year option allows students with at least two academic years remaining in either undergraduate or graduate studies to meet all requirements for commissioning. The ROTC course may be applied toward open elective requirements in any degree program.

The Military Science curriculum is divided into three phases:

1. Basic Military Science

The Basic Military Science courses are offered during the freshman and sophomore years. These courses address military organization, equipment, weapons, map reading, land navigation, use of compass, grade structure, the Threat, communications, leadership, and physical training. The courses consist of both classroom instruction and a mandatory lab.

2. Advanced Military Science

The Advanced Military Science courses are normally taken during the junior and senior years. These courses specialize in small unit tactics, preparation and conduct of military training, military justice system, staff procedures, decision making and leadership, managerial concepts, problem analysis, military writing, the ethic of the professional soldier, and physical training. The courses consist of both classroom instruction and a mandatory lab. This phase requires attendance at a six-week advanced camp, currently conducted at Fort Riley, Kansas.

3. Alternate Entry Program

The Alternate Entry Program provides the student who has no military experience a last opportunity to enter ROTC at the beginning of the Junior year. The criteria and requisites, however, are stringent. The Professor of Military Science (PMS) holds the key to this procedure and must be contacted prior to enrollment.

4. Basic Camp

A summer training program is offered for students who are academic juniors without previous ROTC or military training. This consists of a six-week course at Fort Knox, KY. This will qualify a student for entry into the Advanced Course, thus allowing completion of all requirements for commissioning within two years. Students attending the Summer course at Fort Knox receive approximately \$600 pay.

All students in the Advanced Military Science Course receive a tax-free monetary allowance of \$100 per month. Scholarships are available to qualified ROTC students. These scholarships provide up to \$3,500 per semester tuition, \$175 for fees and \$195 for textbooks. Additionally, scholarship recipients receive \$100 tax-free per month.

Requisites for admission to the Basic Course are the following:

1. Be enrolled in a baccalaureate or master's program.
2. Be at least eighteen years of age at time of entry but not more than twenty-eight years of age at time of graduation.
3. Be a U.S. citizen.

Requisites for admission to the Advanced Course are the following:

1. Successfully complete the Basic Course or equivalent.
2. Successfully complete an Army officer qualifying test.
3. Successfully complete an Army physical examination.
4. Be selected by the Professor of Military Science.
5. Agree to complete the Advanced Course requirements and serve on active, reserve, or National Guard duty as a commissioned officer.
6. Maintain a 2.0 Academic and ROTC GPA.

All of the above are subject to the control of, and are administered by and under the rules and regulations of, the Department of the Army and are subject to change from time to time.

MARINE CORPS COMMISSIONING

For freshmen, sophomores and juniors, the Marine Corps has the Platoon Leaders Class Program (PLCP). Freshmen and sophomores attend two six-week training sessions, and juniors attend one ten-week session at Quantico, VA.

To be eligible for the program you must be an American citizen (either native born or naturalized), a full-time student enrolled in a minimum of 12 academic credits per semester, and working towards an accredited/recognized Baccalaureate degree.

The PLCP Program offers two entry level paths which lead to a commission as a 2nd Lieutenant in the U.S. Marine Corps. The first is the Ground Officer Program which encompasses all Military Occupational Specialties (MOSS) not directly related to piloting aircraft. If you have a qualifying score from either the SAT or ACT tests, you may apply. The second program is the Guaranteed Aviation Program. In order to apply for this program you will need to have a qualifying SAT or ACT score as well as take the Aviation Qualification Test/Flight Aptitude Rating (AQT/FAR). If you have at least the minimum score of a 4/6 on the AQT/FAR, pass a Class-1 Aviation Medical examination performed at a Military Medical Facility, pass a Marine Corps Physical Fitness test (PFT), and are accepted into the program by Headquarters Marine Corps, you could be eligible to receive a "Contract Guarantee" that you will attend Flight School for the Marine Corps upon graduation from college and acceptance of the Commission as a 2nd Lieutenant.

A monthly financial stipend of \$100.00 a month for the 9 months of the school year is available to all who meet the requirements and successfully complete the summer training at Officer's Candidate School.

These programs are subject to the control of, and administered by and under the rules and regulations of, the U.S. Marine Corps and are subject to change from time to time.

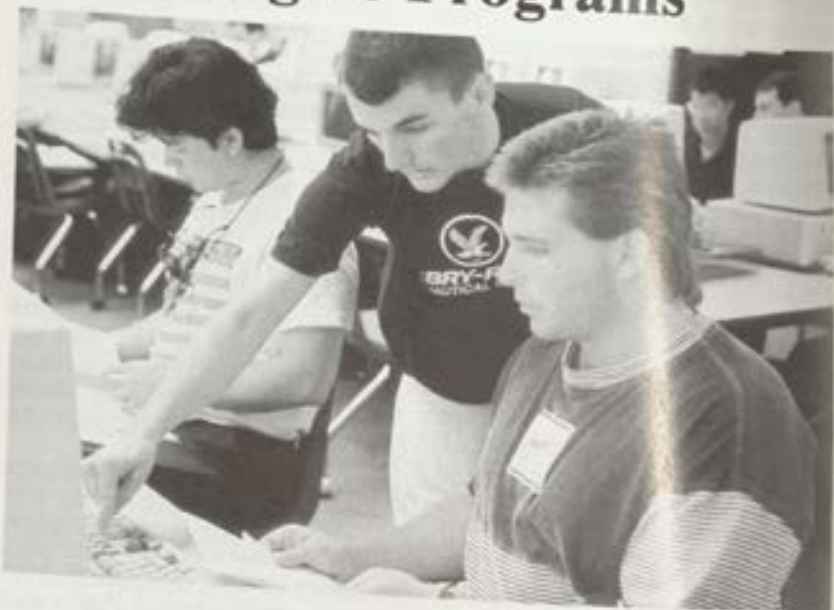
NAVAL AVIATION CLUB

Although no NROTC program is available, large numbers of ERAU graduates enter various U.S. Navy Officer Candidate Programs. In fact, only the U.S. Naval Academy produces more Navy Pilot and Naval Flight Officers. Following graduation, the Naval Aviation Officer Candidate Program at Pensacola leads to a commission in approximately 14 weeks.

On both the Daytona Beach and Prescott campuses, a dynamic Naval Aviation Club exists with the goal of informing and assisting students anxious to learn about Naval Aviation Careers. Membership dues are nominal and no academic credit is conferred. The club features guest speakers and aircraft from Fleet squadrons, in addition to field trips to Naval Air Stations, aircraft carriers, and the "Cradle of Naval Aviation" at Pensacola. Current Navy policy information is made available through close liaison with Navy Recruit Command representatives.

NOTE: Additional information concerning financial assistance can be found in the Financial Assistance chapter of this catalog.

Degree Programs



In this chapter, degree programs are grouped into several aviation disciplines:

Aerospace Engineering Program
Aircraft Engineering Technology Program
Electrical Engineering Program
Engineering Physics Program
Aviation Computer Science Program
Aviation Maintenance and Technology Programs
Avionics Technology Programs
Aviation Business and Management Programs
Flight Related Programs
Minor Fields of Study

At the beginning of each group, degree programs and related areas of concentration are listed. Within each degree program, listing show the courses, both required and elective, which must be taken to attain the degree. The listings are guides for arranging optimum sequence of courses with their prerequisites. In many cases, it is not mandatory that courses be taken in the exact order shown.

AEROSPACE ENGINEERING PROGRAM

Aerospace Engineering

Bachelor of Science

ADMISSION REQUIREMENTS

To enter this program, students should have demonstrated a competence in mechanical drawing, mathematics, physics and chemistry in high school. They should be prepared to enter Calculus I, having demonstrated proficiency in algebra and trigonometry. Students can prepare themselves for this program, if required, by taking MA 140 College Algebra, MA 141 Trigonometry, and ET 101 Engineering Graphics at Embry-Riddle prior to taking MA 241 Calculus and Analytical Geometry I and ET 110 Drafting and Descriptive Geometry.

DEGREE REQUIREMENTS

The Bachelor of Science in Aerospace Engineering program requires successful completion of a minimum of 136 credit hours. The program may be completed in eight semesters assuming appropriate background and full-time enrollment. The courses necessary to earn this degree are listed below:

SEMESTER	COURSE	NUMBER/TITLE	CREDITS
FIRST	ET110	Drafting and Descriptive Geometry	2
	HU 122	English Composition and Literature I	3
	MA 241	Calculus and Analytical Geometry I	4
	PS 110	Chemistry for Engineers	5
	SS 110	World History OR	3
	SS 120	American History	3
			17
SECOND	CS 210	Scientific Programming	3
	HU 123	English Composition and Literature II OR	3
	HU 140	Humanities and Western Culture OR	3
	HU 141	Studies in the Humanities	4
	MA 242	Calculus and Analytical Geometry II	5
	PS 201	Engineering Physics I	15
THIRD	ES 201	Statics	3
	HU 219	Speech	3
	HU 221	Technical Report Writing	3
	MA 243	Calculus and Analytical Geometry III	4
	PS 202	Engineering Physics II	5
			18
FOURTH	ES202	Solid Mechanics	3
	ES 204	Dynamics	3
	ES 206	Fluid Mechanics	3
	MA 345	Differential Equations and Matrix Methods	4
	PS 303	Modern Physics	3
			16
FIFTH	AE 301	Aerodynamics I	3
	AE 304	Aircraft Structures I	3
	AE 309	Experimental Aerodynamics	2
	ES 305	Thermodynamics	3
	ES 307	Engineering Materials Science w/Lab	3
	MA 441	Advanced Engineering Mathematics I	3
			17
SIXTH	AE 302	Aerodynamics II	3
	AE 404	Aircraft Structures II	3
	AE 413	Airplane Stability and Control	3
	EC 200	An Economic Survey	3
	ES 402	Electrical Engineering I w/ Lab	3
	HU/SS	Elective	3
			18
SEVENTH	AE 408	Turbine and Rocket Engines	3
	AE 420	Aircraft Preliminary Design	3

	AE 430	Control Systems Analysis and Design	3
	ES 405	Electrical Engineering II	3
	ES 409	Space Mechanics	3
		Open Elective	3
			<hr/>
			18
EIGHTH	AE 421	Aircraft Detail Design	3
	ES 410	Structures and Instrumentation Lab	2
	HU/SS	Electives (300-400 Level)	6
		Technical Elective	6
			<hr/>
			17
TOTAL			136

TECHNICAL ELECTIVES

AE 350, 399, 401, 407, 409, 411, 415, 425, 433, 499
 ES 399, 403, 412, 499
 ET 401
 CS 335, 338, 350, 430
 CE (AE): By Special Arrangement
 MA 412, 432, 442, 443

Students may substitute upper level AF and MY courses or aeronautical certificates for a maximum of 6 credits of the Technical electives. Cooperative Education credits may be used as open and/or technical electives with prior approval from the Department Chair. For details, see the Co-op faculty advisor.

HUMANITIES/SOCIAL SCIENCES ELECTIVES:

HU 300, 305, 310, 320, 330, 341, 345
 SS 210, 220, 310, 320, 331, 340, 398

Students may substitute other upper level HU/SS courses with approval of the Department/Program Chair.

MINOR IN MATHEMATICS

A minor in mathematics is offered. See the section on Minor Fields of Study for a list of required courses.

MINOR IN MATHEMATICS

A minor in mathematics is offered. See the section in Minor Fields of Study for a list of required courses.

AVIONICS ENGINEERING TECHNOLOGY PROGRAM

Avionics Engineering Technology

Bachelor of Science

DEGREE REQUIREMENTS

The Bachelor of Science degree in Avionics Engineering Technology requires successful completion of 129 semester credit hours, as outlined in the course list below.

SEMESTER	COURSE	NUMBER/TITLE	CREDITS
FIRST	HU 122	English Composition and Literature I	3
	MA 241	Calculus and Analytical Geometry I	4
	PS 101	Basic Chemistry	3
	EL 106	Direct and Alternating Current Fundamentals and Circuit Analysis with Laboratory	6
			16
SECOND	EL 223	Solid State Fundamentals and Circuit Analysis with Laboratory	6
	MA 242	Calculus and Analytical Geometry II	4
	HU 123	English Composition and Literature II	3
		OR	
	HU 140	Humanities and Western Culture OR	3
	HU 141	Studies in the Humanities	3
	CS 210	Scientific Programming	3
			16
THIRD	EL 220	Introduction to Pulse and Digital Circuits with Laboratory	4
	MA 243	Calculus and Analytical Geometry III	4
	ET 101	Engineering Graphics	2
	PS 201	Engineering Physics I	5
			15
FOURTH	EL 225	Advanced Digital Circuits and Systems with Laboratory	4
	ET 201	Technical Mechanics	4
	PS 202	Engineering Physics II	5
	MA 345	Differential Equations & Matrix Methods	4
			17

FIFTH	EL 230	Microprocessor Systems with Laboratory	3
	HU 221	Technical Report Writing	3
	EL 305	Linear Systems Analysis	3
	ET 302	Applied Strength of Materials with Laboratory	3
	ET 305	Applied Thermodynamics with Laboratory	4
			<hr/>
			16
SIXTH	EL 309	Elements of Engineering Design and Laboratory Procedures	3
	EL 300	Electronics Communications Systems with Laboratory	4
	EC 200	An Economic Survey	3
	HU 219	Speech	3
	HU/SS	Elective	3
			<hr/>
			16
SEVENTH	AV 405	Avionics Analog Systems Design Considerations with Laboratory	4
	AV 410	Avionics Digital Systems Design Considerations with Laboratory	4
	AV 345	Elements of Integrated Logistics	3
	HU/SS	Elective	3
		Open Elective	3
			<hr/>
			17
EIGHTH	AV 411	Integrated Aviation Logistics Support	3
	AV 421	Avionics System Integration and Design	3
	ET 307	Manufacturing Processes and Materials with Laboratory	4
	HU/SS	Elective (300-400 Level)	3
		Open Elective	3
			<hr/>
			16
TOTAL			129

Cooperative Education credits may be used as open electives.

ELECTRICAL ENGINEERING PROGRAM

**Electrical Engineering*
Bachelor of Science

*This program available only at the Prescott Campus.

ADMISSION REQUIREMENTS

To enter this program students should have demonstrated competence in mathematics, physics, and chemistry in high school. They should be prepared to enter Calculus I, having demonstrated proficiency in algebra and trigonometry. Students can prepare themselves for this program, if required, by taking MA 140 College Algebra and MA 141 Trigonometry at Embry-Riddle prior to taking MA 241 Calculus and Analytical Geometry I. Students who take MA 140 and MA 141 during their first semester will need to attend during the summer following their Freshman year to catch up on prerequisites if a delay in graduation is to be avoided.

DEGREE REQUIREMENTS:

The Bachelor of Science in Electrical Engineering degree program requires 135 credit hours. The program can be completed in nine semesters or four years if the student attends summer terms. The courses necessary to earn this degree are listed below.

SEMESTER	COURSE NUMBER/TITLE	CREDITS
FIRST	MA 241 Calculus and Analytical Geometry I	4
	PS 110 Chemistry for Engineers	5
	HU 122 English Composition and Literature I	3
	SS110 World History OR	
	SS 120 American History	3
		<hr/> 15
SECOND	MA 242 Calculus and Analytical Geometry II	4
	PS 201 Engineering Physics I	5
	HU 123 English Composition and Literature II	
	OR	
	HU 140 Humanities and Western Culture OR	
	HU 141 Studies in Humanities	3
	*CS Programming Language Elective	3
		<hr/> 15
THIRD	EE 220 Digital Circuit Design	3
	EE 222 Digital Circuit Laboratory	1
	MA 243 Calculus and Analytical Geometry II	4
	PS 202 Engineering Physics II	5
	HU 219 Speech	3
		<hr/> 16

FOURTH	EE 223	Linear Circuits Analysis I	3
	EE 224	Electrical Engineering Laboratory I	1
	EE 320	Introduction to Computer Engineering	3
	EE 322	Computer Engineering Laboratory	1
	MA 345	Differential Equations and Matrix Methods	4
	HU 221	Technical Report Writing	3
			15
FIFTH	EE 300	Linear Circuits Analysis II	3
	EE 301	Electrical Engineering Laboratory II	1
	EE 302	Electronic Devices and Circuits	3
	EE 304	Electronic Circuits Laboratory	1
	MA 441	Advanced Engineering Mathematics I	3
	ES 201	Statics	3
			14
SIXTH	EE 303	Signals and Filters	3
	EE 305	Operational Amplifiers and A/D-D/A Circuits	3
	EE 340	Electric and Magnetic Fields	3
	ES 204	Dynamics	3
	MA 412	Probability and Statistics	3
			15
SEVENTH	EE 401	Control Systems Analysis and Design	3
	EE 402	Control Systems Laboratory	1
	EE 410	Communications Systems	3
	EE 412	Communications Systems Laboratory	1
	ES 305	Thermodynamics	3
	**	Technical Elective	3
			14
EIGHTH	HU/SS	Elective	3
	EE 420	Avionics Preliminary Design	3
	EE 450	Elements of Power Systems	3
	EE 452	Power Systems Laboratory	1
	ES 307	Engineering Materials Science w/Laboratory	3
	**	Technical Elective	3
			16
NINTH	EE 421	Avionics Detail Design	3
	ES 403	Heat Transfer	3
	EC 200	An Economic Survey	3
	HU/SS	Electives	3
	HU/SS	Elective (300-400 Level)	3
			15
TOTAL			135

*CS Electives: CS210, CS215, CS216, CS325, CS360

**Technical Electives: PS 303 and MA 443 are highly recommended.

Students may substitute upper level AF and MY courses for aeronautical certificates for a maximum of 6 credits of technical electives.

MINOR IN MATHEMATICS

A minor in mathematics is offered. See the Section on Minor Field of Study for a list of required courses.

ENGINEERING PHYSICS PROGRAM

Engineering Physics

Bachelor of Science

ADMISSION REQUIREMENTS

To enter this program, students must have completed four years of high school science and mathematics demonstrating a high level of competency. Successful candidates for this program will be prepared to enter Calculus I and Chemistry for Engineers.

DEGREE REQUIREMENTS:

The Bachelor of Science in Engineering Physics degree program requires 136 credit hours. The program can be completed in eight semesters and one summer term. The courses necessary to earn this degree are listed below.

SEMESTER	COURSE NUMBER/TITLE	CREDITS
FIRST	MA 241 Calculus & Analytical Geometry I	4
	PS 110 Chemistry for Engineers	5
	SS 110 World History OR	
	SS 120 American History	3
	HU 122 English Composition and Literature I	3
SECOND	MA 242 Calculus & Analytical Geometry II	15
	PS 205 Physics I	4
	ET 110 Drafting & Descriptive Geometry	4
	HU 123 English Composition & Literature II OR	2
	HU 140 Humanities & Western Culture OR	
	HU 141 Studies in the Humanities	3
	HU 219 Speech	3
THIRD	MA 243 Calculus & Analytical Geometry III	16
	PS 208 Physics II	4
		3

	ES 201	Statics	3
	CS 210	Scientific Programming	3
	HU 221	Technical Report Writing	3
			<hr/>
			16
FOURTH	MA 345	Differential Equations and Matrix Methods	4
	PS 209	Physics III	4
	*PS 290	Physics Laboratory Practicum	0
	ES 202	Solid Mechanics	3
	ES 204	Dynamics	3
	ES 206	Fluid Mechanics	3
			<hr/>
			17
FIFTH	MA 441	Advanced Engineering Mathematics I	3
	PS 303	Modern Physics	3
	PS 305	Modern Physics Laboratory	1
	ES 305	Thermodynamics	3
	ES 402	Electrical Engineering I	3
	EC 200	An Economics Survey	3
			<hr/>
			16
*May be taken during the fourth or fifth semester.			
SUMMER SESSION (Must be taken before seventh semester)			
	HU/SS	Electives (300-400 Level)	6
		Open Elective	3
			<hr/>
			9
SIXTH	MA 442	Advanced Engineering Mathematics II	3
	PS 320	Classical Mechanics	3
	EP 320	Electro-Optical Engineering	3
	ES 307	Engineering Material Science w/Lab	3
	ES 405	Electrical Engineering II	3
	ET 200	Machine Shop Laboratory	1
			<hr/>
			16
SEVENTH	EP 455	Quantum Physics	3
	EP 440	Engineering Electricity and Magnetism	3
	EP 450	Space Systems Engineering	3
	EP 490	Senior Design Project I	3
	SS 210	Introduction to Sociology OR	
	SS 220	Introduction to Psychology	3
			<hr/>
			15
EIGHTH	EP 410	Space Physics	3
	EP 491	Senior Design Project II	4
	ES 409	Space Mechanics	3
	AE	Elective	3
		Open Elective	3
			<hr/>
			16

AE ELECTIVES:

AE 301, 302, 304

MINOR IN MATHEMATICS

A minor in mathematics is offered. See the section on Minor Fields of Study for a list of required courses.

AVIATION COMPUTER SCIENCE PROGRAM

Aviation Computer Science

Bachelor of Science

DEGREE REQUIREMENT

The Bachelor of Science degree can be earned in eight semesters assuming appropriate background and full-time enrollment. Successful completion of a minimum of 126 credit hours is required.

Students entering this program are expected to have completed a basic typing or word-processing course. Those who haven't should enroll in CS 101 -- Introduction to Keyboard Operations during their first semester of attendance. Students should have demonstrated a competence in mathematics and science (preferably in physics). They should be prepared to enter Calculus I, having demonstrated proficiency in algebra and trigonometry. Students can prepare themselves for this program by taking MA 140, College Algebra, and MA 141, Trigonometry, prior to taking MA 241. For those students who have not taken physics in high school, it is recommended that PS 103, Technical Physics I be taken prior to PS 201.

SEMESTER	COURSE NUMBER/TITLE	CREDITS
FIRST	MA 241 Calculus and Analytical Geometry I	4
	HU 122 English Composition and Literature I	3
	CS 115 Computer Programming I	3
	CS 220 Digital Logic and Computer Operations	3
	AS 120 Principles of Aeronautical Science	3
		<hr/>
		16

SECOND	MA 242	Calculus and Analytical Geometry II	4
	HU 123	English Composition and Literature II OR	
	HU 140	Humanities and Western Culture OR	
	HU 141	Studies in the Humanities	3
	CS 215	Computer Programming II	3
	CS 222	Introduction to Discrete Structures	3
	AS 201	Meteorology I	3
			<hr/>
			16
THIRD	PS 201	Engineering Physics I	5
	EC 200	An Economic Survey	3
	SS 220	Introduction to Psychology	3
	CS 235	Assembly Language Programming	3
	CS 315	Data Structures	3
			<hr/>
			17
FOURTH	PS 202	Engineering Physics II	5
	HU 221	Technical Report Writing	3
	SS 110	World History OR	
	SS 120	American History	3
	CS 317	Files and Database Systems	3
	MA 245	Applied Technical Mathematics	3
			<hr/>
			17
FIFTH	MA 412	Probability and Statistics	3
	CS 372	Introduction to Microprocessors	3
	HU 219	Speech	3
	AT 362	National Airspace System OR	
	*AS 309	Basic Aerodynamics	3
	CS	Elective (300-400 Level)	3
			<hr/>
			15
SIXTH	CS 230	Organization of Programming Languages	3
	CS 350	Computer Modeling and Simulation	3
	CS 370	Computer Organization	3
		Open Elective	3
	AS/FA	Elective	3
			<hr/>
			15
SEVENTH	CS 431	Software Engineering	3
	CS 335	Introduction to Computer Graphics	3
		Open Elective	6
		Open Elective (300-400 Level)	3
			<hr/>
			15
EIGHTH	CS 338	Numerical Methods	3
	CS 455	Artificial Intelligence	3
	CS	Elective (300-400 Level)	3
		Open Elective (300-400 Level)	3

TOTAL

Students enrolled in the Army or Air Force ROTC programs may substitute MY or AF courses for the stated open elective courses. *AS309 option is not available on Daytona Campus.

Computer Science electives must be chosen in consultation with the department chair.

Cooperative Education credits may be used as open electives.

AIRWAY SCIENCE PROGRAM OPTION

Those students who seek to be recognized as a graduate from an FAA approved Airway Science Program in computer science must satisfy all the Aviation Computer Science degree requirements plus the FAA program requirements. The Airway Science-Airway Computer Science program can be completed with a minimum of 126 total hours.

The following courses are required by the FAA and may be taken to satisfy the appropriate open electives and specified electives degree requirements:

	COURSE	CREDITS
AS 254	Aviation Regulation	3
AS 409	Aviation Safety	3
CS 420	Operating Systems	3
MS 201	Principles of Management	3
MS 314	Human Resource Management	3
MS 317	Organizational Behavior	3

AVIATION MAINTENANCE AND TECHNOLOGY PROGRAMS

Aircraft Maintenance

Aviation Maintenance Management

see Aviation Business Programs

Aviation Maintenance Technology

Aviation Technology

AMT/Flight Option

AMT/Avionics Option

Avionics/Flight Option

Aircraft Maintenance

Associate in Science

DEGREE REQUIREMENTS

The Associate in Science degree in Aircraft Maintenance requires successful completion of the following:

ERAU Type 147 Aviation Maintenance Technology Program (60 Credits)

OR

ERAU Type 65 Aviation Maintenance Technology Program (See Aviation Maintenance Management degree program for the list of courses which make up the Type 147 and Type 65 maintenance programs.)

AND

33 designated credits as follows:

COURSE	NUMBER/TITLE	CREDITS
CS 105	Introduction to Computers in Aviation, OR	
CS 109	Introduction to Computer Programming with BASIC, OR	
CS 210	Scientific Programming	3
EC 200	An Economic Survey	3
HU 122	English Composition and Literature I	3
HU 123	English Composition and Literature II, OR	
HU 140	Humanities and Western Culture, OR	
HU 141	Studies in the Humanities	3
HU 219	Speech	3
HU 221	Technical Report Writing	3

MA 111	College Mathematics in Aviation I	3
MA 112	College Mathematics in Aviation II, OR	
MA 211	Statistics with Aviation Applications, OR	
MA 222	Business Statistics	3
MS 105	American Business Enterprise, OR	
MS 201	Principles of Management	3
PS 102	Explorations in Physics	3
SS 220	Introduction to Psychology	3
		<hr/> 33

Total credits required vary from 69 to 93 depending upon the method of obtaining the maintenance qualification.

Cooperative education credits are in excess of degree requirements.

Aviation Maintenance Technology

Associate

This degree program is open only to Type 147 students at the Daytona Beach Campus.

DEGREE REQUIREMENTS

Degree requirements for the Associate degree in Aviation Maintenance Technology are outlined in the vertical listing below:

SEMESTER	COURSE NUMBER/TITLE	CREDITS
FIRST	(General Aeronautics)	
	AMT 101 Applied Science for Aerospace Technicians	2
	AMT 102 Aviation Regulations, Records and Documents	2
	AMT 103 Basic Electricity	3
	AMT 104 Aircraft Servicing Procedures	2
	AMT 105 Aviation Material	3
	HU 122 English Composition and Literature I	3
		<hr/> 15
SECOND	(Airframe I)	
	AMT 201 Aircraft Structures and Sheet Metal Fabrication	4
	AMT 202 Non-Metallic Structures	2
	AMT 205 Aircraft Electrical Systems	4
	AMT 206 Hydraulic and Pneumatic Systems	2
	MA 111 College Math for Aviation I OR	
	MA 120 Quantitative Methods I OR	
	MA 140 College Algebra	3
		<hr/> 15
THIRD	(Airframe II)	
	AMT 203 Aircraft Instruments and Communication/Navigation Systems	2

	AMT 204 Aircraft Welding, Assembly and Rigging	4
	AMT 207 Aircraft Environmental and Fuel Systems	3
	AMT 208 Aircraft Landing Gear Systems	3
	HU 219 Speech	3
		<hr/>
		15
FOURTH	(Powerplant I)	
	AMT 209 Aircraft Reciprocating Engines	3
	AMT 210 Aircraft Powerplant Systems	3
	AMT 211 Engine Electrical and Ignition Systems	3
	AMT 212 Propellers and Propeller Systems	3
	CS 109 Introduction to Computer Programming w/BASIC OR	
	CS 210 Scientific Programming	3
		<hr/>
		15
FIFTH	(Powerplant II)	
	AMT 213 Engine Installation and Operation	2
	AMT 214 Reciprocating Engine Overhaul	4
	AMT 215 Turbine Engines and Turbine Engine Systems	6
	SS 110 World History OR	
	SS 120 American History	3
		<hr/>
		15
TOTAL		<hr/>
		75

Cooperative education credits are in excess of degree requirements.

Aviation Technology

Bachelor of Science

DEGREE REQUIREMENTS

The Bachelor of Science in Aviation Technology requires successful completion of 158 to 163 credit hours. The student must complete a core program and two of the three options in avionics, flight and maintenance.

***TYPE 147 AMT/FLIGHT**

SEMESTER	COURSE NUMBER/TITLE	CREDITS
FIRST	AMT 101 Applied Science for Aerospace Technicians	2
	AMT 102 Aviation Regulations, Records and Documents	2
	AMT 103 Basic Electricity	3
	AMT 104 Aircraft Servicing Procedures	2
	AMT 105 Aviation Material	3

MA 145 College Algebra and Trigonometry

5

17

SECOND	AMT 201	Aircraft Structures and Sheet Metal Fabrication	4
	AMT 202	Non-Metallic Structures	2
	AMT 205	Aircraft Electrical Systems	4
	AMT 206	Hydraulic and Pneumatic Systems	2
	MA 241	Calculus and Analytical Geometry I	4

16

THIRD	AMT 203	Aircraft Instruments and Communications/Navigation Systems	2
	AMT 204	Aircraft Welding, Assembly and Rigging	4
	AMT 207	Aircraft Environmental and Fuel Systems	3
	AMT 208	Aircraft Landing Gear Systems	3
	HU 122	English Composition and Literature I	3

15

FOURTH	AMT 209	Aircraft Reciprocating Engines	3
	AMT 210	Aircraft Powerplant Systems	3
	AMT 211	Engine Electrical and Ignition Systems	3
	AMT 212	Propellers and Propeller Systems	3
	CS 210	Scientific Programming	3

15

FIFTH	AMT 213	Engine Installation and Operation	2
	AMT 214	Reciprocating Engine Overhaul	4
	FA 110	Commercial Pilot Flight Operations I	5
	HU 123	English Composition and Literature II	
		OR	
	HU 140	Humanities and Western Culture OR	3
	HU 141	Studies in the Humanities	3
	PS 103	Technical Physics I	

17

SIXTH	AMT 215	Turbine Engines and Turbine Engine Systems	6
	FA 200	Commercial Pilot Flight Operations II	3
	AS 240	Principles of Navigation	3
	PS 104	Technical Physics II	3
	ET 101	Engineering Graphics	2

17

SEVENTH	FA 250	Commercial Pilot Flight Operations III	3
	AS 260	Principles of All-Weather Navigation	3
	AS 201	Meteorology I	3
	AS 309	Basic Aerodynamics	3

	HU 221	Technical Report Writing	3
			<hr/> 15
EIGHTH	FA 300	Commercial Pilot Flight Operations IV	2
	AS 310	Aircraft Performance	3
	AS 352	Meteorology II	3
	HU 219	Speech	3
	SS 220	Introduction to Psychology	3
	AV 301	Avionics for Aviators	3
			<hr/> 17
NINTH	FA 419	Airline Transport Pilot Proficiency Development	2
	AS 355	Global Navigation	3
	AS 357	Flight Physiology	3
	AS 420	Flight Technique Analysis	3
	PS 101	Basic Chemistry	3
	EC 200	An Economic Survey	3
			<hr/> 17
TENTH	FA 453	High Performance Aircraft Flight Crew Techniques and Procedures	2
	AS 452	Electronic Navigation and Flight Control Systems	3
	AS 408	Flight Safety	3
	HU 330	Values and Ethics	3
	HU/SS	Elective (300-400 Level)	3
		Open Elective (300-400 Level)	3
			<hr/> 17
TOTAL			163

Cooperative education credits are in excess of degree requirements.

* This program available only at the Daytona Beach Campus.

* TYPE 147 AMT/AVIONICS

SEMESTER	COURSE NUMBER/TITLE	CREDITS
FIRST	AMT 101 Applied Science for Aerospace Technicians	2
	AMT 102 Aviation Regulations, Records and Documents	2
	AMT 103 Basic Electricity	3
	AMT 104 Aircraft Servicing Procedures	2
	AMT 105 Aviation Material	3
	MA 241 Calculus and Analytical Geometry	4
		<hr/> 16
SECOND	AMT 201 Aircraft Structures and Sheet Metal Fabrication	4
	AMT 202 Non-Metallic Structures	2
	AMT 205 Aircraft Electrical Systems	4
	AMT 206 Hydraulic and Pneumatic Systems	2

	MA 242	Calculus and Analytical Geometry II	4
			<hr/> 16
THIRD	AMT 203	Aircraft Instruments and Communications/Navigation Systems	2
	AMT 204	Aircraft Welding, Assembly and Rigging	4
	AMT 207	Aircraft Environmental and Fuel Systems	3
	AMT 208	Aircraft Landing Gear Systems	3
	HU 122	English Composition and Literature I	3
			<hr/> 15
FOURTH	AMT 209	Aircraft Reciprocating Engines	3
	AMT 210	Aircraft Powerplant Systems	3
	AMT 211	Engine Electrical and Ignition Systems	3
	AMT 212	Propellers and Propeller Systems	3
	CS 210	Scientific Programming	3
			<hr/> 15
FIFTH	AMT 213	Engine Installation and Operation	2
	AMT 214	Reciprocating Engine Overhaul	4
	AMT 215	Turbine Engines and Turbine Engine Systems	6
	PS 103	Technical Physics I	3
	HU 123	English Composition and Literature II	
		OR	
	HU 140	Humanities and Western Culture OR	
	HU 141	Studies in the Humanities	3
			<hr/> 18
SIXTH	EL 106	Direct and Alternating Current Fundamentals and Circuit Analysis w/Laboratory	6
	MA 245	Applied Technical Mathematics	3
	ET 101	Engineering Graphics	2
	PS 101	Basic Chemistry	3
	PS 104	Technical Physics II	3
			<hr/> 17
SEVENTH	EL 220	Introduction to Pulse and Digital Circuits w/Laboratory	4
	EL 223	Solid State Fundamentals and Circuit Analysis w/Laboratory	6
	HU 221	Technical Report Writing	3
	SS 220	Introduction to Psychology	3
			<hr/> 16
EIGHTH	EL 225	Advanced Digital Circuits and Systems w/Laboratory	4

	EL 226	Electronic Systems Analysis w/Laboratory	5
	EC 200	An Economic Survey	3
	HU 219	Speech	3
	HU/SS	Elective (300-400 Level)	3
			<hr/> 18
NINTH	EL 230	Microprocessor Systems w/Laboratory	3
	AV 305	Aircraft Communication and Landing Systems	3
	AV 309	Aircraft Pulse Systems	3
	AV 339	Avionics Equipment Troubleshooting and Repair Laboratory	2
	HU 330	Values and Ethics	3
		Open Elective (300-400 Level)	3
			<hr/> 17
TENTH	AV 318	Low Frequency and Area Navigational Systems	3
	AV 320	Aircraft Surveillance Systems	3
	AV 324	Avionics System Integration and Flight Control	3
	AV 325	Long Range Navigation Systems	3
	AV 341	Advanced Avionics Equipment Troubleshooting and Repair Laboratory	2
			<hr/> 14
TOTAL			162

Cooperative education credits are in excess of degree requirements.

*This program available only at the Daytona Beach Campus.

SEMESTER	COURSE	NUMBER/TITLE	CREDITS
FIRST	MA 241	Calculus and Analytical Geometry I	4
	PS 101	Basic Chemistry	3
	HU 122	English Composition and Literature I	3
	EL 106	Direct and Alternating Current Fundamentals and Circuit Analysis w/Laboratory	6
			<hr/> 16
SECOND	MA 242	Calculus and Analytical Geometry II	4
	CS 210	Scientific Programming	3
	HU 123	English Composition and Literature II OR	
	HU 140	Humanities and Western Culture OR	
	HU 141	Studies in the Humanities	3
	EL 223	Solid State Fundamentals and Circuit Analysis w/Laboratory	6
			<hr/> 16

THIRD	MA 245	Applied Technical Mathematics	3
	PS 103	Technical Physics I	3
	ET 101	Engineering Graphics	2
	HU 221	Technical Report Writing	3
	EL 220	Introduction to Pulse and Digital Circuits w/Laboratory	4
			15
FOURTH	PS 104	Technical Physics II	3
	HU 219	Speech	3
	EL 225	Advanced Digital Circuits and Systems w/Laboratory	4
	EL 226	Electronics Systems Analysis w/Laboratory	5
			15
FIFTH	FA 110	Commercial Pilot Flight Operations I	5
	SS 220	Introduction to Psychology	3
	AV 305	Aircraft Communication and Landing Systems	3
	AV 309	Aircraft Pulse Systems	3
	EL 230	Microprocessor Systems w/ Laboratory	3
			17
SIXTH	FA 200	Commercial Pilot Flight Operations II	3
	AS 240	Principles of Navigation	3
	AS 201	Meteorology I	3
	AV 318	Low Frequency and Area Navigation Systems	3
	AV 339	Avionics Equipment Troubleshooting and Repair Laboratory	2
			14
SEVENTH	FA 250	Commercial Pilot Flight Operations III	3
	AS 260	Principles of All-Weather Navigation	3
	AS 305	Aircraft Engines-Reciprocating	3
	AS 309	Basic Aerodynamics	3
	AV 320	Aircraft Surveillance Systems	3
			15
EIGHTH	FA 300	Commercial Pilot Flight Operations IV	2
	AS 310	Aircraft Performance	3
	AS 311	Aircraft Engines-Turbine	3
	AV 324	Avionics System Integration and Flight Control	3
	AV 325	Long Range Navigation Systems	3
		Open Elective (300-400 Level)	3
			17
NINTH	FA 419	Airplane Transport Pilot Proficiency Development	2
	AS 352	Meteorology II	3

	AS 355	Global Navigation	3
	AS 357	Flight Physiology	3
	AV 341	Advanced Avionics Equipment Troubleshooting and Repair Laboratory	2
	AS 420	Flight Technique Analysis	3
			<hr/> 16
TENTH	FA 453	High Performance Aircraft Flight Crew Techniques and Procedures	2
	AS 356	Aircraft Systems and Components	3
	AS 408	Flight Safety	3
	EC 200	An Economic Survey	3
	HU 330	Values and Ethics	3
	HU/SS	Elective (300-400 Level)	3
			<hr/> 17
TOTAL			158

Cooperative education credits are in excess of degree requirements.

*This program available only at the Daytona Beach Campus.

AVIONICS TECHNOLOGY PROGRAM

Avionics Technology
Associate in Science

DEGREE REQUIREMENTS

The Associate in Science degree in Avionics Technology requires successful completion of 78 semester credit hours as indicated in the following outline.

SEMESTER	COURSE	NUMBER/TITLE	CREDITS
FIRST	EL 106	Direct and Alternating Current Fundamentals and Circuit Analysis with Laboratory	6
	HU 122	English Composition and Literature I	3
	MA 241	Calculus and Analytical Geometry I	4
	PS 101	Basic Chemistry	3
			<hr/> 16
SECOND	EL 223	Solid State Fundamentals and Circuit Analysis with Laboratory	6
	CS 210	Scientific Programming	3
	EL 220	Introduction to Pulse and Digital Circuits with Laboratory	4
	ET 101	Engineering Graphics	2
			<hr/> 15
THIRD	EL 226	Electronic Systems Analysis with Laboratory	5
	HU 123	English Composition and Literature II	
		OR	
	HU 140	Humanities and Western Culture OR	
	HU 141	Studies in the Humanities	3
	EL 225	Advanced Digital Circuits and Systems with Laboratory	4
	MA 242	Calculus and Analytical Geometry II	4
			<hr/> 16
FOURTH	AV 339	Avionics Equipment Troubleshooting and Repair Laboratory	2
	AV 305	Aircraft Communications and Landing Systems	3
	AV 309	Aircraft Pulse Systems	3
	PS 103	Technical Physics I	3
	HU 219	Speech	3
	EL 230	Microprocessor Systems with Laboratory	3
			<hr/> 17
FIFTH	AV 341	Advanced Avionics Equipment Troubleshooting and Repair Lab	2

AV 318	Low Frequency and Area Navigation Systems	3
AV	Elective	3
HU/SS	Elective	3
EC 200	An Economic Survey	3
		<hr/>
TOTAL		14
		78

AVIONICS ELECTIVES:

AV 320, AV 324, AV 325

AVIATION BUSINESS AND MANAGEMENT PROGRAMS

Aviation Business Administration

Aviation Maintenance Management

Type 147 Option

Type 65 Option

Avionics Option

Management of Technical Operations

Aviation Business Administration

Bachelor of Science

DEGREE REQUIREMENTS

The Bachelor of Science degree in Aviation Business Administration requires successful completion of a minimum of 126 credit hours, normally completed within eight semesters.

Students may select concentrations in Aviation Management, Aviation/Aerospace Logistics, or Aviation/Aerospace Management Information Systems.

Students enrolled in the Army or Air Force ROTC program may substitute MY or AF courses for the open elective courses.

AVIATION BUSINESS ADMINISTRATION MAJOR

SEMESTER	COURSE	NUMBER/TITLE	CREDITS
FIRST	CS 109	Introduction to Computer Programming w/ BASIC	3
	HU 122	English Composition and Literature I	3
	MA 120	Quantitative Methods I	3
	SS 110	World History OR	
	SS 120	American History	3
	MS 120	Introduction to Computer Based Systems	3
			<hr/> 15
SECOND	MS 221	Computer Based Systems	3
	HU 123	English Composition and Literature II	3
		OR	
	HU 140	Humanities and Western Culture OR	
	HU 141	Studies in the Humanities	3
	MA 220	Quantitative Methods II	3
	*PS	Elective	3
	MS 201	Principles of Management	3
			<hr/> 15

THIRD	SS 220	Introduction to Psychology	3
	HU 219	Speech	3
	EC 211	Macroeconomics	3
	MA 222	Business Statistics OR	
	MA 211	Statistics w/Aviation Applications	3
	*PS	Elective	3
	MS 210	Financial Accounting I	3
			<hr/> 18
FOURTH	EC 210	Microeconomics	3
	HU 221	Technical Report Writing	3
	MA 320	Decision Mathematics	3
	MS 212	Financial Accounting II	3
	MS 311	Marketing	3
	MS 314	Human Resource Management	3
			<hr/> 18
FIFTH	EC 315	Managerial Economics	3
	MS 312	Managerial Accounting	3
	MS 317	Organizational Behavior	3
	MS 320	Business Information Systems	3
		Concentration Course	3
			<hr/> 15
SIXTH	MS 332	Corporate Finance I	3
	MS 390	Business Law	3
		Concentration Courses	9
			<hr/> 15
SEVENTH	MS 401	Management Planning and Control	3
		Concentration Course	3
	HU/SS	Electives	6
		Open Elective	3
			<hr/> 15
EIGHTH	MS 431	Business Policy	3
	HU/SS	Elective (300-400 Level)	3
		Open Electives	9
			<hr/> 15
TOTAL			126

*One PS Elective must include a laboratory.

AREAS OF CONCENTRATION

An Aviation Business Administration major will be required to select one of three areas of concentration which consist of five courses. These areas of concentration are:

AVIATION MANAGEMENT

REQUIRED COURSES

EC 420	Economics of Air Transportation	3
MS 415	Airline Management	3
MS 408	Airport Management	3
MS 322	Aviation Insurance	3
MS 405	Aviation Marketing	3

15

AVIATION/AEROSPACE LOGISTICS

REQUIRED COURSES

MS 331	Transportation Principles	3
MS 410	Management of Air Cargo	3
MS 420	Industrial Management	3
MS 411	Logistics Information Systems in Aviation/Aerospace	3
MS 422	Life Cycle Analysis for Systems and Programs in Aviation/Aerospace	3

15

AVIATION/AEROSPACE MANAGEMENT INFORMATION SYSTEMS

REQUIRED COURSES

MS 321	Aviation/Aerospace Systems Analysis Methods	3
MS 323	Office Automation and Telecommunications with Aviation/Aerospace Applications	3
MS 423	Artificial Intelligence and Expert Systems in Business	3
MS 424	Project Management and Software Engineering	3
MS 445	Aviation/Aerospace Database Management Systems	3

15

Students who participate in cooperative education assignments must complete four of the five courses listed for any area of concentration.

AIRWAY SCIENCE OPTION

Those students who seek to be recognized as a graduate from the FAA Approved Airway Science program in management must satisfy the Aviation Business Administration degree requirements by including the FAA program requirements. The Airway Science - Management program can be completed with a minimum of 126 hours.

The following courses are required by the FAA and, for the purpose of attaining the Airway Science option in the Aviation Business Administration program, may be substituted for HU/PS/SS electives, open electives, and the courses needed for an area of concentration.

	COURSE	CREDITS
AS 120	Principles of Aeronautical Science	3
OR		
FA 110	Commercial Pilot Flight Operations I	5
AS 254	Aviation Regulation	3
AS 305	Aircraft Engines -- Reciprocating	3
OR		
AT 462	Enroute/Terminal NonRadar Air Traffic Control with Laboratory	3
AT 362	National Airspace System	3
AS 405	Aviation Law	3
AS 409	Aviation Safety	3
AS 412	Corporate and Business Aviation	3
EC 420	Economics of Air Transportation	3
HU 330	Values and Ethics	3
MS 408	Airport Management	3
PS 103	Technical Physics I	3
PS 104	Technical Physics II	3
SS 310	Personality Development	3
SS 331	Current Issues in America	3

MINOR IN AVIATION BUSINESS ADMINISTRATION

A minor in Aviation Business Administration is offered for non-business students. See the section on Minor Fields of Study for a list of required courses.

Aviation Business Administration

Associate in Science

The Associate in Science in Aviation Business Administration degree requires successful completion of 63 credit hours.

SEMESTER	COURSE	NUMBER/TITLE	CREDITS
FIRST	CS 109	Introduction to Computer Programming w/BASIC	3
	HU 122	English Composition and Literature I	3
	MA 120	Quantitative Methods I	3
	MS 201	Principles of Management	3
	SS 110	World History OR	
	SS 120	American History	3
			<hr/> 15
SECOND	EC 211	Macroeconomics	3
	HU 123	English Composition and Literature II OR	
	HU 140	Humanities and Western Culture OR	
	HU 141	Studies in the Humanities	3

	MA 220	Quantitative Methods II	3
	PS	Elective	3
	SS 220	Introduction to Psychology	3
			<hr/> 15
THIRD	HU 219	Speech	3
	EC 210	Microeconomics	3
	MA 222	Business Statistics OR	
	MA 211	Statistics w/Aviation Applications	3
	MS 210	Financial Accounting I	3
		Open Elective	3
			<hr/> 15
FOURTH	HU 221	Technical Report Writing	3
	MS 212	Financial Accounting II	3
	MS 314	Human Resource Management	3
	MS 317	Organizational Behavior	3
	MS 320	Business Information Systems	3
		Specified Elective	3
			<hr/> 18
TOTAL			63

SPECIFIED ELECTIVES:

AS 401, 405, 408, 409, 412

AT 362

EC 420

MS 322, 405, 408, 410, 412, 415, 419, 425

Cooperative Education credits may be used as open electives. See Co-op faculty advisor for exceptions.

Aviation Maintenance Management

Bachelor of Science

DEGREE REQUIREMENTS

The Bachelor of Science degree in Aviation Maintenance Management may be attained by successfully completing one of the following options plus the additional courses indicated.

AVIATION MAINTENANCE MANAGEMENT TYPE 147

AMT

COURSE	NUMBER/TITLE	CREDITS
AMT 101	Applied Science for Aerospace Technicians	2
AMT 102	Aviation Regulations, Records and Documents	2
AMT 103	Basic Electricity	3
AMT 104	Aircraft Servicing Procedures	2
AMT 105	Aviation Material	3
AMT 201	Aircraft Structures and Sheet Metal Fabrication	4
AMT 202	Non-Metallic Structures	2

AMT 203	Aircraft Instruments and Communications/Navigation	2
AMT 204	Aircraft Welding, Assembly and Rigging	4
AMT 205	Aircraft Electrical Systems	4
AMT 206	Hydraulic and Pneumatic Systems	2
AMT 207	Aircraft Environmental & Fuel Systems	3
AMT 208	Aircraft Landing Gear Systems	3
AMT 209	Aircraft Reciprocating Engines	3
AMT 210	Aircraft Powerplant Systems	3
AMT 211	Engine Electrical & Ignition Systems	3
AMT 212	Propellers and Propeller Systems	3
AMT 213	Engine Installation and Operation	2
AMT 214	Reciprocating Engine Overhaul	4
AMT 215	Turbine Engines and Turbine Engine Systems	6

TOTAL

60

*This program available only at the Daytona Beach Campus.

SEMESTER	COURSE	NUMBER/TITLE	CREDITS
FIRST	CS 109	Introduction to Computer Programming w/BASIC	3
	EC 211	Macroeconomics	3
	HU 122	English Composition and Literature I	3
	MA 120	Quantitative Methods I	3
	MS 201	Principles of Management	3
			15
SECOND	EC 210	Microeconomics	3
	HU 123	English Composition and Literature II	
		OR	
	HU 140	Humanities and Western Culture OR	
	HU 141	Studies in the Humanities	3
	MA 220	Quantitative Methods II	3
	MS 210	Financial Accounting I	3
	SS 110	World History OR	
	SS 120	American History	3
			15
THIRD	HU 219	Speech	3
	MA 222	Business Statistics OR	
	MA 211	Statistics w/Aviation Applications	3
	MS 212	Financial Accounting II	3
	SS 220	Introduction to Psychology	3
	*PS	Elective	3
			15
FOURTH	HU 221	Technical Report Writing	3
	MS 314	Human Resource Management	3
	MS 317	Organizational Behavior	3
	MS 332	Corporate Finance I	3
	MA 320	Decision Mathematics	3
			15

FIFTH	EC 310	Labor Economics	3
	MS 312	Managerial Accounting	3
	MS 311	Marketing	3
	MS 401	Management Planning and Control	3
	*PS	Elective	3
			<hr/>
SIXTH	HU/SS	Elective (300-400 Level)	15
	MS 390	Business Law	3
	MS 419	Aviation Maintenance Management	3
	MS 420	Industrial Management	3
	MS 431	Business Policy	3
			<hr/>
TOTAL			15
			<hr/>
			150

*One PS Elective must include a laboratory.

Cooperative education credits are in excess of degree requirements.

AIRWAY SCIENCE PROGRAM OPTION

Those students who seek to be recognized as a graduate from an FAA Approved Airway Science Program in Aviation Maintenance Management must satisfy all the Aviation Maintenance Management degree requirements plus the FAA program requirements. The Airway Science-Aviation Maintenance Management program can be completed with a minimum of 165 total hours.

The following courses are required by the FAA and may be taken to satisfy the appropriate open electives and specified electives required for the degree:

COURSE	CREDITS
AS 120 Principles of Aeronautical Science	3
AS 254 Aviation Regulation	3
AS 409 Aviation Safety	3
MS 120 Introduction to Computer Based Systems	3
MS 221 Computer Based Systems	3
PS 101 Basic Chemistry	3
PS 103 Technical Physics I	3
PS 104 Technical Physics II	3

**AVIATION MAINTENANCE MANAGEMENT TYPE 65

COURSE	NUMBER/TITLE	CREDITS
**AMT 240	General Aeronautics and Applications	3
**AMT 260	Aircraft Electrical Systems Theory	3
**AMT 270	Airframe Structures and Applications	4
**AMT 271	Airframe Systems and Applications	3
**AMT 280	Powerplant Theory and Applications	4
**AMT 281	Aircraft Propulsion Systems & Applications	4
	Electives (AMT, AS, AV, CS, EL, FA, MS) OR AMT 275 and AMT 285	15
TOTAL		<hr/>
		36

**These courses are available only at College of Continuing Education locations.

SEMESTER	COURSE	NUMBER/TITLE	CREDITS
FIRST	CS 109	Introduction to Computer Programming w/BASIC	3
	EC 211	Macroeconomics	3
	HU 122	English Composition and Literature I	3
	MA 120	Quantitative Methods I	3
	MS 201	Principles of Management	3
			<hr/> 15
SECOND	EC 210	Microeconomics	3
	HU 123	English Composition and Literature OR	
	HU 140	Humanities and Western Culture OR	
	HU 141	Studies in the Humanities	3
	MA 220	Quantitative Methods II	3
	MS 210	Financial Accounting I	3
	SS 110	World History OR	
	SS 120	American History	3
			<hr/> 15
THIRD	HU 219	Speech	3
	MA 222	Business Statistics OR	
	MA 211	Statistics w/Aviation Applications	3
	MS 212	Financial Accounting II	3
	SS 220	Introduction to Psychology	3
	*PS	Elective	3
			<hr/> 15
FOURTH	HU 221	Technical Report Writing	3
	MS 314	Human Resource Management	3
	MS 317	Organizational Behavior	3
	MA 320	Decision Mathematics	3
	MS 332	Corporate Finance I	3
			<hr/> 15
FIFTH	EC 310	Labor Economics	3
	MS 311	Marketing	3
	MS 312	Managerial Accounting	3
	MS 401	Management Planning and Control	3
	*PS	Elective	3
			<hr/> 15
SIXTH	HU/SS	Elective (300-400 Level)	3
	MS 390	Business Law	3
	MS 419	Aviation Maintenance Management	3
	MS 420	Industrial Management	3
	MS 431	Business Policy	3
			<hr/> 15
TOTAL			126

*One PS Elective must include a laboratory.

Cooperative education credits are in excess of degree requirements.

AVIATION MAINTENANCE MANAGEMENT -- AIRFRAME AND POWERPLANT MAINTENANCE CERTIFICATE

Thirty-six credits are granted to students who possess the FAA A&P Maintenance Certificate.

SEMESTER	COURSE	NUMBER/TITLE	CREDITS
FIRST	CS 109	Introduction to Computer Programming w/BASIC	3
	EC 211	Macroeconomics	3
	HU 122	English Composition and Literature I	3
	MA 120	Quantitative Methods I	3
	MS 201	Principles of Management	3
			<hr/> 15
SECOND	EC 210	Microeconomics	3
	HU 123	English Composition and Literature II	3
		OR	
	HU 140	Humanities and Western Culture OR	
	HU 141	Studies in the Humanities	3
	MA 220	Quantitative Methods II	3
	MS 210	Financial Accounting I	3
	SS 110	World History OR	
	SS 120	American History	3
			<hr/> 15
THIRD	HU 219	Speech	3
	MA 222	Business Statistics OR	
	MA 211	Statistics w/Aviation Applications	3
	MS 212	Financial Accounting II	3
	SS 220	Introduction to Psychology	3
	*PS	Elective	3
			<hr/> 15
FOURTH	HU 221	Technical Report Writing	3
	MS 314	Human Resource Management	3
	MS 317	Organizational Behavior	3
	MA 320	Decision Mathematics	3
	MS 332	Corporate Finance I	3
			<hr/> 15
FIFTH	EC 310	Labor Economics	3
	MS 311	Marketing	3
	MS 312	Managerial Accounting	3
	MS 401	Management Planning and Control	3
	*PS	Elective	3
			<hr/> 15
SIXTH	HU/SS	Elective (300-400 Level)	3
	MS 390	Business Law	3
	MS 419	Aviation Maintenance Management	3
	MS 420	Industrial Management	3

MS 431	Business Policy	3
		<hr/> 15
TOTAL		126

*One PS Elective must include a laboratory.

Cooperative education credits are in excess of degree requirements.

AVIATION MAINTENANCE MANAGEMENT — AVIONICS			
SEMESTER	COURSE	NUMBER/TITLE	CREDITS
FIRST	EL 106	Direct and Alternating Current Fundamentals and Circuit Analysis w/Laboratory	6
	MA 241	Calculus and Analytical Geometry I	4
	PS 101	Basic Chemistry	3
	HU 122	English Composition and Literature I	3
			<hr/> 16
SECOND	EL 220	Introduction to Pulse and Digital Circuits	4
	EL 223	Solid State Fundamentals and Circuit Analysis with Laboratory	6
	CS 210	Scientific Programming	3
	MA 242	Calculus and Analytical Geometry II	4
			<hr/> 17
THIRD	EL 225	Advanced Digital Circuits and Systems with Laboratory	4
	EL 226	Electronic Systems Analysis with Laboratory	5
	MA 245	Applied Technical Mathematics	3
	HU 123	English Composition and Literature II OR	
	HU 140	Humanities and Western Culture OR	
	HU 141	Studies in the Humanities	3
			<hr/> 15
FOURTH	EL 230	Microprocessor Systems with Laboratory	3
	PS 103	Technical Physics I	3
	ET 101	Engineering Graphics	2
	MA 412	Probability and Statistics	3
	MS 201	Principles of Management	3
	HU 221	Technical Report Writing	3
			<hr/> 17
FIFTH	AV 339	Avionics Equipment Troubleshooting and Repair Laboratory	2
	AV 309	Aircraft Pulse Systems	3
	AV 305	Aircraft Communications and Landing Systems	3

	EC 200	An Economic Survey	3
	SS 110	World History OR	
	SS 120	American History	3
	MS 210	Financial Accounting I	3
			<hr/>
			17
SIXTH	AV 341	Advanced Avionics Equipment Troubleshooting and Repair Laboratory	2
	SS 220	Introduction to Psychology	3
	MS 314	Human Resource Management	3
	MS 317	Organizational Behavior	3
	AV 320	Aircraft Surveillance Systems	3
	HU 219	Speech	3
			<hr/>
			17
SEVENTH	MS 420	Industrial Management	3
	MS 311	Marketing	3
	MS 332	Corporate Finance I	3
	AV 324	Avionics System Integration and Flight Control	3
	AV 325	Long Range Navigation Systems	3
			<hr/>
			15
EIGHTH	MS 419	Aviation Maintenance Management	3
	HU/SS	Elective (300-400 Level)	3
	MS 401	Management Planning and Control	3
	MS 411	Logistics Information Systems in Aviation/Aerospace	3
	MS 422	Life Cycle Analysis for Systems and Programs in Aviation/Aerospace	3
			<hr/>
			15
TOTAL			129

Cooperative education credits are in excess of degree requirements.

Management of Technical Operations

Bachelor of Science

DEGREE REQUIREMENTS

The Bachelor of Science degree in Management of Technical Operations requires successful completion of a minimum of 126 credit hours.

TECHNICAL OPERATIONS SPECIALTY

CREDITS

15

A minimum of 15 semester hours of credit in an area of technical operations which has been earned at accredited postsecondary institutions or through CLEP, DANTES, or military or industrial education programs recognized by the American Council on Education is required. The credit should be related to the aviation industry and may be technical, mechanical, or industrial in nature.

GENERAL EDUCATION

COURSE NUMBER/TITLE

CREDITS

MA 111	College Mathematics for Aviation I AND	
MA 112	College Mathematics for Aviation II	
	OR	
MA 120	Quantitative Methods I AND	
MA 220	Quantitative Methods II	6
HU 122	English Composition and Literature I	3
HU 123	English Composition and Literature II	
	OR	
HU 140	Humanities and Western Culture	
	OR	
HU 141	Studies in the Humanities	3
HU 219	Speech	3
HU 221	Technical Report Writing	3
HU/SS	Elective (300-400 Level)	3
CS 105	Introduction to Computers in Aviation	
	OR	
CS 109	Introduction to Computer Programming w/BASIC	3
PS	Electives (One course must include a Laboratory)	6
SS 220	Introduction to Psychology	3
EC 211	Macroeconomics	3
		<hr/>
		36

MANAGEMENT

EC 210	Microeconomics	3
HU 250	Introduction to Logic	3
MA 222	Business Statistics	3
MA 320	Decision Mathematics OR	
MS 350	Analysis Methods for Management	3
MS 201	Principles of Management	3

MS 210	Financial Accounting I	3
MS 212	Financial Accounting II	3
MS 314	Human Resources Management	3
MS 317	Organizational Behavior	3
MS 331	Transportation Principles	3
SF 200	Safety Program Management	3

33

SPECIFIED ELECTIVES

At least 18 semester hours selected from the following:

AS 254	Aviation Regulation	3
AS 320	Commuter Aviation	3
AS 401	Airport Development and Operations	3
AS 405	Aviation Law	3
AS 409	Aviation Safety	3
AS 412	Corporate and Business Aviation	3
MS 308	Public Administration	3
MS 311	Marketing	3
MS 312	Managerial Accounting	3
MS 322	Aviation Insurance	3
MS 332	Corporate Finance I	3
MS 335	International Business	3
MS 390	Business Law	
MS 401	Management Planning and Control	3
MS 405	General Aviation Marketing	3
MS 408	Airport Management	3
MS 412	Airport Planning and Design	3
MS 415	Airline Management	3
MS 419	Aviation Maintenance Management	3
MS 420	Industrial Management	3
MS 421	Small Business Management	3
MS 425	Trends and Current Problems in Air Transportation	3
MS 431	Business Policy	3
MS 433	Management of the Sales Force	3
MS 449	Strategic Marketing Management	3
SF 305	Mechanical and Structural Factors in Aviation Safety	3
SF 310	Aircraft Crash Survival Analysis and Design	
SF 330	Aircraft Accident Investigation	3
SF 340	System Safety in Aviation	3

18

OPEN ELECTIVES

24

TOTAL

126

FLIGHT RELATED PROGRAMS

Aeronautical Science

Professional Aeronautics

Aeronautical Science

Bachelor of Science

ADMISSION REQUIREMENTS

Students must meet the general University requirements for admission and the age and physical qualifications for a flight training program, as outlined in the Admission to the University chapter of this catalog.

FLIGHT COURSE SCHEDULING

All flight students are required to take FA 110. Students enrolling in a degree program requiring flight usually begin their initial flight course sometime during the first semester in attendance. The exact date is dependent upon weather conditions, aircraft and instructor availability. All flight training courses may begin and end at any time during the academic year and may not coincide with the beginning and ending dates of the published semester schedule. Therefore, students who begin a flight course late in the semester should be prepared for training in that course to continue into the subsequent semester.

See the Academic Regulations and Procedures chapter of this catalog for additional information concerning University policies with respect to flight courses.

DEGREE REQUIREMENTS

The Bachelor of Science degree in Aeronautical Science may be attained in eight semesters. To earn the degree, successful completion of a minimum of 128 credit hours is required. Upon completion of the curriculum, the student is qualified to be examined for the FAA Commercial Pilot Certificate with Instrument, Single-Engine and Multi-Engine ratings.

SEMESTER	COURSE	NUMBER/TITLE	CREDITS
FIRST	FA 110	Commercial Pilot Flight Operations I	5
	HU 122	English Composition and Literature I	3
	MA 111	College Mathematics for Aviation I	3
	CS 109	Introduction to Computer Programming w/BASIC OR	

	CS 210	Scientific Programming	3
			<hr/> 14
SECOND	AS 201	Meteorology I	3
	HU 123	English Composition and Literature II OR	
	HU 140	Humanities and Western Culture OR	3
	HU 141	Studies in the Humanities	3
	MA 112	College Mathematics for Aviation II	3
	PS 103	Technical Physics I	3
	MS 105	American Business Enterprise OR	
	MS 201	Principles of Management	3
			<hr/> 15
THIRD	FA 200	Commercial Pilot Flight Operations II	3
	AS 240	Principles of Navigation	3
	PS 104	Technical Physics II	3
	SS 220	Introduction to Psychology	3
	EC 200	An Economic Survey	3
	HU 219	Speech	3
			<hr/> 18
FOURTH	FA 250	Commercial Pilot Flight Operations III	3
	AS 260	Principles of All-Weather Navigation	3
	AS 254	Aviation Regulation	3
	HU 221	Technical Report Writing	3
		Open Electives	3
			<hr/> 15
FIFTH	FA 300	Commercial Pilot Flight Operations IV	2
	AS 305	Aircraft Engines — Reciprocating	3
	AS 309	Basic Aerodynamics	3
	AS 352	Meteorology II	3
	AV 301	Avionics for Aviators	3
	HU/SS	Elective (300-400 Level)	3
			<hr/> 17
SIXTH	**AS357	Flight Psychology	3
	AS 310	Aircraft Performance	3
	AS 311	Aircraft Engines — Turbine	3
	AS/FA/SF	Electives (300-400 Level)*	3
		Open Elective	3
			<hr/> 15
SEVENTH	FA 419	Airline Transport Pilot Proficiency Development	2
	AS 420	Flight Technique Analysis	3
	AS 355	Global Navigation	3
	AS 356	Aircraft Systems and Components	3
	AS/FA/SF	Elective (300-400 Level)*	3
		Open Elective	3
			<hr/> 17

EIGHTH	FA 453	High Performance Aircraft Flight Crew Techniques and Procedures	2
	AS 408	Flight Safety	3
	AS 452	Electronic Navigation and Flight Control Systems	3
	AS/FA/SF	Elective (300-400 Level)*	3
		Open Electives	6
			<hr/> 17
TOTAL			128

* AS/FA/SF 300-400 level electives must include either AS 340 or FA 417.

** Aeronautical Science students must have successfully completed SS220 before enrolling in AS357.

Students enrolled in the Army or Air Force ROTC program may substitute MY or AF courses for the stated open elective courses.

Cooperative Education credits may be used as open electives.

AIRWAYS SCIENCE PROGRAM OPTION

Those students who seek to be recognized as a graduate from an FAA approved Airway Science Program in Aircraft Systems Management must satisfy all the requirements for a degree in Aeronautical Science plus the FAA program requirements. The Airways Science -Aircraft Systems Management program can be completed with a minimum of 130 total hours.

The following courses are required by the FAA and may be taken to satisfy the appropriate open electives and specified electives degree requirements:

	COURSE	CREDITS
AS 401	Airport Development and Operations	3
AS 410	Air Carrier Operations	3
CS 115	Computer Programming I	3
CS 220	Digital Logic and Computer Operation	3
FA 417	Flight Training Methods and Curriculum Analysis	3
FA 460	Advanced Multi-Engine Flight Crew Training Methods	3
HU/SS	Elective	3
MA 222	Business Statistics	3
*MS 201	Principles of Management	3
MS 317	Organizational Behavior	3

* Where an option exists between MS 105 and MS 201, MS 201 must be taken.

Aircraft Dispatcher Certification Program

INTRODUCTION

For the student interested in airline flight operations management, Embry-Riddle offers a program of instruction designed to prepare the student for Aircraft Dispatcher Certification testing. The FAA awards the Aircraft Dispatcher Airman Certificate to graduates of the approved program upon successful completion of a standardized written examination and a practical test.

Licensed dispatchers are employed by all non-commuter airlines to manage the ground-based tasks vital to the successful execution of an airline flight. Dispatchers share responsibility with the captain for preflight planning and preparation of the dispatch release, and they are included in the decision loop involving equipment failures, weather variations, or traffic delays encountered during the flight. In addition, they are responsible for monitoring the progress of the flight, issuing safety-of-flight information to the crew, and canceling or redispersing the flight, if they or the captain deem it necessary.

To carry out these tasks properly, dispatchers must be knowledgeable in aircraft performance capabilities, meteorology, operating regulations, air traffic control, and instrument flight procedures. Furthermore, they must be able to make sound judgments incorporating company economic and scheduling considerations.

CERTIFICATION REQUIREMENTS

The Aircraft Dispatcher Certification Program is offered only at the Daytona Beach Campus and is recommended for students in any degree program. Students must complete the required Aeronautical Science courses and applicable prerequisites. Dispatcher preparation is predicated upon successful completion of the required Aeronautical Science courses with 100 percent attendance.

Interested students may contact the Aeronautical Science Department for more information.

MINORS IN AVIATION SAFETY

Minors in Aviation Safety, Air Traffic Control, and Space Studies are offered. See the section on Minor Fields of Study for a list of required courses.

Professional Aeronautics

Bachelor of Science

Associate in Science

INTRODUCTION

The Professional Aeronautics degree program was conceived and developed especially for people who have already established and progressed in an aviation career. The curriculum is designed to build upon the knowledge and skills acquired through training and experience in one of the many aviation occupations. The combination of aviation experience and required and elective courses in aeronautical science, management, computer science, economics, communications, humanities, social science, mathematics, and physical science prepares graduates for career growth and increased responsibility.

SPECIAL ADMISSION REQUIREMENTS

Admission to the Professional Aeronautics program is reserved for persons who are able to document achievement of a verifiable level of competence in an aviation occupation.

AVIATION OCCUPATIONS

Many aviation occupations have been identified and determined to be eligible for admission to Professional Aeronautics. The major categories of eligible aviation occupations include aircraft crew members, air traffic control, aviation maintenance and manufacturing, avionics and electronics, ground support services, safety, training, and weather.

AERONAUTICAL TECHNOLOGY CREDIT

Persons who qualify for admission to, and matriculate in, Professional Aeronautics are eligible for advanced standing credit, termed aeronautical technology credit, for their prior learning from their aviation training and experience. Training and experience in closely related occupations may be combined. The number of aeronautical technology credits granted is determined by an evaluation of professional credentials and qualifications which may include: Federal Aviation Administration certificates; completion of formal technical schools; level of responsibility attained; and evidence of knowledge acquired and level of competence achieved in the aviation occupation.

The maximum amount of aeronautical technology credit granted for prior aviation learning is 36 semester hours.

Aeronautical technology credits are applicable only in Professional Aeronautics and are not transferable to any other ERAU degree program. The credit granted encompasses the prior aviation learning

acquired from all training and experience related to the occupational field which established the student's eligibility for Professional Aeronautics. Other University advanced standing policies are not applicable to the prior aviation learning used to qualify for Professional Aeronautics.

Duplicate Credit

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

Evidence of Prior Aviation Learning

Just as official transcripts are required to transfer credit from one university to another, original documentation of professional training and experience must be presented to qualify for admission to Professional Aeronautics and the award of aeronautical technology credit. The documentation must be from objective, third-party sources and clearly describe the applicant's professional training, duties, responsibilities, and achievements in detail.

DEGREE REQUIREMENTS

Bachelor of Science in Professional Aeronautics

The Bachelor of Science degree requires 126 credit hours including the aeronautical technology credit granted for professional aviation training and experience. Using each students' aviation specialty as the foundation, the curriculum adds required courses in communications, computer science, humanities, mathematics, and physical sciences to provide the essential, basic academic education found in every Embry-Riddle degree program. The remaining component of the curriculum features an opportunity for students to select courses which fit the career path they have planned.

Associate in Science in Professional Aeronautics

The Associate in Science in Professional Aeronautics requires a minimum of 63 credit hours including the aeronautical technology credit granted for prior learning from professional aviation training and experience.

Students with aviation maintenance backgrounds who wish to take the six Type 65 Aviation Maintenance Technology courses totaling 21 credits may adjust the Associate in Science curriculum in the following manner:

1. Delete the curriculum requirement for AS 405.
2. Use AMT 271 and AMT 281 as specified electives.
3. Use AMT 240, AMT 260, AMT 270, and AMT 280 as open electives.

These adjustments apply only to the Associate in Science and are not transferable to the Bachelor of Science in Professional Aeronautics curriculum. All of the credits completed using the adjustments and applied to the requirements of the Associate in Science may not fit within the minimum credits required for the Bachelor of Science.

The Type 65 courses are for those who do not possess the FAA Airframe and/or Powerplant certificate. Students who possess the Airframe OR Powerplant certificate may take the Type 65 courses which pertain to the certificate they do not possess.

The adjusted curriculum requires 75 credit hours to complete the Associate in Science.

PROFESSIONAL AERONAUTICS CURRICULUM

The curriculum to be followed by each student depends upon the amount of aeronautical technology credit granted and whether the objective is the Associate or Bachelors' degree. The column of numbers on the left specifies the requirements for the Associate in Science. The column of numbers to the right of the associate curriculum specifies the requirements for the Bachelor of Science.

CURRICULUM	A.S.	B.S.
AERONAUTICAL TECHNOLOGY CREDIT (Maximum)	18	36
AERONAUTICAL SCIENCE		
AS 254 Aviation Regulation	3	3
AS 405 Aviation Law	3	3
HUMANITIES/SOCIAL SCIENCES		
HU 122 English Composition and Literature I	3	3
HU 123 English Composition and Literature II OR	3	3
HU 140 Humanities and Western Culture OR		
HU 141 Studies in the Humanities		
HU 219 Speech	3	3
HU 221 Technical Report Writing	3	3
HU/SS Electives	3	3
HU/SS Electives (300-400 level)		3
COMPUTER SCIENCE/MATHEMATICS		
CS 109 Introduction to Computer Programming w/BASIC OR		
CS 105 Introduction to Computers in Aviation	3	3
MA 111 College Math for Aviation I	3	3
* MA 112 College Mathematics for Aviation II OR		
MA 320 Decision Mathematics	3	3
MA 211 Statistics with Aviation Applications OR		
MA 222 Business Statistics		3
PHYSICAL SCIENCES		
Physical science, chemistry, physics, earth science, astronomy, geology, biology, zoology or physiology courses.	3	6

ECONOMICS/MANAGEMENT

EC 211 Macroeconomics		3
** EC 210 Microeconomics	3	3
MS 201 Principles of Management	3	3
MS 210 Financial Accounting I		3
SPECIFIED ELECTIVES: (select from list)	3	21
OPEN ELECTIVES (any discipline)	3	15
TOTAL	63	126

SPECIFIED ELECTIVES:

- AS 320, AS 357, AS 401, AS 409, AS 412
- *** AS 305, AS 309, AS 310, AS 311, AS 352, AS 410
- **** AMT 271, AMT 281
- AT 362
- EC 310, EC 420
- MS 308, MS 311, MS 312, MS 314, MS 317, MS 320, MS 322, MS 331, MS 332, MS 335, MS 401, MS 405, MS 408, MS 410, MS 412, MS 415, MS 419, MS 420, MS 421, MS 425, MS 431, MS 433
- SF 305, SF 310, SF 320, SF330, SF 340, SF 350
- * Either MA 112 or MA 211 satisfies the requirements of the Associate degree curriculum.
- ** Either EC 210 or EC 211 satisfies the requirements of the Associate degree curriculum.
- *** Prerequisite PS 104
- **** These courses are lower-level and do not count toward the 40 upper-level credit graduation requirement. They may be taken only if the upper-level requirement will be satisfied by the other courses completed.

Dependent upon the amount of upper level Aeronautical Technology granted, some of the open or humanities/social science electives in the B.S. degree may have to be taken in 300-400 level courses in order to satisfy the requirement of 40 credits of upper level courses.

Cooperative Education credits may be used as open electives; however, assignments may not be in the student's occupational specialty.

MINOR FIELDS OF STUDY

Minors are available through several academic departments. A minor consists of 15-21 semester hours of courses which provide a coherent sequence of study that includes both lower and upper division courses. Where specific courses are listed, these courses must be taken for award of the minor. **Course substitutions are not authorized.** Students desiring to designate minors should consult with their degree program chair. All minors are not available at all College of Continuing Education locations.

MINOR IN AIR TRAFFIC CONTROL

Students may earn a Minor in Air Traffic Control by successfully completing the following:

COURSE	CREDITS
AS 201 Meteorology I	3
AT 362 National Airspace System	3
AT 364 Introduction to Air Traffic Control	3
AT 462 Enroute/Terminal Air Traffic Control with Laboratory	3
AT 464 Advanced Air Traffic Control Operations with Laboratory	3

15

One of the following is required:

AS 120 Principles of Aeronautical Science OR	3
FA 110 Commercial Pilot Flight Operations I OR FAA Private Pilot Certificate	5

3-5

Total Credits 18-20

MINOR IN AVIATION BUSINESS ADMINISTRATION

Students enrolled in degree programs other than the B.S. in Aviation Business Administration and B.S. in Aviation Maintenance Management may complete a Minor in Aviation Business Administration by earning 18 credit hours in the following courses:

COURSE	CREDITS
MS 120 Introduction to Computer Based Systems	3
MS 210 Financial Accounting I	3
MS 314 Human Resource Management	3
MS 317 Organizational Behavior	3
MS/EC Electives (300-400 Level)	6

18

MINOR IN AVIATION SAFETY

Students may earn a Minor in Aviation Safety by successfully completing the following:

COURSE	CREDITS
SF 210 Introduction to Aerospace Safety	3
SF 320 Human Factors in Aviation Safety	3

Nine additional credit hours must be completed from the following:

COURSE	CREDITS
SF 200 Safety Program Management	3
SF 305 Mechanical and Structural Factors in Aviation Safety	3
SF 310 Aircraft Crash Survival Analysis and Design	3
SF 330 Aircraft Accident Investigation	3
SF 340 System Safety in Aviation	3
SF 350 Aircraft Crash and Emergency Management	3

Total credits required 15

MINOR IN COMPUTER SCIENCE

Students may earn a Minor in Computer Science by successfully completing the following:

COURSE	CREDITS
CS 115 Computer Programming I	3
CS 215 Computer Programming II	3
CS 315 Data Structures	3
CS 317 Files and Database Systems	3
CS 230 Organization of Programming Languages OR	
CS Elective (300-400 Level)	3
	<hr/>
Total credits required	15

MINOR IN HUMANITIES

Students may earn a Minor in Humanities by successfully completing two courses from the following for a total of 6 credits:

COURSE	CREDITS
HU 123 English Composition and Literature II	3
HU 140 Humanities and Western Culture	3
HU 141 Studies in the Humanities	3
	<hr/>
	6

One or more courses from each of the following lists for a total of 12 credits.

Narrative

COURSE	CREDITS
HU 300 World Literature	3
HU 305 Modern Literature	3
HU 310 American Literature	3
HU 325 Exploring Film	3

Speculative

COURSE	CREDITS
HU 330 Values and Ethics	3
HU 335 Technology and Modern Civilization	3
HU 341 World Philosophy	3

Religion and Fine Arts

COURSE	CREDITS
HU 320 Aesthetics of Visual and Musical Arts	3
HU 345 Religions of Mankind	3
HU 355 Creative Writing	3
	<hr/>
	12

Total credits required 18

HU399/HU499 Special Topics in Humanities may be included with prior permission of the department chair.

MINOR IN MATHEMATICS

Students may earn a Minor in Mathematics by completing the following:

COURSE	CREDITS
MA 241 Calculus and Analytical Geometry I	4
MA 242 Calculus and Analytical Geometry II	4
MA Electives (200 level or above as approved by the Department Chair)	12
	<hr/> 20

NOTE: Only one course from MA 211, MA 222, or MA 412 may be applied to the minor. Either MA 243 or MA 245 may apply, but not both.

MINOR IN PSYCHOLOGY

Students may earn a Minor in Psychology by completing the following:

COURSE	CREDITS
SS 220 Introduction to Psychology	3
Plus 12 additional credits in psychology chosen from	
COURSE	CREDITS
MS 317 Organizational Behavior	3
SS 310 Personality Development	3
SS 335 Human Factors	3
SS 350 Psychology of Relationships	3
SS 398 Applied Social Psychology	3
	<hr/> 12
Total credits required	15

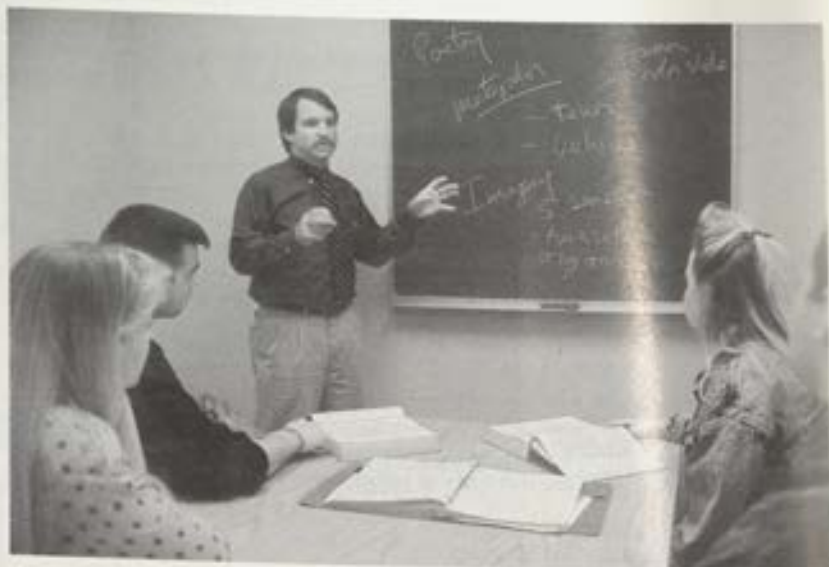
Three credits of SS 399 Special Topics in Psychology may be included with prior permission of the department chair.

MINOR IN SPACE STUDIES

Students may earn a Minor in Space Studies by completing 15 credits from the following list: Twelve credits selected from:

COURSE	CREDITS
SP 110 Introduction to Space Flight	3
SP 200 Planetary and Space Exploration	3
SP 210 Space Transportation System	3
SP 215 Space Station Systems and Operations	3
SP 220 Life Support Systems	3
SP 300 Introduction to Satellite and Spacecraft Systems	3
SP 400 Introduction to Space Navigation	3
In addition, all students must complete:	
SP 425 Selected Topics in Space and Aerospace	3
	<hr/> 15
Total credits required	15

Course Descriptions



Courses numbered 001-099 are basic skills courses which do not apply against degree requirements. Courses numbered 100-199, 200-299, 300-399 and 400-499 are generally taken in the freshman, sophomore, junior and senior years, respectively. Because of the career orientation of Embry-Riddle's degree programs, this condition will not always apply. The student is cautioned to plan ahead so as to meet necessary prerequisites in a timely manner. Courses numbered 300 and above are upper division courses and reflect the advanced level in the technical skill and/or designated discipline. Course numbers ending in 95 identify special courses offered on a limited time basis such as courses taught by a visiting lecturer; numbers ending in 96 or 97 identify special courses which are sequential; numbers ending in 98 identify courses in which students are collectively given a unique program of learning activities by a supervising instructor, and numbers ending in 99 identify courses involving individual study with a one-to-one relationship between instructor and student.

The figures located in parentheses immediately following the course titles indicate the number of lecture and laboratory hours that the class meets each week during the semester, e.g., (3,3) indicates that the course consists of three hours of lectures and a three hour laboratory weekly.

The course offerings of the University are described below in alphabetical order by course designations:

- AE Aerospace Engineering
- AF Air Force Aerospace Studies
- AMT Aviation Maintenance Technology
- AS Aeronautical Science
- AT Air Traffic Control
- AV Avionics Technology
- CE Cooperative Education
- CS Computer Science
- EC Economics
- EE Electrical Engineering
- EL Electronics Technology
- EP Engineering Physics
- ES Engineering Science
- ET Engineering Technology
- FA Flight Academic
- HU Humanities
- MA Mathematics
- MS Management Science
- MY Military Science
- PS Physical Science
- SF Safety of Flight
- SP Space Studies
- SS Social Science

COREQUISITES AND PREREQUISITES MAY BE WAIVED ONLY BY PERMISSION OF THE RESPONSIBLE DEPARTMENT CHAIR OR ASSOCIATE DEAN OF ACADEMICS FOR THE COLLEGE OF CONTINUING EDUCATION.

Not all courses are taught every semester or at all locations.

AEROSPACE ENGINEERING

A grade of C or better is required in MA 241, MA 242, PS 110, and PS 201 or PS 205 for entry into all AE courses except AE 101.

AE 101 — Introduction to Aeronautical Engineering (2,0)

2 Credits

An overview of aerospace engineering. History; basic physical laws; aerodynamics and flight; stability and control; high speed flight; structures; reciprocating engines; reaction engines. To be taken during the first year. Corequisite: MA 241.

AE 301 — Aerodynamics I (3,0)

3 Credits

The atmosphere. Incompressible and compressible one-dimensional flow. Airspeed measurement. Two-dimensional potential flow. Circulation theory of lift. Thin airfoil theory. Viscous flow. Boundary layers. Finite wing theory. Drag in incompressible flow. Wing-body interactions. Prerequisites: CS 210, ES 204, ES 206, MA 243. Corequisite: ES 305.

AE 302 — Aerodynamics II (3,0)

3 Credits

Laminar and turbulent flows, transition point, determination of skin friction drag on an airfoil. Obtaining equations for streamline, for particle path, and for streakline in a flow field. Compressible flow, shock waves, thermodynamics in gas flow. Reversible and irreversible processes. Changes in pressure, density and temperature across shock waves. Isentropic duct flow and flow through a nozzle. Static performance and maneuvers in flight. Propeller theory. Prerequisite: AE 301.

AE 304 — Aircraft Structures I (3,0)

3 Credits

Space structures. Introduction to fuselage truss analysis and wing structural analysis. Inertia force and load factor computation for various flying and landing conditions. Elasticity and combined stress analysis. Beam bending. Area moment of inertia tensor. Shear flow in thin-walled sections. Materials considerations. Finite-element modelling and computer-aided analysis. Prerequisites: CS 210, ES 202, ES 204.

AE 309 — Experimental Aerodynamics (1,3)

2 Credits

This laboratory consists of a series of aerodynamic experiments using the wind tunnel, simple and multiple manometer, and a strain gauge force balance. Experiments concerning closed duct flow include diffuser efficiency tests, venturi performance and pitot-static speed calibration. Pressure measuring experiments consist of boundary layer velocity profiles, airfoil pressure coefficients, and momentum drag. Tests using the force balance include plain and flapped wing performance and complete airplane model tests. Prerequisites: CS 210, HU 221. Corequisite: AE 301.

- AE 350 — Project Engineering (3,0) 3 Credits**
 Role of the engineer in project management with emphasis on systematic evaluation of the benefits and costs of projects involving engineering design and analysis. Proposal preparation and presentation, engineering contracts, negotiation techniques. Value engineering. Prerequisites: MA 345 OR MA 245, HU 219, HU 221.
- AE 401 — Advanced Aerodynamics I (3,0) 3 Credits**
 An advanced-level presentation of the theory and applications of incompressible aerodynamics. Kinematics and dynamics of fluid flow. Flow about a body. Shock tube flow. Thin airfoil and finite wing theory. Approximation techniques; numerical methods. Introduction to compressible flow. Prerequisites: AE 302, MA 441.
- AE 404 — Aircraft Structures II (3,0) 3 Credits**
 Deflection analysis of structural systems by means of virtual work principles and their energy counterparts. The Rayleigh-Ritz method. Redundant truss, frame and stiffened web structures. Thermal loads. Shear lag. Load transfer at fuselage frames and wing ribs. Cutouts in wing and fuselage members. Shear flow in multicell wing structures. Buckling considerations. Prerequisite: AE 304.
- AE 407 — Matrix Structural Methods (3,0) 3 Credits**
 Linear algebra. Energy methods for elastic media. Rod, beam and shear panel elements. Matrix formulation and solution procedures for structural analysis. Substructures. Free vibration. Prerequisite: AE 404.
- AE 408 — Turbine and Rocket Engines (3,0) 3 Credits**
 A study of the gas turbine and rocket engines. Topics include control volumes, the conservation equations, combustion processes, efficiencies, fuel consumption, nozzle flow, diffusers, ideal and real ramjets and gas turbine engines, performance of rocket vehicles, and solid and liquid propellant rocket motors. Prerequisite: AE 302.
- AE 409 — Aircraft Composite Structures (3,0) 3 Credits**
 Introduction to reinforced plastic composite structural materials and their use in modern aircraft. Discussion of basic material properties, testing procedures, design and analysis using classical lamination theory, and fabrication techniques, including some hands-on demonstrations. Prerequisites: ES 202, ES 307.
- AE 411 — Advanced Experimental Aerodynamics (2,3) 3 Credits**
 This course is a technical elective and consists of a series of advanced experiments using the wind tunnel. Model design and construction, testing procedure, control surface testing, propeller testing, use of wind tunnel data, scale effects, complete model testing. Includes introduction to supersonic testing. Prerequisite: AE 309.

AE 413 — Airplane Stability and Control (3,0) **3 Credits**
Development of longitudinal, lateral and directional stability and control equations. Control surface design. Control effectiveness and size requirements. Dynamic control theory. Handling characteristics and maneuvering stability of aircraft. Prerequisites: MA 345, CS 210. Corequisite: AE 302.

AE 415 — In-Flight Laboratory (3,1.5) **3 Credits**
Development of longitudinal and lateral-directional, static and dynamic stability and excess power, rate of climb, turn rate, and load factor performance theory, with laboratory concept validations. Prerequisite: AE 413.

AE 420 — Aircraft Preliminary Design (2,4) **3 Credits**
Airplane conceptual design principles are developed to meet modern aerodynamics propulsion, structural and performance specifications. A complete airplane is designed, resulting in a design package consisting of specifications, aerodynamic calculations, inboard profile drawing, weight and balance, general arrangement drawing, aerodynamic drag analysis and complete performance report. Prerequisites: AE 413, ET 110.

AE 421 — Aircraft Detail Design (2,4) **3 Credits**
Principles of aircraft detail and component part design, manufacture and production are covered along with projects to give actual experience in the design of aircraft components. Carries the design of an airplane from the general layout to the design of its detail parts and the design of necessary tools. Prerequisites: AE 404, AE 420.

AE 425 — Aircraft Acoustics and Noise Control (3,0) **3 Credits**
Sound wave characteristics, levels and directivity. Hearing and psychological effects of noise. Noise control criteria and regulations. Instrumentation. Noise sources. Acoustics of walls, barriers and enclosures. Acoustical materials and structures. Noise characteristics of jet and propeller aircraft, including helicopters. Prerequisite: AE 301.

AE 430 — Control Systems Analysis and Design (3,0) **3 Credits**
Modeling, analysis, and control of dynamical systems with aerospace applications. Transfer functions, block diagram algebra. Routh-Hurwitz stability criteria. Introduction to system design using root locus, Bode and Nyquist diagrams. Prerequisites: ES 402, MA 441.

AE 433 — Aerodynamics of the Helicopter (3,0) **3 Credits**
The development of rotating-wing aircraft and the helicopter. Hovering theory and vertical flight performance analysis. Autorotation, physical concepts of blade motion and control, aerodynamics

and performance of forward flight. Blade stall, stability and vibration problems. Design problems. Prerequisites: AE 302, MA 441.

**AE 299, 399, 499 — Special topics in
Aerospace Engineering**

1-5 Credits

Lectures, laboratories, or independent studies on selected topics in aerospace engineering. Prerequisite: Consent of instructor and the department chair. May be repeated with a change of content.

AIR FORCE AEROSPACE STUDIES

AF 101 — U.S. Military Forces

(General Military Course) (1,2)

1 Credit

A survey course which briefly treats topics relating to the Air Force and defense. It focuses on the organizational structure and missions of Air Force organizations; officership and professionalism; and includes an introduction to communicative skills. A weekly two hour Leadership Lab consisting of Air Force customs and courtesies, health and physical fitness, and drill and ceremonies is mandatory.

AF 102 — U.S. Military Forces

(General Military Course) (1,2)

1 Credit

Continuation of AF 101.

AF 201 — The Development of Air Power

(General Military Course) (1,2)

1 Credit

Focuses on factors contributing to the development of air power from its earliest beginnings through two world wars; the evolution of air power concepts and doctrine; and an assessment of communicative skills. An additional two hour weekly Leadership Lab consisting of Air Force customs and courtesies, Air Force environment, drill and ceremonies, and field training orientation is mandatory.

AF 202 — The Development of Air Power

(General Military Course) (1,2)

1 Credit

Continuation of AF 201.

AF 301 — Air Force Leadership and Management

(Professional Officers Course) (3,2)

3 Credits

A study of leadership and management fundamentals, professional knowledge, leadership ethics, and communicative skills required of an Air Force officer. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical applications of the concepts being studied. A mandatory two hour Leadership Lab complements this course by providing advanced leadership experience in officer-type activities, giving students the opportunity to apply leadership and management

principles of this course. Prerequisites: Completion of the GMC or Two-year Program selection and/or approval of the PAS.

**AF 302 — Air Force Management and Leadership
(Professional Officers Course) (3,2) 3 Credits**
Continuation of AF 301.

**AF401 — National Security Forces in Contemporary American
Society (Professional Officers Course) (3,2) 3 Credits**
An examination of the needs for national security; an analysis of the evolution and formulation of the American defense policy and strategy; aerospace doctrine; an examination of the methods for managing conflict; an extensive study of alliances and regional security to preserve American interests around the world; an analysis of arms control and the threat of war; and terrorism. Special topics of interest focus on the military as a profession, officership, the military justice system, and transition from civilian to military life. Within this structure, continued emphasis is given to the refinement of communicative skills. An additional two hour Leadership Lab, consisting primarily of advanced leadership experiences in officer-type activities is mandatory. Prerequisites: Completion of the GMC or Two-year Program selection and/or approval of the PAS.

**AF402 — National Security Forces in Contemporary American
Society (Professional Officers Course) (3,2) 3 Credits**
Continuation of AF 401. The Leadership Laboratory prepares students to deal with entry into active duty with the USAF.

AVIATION MAINTENANCE TECHNOLOGY

AMT courses designated as Type 65 are available at College of Continuing Education locations only.

**AMT 101 — Applied Science for Aerospace
Technicians (10,0) 2 Credits**
The fundamentals of mathematics and physical science appropriate to and combined with mechanical drawing necessary for the training of the aviation maintenance technician.

**AMT 102 — Aviation Regulations, Records and
Documents (10,0) 2 Credits**
A presentation of Federal Aviation Regulations pertinent to aircraft maintenance and the associated documents, publications records and weight and balance computations.

AMT 103 — Basic Electricity (8,7) 3 Credits
A study of basic electrical theory and its application to aircraft systems to include inspection and repair of aircraft circuits, and electrical components.

AMT 104 — Aircraft Servicing Procedures (10,0) 2 Credits
A familiarization course in aircraft servicing. Standard procedures of ground operation, movement, and the safety precautions necessary to aircraft line operations.

AMT 105 — Aviation Material (8,7) 3 Credits
An introduction to the tools, hardware and materials used in aircraft maintenance and repair. This course includes the processes of inspection and testing used in aviation.

AMT 201 — Aircraft Structures and Sheet Metal Fabrication (10,10) 4 Credits
A study of aircraft structural characteristics and methods of fabrication with an emphasis on aluminum sheet metal applications. Explains metal-working processes and develops the techniques necessary for airworthy manufacture. Prerequisite: AMT 105.

AMT 202 — Non-Metallic Structures (6,6) 2 Credits
A course of study encompassing the use of composites, plastics, wood, and fabric covering, in structural applications on aircraft. Fabrication, repairs, finishing, and safety practices, relating to these materials, will be discussed and practiced. Included will be the application of dope and plastic resin, and vacuum bagging of composite parts.

AMT 203 — Aircraft Instruments and Communication/Navigation System (8,2) 2 Credits
This course familiarizes the student with the aircraft instruments and their functions; communication and navigation equipment, including removal and installation procedures.

AMT 204 — Aircraft Welding, Assembly and Rigging (10,10) 4 Credits
The theory and practice of welding methods used in aircraft construction is thoroughly covered with emphasis on gas welding and advanced work in heli-arc welding. Airframe assembling operation is explained and demonstrated as well as control and rigging adjustments.

AMT 205 — Aircraft Electrical Systems (10,10) 4 Credits
The types and characteristics of aircraft electrical circuits and components are compared and evaluated. Advanced electrical systems as used in corporate and airline aircraft are studied. The course

includes troubleshooting and repairs of A-C and D-C electrical systems and equipment. Prerequisite: AMT 103.

AMT 206 — Hydraulic and Pneumatic Systems (5,5) 2 Credits
The operation and maintenance of aircraft hydraulic and pneumatic systems are analyzed together with the study of these systems as they are used in corporate and airline type aircraft. The methods of repair and replacement of components are examined as well as ground test and servicing equipment.

AMT 207 — Aircraft Environmental and Fuel Systems (6,6) 3 Credits
A study of the various types of systems used for cabin atmospheric control in advanced aircraft systems including those found on corporate and airline type aircraft. Heating, cooling, pressurization as well as oxygen supply are included in the study. Additional study is directed towards the various fuel storage and distribution systems used in small and large aircraft. Prerequisite: AMT 104.

AMT 208 — Aircraft Landing Gear Systems (6,6) 3 Credits
A study of aircraft landing gear structures and operating systems to include the maintenance and repair procedures for retraction systems, shock strut, brakes, wheels, tires and ground steering equipment. Included in the course are the advanced landing gear systems used in narrow and wide body jet airliners. Prerequisite: AMT 104.

AMT 209 — Aircraft Reciprocating Engines (6,6) 3 Credits
A basic study of the various types of reciprocating engines, engine systems, lubricants, and engine efficiencies. Engine disassembly, inspection, and reassembly procedures are involved.

AMT 210 — Aircraft Powerplant Systems (5,5) 3 Credits
A study of the operation of powerplant component systems; fuel metering and distribution, superchargers, heat exchangers, and exhaust manifolds. Inspection and repair processes are applied to operating engine systems.

AMT 211 — Engine Electrical and Ignition Systems (6,5,6) 3 Credits
This course consists of the study of various electrical systems used in support of the reciprocating engine to include methods of generating, timing and distributing ignition energy. Included in the course are the testing and overhaul procedures for engine electrical components to include the latest advanced magneto systems. Prerequisite: AMT 103.

AMT 212 — Propellers and Propellers Systems (10,7,5) 3 Credits
A study of the theory, operation and control of aircraft propellers and related systems. Includes methods of installation, maintenance and repair of propeller systems.

AMT 213 — Engine Installation and Operation (6.5,6) 2 Credits
A course of study which details the correct methods of installation, inspection and run-up check of powerplants. Includes fuel, oil and electrical adjustments on operational aircraft engines. Prerequisites: AMT 210 and AMT 211.

AMT 214 — Reciprocating Engine Overhaul (10,10) 4 Credits
This course contains a detailed study supported by the actual overhaul of operational reciprocating engines. Included is a study of the procedures and acceptable techniques used in engine disassembly, inspection, repair and reassembly. Advanced techniques of nondestructive testing are included in this course. Prerequisite: AMT 209.

AMT 215 — Turbine Engines and Turbine Engine Systems (12.5, 12.5) 6 Credits
A study of the theory of operation of the turbine engine and the function of the engine components. Overhaul and testing procedures are covered including disassembly, inspection, repair, reassembly and operational tests of engines and accessories.

AMT 240 — General Aeronautics and Applications (3,0) 3 Credits
An introduction to general aeronautics. Includes a study of physical mathematics, weight and balance, FAA Regulations, AN hardware and aircraft servicing. (Type 65.)

AMT 260 — Aircraft Electrical Systems Theory (3,0) 3 Credits
An introduction to aircraft electrical systems. Includes a study of the principles, theories and concepts of basic DC and AC electrical theory, magnetism, batteries, generators, motors, voltage regulators, wiring, circuit protection, and electrical component installations. (Type 65.)

AMT 270 — Airframe Structures and Applications (4,0) 4 Credits
A study of aircraft wood, dope, fabric, sheet metal, welding theory and methods of fabrication. (Type 65.)

AMT 271 — Airframe Systems and Applications (3,0) 3 Credits
A study of airframe hydraulic, pneumatic, environmental, fuel, landing gear and auxiliary systems. (Type 65.)

AMT 275 — Aircraft Maintenance Practicum (0,0) 8 Credits
Enrolled students who have a minimum of 18 months on-the-job experience subsequent to technical training in an approved aircraft maintenance specialty may receive credit for this course after completion of all required Type 65 AMT course work. (This course applies only to the Type 65 AMT Program.)

AMT 280 — Powerplant Theory and Applications (4,0) 4 Credits
An indepth study of the reciprocating engine to include theory,

construction, fuel metering, lubrication, exhaust, engine installation and overhaul, and operational maintenance procedures. (Type 65.)

**AMT 281 — Aircraft Propulsion Systems
and Applications (4,0)**

4 Credits

A comprehensive study of theory, principles of operation, controls and systems for propellers and turbine engines. (Type 65.)

**AMT 285 — Advanced Aircraft Maintenance
Practicum (0,0)**

8 Credits

Enrolled students who are qualified for the award of AMT 275 credit and have a minimum of 30 months on-the-job experience subsequent to technical training in an approved aircraft maintenance specialty may receive credit for this course after completion of all required Type 65 AMT course work. (This course applies only to the Type 65 AMT Program.)

AERONAUTICAL SCIENCE

AS 120 — Principles of Aeronautical Science (3,0)

3 Credits

An introductory course in Aeronautical Science designed to provide a broad-based orientation in flight related areas appropriate to all degree programs. Subjects include theory of flight, environmental effects, aviation operations, aircraft structure and capability, elements of air navigation, basic meteorology theory, air traffic control principles and aviation safety and regulation. Not available to students in the Aeronautical Science and Aviation Technology - Flight programs.

AS 201 — Meteorology I (3,0)

3 Credits

A survey of the basic concepts and processes of atmospheric phenomena and their relation to aeronautical conditions. Included is a systematic development of the following: thermal patterns, atmospheric moisture, horizontal and vertical pressure patterns, clouds, atmospheric circulation, local winds, tropical weather, stability, air masses, fronts, fog, icing, thunderstorms, jet streams and turbulence. Weather data studied includes: surface weather observations, surface maps, and constant pressure maps.

AS 211 — Aircraft Engines and Systems (3,0)

3 Credits

Reciprocating and gas turbine engines, power and thrust measurement, and operating principles. Oil, fuel, hydraulic, electrical and pneumatic systems. Not available to Aeronautical Science students or Airway Science students with an area of concentration in Flight.

AS 240 — Principles of Navigation (3,0)

3 Credits

An introduction to basic navigation for Aeronautical Science students.

The course content includes aircraft instrument and system theory, aircraft performance theory, navigation theory and solution methods, navigation information sources and planning procedures, electronic navigation principles and special problems in air navigation. Prerequisite: FA 110.

AS 254 — Aviation Regulation (3,0) 3 Credits
A survey of state, federal and international regulation of the Aviation Industry. Past historical and legislation events, acts, conventions and treaties will be examined. Emphasis is on the historical and legislative aspects as they correlate to the development and control of aviation.

AS 260 — Principles of All-Weather Navigation (3,0) 3 Credits
Theoretical relationships applicable to all-weather flight operations, including theoretical aerodynamics, precision flight control principles, all-weather application of electronic navigation systems, all-weather navigation and operations in extreme environments. Prerequisite: AS 240.

AS 305 — Aircraft Engines — Reciprocating (3,0) 3 Credits
Mechanical relationships, components, construction, power calculations, carburetion, induction, fuel-air requirements, and federal regulations. Prerequisite: PS 104.

AS 309 — Basic Aerodynamics (3,0) 3 Credits
Incompressible flow Airfoil theory, wing theory. Calculation of stall speed, drag and basic performance criteria. Configuration changes, high and low speed conditions. Special flight conditions. Introduction to compressible flow. Prerequisite: PS 104.

AS 310 — Aircraft Performance (3,0) 3 Credits
Aerodynamic performance of aircraft powered by reciprocating, turboprop or jet turbine engines. Stability and control, weight and balance and operating data. Prerequisite: AS 309. Corequisite: AS 311.

AS 311 — Aircraft Engines — Turbine (3,0) 3 Credits
Thrust factors, gas generators, Mach effects, diffusion, turbofans and turboprops. Prerequisite: AS 305.

AS 320 — Commuter Aviation (3,0) 3 Credits
The objective of this course is to acquaint the student with the developmental, administrative and operational factors peculiar to commuter aviation, especially since passage of the Airline Deregulation Act of 1978. Relationship with major/national airlines, including the impact of mergers and acquisitions, profiles of passenger and cargo carrying commuters, and analysis of commuter airline successes and failures are treated. Emphasis is placed on the establishment of a new commuter airline which includes market and financial analyses,

the company plan, aircraft selection and acquisition, route structure and timetable, marketing strategy and pertinent regulatory requirements. Prerequisite: MS 105 or MS 201.

AS 340 — Principles of Instruction (3,0)

3 Credits

Basic principles of learning and teaching, curriculum analysis and flight crew training methods are presented. Basic flight maneuvers and instrument flying methods are analyzed and strong emphasis is placed on in-class teaching opportunities and development of instructional materials. Prerequisite: FA 250 or FA 304 or Commercial Pilot Certificate with Airplane Single Engine Land and Instrument ratings.

AS 352 — Meteorology II (3,0)

3 Credits

An expansion of Meteorology I including the following theoretical concepts: hydrostatic instability, baroclinic instability, thermal wind, and kinematic fields. These will be integrated into real time weather analysis of synoptic patterns involving mid-latitude cyclones, frontal systems, and jet streams. The anatomy of severe thunderstorms, particularly as applied to aviation hazards, will be treated in detail through analyses of recent major aircraft accidents. Practical application will be achieved in current weather discussions, which will be given by teams of students. In addition, study of weather radar, solar aspects, and satellite meteorology will be accomplished. Prerequisites: AS 201, PS 104.

AS 355 — Global Navigation (3,0)

3 Credits

Worldwide navigation of high performance transport aircraft, to include: aeronautical chart construction, time zones, coordinates, calculation of spherical distance and course; climb, enroute and descent performance of typical transport aircraft, electronic calculator solution of decision point problems, long range flight planning of transport aircraft including electronic computer solutions of most economical altitudes and flight paths, and basic principles of worldwide navigational systems. Prerequisites: AS 260, AS 310.

AS 356 — Aircraft Systems and Components (3,0)

3 Credits

Electrical, environmental, hydraulic, fuel, ignition and lubrication systems including theory of operation and calculations. Prerequisites: PS 104, AS 260.

AS 357 — Flight Physiology (3,0)

3 Credits

Aeromedical information. Causes, symptoms, prevention and treatment of flight environment disorders. Altitude effects, spatial disorientation, body heat imbalance, visual anomalies and psychological factors are included as they relate to pilot performance and survival effectiveness.

AS 401 — Airport Development and Operations (3,0) 3 Credits
Managerial problems of small and medium size airports and fixed base operations. Federal, state and local obligations. Leases, internal guidelines, community relations. Prerequisite: AS 254.

AS 405 — Aviation Law (3,0) 3 Credits
Chronological development, federal and state regulatory functions, rights and liabilities of pilots and operators. Case histories, liens and security interest in aircraft. International conferences, bilateral and multilateral agreements, criminal statutes. Prerequisites: AS 254.

AS 408 — Flight Safety (3,0) 3 Credits
A capstone course designed to assist the student to develop an attitude and philosophy for accident prevention. The course includes: Ideal and practical, personal and organizational safety procedures and goals, safety philosophies, aircraft accident reports; human factors; principles of accident investigation; accident prevention programs and accident statistics; current events; NTSB special studies. Prerequisites: AS 309, AS 357. Corequisites: FA 300 or FA 304 or FA 325.

AS 409 — Aviation Safety (3,0) 3 Credits
Aviation safety for non-flying students. Major problem areas, program evaluation, impact of accidents on industry. Human factors, accident prevention, basic principles of investigation, case surveys of accidents. Not available to Aeronautical Science students.

AS 410 — Air Carrier Operations (3,0) 3 Credits
Air carrier operations as related to the flight crew and dispatcher. FAR Part 121, weight and balance, manifests, planning forms, charts and graphs, performance considerations. Prerequisites: AS 201, AS 310.

AS 412 — Corporate and Business Aviation (3,0) 3 Credits
Operation of a corporate flight department. Value of management mobility. Aircraft and equipment evaluation, maintenance, flight operations, administration, fiscal considerations.

AS 420 — Flight Technique Analysis (3,0) 3 Credits
Application of aerodynamic principles to the development of optimum pilot techniques and procedures, utilizing theoretical relationships and computer-simulated comparison strategies. Uniform procedures, applicable to all airplanes and special procedures for high performance aircraft are analyzed, including an introduction to spacecraft stability and control and principles of flight deck resource management. Prerequisites: AS 310 and Commercial Pilot Certificate with Airplane Single Engine Land and Instrument Airplane ratings.

**AS 452 — Electronic Navigation and Flight
Control Systems (3,0)**

3 Credits

Principles, systems analysis, operation and limitations of advanced electronic navigation, flight director and automatic flight control systems, including Inertial Navigation Systems, Inertial Reference Systems, VLF/OMEGA and NAVSTAR; Automatic Flight Control Systems with auto throttle, autoland, go-around computer, and stability augmentation; and flight directors with mechanical, CRT and head up displays. Prerequisites: AS 310, AS 355, and AV 301.

AS 455 — Flight Engineer (3,0)

3 Credits

This course will provide the student with exposure to complex aircraft systems; detailed systems study of a specific aircraft type used within the airline industry; and preparation for the FAA Flight Engineer Turbojet written and oral examinations. The student will also be provided with an overview of government regulations governing flight engineers during training and in performance of their duties. Prerequisites: Commercial/Instrument Rating, AS 309, AS 310, AS 311, AS 356.

**AS 299, 399, 499 — Special Topics in Aeronautical
Science**

1-3 Credits

Lectures, laboratories, independent studies, or combinations of these on selected topics in general aviation. Prerequisites: Consent of instructor and approval of department and program chairs. May be repeated with a change of subject.

AIR TRAFFIC CONTROL

AT 362 — National Airspace System (3,0)

3 Credits

The National Airspace System (NAS) is in a major transitional period in which the equipment and operational practices now in use will be replaced by radically different technology and operational procedures. This course provides the student with a perspective of the dynamics that are driving the evolution of the NAS Plan modernization. The background knowledge of this important transitional phase will facilitate a more comprehensive understanding of the interrelationships among the principal components that constitute the NAS. The NAS modernization will replace or change nearly every component and procedure in the ATC system. This course will examine the effects of these changes on procedures, technology, and the humans that operate the system. This knowledge is relevant to anyone entering an aviation profession. Prerequisites: FA 110 or AS 120 or FAA Private Pilot Certificate.

AT 364 — Introduction to Air Traffic Control (3,0)

3 Credits

An introduction to the air traffic control (ATC) profession and its role in the National Airspace System. Student will learn the general

eligibility requirements for selection, screening, and certification of air traffic controllers by the FAA. Course content includes the knowledge areas used by the FAA in evaluating applicants for the Control Tower Operator (CTO) certification. Classroom instruction is augmented by field trips to the FAA Daytona Beach Control Tower and Tracon. Students are normally given the opportunity to take the Office of Personnel Management (OPM) air traffic control specialist qualification examination (free of charge) on campus at the completion of this course. Prerequisite: AT 362.

**AT 462 — Enroute/Terminal Air Traffic Control
with Laboratory (2,3)**

3 Credits

Introduction to Air Traffic Control from an operational, "hands-on" perspective. This course integrates the knowledge the student has learned in previous courses with the learning of skills needed by a controller in a "real-time" traffic environment. Computer-based Instruction (CBI) is used to augment other learning experiences, including lectures and field trips to the FAA facilities, to provide the student the opportunity to "try out" their aptitude as an air traffic controller in a realistic but user-friendly environment. This is a competency-based instructional design and student grades are based on a combination of evaluations obtained from both paper and pencil tests and performance scores. Prerequisite: AT 364.

**AT 464 — Advanced Air Traffic Control Operations
with Laboratory (2,3)**

3 Credits

A capstone course in the ATC program that integrates the knowledge and skills the student has obtained in previous learning experiences with more emphasis on problem-solving and decision-making. Knowledge and performance skills requirements will be increased and both enroute and terminal control options will be included in the simulations. An emphasis on human factors issues in an increasingly automated ATC system will add to the student's analytical skills as a future aviation professional. Student should also gain a deeper appreciation for the management of all safety-related professions. The student will be expected to demonstrate higher levels of competency as a problem-solver and decisionmaker in the Computer-Based Instruction (CBI) ATC Simulation. Upon the successful completion of this course, students will demonstrate their ability to pass an over-the-shoulder performance (skill) evaluation that will satisfy the criteria established in the course performance objectives. Prerequisite: AT462.

AVIONICS TECHNOLOGY

AV 301 — Avionics for Aviators (3,0)

3 Credits

A survey course designed to present to the student the theory of operation, evaluation, purchase, installation and utilization of various

types of avionic equipment. Subject areas include radio wave propagation, VHF communication and VOR navigation systems, instrument landing system, automatic direction finder, distance measuring equipment, transponder, weather radar and area navigation systems. Prerequisite: PS 104. (Not available to Avionics Technology students.)

AV 305 — Aircraft Communications and Landing Systems (3,0) 3 Credits

An advanced study of electronic communication, navigation and landing equipment used in aircraft. Subject areas include VHF navigation, communication transceivers, instrument landing systems, microwave landing systems and audio systems. Prerequisites: EL 225, EL 226. Corequisite: EL 230.

AV 309 — Aircraft Pulse Systems (3,0) 3 Credits

An advanced study of electronic pulse type equipment used in aircraft. Subject areas include distance measuring equipment, secondary radar (transponder), and future discrete address beacon systems. Prerequisites: EL 225, EL 226. Corequisite: EL 230.

AV 318 — Low Frequency and Area Navigation Systems (3,0) 3 Credits

An advanced course in low frequency and area navigation systems on aircraft. Subject areas include Loran C, Automatic Direction Finders, and Area Navigation Systems. Prerequisites: AV 305, AV 309, EL 230.

AV 320 — Aircraft Surveillance Systems (3,0) 3 Credits

An advanced course in surveillance systems used on aircraft. Subject areas include weather radar, low frequency weather mapping systems and radar altimeter systems. Prerequisites: AV 305, AV 309, EL 230.

AV 324 — Avionics System Integration and Flight Control (3,0) 3 Credits

An advanced course in system integration and flight control used on aircraft. Subject areas include instrumentation, electronic flight instrument systems, data base, and integrated flight control systems. Prerequisites: AV 305, AV 309, EL 230.

AV 325 — Long Range Navigation Systems (3,0) 3 Credits

An advanced course in long range navigation systems used on aircraft. Subject areas include long range low frequency navigation systems, inertial navigation and flight management systems. Prerequisites: AV 305, AV 309, EL 230.

AV 339 — Avionics Equipment Troubleshooting and Repair Laboratory (0,6) 2 Credits

A laboratory type course designed to apply both electronic and

avionics theory to actual hands-on troubleshooting, alignment and repair of avionics equipment. Corequisites: AV 305, AV 309.

**AV 341 — Advanced Avionics Equipment
Troubleshooting and Repair
Laboratory (0,6) 2 Credits**

A continuation of AV 339. The student will gain additional experience in troubleshooting and repair of avionics equipment in ERAU's FAA certified Avionics Repair Station. The student will also be exposed to aircraft system trouble analysis and installation techniques. Prerequisite: AV 339.

AV 345 — Elements of Integrated Logistics (3,0) 3 Credits
This is an introductory course in the application of probability theory and statistics to avionics. Emphasis is placed on qualitative and quantitative test engineering and quality assurance. Prerequisite: MA 242.

**AV 405 — Avionics Analog System Design
Considerations with Laboratory (3,3) 4 Credits**
An intensive study and investigation of both linear and non-linear avionics analog systems and components, using a theoretical and mathematical approach. Special topics of current and future avionics interest may be discussed and studied. Prerequisites: EL 300 and EL 309.

**AV 410 — Avionics Digital Design Considerations with
Laboratory (3,3) 4 Credits**
An intensive study and investigation of avionic digital and microwave systems using a theoretical and mathematical approach. Special topics of current and future avionics interest may be discussed and studied. Prerequisites: EL 300 and EL 309.

AV 411 — Integrated Aviation Logistics Support (3,0) 3 Credits
An intensive study of logistics engineering in aviation support systems. Subjects include: Field service, customer service, publications, product support, training, packaging, computer resources, reliability and maintainability engineering. Prerequisites: AV 345.

**AV 421 — Avionics System Integration and
Design (2,3) 3 Credits**
Design application in avionic system integration in current aircraft. Subjects include: Avionics package design, aircraft mainframe effects on design, FAA regulations and certification, agencies involved in the design, licensing and standardization of avionics systems, and manufacturers specifications. Design project required. Prerequisites: AV 405, AV 410.

AV 399, 499 — Special Topics in Avionics Engineering Technology

1-6 Credits

Lectures, laboratories, or independent studies on selected topics in avionics engineering technology. Prerequisite: Consent of instructor and the department chair. May be repeated with a change of content.

COOPERATIVE EDUCATION

CE — 396, 397

1 to 6 Credits

Aerospace Engineering (AE), Aeronautical Science (AS), Aircraft Engineering Technology (ET), Aviation Management (AM), Avionics (AV), Computer Science (CS), Electrical Engineering (EE), Flight (FL), Maintenance Technology (MT). Practical learning experience in full-time or part-time employment that is related to the student's degree program and career goals. Course title and level are based on the work assignment. Prerequisite: Approval by the department chair and cooperative education administrator.

CE — 496, 497

1 to 6 Credits

Continuation of CE — 396, 397

COMPUTER SCIENCE

CS 101 — Introduction to Keyboard Operations (0.5,1) 1 Credit

Fundamental skills and techniques in the operation of the keyboard and use of computers in word processing. Emphasis is placed on the fundamentals of word processing, and the development of touch typing with speed and accuracy.

CS 105 — Introduction to Computers in Aviation (3,0) 3 Credits

Diverse exposure to the digital computer and its uses and capabilities as a management tool in the aviation field. Topics include basic introduction to systems analysis and management information systems. Contrasts hardware capabilities, programming requirements, and systems analysis and planning.

CS 109 — Introduction to Computer Programming with BASIC (3,0) 3 Credits

Concepts of algorithms, computers, and programming. Experience with software packages and programming in BASIC. Student develops an appreciation for the kinds of tasks that can (or cannot) be performed by the computer, and the types of analysis and programming necessary to achieve desired results. Corequisite: MA 111 or MA 120 or MA 140.

CS 115 — Computer Programming I (3,0) 3 Credits

Introduction to problem solving methods and algorithm development; program design, coding, debugging, testing and documentation; programming in a block-structured high-level language. Corequisites: MA 111 or MA 120 or MA 140 and MA 142 or MA 145.

CS 210 — Scientific Programming (3,0) 3 Credits

Introduction to FORTRAN. Flowcharts, psuedocode, input/output, flow of control, looping, arrays, and subprograms are covered. Emphasis is on scientific/engineering programming techniques and applications. Corequisite: MA 112 or MA 220 or MA 241.

CS 215 — Computer Programming II (3,0) 3 Credits

Continuation of CS 115 with emphasis on program design, style, debugging, and testing, especially for larger programs; introduction to algorithm analysis; introduction to basic aspects of string processing, recursion, and simple data structures. Prerequisite: CS 115.

CS 216 — Structured Programming (3,0) 3 Credits

Introduction to structured programming using a structured language and emphasis on the fundamental control structures of sequence, selection and iteration, functions, and procedures. Data structures include standard data types, user defined data types, and structured data types including arrays, records, sets and files. The philosophy of top-down programming is emphasized throughout the course. Prerequisite: Permission of Instructor.

CS 220 — Digital Logic and Computer Operation (3,0) 3 Credits

Number systems, Boolean Algebra, logic gates, design and analysis of digital circuits, digital computer components and digital computer operation. Corequisite: CS 115.

CS 222 — Introduction to Discrete Structures (3,0) 3 Credits

An introduction to the fundamental algebraic, logical, and combinatorial concepts of mathematics and logic needed in subsequent computer science courses. Prerequisites: MA 140 or MA 120, CS 115 or permission of the instructor.

CS 230 — Organization of Programming Languages (3,0) 3 Credits

Specification and analysis of various programming languages; problem solution and programming in each language studied; compilation and interpretation; introduction to formal language concepts. Prerequisites: CS 215, CS 222.

CS 235 — Assembly Language Programming (3,0) 3 Credits

Introduction to computer architecture; assembler concepts and instruction format; addressing techniques; interrupt processing, especially input/output; segmentation, linkage, and external proce-

dures; programming projects to develop understanding of assembly language concepts. Prerequisites: CS 215, CS 220.

CS 315 — Data Structure and Analysis of Algorithms (3,0) 3 Credits
Continuation of CS 215 with emphasis on the design, implementation, and analysis of algorithms dealing with sorting, graphs, trees, and disk files. Other topics include: computer theory; space and time complexity; parallel algorithms. Prerequisite: CS 215.

CS 317 — Files and Database Systems (3,0) 3 Credits
Introduction to file and database systems. Topics include: file processing data structures and algorithms; various database models; theory behind relational database systems; design and implementation of a well structured relational database system; and the physical structure of database systems. Prerequisite: CS 315.

CS 325 — Programming in ADA (3,0) 3 Credits
Advanced systems concepts using the ADA language to implement software engineering, concurrent programming, and structured design techniques. Prerequisites: CS 215, CS 210 or consent of the instructor.

CS 335 — Introduction to Computer Graphics (3,0) 3 Credits
Introduction to computer graphics, algorithms, graphics programming, graphics design, use of graphic packages, and applications of computer graphics to aviation, business and scientific problems. Prerequisites: MA 241, CS 210 or CS 215, or permission of the instructor.

CS 338 — Numerical Methods (3,0) 3 Credits
Floating point arithmetic; error analysis; numerical algorithms in interpolation, integration, differentiation, matrix algebra, approximations, and solutions of equations; use of numerical software packages. Prerequisites: CS 210 or CS 215; MA 242.

CS 340 — Computer Processing of Statistical Data (3,0) 3 Credits
Least square analysis, curve fitting, analysis of variance and covariance in computations. Estimating and trend projections using computer-produced plots along with statistics. Prerequisites: CS 109 or CS 210 and MA 222 or MA 412.

CS 350 — Computer Modeling and Simulation (3,0) 3 Credits
Introduction to system simulation and modeling; types of models basic to any simulation; techniques of simulation; continuous and discrete simulation, queuing; linear programming; Monte Carlo simulation. Prerequisites: MA 412 or MA 222; Knowledge of a high level programming language.

CS 360 — Advanced FORTRAN Programming (3,0) 3 Credits
Techniques in data reduction, modular programming at the systems

level, array manipulation. Practical applications in applied programming. Prerequisite: CS 210 and permission of the instructor.

CS 370 — Computer Organization (3,0) 3 Credits

Computer system organization to include processors, memory, input/output and transfer of information; examples of conventional machine language architecture to include instruction format and types, addressing, representation and flow of data, microprogramming level, operating system level, and assembly language level. Prerequisites: CS 235, CS 315.

CS 372 — Introduction to Microprocessors (3,1) 3 Credits

Basic concepts of CPU architecture and operations; CPU interface and memory system design; microcomputer system hardware input/output techniques; applications of microprocessors; laboratory experiments involve microprocessor hardware and software. Prerequisite: CS 235.

CS 420 — Operating Systems (3,0) 3 Credits

Development, structure, and functions of operating systems; demand service models, development of concurrent models. Prerequisite: CS 370.

CS 430 — Numerical Analysis (3,0) 3 Credits

Systems of equations; approximation by spline functions; numerical methods of solving ordinary differential equations, systems of differential equations, and partial differential equations; finite element method. Prerequisites: CS 338; MA 245 or MA 345.

CS 431 — Software Engineering (3,0) 3 Credits

Intended as a senior project course. The course provides an environment to practice software engineering principles via group projects. Prerequisites: CS 317, HU 221.

**CS 436 — Computer Graphics II
with Aviation Applications (3,0) 3 Credits**

Interactive graphics programming stressing program design, picture plotting, input handling, and concepts necessary to implement a graphics subroutine package. Basic mathematics of two-dimensional and three-dimensional geometric and viewing transformations. Prerequisites: CS 335 and MA 242.

CS 441 — Database Management Systems Design (3,0) 3 Credits

Introduction to database concepts, data models, data normalization and data description languages. Regional database design using entity-relationship model or other appropriate tools. Conversion of the design to a particular DBMS. Prerequisite: CS 317.

- CS 445 — Interfacing (3,1)** **3 Credits**
 Introduction to microcomputers and microcontrollers, effect of the microprocessor on the system, memory, and microcomputer input/output methods. The subject of interface components and their characteristics, designing interface components, interfacing to standard buses and peripherals. Interface layout and construction. Interface software design and implementation. Prerequisite: CS 372.
- CS 450 — Real-time Systems (3,0)** **3 Credits**
 Interfacing real-time devices with computers, computer-to-computer communications, timing interrupt processing and queuing. Hands-on implementation of an application to an aviation project. Prerequisite: CS 372.
- CS 455 — Artificial Intelligence (3,0)** **3 Credits**
 An introduction to how computers can be applied to solve problems, and the principles of human intelligence. Topics include representation mechanics such as procedural and nonprocedural control strategies, searching strategies, predicate calculus and rule based deductions, goal directed planning, applications of understanding, representation of knowledge frames and scripts, programming languages and database for artificial intelligence, knowledge based systems, and robotic systems. Prerequisite: CS 315.
- CS 460 — Telecommunications Systems (3,0)** **3 Credits**
 Techniques and applications in telecommunications. Type of data communication versus line discipline methodology. Hardware requirements and constraints. Speed versus quality. Security and encoding algorithms. Prerequisite: Permission of the instructor.
- CS 465 — Senior Project in Application of
Computer to Aviation (2,3)** **3 Credits**
 A computer science project involving a practical application to aviation will be carried out. Each student will be under the direction of an individual computer science faculty member. Prerequisite: Senior standing in the computer science program and the consent of the instructor.
- CS 299, 399, 499 — Special Topics in Computer Science** **1-6 Credits**
 Lectures, laboratories, or independent studies on selected topics in computer science. Prerequisite: Consent of the instructor and the department chair.

ECONOMICS

- EC 200 — An Economic Survey (3,0)** **3 Credits**
 An introduction to macro- and microeconomic principles, problems, and policies with a view to current economic problems.

EC 210 — Microeconomics (3,0)**3 Credits**

An introduction to economics principles, problems and policies with emphasis on microeconomic theory and current domestic problems. Prerequisite: MS 201.

EC 211 — Macroeconomics (3,0)**3 Credits**

An introduction to economics principles, problems and policies with emphasis on macroeconomics theory, business fluctuation, fiscal and monetary policy, and economic growth. Prerequisite: MS 201.

EC 310 — Labor Economics (3,0)**3 Credits**

A survey of the economics of the labor market to include wage determination and employment theory, Labor organization, labor legislation and current developments in labor relations. Prerequisites: EC 210, EC 211.

EC 312 — Money and Banking (3,0)**3 Credits**

A preliminary investigation of the financial institutions of the United States and the relationship of monetary policy to income and price stabilization. Some analysis of international capital flows will also be undertaken. Prerequisite: EC 211, MA 222.

EC 315 — Managerial Economics (3,0)**3 Credits**

An analytical approach to the manager's role in understanding pricing, costing, production and forecasting. Concentrates on simple quantitative models to explain the firm's position in the market and how the manager can react to and control this information. Prerequisite: EC 210, EC 211, MA 211 or MA 222.

EC 420 — Economics of Air Transportation (3,0)**3 Credits**

A study of the economic aspects of airline service with consideration given to the impact of federal aid and regulation, types of aircraft, airport problems, consumer interests and competitive practices. Prerequisite: EC 315.

EC 299, 399, 499 — Special Topics in Economics**1-4 Credits**

Lectures, laboratories, or independent studies or combinations of selected topics in economics. Prerequisites: Consent of the instructor and the department chair.

ELECTRICAL ENGINEERING

A grade of C or better is required in MA 241, MA 242, PS 110, or PS 205 for entry into all EE courses.

EE 220 — Digital Circuit Design (3,0)**3 Credits**

Introduction to logic design and interfacing digital circuits. Boolean

algebra, combinational logic circuits, digital multiplexers, circuit minimization techniques, flip-flop storage elements, shift registers, counting devices and sequential logic circuits.

EE 222 — Digital Circuits Laboratory (1,2) **1 Credit**
Laboratory experiments in the measurement and verification of digital circuits. Discrete and integrated logic circuits design analysis and measurements. Corequisites: EE 220.

EE 223 — Linear Circuits Analysis I (3,0) **3 Credits**
Volt-ampere characteristics for passive circuit elements. Resistive network circuit theory and simplification. Kirchhoff's current and voltage laws. Introduction to linear network theorems and transformations. Transient response to RC, RL and RLC circuits. Steady state and impedance circuit analysis for sinusoidal sources. Prerequisite: PS 202. Corequisite: MA 345.

EE 224 — Electrical Engineering Laboratory I (1,2) **1 Credit**
Problem sessions, electrical instrumentation and measurement, verification of theory presented in EE 223, working knowledge of electronic test equipment. Corequisite: EE 223.

EE 300 — Linear Circuits Analysis II (3,0) **3 Credits**
Continuation of EE 223. The Laplace and Fourier transforms, Fourier analysis, complex plane, resonance and coupled circuits, Bode diagrams. Introduction to magnetic circuits and transformer. Prerequisite: EE 223. Corequisite: MA 441

EE 301 — Electrical Engineering Laboratory II (1,2) **1 Credit**
Problem sessions, analysis and simulation of analog and digital circuits using computer aided design and analysis tools. Prerequisite: EE 223. Corequisite: EE 300.

EE 302 — Electronic Devices and Circuits (3,0) **3 Credits**
Diode, bipolar transistor, and FET circuit models for the design and analysis of electronic circuits. Single and multi-state analysis and design. Amplifier operating point design, frequency response and Bode plots. Switching of transistors as applied to digital characteristics. Prerequisite: PS 110. Corequisite: EE 300.

EE 303 — Signals and Filters (3,0) **3 Credits**
Mathematics for filtering and spectral analysis of continuous and discrete systems. Solutions to filtering approximations via Butterworth, Chebyshev, elliptic and others. Introductions to Z-transforms and digital filter design methods. Prerequisites: CS 210, MA 441. Corequisite: EE 305.

EE 304 — Electronic Circuits Laboratory (1,2) **1 Credit**
Laboratory experiments in the measurement of electronic device

characteristics. Design and biasing networks, small signal amplifiers and switching circuits. Corequisite: EE 302.

**EE 305 — Operational Amplifiers and
A/D — D/A Circuits (3,1)**

3 Credits

Design and analysis of operational amplifiers and their use as a building block in many different applications. Terminal characteristics of operational amplifier devices used to perform a variety of signal functions. Introduction to basic components found in analog instrumentation systems. Components considered include transducers, thermocouples, various sensors and other signal processing devices. Analysis and design of various analog-to-digital and digital-to-analog circuits. Study of analog-to-digital and digital-to-analog circuit requirements. Laboratory experiments involving operational amplifiers and A/D — D/A circuits. Measurement and analysis of these circuits. Prerequisites: EE 300, EE 302.

EE 320 — Introduction to Computer Engineering (3,0)

3 Credits

Study of digital computer organizations. Introduction to microcomputer systems using a current microprocessor. Assembly language programming techniques for microcomputers will be used to study digital computer operation. Input and Output techniques, memory devices, RS 232 and other interfacing techniques will be studied. Hardware and software relationships will also be discussed. Prerequisites: EE 220, CS 210.

EE 322 — Computer Engineering Laboratory (1,2)

1 Credit

"Hands-on" experience with a microcomputer is provided through weekly experiments involving hardware and software techniques. Prerequisite: CS 210. Corequisite: EE 320.

EE 340 — Electric and Magnetic Fields (3,0)

3 Credits

Electrostatics and magnetostatics. Magnetic and dielectric material properties. Maxwell's equations. Energy and radiation of plane waves. Introduction of electromagnetic waves, transmission lines, the Smith chart, and radiation from antennas. Prerequisites: EE 300, MA 441.

EE 401 — Control System Analysis and Design (3,0)

3 Credits

Analysis and design of linear feedback systems. Frequency response and root locus techniques and state variable feedback. Analysis and design of digital and sampled control systems, applying z-transforms, stability, design and synthesis. Prerequisites: EE 303, EE 305, EE 320.

EE 402 — Control Systems Laboratory (1,2)

1 Credit

Laboratory experiments involving the principles of operation and design of linear control systems. Experiments to support theory introduced in EE 401. Corequisite: EE 401.

EE 410 — Communications Systems (3,0) **3 Credits**
Theory and application of electronic communications systems, spectral analysis; modulation and demodulation techniques; transmitting and receiving systems. Behavior of receivers and transmitters in the presence of noise. Study of avionic radio systems presently in use such as VHF, OMEGA, ACARS, voice and others. Prerequisites: EE 303, EE 340, MA 441.

EE 412 — Communication Systems Laboratory (1,2) **1 Credit**
Laboratory experiments involving design and analysis of electronic communication circuitry and measuring performance characteristics and limitations of various communication systems. Corequisite: EE 410.

EE 420 — Avionics Preliminary Design (3,1) **3 Credits**
Study of FAA requirements governing the design of airborne electronic equipment. Study of component and subsystem specification and design practices. Application of the above in the preparation of a proposal/design plan for an airborne electrical/electronic subsystem. Prerequisites: Senior Standing, EE 410, HU 221, MA 412. Corequisite: EE 450.

EE 421 — Avionics Detail Design (1,5) **3 Credits**
Continuation of EE 420. Senior level project. Students will work as members of a team in the execution of winning proposals from EE 420. Prerequisite: EE 420.

EE 450 — Elements of Power Systems (3,0) **3 Credits**
Fundamental concepts and operation considerations of avionic power systems. Basic component model representations, steady state performance, operating strategies, and control of avionic power systems. Prerequisite: EE 401, EE 410.

EE 452 — Power Systems Laboratory (1,2) **1 Credit**
Laboratory experiments involving avionic power systems. Analysis and measuring characteristics of avionic power systems. Corequisite: EE 450.

ELECTRONICS TECHNOLOGY

EL 106 — Direct and Alternating Current Fundamentals and Circuit Analysis with Laboratory (5,5) **6 Credits**
A detailed study of basic D.C. and A.C. theory and circuit concepts. Subject areas include the physical nature of matter, Ohm's Law, D.C. and A.C. components, series and parallel circuits, reactance, resonance, and transformer theory. Prerequisites: MA 140 and MA 142 or MA 145, HU 006, HU 017. Corequisites: MA 241 and HU 122.

**EL 220 — Introduction to Pulse and
Digital Circuits (3,3)**

4 Credits

An introductory course in electronic pulse and digital circuit fundamentals. Subject areas include waveform analysis, RC, RL, and RLC circuit analysis and their use in pulse circuits, integrating and differentiating circuits, pulse transformers, delay lines, diode and transistor switching circuits, logic gates, families of integrated circuits (including TTL, ECL, MOS and CMOS), bistable, monostable and free running multivibrators. Prerequisites: EL 106, MA 241. Corequisites: EL 223, CS 210, or CS 109.

**EL 223 — Solid State Fundamentals and Circuit Analysis
with Laboratory (5,5)**

6 Credits

An introductory course in solid state fundamentals and circuit analysis. Subject areas include semiconductor construction, biasing, small and large signal amplifier analysis, active devices, op amps, oscillators, and frequency considerations. Prerequisites: EL 106, MA 241, PS 101. Corequisites: CS 210 or CS 109.

**EL 225 — Advanced Digital Circuits and Systems
with Laboratory (3,3)**

4 Credits

A continuation of EL 220. Subject areas include shift registers, counting circuits, comparatory circuits, memories, arithmetic logic, and an introduction to computer organization. Prerequisite: EL 220.

**EL 226 — Electronic Systems Analysis
with Laboratory (4,3)**

5 Credits

Introduction to communications and microwave devices, circuits, and systems. Subject areas include AM, FM, and SS modulation and receivers, transmission lines, wave propagation, antennas, wave guides, microwave devices, data communications and radar fundamentals. Prerequisites: EL 223.

**EL 230 — Microprocessor Systems with
Laboratory (2,3)**

3 Credits

An advanced course designed to acquaint the student with microprocessor architecture, software, and hardware. Subject areas include: microprocessor organization, instructions, selection, software and hardware. Microprocessor system design and interfacing to buses, I/O devices, memories, registers, and other digital devices. Prerequisite: EL 225.

**EL 300 — Electronics Communications Systems with
Laboratory (3,3)**

4 Credits

An introductory course in communications techniques. Topics include modulation and demodulation; receivers and transmitters; transmission lines and antennas; microwave and radar fundamentals; noise

factors; propagation of radio waves, and digital communications. Prerequisites: EL 305 and EL 230.

EL 305 — Linear Systems Analysis (3,0) **3 Credits**
An intensive study of linear electronic circuits and control systems using theoretical and mathematical approaches. Topics include the use of the Fourier and Laplace transforms and mathematical modeling to predict: Signal spectrum, circuit bandwidth and output; circuit frequency response and control system performance. Prerequisites: PS 202, MA 345, EL 223, EL 225. Corequisite: EL 230.

EL 309 — Elements of Engineering Design and Laboratory Procedures (2,3) **3 Credits**
This course is intended to familiarize the student with various theoretical and empirical design procedures including CAD/CAE to translate these designs into laboratory breadboard hardware; and to observe and practice acceptable laboratory investigative procedures. The student will be required to provide and utilize an engineering laboratory notebook throughout this course. Project documentation will include a final, scholarly written, engineering report. Prerequisites: EL 305 and EL 230.

EL 299, 399 — Special Topics in Electronics **1 Credit**
Lectures, laboratories or independent studies on selected topics in electronics technology. Prerequisite: Consent of instructor or department chair.

ENGINEERING PHYSICS

A grade of C or better is required in MA 241, MA 242, PS 110, and PS 201 or PS 205 for entry into all EP courses.

EP 320 — Electro-Optical Engineering (3,0) **3 Credits**
Geometrical optics of mirrors, thin and thick lenses, prisms and systems. Ray tracing with optical CAD. Fiber optics applications. Physical optics including interference, diffraction and polarization. Phaser methods. Engineering considerations in choice of different types of detectors. Space systems applications. Image Processing. Emphasis on design. Prerequisites: PS 303, CS 210.

EP 400 — Thermodynamics and Statistical Mechanics (3,0) **3 Credits**
Basic Thermodynamics; Entropy; Kinetic Theory; Distribution of Molecular Velocities; Maxwell-Boltzmann Statistics; Bose-Einstein Statistics; Fermi-Dirac Statistics; Microcanonical Ensemble; Canonical Ensemble. Prerequisites: CS 210, ES 305, MA 345.

EP 410 — Space Physics (3,0) **3 Credits**
Origin, evolution and structure of neutral and ionized terrestrial

atmosphere. Effect of sun's electromagnetic radiation on ozone shield. Photo ionization and thermal structure of the neutral atmosphere as well as the Ionosphere and Magnetosphere. Solar disturbances and their effects on satellite orbit decay and on long distance communication. Studies of composition, thermodynamics and physical processes of the near-earth space environment. Rocket and satellite monitoring and remote sensing. Numerical and instrument design projects. Prerequisite: EP 320.

EP 420 — Planetary Science (3,0)

3 Credits

Study of the planetary system: origin, evolution, composition, present configuration, dynamics, interiors, surfaces, atmospheres, and magnetospheres of the planets and where appropriate, similar aspects of the satellites, asteroids, and comets. Interpretations of existing data and definition of future experiments to aid in determination of the origin and evolution of the solar system are stressed. Prerequisite: PS 303.

EP 440 — Engineering Electricity and Magnetism (3,0)

3 Credits

Solutions of electrostatics problems using Poisson's equation and Laplace's equation. Electrostatic Energy, Electric Current, Magnetic Field, Electromagnetic Induction, Physics of Plasmas, Maxwell's Equations, Application of Maxwell's Equations (reflection, refraction, waveguides, antenna radiation). Students will write some simple computer programs. Prerequisites: CS 210, MA 442.

EP 450 — Space Systems Engineering (3,0)

3 Credits

Development of the fundamental principles used in the design and engineering development of satellites, planetary probes, and space systems. Optimization of a complete system including trajectory analysis, entry dynamics, propulsion systems, structural design, thermal protection, weight estimation, environmental control, equipment selection, support systems, and cost estimates. Students participate in teams in the design of a complex space system, with each team responsible for one of several subsystems, providing experience in project organization, interaction between disciplines, and methods by which individuals and teams work together. Prerequisite: EP 320.

EP 455 — Quantum Physics (3,0)

3 Credits

The Schrodinger equation in 1 and 3 dimensions and its solutions for step potentials, the harmonic oscillator, and the hydrogen atom. Operators and their matrix representations: Dirac bra-ket formalism, angular momentum and spin, spin-orbit interaction. Identical particles and exchange symmetries. Time independent and time dependent perturbation theory and approximation methods: transition rates; Fermi's Rule; Scattering theory. Classical and quantum statistical distributions. Prerequisite: PS 320.

EP 490 — Senior Design Project I (2,4) **3 Credits**
A program of undergraduate research, supervised by physics or engineering faculty, leading to the writing of a technical design report in an area of current interest in engineering physics.

EP 491 — Senior Design Project II (2,6) **4 Credits**
Continuation and completion of EP 490. Prerequisite: EP 490.

ENGINEERING SCIENCE

A grade of C or better is required in MA 241, MA 242, PS 110, and PS 201 or PS 205 for entry into all ES courses.

ES 201 — Statics (3,0) **3 Credits**
A vector treatment of the concepts and characteristics of forces and couples. Distributed forces. Center of mass; centroid. Equilibrium of particles and rigid bodies. Trusses and frames. Internal forces. Shear and moment distribution in beams. Area moments of inertia; tensor properties. Prerequisites: PS 201 or PS 205, ET 110 or consent of the Department Chair. Corequisite: MA 243.

ES 202 — Solid Mechanics (3,0) **3 Credits**
The concepts of stress and strain and their tensor properties. Elastic stress-strain relations. Analysis of stress and deformation in members subject to axial, torsional, bending and combined loading. Column stability. Prerequisites: ES 201, CS 210.

ES 204 — Dynamics (3,0) **3 Credits**
A vector treatment of the kinematics and kinetics of particles and rigid bodies. Acceleration, momentum, work, energy and power. Prerequisites: ES 201, CS 210.

ES 206 — Fluid Mechanics (3,0) **3 Credits**
Physical characteristics of the fluid state. Fluid statics. Kinematics of fluid motion. Flow of an incompressible ideal fluid. The impulse-momentum principles. Similitude and dimensional analysis; fluid measurements. Prerequisites: CS 210, ES 201.

ES 305 — Thermodynamics (3,0) **3 Credits**
A study of the concepts of heat and work and their transformation as governed by the first and second laws of thermodynamics. Properties of pure substances. Ideal gas behavior and relationships. Reversible processes and temperature-entropy diagrams. Conventional power cycles. Properties of ideal gas mixtures. Combustion. Prerequisites: CS 210, PS 202 or PS 208.

**ES 307 — Engineering Materials Science with
Laboratory (3,1.5)**

3 Credits

Materials used in aeronautical engineering applications. Properties of materials and their measurements. Metals and their structures. Characteristics of metallic phases. Equilibrium diagrams. Processing of metals and alloys. Plastics, their structures and characteristics. Ceramics and their characteristics. Composite materials. Corrosion. Prerequisites: CS 210, PS 110, PS 202, HU 221.

ES 402 — Electrical Engineering I with Laboratory (2,3)

3 Credits

Introduction of the fundamentals of electrical engineering. Circuit theory and variables. Voltage-current relationship for passive elements — resistance, capacitance and inductance. Circuit analysis and network solutions for resistance-capacitance networks. Phasors and frequency-domain analysis. Time-domain analysis via differential equations and using the Laplace transform. Equivalent circuits. Graded sequence of applicable laboratory experiments. Prerequisites: PS 202, MA 345, CS 210, HU 221.

ES 403 — Heat Transfer (3,0)

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. Prerequisites: CS 210, ES 206 or permission of instructor, ES 305, MA 345.

ES 405 — Electrical Engineering II (3,0)

3 Credits

Continuation of the principles of electrical engineering. Systems block diagrams, feedback and transfer functions. Computer principles-analog computer programming, Boolean algebra and logic gates. Rotating electrical machines, transformers and other electromagnetic energy conversion devices. Automatic control systems-dynamic response, feedback control and transducers. Prerequisite: ES 402.

ES 409 — Space Mechanics (3,0)

3 Credits

The mathematics and physics of the two-body problem. Orbits, satellite launch, orbit transfer, interception and rendezvous, and celestial astronomy. Gyrodynamics; gyroscopic instruments; precession and nutation; inertial navigation. This course is based heavily on vector dynamics, differential equations and spatial geometry, as well as computer programming skills, which are used in writing computer program solutions of selected two-body problems. Prerequisites: CS 210, ES 204, MA 441.

**ES 410 — Structures and Instrumentation
Laboratory (1,3)**

2 Credits

Principles of modern laboratory test instrumentation. Basic electrical measurements and devices such as strain gages, piezoelectric sensors and thermocouples. Measurement of fluid pressure and flow;

temperature; thermal and transport properties; strain; motion; vibration; force and torque. Experimental static and dynamic analysis of structures. Processing and analyzing experimental data; report writing and data presentation. Prerequisites: AE 404, ES 305, ES 402, HU 221.

ES 412 — Structural Dynamics (3,0) 3 Credits
Simple harmonic motion. Undamped and damped free vibration; Forced vibration. Multiple degrees of freedom. Multi-mass torsional and transverse systems. Equivalent torsional systems. Balancing. Dynamic damping. Computer analysis using finite element modeling. Prerequisites: ES 202, ES 204, MA 345.

ES 299, 399, 499 — Special Topics in Engineering Science 1-6 Credits
Lectures, laboratories, or independent studies on selected topics in engineering science. Prerequisite: Consent of instructor and department chair. May be repeated with change of content.

ENGINEERING TECHNOLOGY

ET 101 — Engineering Graphics (1,3) 2 Credits
Principles of lettering. Drawing instruments and their use. Linework code and drafting techniques. Geometrical construction. Multiview projection. Sectional and auxiliary revolutions. Dimensioning, shop processes and tolerances. Threads and fasteners.

ET 110 — Drafting and Descriptive Geometry (1,3) 2 Credits
Dimensioning, tolerancing, threads, fasteners. Introduction to descriptive geometry. Airplane general arrangement and airfoil layout drawings. Prerequisite: A completed high school course in mechanical drawing with a grade of B or better or ET 101 Engineering Graphics.

ET 200 — Machine Shop Laboratory (0,3) 1 Credit
Introduction to basic machining techniques.

ET 201 — Technical Mechanics (4,0) 4 Credits
Statics and dynamics. Systems of forces and moments, free body diagrams, equilibrium, truss structures, friction, distributed forces, centroids, and moments of inertia. Kinematics and kinetics of particles and rigid bodies. Prerequisites: PS 201, MA 242.

ET 301 — Applied Aerodynamics I With Laboratory (2,3) 3 Credits
Basic fluid mechanics; airflow measurement; airfoil theory; airplane performance. Wind tunnel projects include pressure and velocity measurement and measurement of aerodynamic forces on airfoil and

airplane models; smoke tunnel flow visualization. Prerequisites: ET 201, MA 242.

**ET 302 — Applied Strength of Materials
With Laboratory (2,3)**

3 Credits

Concepts of stress and strain. Stress and deflections of members subject to axial, torsional and bending loads. Laboratory experiments augment coursework. Prerequisite: ET 201.

ET 303 — Aircraft Drafting (2,3)

3 Credits

General arrangement of layout, detail and assembly drawings. Dimensioning, local and general notes, and specification of shop processes. Drafting of formed sheet metal parts; riveted, bolted, bonded and welded assemblies; control cable, push-pull rod, and torque tube assemblies. Hydraulic and electrical schematic and drafting. Prerequisites: ET 110, ET 302.

**ET 304 — Aircraft Structural Analysis
with Laboratory (3,3)**

4 Credits

Analytical techniques for determining loads and stresses in trusses, beams and thin sheet structures. Laboratory measurements include loads trusses, shear flow in beams and thin-wall box structures, deflections of structures. Computer stress analysis procedures. Prerequisites: ET 302, MA 245.

**ET 305 — Applied Thermodynamics
with Laboratory (3,3)**

4 Credits

Definitions of heat and work, first and second laws of thermodynamics. Thermodynamic cycles used in engines and engine components. Introduction to compressible flow. Laboratory demonstrations of engines and performance measurements. Prerequisites: MA 242, PS 202.

**ET 307 — Manufacturing Processes and Materials
with Laboratory (3,3)**

4 Credits

The nature of production processes and how they influence detail design decisions. Topics include process selection, milling, turning, numerical control processes, forging, bending and forming, heat treatment, surface finishing, finishes and coatings, plastic and composite materials. Laboratory work includes sheet metal forming, machining, riveting, composite fabrication, welding. Prerequisite: ET 302.

ET 308 — Applied Aerodynamics II (3,0)

3 Credits

Compressible flow, shock waves, supersonic flow, airfoil characteristics, nozzle flow. Prerequisites: ET 301, MA 245.

**ET 312 — Applied Electrical Science with
Laboratory (3,3)**

4 Credits

Basic D.C. and A.C. circuit theory with applications to instrumentation. Familiarity with instrumentation techniques will be gained in the laboratory. Prerequisite: PS 202.

ET 401 — Mechanical Design (3,0) 3 Credits
Study of machine motion, velocity, acceleration and cycling. Sizing of machine elements under operational conditions. Application and design of mechanical linkages, springs, clutches, brakes, cams, sprockets, gears and gear trains, bearings and lubrication. Other selected topics. Prerequisite: ES 202 or ET 302.

ET 402 — Applied Instrumentation Laboratory (2,3) 3 Credits
Selection and operation of standard instrumentation components to measure and record force, strain, temperature, and pressure. Analysis of test data. Prerequisites: PS 202, MA 242, ET 302.

ET 403 — Aircraft Detail Design (2,3) 3 Credits
Design of load bearing structures representative of those employed in aircraft, along with supporting stress analysis and production, drawings. Prerequisites: ET 201, ET 303, ET 304.

ET 404 — Aircraft Performance and Design (2,3) 3 Credits
Aircraft static performance, introduction to stability and control. Application of aerodynamics through aircraft preliminary design project, including performance specification, general arrangement, weight and balance, and drag estimation. Prerequisite: ET 301.

ET 405 — Non-Destructive Testing and Quality Assurance with Laboratory (2,3) 3 Credits
Inspection procedures, proof-of-design requirements per FAR Part 23, material inspection techniques (magnetic particle, X-ray, visual), dimensional checking and use of inspection instruments. Statistical analysis of test data. Prerequisite: ET 307.

ET 406 — Aircraft Systems Analysis and Design (3,0) 3 Credits
Definition and functional description of aircraft systems. Analysis and design of dynamic systems to meet performance requirements. Prerequisites: ET 201, ET 303, ET 305, ET 312.

ET 407 — Aircraft Gas Turbines (3,0) 3 Credits
A study of the gas turbine fundamentals, including various gas turbine cycles, components and component efficiency, thrust, specific fuel consumption, duct flow and inlet diffuser, centrifugal and axial compressors, combustion chambers and jet nozzles for aircraft propulsion. Prerequisites: ET 305, MA 245.

ET 408 — Applied Structural Dynamics (3,0) 3 Credits
Free, damped and forced motion of linear SDOF systems. Multi-DOF system topics include modeling of stiffness, flexibility and consistent

of transient response and loads. Prerequisites: MA 245, ET 304. Corequisites: ET 402 or permission of the instructor.

ET 299, 399, 499 — Special Topics in Engineering

Technology

1-3 Credits

Lectures on specialized topics or independent design and/or laboratory project. Prerequisite: Permission of program chair.

FLIGHT-ACADEMIC

Students enrolled in flight courses should expect to spend an average of approximately 12 to 15 hours per week in flight training. The actual weekly training time will vary based upon specific syllabus requirements, aircraft and instructor availability, weather, and individual student performance. Training time consists of flight and simulator training, observer flights, preflight and post flight inspections and briefing, oral instruction, and ground training. It does not include required outside study time.

Flight courses are offered on a continuous basis. Course start and completion dates may or may not coincide with the beginning and end of an academic semester/term. Credit is awarded based upon the semester/term in which the course is begun. The length of time required to complete a course will also vary based upon the factors identified above.

FA 109 — Commercial Pilot Flight Operations I

2 Credits

A review of elementary commercial pilot flight operations including basic aircraft control, elementary radio navigation, air traffic control procedures, cross-country operations, and solo flight. Associated ground instructions will include a review of knowledge areas required for Private Pilot certification. This course is specifically designed for students entering Embry-Riddle's Commercial Pilot program with a Private Pilot certificate and desiring advanced standing. Prerequisite: FAA Private Pilot Certificate with Airplane Single Engine Land Class rating.

FA110 — Commercial Pilot Flight Operations I

5 Credits

An introduction to commercial pilot flight operations including basic aircraft control, elementary radio navigation, air traffic control procedures, cross-country operations, and solo flight. Associated ground instruction will include completion of the Private Pilot written examination. At the successful completion of this course the student will have gained the aeronautical knowledge and experience necessary to apply for an FAA Private Pilot Certificate.

FA 200 — Commercial Pilot Flight Operations II

3 Credits

Flight, simulator and ground instruction in basic attitude instrument flight techniques, maximum performance and precision commercial flight maneuvers, and advanced cross-country operations. Prerequisite:

sites: FA 110 and an FAA Private Pilot Certificate with Airplane Single-engine Land class rating.

FA 250 — Commercial Pilot Flight Operations III **3 Credits**
Flight and simulator training in those instrument pilot operations necessary to safely and accurately operate an airplane under instrument flight rules within the National Airspace System. Associated ground instruction will include completion of the Instrument Pilot written examination. At the successful completion of this course the student will have gained the aeronautical knowledge necessary for the addition of an instrument-airplane rating to his/her existing pilot certificate. Prerequisite: FA 200.

FA 300 — Commercial Pilot Flight Operations IV **2 Credits**
A review of selected pilot operations required of a commercial pilot including maximum performance and precision commercial flight maneuvers. Associated ground instruction will include completion of the Commercial Pilot written examination. At the successful completion of this course the student will have gained the aeronautical knowledge and experience necessary to apply for an FAA Commercial Pilot Certificate with Instrument-Airplane and Single-Engine Land ratings. Prerequisite: FA 250.

FA 309 — Instrument Rating **3 Credits**
Flight and simulator training in those instrument pilot operations necessary to safely and accurately operate an airplane under instrument flight rules within the National Airspace System. Associated ground instruction will include completion of the Instrument Pilot written examination. At the successful completion of this course the student will have gained the aeronautical knowledge and experience necessary to apply for the addition of an instrument-airplane rating to his/her existing Commercial Pilot Certificate. Prerequisite: FAA Commercial Pilot Certificate with Airplane Single-engine Land rating.

FA 340 — Multi-Engine Class Rating **1 Credit**
Instruction and flight training to provide the aeronautical skill and knowledge to meet the requirements for the addition of a multi-engine land class rating with instrument privileges to the student's existing pilot certificate. Prerequisite: FAA Commercial Pilot Certificate with an instrument rating.

FA 409 — Certified Flight Instructor Instrument **1 Credit**
Instruction, flight training and practice teaching dealing with those subjects and flight operations pertinent to an instrument flight instructor. Associated ground instruction will include completion of the Flight Instructor-Instrument written examination. At the successful completion of this course the student will have gained the aeronautical knowledge and experience necessary to apply for the

addition of an Instrument-Airplane rating to his/her existing Flight Instructor Certificate. Prerequisites: FAA Commercial Pilot Certificate with Airplane Single-engine Land and Instrument-Airplane ratings and an FAA Flight Instructor Certificate with Airplane Single Engine Land rating.

FA 417 — Flight Training Methods and Curriculum

Analysis

3 Credits

Instruction, flight training and practice teaching that will allow the student to obtain the aeronautical skill and knowledge necessary to apply for an FAA Flight Instructor Certificate with both Airplane Single-Engine & Instrument-Airplane ratings. Associated ground instruction will include completion of the Fundamentals of Instruction, the Flight Instructor-Airplane, and the Flight Instructor-Instrument written examinations. Prerequisites: FA 300 or FA 325 and an FAA Commercial Pilot Certificate with Single-engine and Instrument-Airplane ratings.

FA 419 — Airline Transport Pilot Proficiency

Development

2 Credits

Certified Commercial and Instrument rated pilots are initially prepared for the Multi-Engine Land Class rating followed by extensive detailed instrument oriented training to airline transport pilot proficiency standards. Emphasis is placed on precision attitude flying techniques including configuration change procedures, attitude and thrust setting determination, and velocity transitions; precise instrument approach and departure procedures; and integration of applicable emergency procedures during all phases of instrument flight. Prerequisites: FAA Commercial Pilot Certificate with Airplane Single-engine Land and Instrument-Airplane ratings. Corequisite: AS 420.

FA 453 — High Performance Aircraft Flight Crew

Techniques and Procedures

2 Credits

Instruction in advanced flight crew operations with emphasis on the transition of the professionally qualified pilot into a highly skilled member of a flight management team. Course topics include cockpit resource management, high speed and high altitude transport aircraft flight techniques, turbine-powered aircraft operations, flight crew training techniques, utilization of advanced avionics, and programming of automatic flight control systems. Prerequisites: FA 419 or FA 418, AS 420, and an FAA Commercial Pilot Certificate with Airplane Single and Multi-engine Land and Instrument-Airplane ratings. Corequisite: AS 452.

FA 460 — Advanced Multi-Engine Flight Crew Training

Methods

2 Credits

Certified Flight Instructors are initially prepared for the addition of a multi-engine flight instructor rating followed by instruction in

advanced multi-engine flight crew training techniques to include cockpit resource management, line-oriented flight training, and the use of advanced training devices. Prerequisites: FA 417, FA 453, an FAA Commercial Pilot Certificate with Airplane Multi-engine Land and Instrument-Airplane ratings and an FAA Flight Instructor Certificate with an Instrument-Airplane rating.

FA 199, 299, 399, 499 — Special Topics in Flight **0-2 Credits**
Flight training in selected areas for the purpose of gaining proficiency in required pilot operations for various certificates and ratings. Prerequisite: Approval of chief flight instructor and department chair.

HUMANITIES

HU 003 — Writing English as a Second Language (3,0) **3 Credits**
This course is designed for those non-native speakers of English who are found to need special practice in written English. Emphasis is on fundamental writing skills (organization, development, and mechanics), with added practice in spoken English. Cultural topics of particular interest to the class are included when necessary. (Credit not applicable to any degree.)

HU 004 — Speaking and Listening Skills in English as a Second Language (3,0) **3 Credits**
This course deals with the verbal production and listening reception skills necessary to help the non-native English speaker comprehend spoken English and to speak appropriately and proficiently as a student within the American culture, especially in academic and social situations. Students will learn to discriminate and produce the sounds, intonation, and stress patterns of American English, make use of the visual and aural environmental signals that contribute to successful listening and speaking, and be familiar with the language and accompanying behavior associated with academic and social situations. Listening and speaking skills will be studied in context to familiarize students with the patterns of English use which determine what is appropriate in verbal communication. (Credit not applicable to any degree.)

HU 006 — Developmental English (3,0) **3 Credits**
Designed to improve competence in writing and speaking the English language, through the study of grammar and mechanics, sentence and paragraph construction, and vocabulary building. (Credit not applicable to any degree.)

HU 013 — Reading English as a Second Language (3,0) **3 Credits**
This course is designed for those non-native speakers of English who are found to need special practice in reading English. Emphasis is on vocabulary enrichment and improvement of comprehension and

reading skills. Cultural topics of particular interest to the class are included when necessary. (Credit not applicable to any degree.)

HU 017 — Reading and Study Skills (3,0) 3 Credits

Individual and group instruction in the development of a variety of reading and study techniques. Emphasis is placed on the development of reading-study skills, comprehension, word attack, vocabulary improvement, and efficient, flexible reading habits. (Credit not applicable to any degree.)

HU 122 — English Composition and Literature I (3,0) 3 Credits

Expository writing, interpretation, analysis and research methods of fiction and nonfiction reading assignments. Textbook sources aid the student in developing communicative and evaluation skills. Prerequisite: HU 006 and/or HU 017 or passing grade on Placement Test.

HU 123 — English Composition and Literature II (3,0) 3 Credits

A continuation of HU 122 with emphasis on a survey of literature. Reading materials include selected novels, poems and plays. Prerequisite: HU 122.

HU 130 — Elementary Spanish I (3,0) 3 Credits

Basic grammar and reading. Introduction to conversation. Not open to students with two or more years of high school Spanish or equivalent.

HU 135 — Elementary Spanish II (3,0) 3 Credits

A continuation of HU 130.

HU 140 — Humanities and Western Culture (3,0) 3 Credits

A study of ways in which literature, philosophy, history and fine arts aid in understanding what it means to be human. The course will be delivered under four or more of these headings: democratic vision, awareness of self, critical thinking about culture, technology and culture, uses of art — creativity and living. Religion, philosophy, and varying views of art in European culture will be given special emphasis. Prerequisite: HU 122.

HU 141 — Studies in the Humanities (3,0) 3 Credits

A study of the ways in which literature, philosophy, history and fine arts clarify our quest for a self-awareness, our understanding of the past, our cultures and their interconnectedness. The course will be delivered under four or more of these headings: democratic vision, awareness of self, uses of art, critical thinking about culture, the impact of technology on culture. Music, myths, literature and non-European cultures will receive special emphasis. Prerequisite: HU 122.

HU 150 — Elementary Arabic I (3,0)

3 Credits

Elementary oral-aural introduction to Arabic, including such topics as courtesy phrases, basic vocabulary, and patterns for questions and answers. Not open to students with two or more years of high school instruction or the equivalent, or native speakers of the language.

HU 151 — Elementary Arabic II (3,0)

3 Credits

A continuation of HU 150. Prerequisite: HU 150 or permission of the instructor.

HU 152 — French I (3,0)

3 Credits

Elementary oral-aural introduction to French including such topics as courtesy phrases, basic vocabulary, and patterns for questions and answers. Not open to students with two or more years of high school instruction or the equivalent, or native speakers of the language.

HU 153 — French II (3,0)

3 Credits

A continuation of HU 152. Prerequisite: HU 152 or permission of the instructor.

HU 154 — German I (3,0)

3 Credits

Elementary oral-aural introduction to German including such topics as courtesy phrases, basic vocabulary, and patterns for questions and answers. Not open to students with two or more years of high school instruction or the equivalent, or native speakers of the language.

HU 155 — German II (3,0)

3 Credits

A continuation of HU 154. Prerequisite: HU 154 or permission of the instructor.

HU 156 — Japanese I (3,0)

3 Credits

Elementary oral-aural introduction to Japanese including such topics as courtesy phrases, basic vocabulary, and patterns for questions and answers. Not open to students with two or more years of high school instruction or the equivalent, or native speakers of the language.

HU 157 — Japanese II (3,0)

3 Credits

A continuation of HU 156. Prerequisite: HU 156 or permission of the instructor.

HU 158 — Russian I (3,0)

3 Credits

Elementary oral-aural introduction to Russian including such topics as courtesy phrases, basic vocabulary, and patterns for questions and answers. Not open to students with two or more years of high school instruction or the equivalent, or native speakers of the language.

- HU 159 — Russian II (3,0) 3 Credits**
A continuation of HU 158. Prerequisite: HU 158 or permission of the instructor.
- HU 219 — Speech (3,0) 3 Credits**
A continuation of the study of communication with emphasis on speaking effectively. Modern and traditional theory and methods, study and practice of informative, persuasive and symposium rhetorical forms are included. Prerequisite: HU 122.
- HU 221 — Technical Report Writing (3,0) 3 Credits**
Preparation of formal and informal technical reports, abstracts, resumes and business correspondence. Major emphasis placed on the long technical paper and the acquisition of advanced writing skills. Prerequisites: HU 123 or HU 140 or HU 141.
- HU 250 — Introduction to Logic (3,0) 3 Credits**
Principles of valid thinking; the nature of inductive and deductive inferences and their applications. Prerequisite: HU 123 or HU 140 or HU 141.
- HU 300 — World Literature (3,0) 3 Credits**
Major works and literary trends in world literature. Prerequisites: HU 123 or HU 140 or HU 141.
- HU 305 — Modern Literature (3,0) 3 Credits**
The mainstreams of literature of this century. The specific content — genre and major writers — to be studied will vary from semester to semester. Prerequisites: HU 123 or HU 140 or HU 141.
- HU 310 — American Literature (3,0) 3 Credits**
A survey of intellectual backgrounds, major works and literary trends in American literature. Prerequisite: HU 123 or HU 140 or HU 141.
- HU 320 — Aesthetics of Visual and Musical Arts (3,0) 3 Credits**
Provides a survey of the major artistic monuments of Western culture and discusses the methods by which artistic productions are analyzed. Prerequisites: HU 123 or HU 140 or HU 141.
- HU 325 — Exploring Film (3,0) 3 Credits**
A survey of the art of the film. History of the cinema. Basic elements, photography, continuity and rhythm, movement, imaging, music and sound, script writing, directing, editing, acting, great film artists —directors, cinematographers, actors, etc. Prerequisite: HU 123 or HU 140 or HU 141.
- HU 330 — Values and Ethics (3,0) 3 Credits**
Designed to help one identify and resolve ethical problems. Status and scope of ethics, the understanding and solving of moral problems are

included. This study is based on the assumption that no person can live a fulfilling life if he has not set up for himself some scale of values. Ethics, as a study of human values, attempts to stimulate the moral sense, discover the best values of life, and motivate a quest for these values. Prerequisite: HU 123 or HU 140 or HU 141.

HU 335 — Technology and Modern Civilization (3,0) 3 Credits
A humanistic analysis of technology, with special attention to its influence upon modern American culture in a global context. Topics include the history and development of technology; the influence of technology upon certain philosophies such as determinism and utilitarianism; the influence of technology on the ecosphere; and the depiction of technology in imaginative literature. Prerequisite: HU 123 or HU 140 or HU 141.

HU 341 — World Philosophy (3,0) 3 Credits
An in-depth study of prominent philosophers and major philosophical movements in America, Europe, and Asia, showing their interrelatedness, emphasizing their contributions to the world of thought, and demonstrating the importance of reason in the contemporary world. Prerequisite: HU 123 or HU 140 or HU 141.

HU 345 — Religions of Mankind (3,0) 3 Credits
A survey of the major religions of the world, including Judaism, Christianity, Islam, Hinduism, Buddhism, and Confucianism as well as a brief examination of the development of religion as a vital aspect of man's experience in history. Prerequisite: HU 123 or HU 140 or HU 141.

HU 351 — Journalism (3,0) 3 Credits
Theory and practice of the techniques of journalism, familiarizing the student with the functions, skills and responsibilities required in writing, editing and producing news and technical publications. Prerequisite: HU 123 or HU 140 or HU 141.

HU 355 — Creative Writing (3,0) 3 Credits
The course culminates the interpretive and expressive elements of communications classes. The study, practice and utilization of a personal style of creative composition, examples of contemporary literature and submittal of publications are included in this course. Prerequisites: HU 123 or HU 140 or HU 141.

HU 299, 399, 499 — Special Topics in Humanities 1-6 Credits
Lectures, independent study, and other specially arranged courses not regularly scheduled. Prerequisites: Consent of instructor and approval of the department chair.

MATHEMATICS

MA 005 — Quantitative Skills (3,0)

3 Credits

Fundamentals and theory of algebra including exponents, radicals, factoring, linear equations, rational expressions, quadratic equations, polynomial arithmetic, and solutions to applied problems. (Credit not applicable to any degree.) Required of all students who are placed in this course.

MA 006 — Intermediate Algebra (3,0)

3 Credits

An intermediate level algebra course. Topics include fundamental concepts of algebra; linear equations and inequalities; polynomials, rational expressions, exponents and radicals; quadratic equations; functions and graphing; systems of linear equations and inequalities. Prerequisite: MA 005 or Placement. (Credit not applicable to any degree.)

MA 106 — Basic Algebra and Trigonometry (3,0)

3 Credits

A study of the basic laws of fractions, exponents, radicals, inequalities, quadratic equations, complex numbers and the elements of trigonometry.

MA 111 — College Mathematics for Aviation I (3,0)

3 Credits

A pre-calculus course designed for the student of aviation. Review of the fundamentals of algebra; linear equations and inequalities; quadratic equations; variation; polynomial, rational, exponential, logarithmic and trigonometric functions; radian measure; right triangle solutions, vectors, and the laws of sines and cosines. Prerequisite: MA 006, MA 106 or placement.

MA 112 — College Mathematics for Aviation II (3,0)

3 Credits

Basic calculus designed for the student of aviation. Differentiation and integration of algebraic functions; applications to velocity, accelerations, area, curve sketching and computation of extreme values. Prerequisite: MA 111.

MA 120 — Quantitative Methods I (3,0)

3 Credits

A pre-calculus course with applications to business and economics. Fundamental algebraic operations, functions, graphs, logarithmic and exponential functions, systems of linear equations and inequalities, linear programming and matrix algebra. Prerequisite: MA 006, MA 106, or placement.

MA 125 — Space Mathematics (3,0)

3 Credits

Units of measure used in Space Technology, launch and re-entry velocities and accelerations, force and acceleration of gravity on the moon and on an asteroid, "g forces" on an astronaut, analysis of the behavior of sounding rockets both when launched and when returned

to earth, the reliability of spacecraft systems, multi-stage rocket design, tracking of model rockets, investigation of the movement of celestial bodies on the celestial highways. Prerequisite: MA 111.

MA 140 — College Algebra (3,0)

3 Credits

Fundamentals of exponents, radicals, linear, quadratic and absolute value equations, inequalities and complex numbers. Introduction to functions, curve sketching, elementary theory of equations, sequences and series, matrix algebra and systems of equations. Prerequisite: MA 006, MA 106, or placement.

MA 142 — Trigonometry (3,0)

3 Credits

Trigonometric functions and their graphs; identities; radian measure with applications; compound, half and double angle identities; solving elementary trigonometric equations, right and oblique triangles, law of sines and cosines; exponential, logarithmic and inverse trigonometric functions; vectors and trigonometric form of a complex number. Prerequisites: MA 006, MA 106, or Placement. Corequisite: MA 140.

MA 145 — College Algebra and Trigonometry (5,0)

5 Credits

Fundamentals of exponents, radicals, linear and quadratic equations, inequalities, elementary theory of equations, sequences and series, functions, exponential, logarithmic and trigonometric functions, radian measure, trigonometric identities and equations, vectors, laws of sines, cosines, solutions of right triangles, and complex numbers. Prerequisites: MA 006, MA 106 or Placement.

MA 211 — Statistics with Aviation Applications (3,0)

3 Credits

Descriptive statistics; populations and samples; measures of central tendency and dispersion; elementary probability; binomial and normal distributions and their interrelationship; random variables; one and two sample hypothesis testing involving proportions and means for large and small samples; estimation and confidence intervals; Chi-square distribution; correlation coefficient; least squares line. Prerequisite: MA 111.

MA 220 — Quantitative Methods II (3,0)

3 Credits

An introductory calculus course with applications to business and economics; limits; differentiation and integration of algebraic, exponential and logarithmic functions; applications of differentiation to maximizing and minimizing; curve sketching; marginal values. Prerequisite: MA 120.

MA 222 — Business Statistics (3,0)

3 Credits

Measures of central tendency and dispersion; histograms; algebra of probability; sample spaces; dependent events; Bayes' Theorem with applications; binomial, Poisson, normal distributions and their interrelationships; sampling distributions; hypothesis testing; confidence intervals. Prerequisite: MA 220 or MA 112 or MA 140.

MA 241 — Calculus and Analytical Geometry I (4,0) 4 Credits
Graphs and functions; limits and continuity; differentiation and integration of algebraic and elementary trigonometric functions; applications of first and second derivatives. Prerequisite: MA 140 or MA 145 or equivalent. Corequisite: MA 142.

MA 242 — Calculus and Analytical Geometry II (4,0) 4 Credits
Differentiation and integration of transcendental functions; special integration techniques; polar coordinates; applications of the definite integral; numerical methods. Prerequisite: MA 241.

MA 243 — Calculus and Analytical Geometry III (4,0) 4 Credits
Solid analytical geometry; vector functions in three dimensions; elements of infinite series; partial differentiation; directional derivative and gradient; multiple integrals. Prerequisite: MA 242.

MA 245 — Applied Technical Mathematics (3,0) 3 Credits
Applied treatment of ordinary differential equations; Laplace transforms; matrix algebra and applications; computer techniques; numerical methods; least squares fit; normal distribution and applications. Prerequisites: MA 242, CS 210. (Not for Bachelor of Science degree in Aeronautical Engineering credit.)

MA 300 — Applied Logic (3,0) 3 Credits
Algebra of logic; truth tables, axiomatic system; set theory; Boolean algebra; design and simplification of digital circuits. Prerequisite: MA 111 or MA 120 or MA 140. (Not open to engineering students.)

MA 320 — Decision Mathematics (3,0) 3 Credits
The mathematical concepts and applications in mathematical model building and problem solving. Included are mathematical areas which are basic to decision theory. Prerequisite: MA 211 or MA 222. (Not open to engineering students.)

MA 345 — Differential Equations and Matrix Methods (4,0) 4 Credits
Treatment of ordinary differential equations to include principal types of first and second order equations; methods of substitution on simple higher order equations; linear equations and systems of linear equations with constant coefficients; methods of undetermined coefficients and variation of parameters; Laplace transforms; series solutions; linear algebra and matrix methods of solutions; applications to physics and engineering. Prerequisite: MA 243.

MA 412 — Probability and Statistics (3,0) 3 Credits
Finite sample spaces; conditional probability and Bayes' Theorem; discrete and continuous random variables and their functions; expected value, variance and standard deviation; systematic study of

the major discrete and continuous distributions; moment generating functions; hypothesis testing and estimation. Prerequisite: MA 242.

MA 432 — Linear Algebra (3,0) 3 Credits
Review of vector and matrix operations including matrix inverses, eigenvectors and eigenvalues. Equations of lines and planes, vector spaces including basis and dimensions, linear transformations, change of basis, diagonalization of matrices, inner products and orthonormal bases, applications. Prerequisite: MA 245 or MA 345.

MA 441 — Advanced Engineering Mathematics I (3,0) 3 Credits
Line and surface integrals; vector fields with the study of Green, Gauss and Stokes Theorems; applications of vector field theory; Fourier series. Prerequisite: MA 345.

MA 442 — Advanced Engineering Mathematics II (3,0) 3 Credits
The solution of linear differential equations with variable coefficients; study of the derivation, characteristics and solutions of partial differential equations; Fourier series, Fourier transform, Laplace transform and Green's function; applications in science and engineering. Prerequisite: MA 441.

MA 443 — Complex Variables (3,0) 3 Credits
Algebra of complex numbers; complex functions, analytic functions; mapping by elementary functions; conformal mappings and their applications; additional topics may include complex integration, power series expansion. Prerequisite: MA 441.

MA 299, 399, 499 — Special Topics in Mathematics 1-6 Credits
Lectures, independent studies or combinations of selected topics in mathematics. Prerequisites: Consent of instructor and approval of the department chair.

MANAGEMENT SCIENCE

MS 105 — American Business Enterprise (3,0) 3 Credits
The role of business in American society. Examines the issues, foundations and environment of the business enterprise system. Business financing, production, marketing and employee relations are stressed. Not available to Aviation Business Administration students.

MS 120 — Introduction to Computer Based Systems (3,0) 3 Credits
An overview of computers as processors of information and the form that both the information and the processor take, where this fits into organizations, and how people get involved. Introduction to some of the tools, techniques and strategies used in computer-system

development. Computer use in the analysis, design and writing spreadsheets for business applications. Corequisite: CS 109.

MS 201 — Principles of Management (3,0) 3 Credits

Provides an overview of relevant management principles and practices as applied in contemporary organizations. Focuses on management theories, philosophies and functions.

MS 210 — Financial Accounting I (3,0) 3 Credits

Fundamental principles applicable to the accounting cycle, asset valuation, income determination, financial reporting, and owners equity. Prerequisite: MS 201.

MS 212 — Financial Accounting II (3,0) 3 Credits

Fundamental principles applicable to financial statement analyses, funds and cash flow reporting, price level changes and income tax interperiod allocation. Prerequisite: MS 210.

MS 221 — Computer Based Systems (3,0) 3 Credits

This course analyzes the design and use of spreadsheets in business information systems. Covers advanced concepts for database management, graphics and reports. Structured programming concepts applied to menu driven applications, macro and command language programming. Use of add-ins and spreadsheet compilers. Prerequisite: MS 120.

MS 308 — Public Administration (3,0) 3 Credits

Characteristics of organization and management in government; impact of political processes and public pressures on administrative action; role of regulatory agencies; governmental personnel and budgetary procedures; unique qualifications of the public administrator. Prerequisite: MS 201.

MS 311 — Marketing (3,0) 3 Credits

Marketing theory; marketing management, sales management; market research. Public and customer relations, advertising, distribution. Prerequisites: EC 200 or EC 210, MA 222.

MS 312 — Managerial Accounting (3,0) 3 Credits

Emphasizes the conceptual, measurement, and communication aspects essential for the interpretation and use of accounting information for management purposes. These aspects will be stressed by treating three areas of cost within the field of management accounting; full cost accounting; differential accounting; and responsibility accounting. Prerequisite: MS 212.

MS 314 — Human Resource Management (3,0) 3 Credits

This course will examine the functions to be accomplished in effectively managing human resources. An in-depth study of the

interrelationship of managers, organizational staff and/or specialists, will assist the student in understanding and applying management theories to real world human resource planning. Areas of concentration include human resource planning; recruitment and selection; training and development; compensation and benefits; safety and health; and employee and labor relations. Prerequisites: SS 220, MS 201.

MS 317 — Organizational Behavior (3,0) 3 Credits
A basic course in the analysis of various behavioral concepts affecting human behavior in business organizations, with emphasis on research, theory and practice. Prerequisites: SS 220, MS 201.

MS 320 — Business Information Systems (3,0) 3 Credits
A management approach to understanding business information systems. The general characteristics, potential and limitations of business systems are covered. The major emphasis is on understanding the inputs, processing and outputs of a variety of business systems; the ways in which business systems are interrelated and the inherent management problems involved in the implementation and control of such systems. Prerequisites: MS 210, MS 221, MA 220.

MS 321 — Aviation/Aerospace Systems Analysis Methods (3,0) 3 Credits
Overview of the system development life cycle. Emphasis on current system documentation through the use of both classical and structured tools/techniques for describing process flows, data flows, data structures, file designs, input and output designs and program specifications. Prerequisite: MS 221.

MS 322 — Aviation Insurance (3,0) 3 Credits
An introduction to the basic principles of insurance and risk with its special application to the aviation industry. An in-depth review of the aviation insurance industry in the United States including the market and types of aviation insurers. Prerequisite: MS 201.

MS 323 — Office Automation and Telecommunications with Aviation/Aerospace Applications (3,0) 3 Credits
Office information and decision support systems are examined. Emphasis is given to information processing considerations at the systems level, including analysis and management of support activities such as records management, electronic filing and retrieving systems, word processing, micro and reprographics, and telecommunications. Prerequisite: MS 221.

MS 331 — Transportation Principles (3,0) 3 Credits
Basic principles of the several modes of transportation — air, sea, rail, highway, and pipeline — including problems of competition, the

importance of each in the economy, and future developmental prospects. Prerequisites: EC 210.

MS 332 — Corporate Finance I (3,0) 3 Credits

The finance function, financial analysis and control, financial planning, short term and intermediate term financing, long term financing and financial strategies. Prerequisites: MS 212, EC 200 or EC 211.

MS 333 — Personal Financial Planning (3,0) 3 Credits

A study of the Personal Financial Planning process. Includes taxes, investments, purchase of housing/auto, insurance needs and analysis, use of credit and retirement and estate planning. Student will develop a personal financial plan and will invest in a \$500,000 portfolio of securities. Prerequisite: Junior Standing.

MS 335 — International Business (3,0) 3 Credits

An analysis of economic development and international trade in modern times, with an examination of current US relations with other nations. Attention will be focused on the impact of foreign trade on the aviation industry and the industry's contribution to economic development. Prerequisites: EC 210, EC 211, MA 222.

MS 350 — Analysis Methods for Management (3,0) 3 Credits

The application of mathematical methods to the solution of management problems. Probabilities; decision making using marginal, cost, profit and volume analysis; linear programming; forecasting; introduction to simulation. Prerequisite: MA 211 or MA 222. (Offered by College of Continuing Education only.)

MS 390 — Business Law (3,0) 3 Credits

A survey of the legal aspects of business transactions. Areas covered include contracts, agency, bailments, negotiable instruments, partnerships, corporations, consumer credit, and the government's influence on business law. Prerequisite: MS 201.

MS 401 — Management Planning and Control (3,0) 3 Credits

The requirement for short term and long range planning are investigated. New product planning is discussed. The importance of the control functions will be emphasized with particular attention to applications of these functions to aviation-oriented activities. Prerequisites: MS 314, MS 317, MS 332, MA 320.

MS 405 — Aviation Marketing (3,0) 3 Credits

Basic marketing concepts and procedures involved in the aviation industry to include commercial, general, and corporate aviation. Prerequisites: EC 210, MS 201, MS 311.

- MS 408 — Airport Management (3,0)** **3 Credits**
 Comprehensive examination of the major functions of airport management including master planning. Study of the socioeconomic effects of airports on the communities they serve. Prerequisites: MS 311, MS 314, EC 315.
- MS 410 — Management of Air Cargo (3,0)** **3 Credits**
 Intensive study of the practices and problems of management with respect to air cargo. Importance of air cargo service to the economy, rate and tariff problems, terminal facilities, competition, and future prospects. Prerequisite: MS 311.
- MS 411 — Logistics Information Systems in Aviation/Aerospace (3,0)** **3 Credits**
 This course examines ways to optimize the physical flow of goods and materials within a firm from acquisition through production, and movement through channels of distribution. It focuses on applying logistics theory to aviation management problems in materials handling, managing inventory, planning capacities, and locating distribution centers. It includes case studies with aviation/aerospace applications using computer models. Prerequisites: MA 222, MA 320, and HU 221 or permission of instructor.
- MS 412 — Airport Planning and Design (3,0)** **3 Credits**
 The principles of airport master planning and system planning will be studied. Fundamental principles of airport layout and design are covered, including geometric design, airport drainage, pavement design, passenger and cargo terminal layout and capacity and delay effects. Prerequisite: MS 408.
- MS 415 — Airline Management (3,0)** **3 Credits**
 An introduction to the administrative aspects of airline operation and management. Topics include the annual profit plan, uniform system of accounts and reports, demand analysis, scheduling, the theory of pricing, fleet planning, facilities planning and airline financing. Prerequisites: EC 315, MS 311, MS 314, MS 332.
- MS 419 — Aviation Maintenance Management (3,0)** **3 Credits**
 Comprehensive examination of organizational maintenance policies, programs and procedures. Emphasis on maintenance planning, forecasting and cost control; reliability; safety and flight schedule performance. Prerequisites: MA 320, MS 312, or permission of Department Chair/Resident Center Director.
- MS 420 — Industrial Management (3,0)** **3 Credits**
 An intensive study of management in all organizations — service oriented and product oriented. Scheduling, inventory control procurement, quality control and safety are investigated. Particular attention to applications of these to aviation oriented activities. Prerequisites:

MA 320, MS 312, or permission of Department Chair/Resident Center Director.

MS 421 — Small Business Management (3,0) 3 Credits

An analysis of the theoretical and practical knowledge necessary to be successful in conceiving, initiating, organizing and operating a small business. Special focus will be placed on small businesses in the aviation field. Prerequisite: MS 401.

MS 422 — Life Cycle Analysis for Systems and Programs in Aviation/Aerospace (3,0) 3 Credits

This course is a study of system theory and its relationship to aviation/aerospace systems management. It covers a brief history of system theory and system life cycle, and presents the major activities in each phase of a system's life cycle. Also covered are specific topics related to system design and support, including reliability, maintainability, availability, testing, quality control, customer support, product improvement program analysis and the role of data collection and analysis in the operational phase. Related topics covered are cost effectiveness analysis and project management. The course examines applications and case studies specific to aviation/aerospace, including military applications and computer simulation models. Prerequisites: MA 222, MA 320, and HU 221 or permission of instructor.

MS 423 — Artificial Intelligence and Expert Systems in Business (3,0) 3 Credits

This course surveys application of artificial intelligence and expert systems in a business environment. Areas include problem solving, knowledge representation, search strategies, natural language processing, perception and learning, and AI computer languages. Reading in cognitive psychology, philosophy and social issues as applied to AI. Building a knowledge system project. Prerequisite: MS 221.

MS 424 — Project Management and Software Engineering (3,0) 3 Credits

This course analyzes procedures for planning, managing, and developing software and for controlling the configuration of the developed product and its documentation. It provides computer-based tools to determine cost, schedule and technical validity of a project. Other topics include estimating software effort and using software metrics. Prerequisite: MS 221.

MS 425 — Trends and Current Problems in Air Transportation (3,0) 3 Credits

Analysis of selected contemporary issues, problems and trends facing management in various segments of the aviation industry including general aviation and the airlines. Students apply previously learned concepts to practical problems to develop increased understanding and demonstrate knowledge of the subject. Prerequisite: MS 401.

MS 431 — Business Policy (3,0)**3 Credits**

Case problems in determining business policy, instituting policy and appraising the results. The viewpoint is that of top and middle management. Prerequisites: MS 401.

MS 433 — Management of the Sales Force (3,0)**3 Credits**

Organization of the sales department within aviation organizations and its relation to other departments. Topics to be covered include: planning, forecasting, quota setting, selection and training of sales persons, sales policies, sales analysis and evaluation. Prerequisite: MS 401.

MS 434 — Corporate Finance II (3,0)**3 Credits**

A study of modern portfolio investment theory including traditional financial analysis, technical analysis, efficient market theory and the capital asset pricing model. Theories will be explored in the context of practical application to investment and financial decision-making in aviation industry corporations; analysis of specific companies involved in leasing, mergers, bankruptcies and other reorganizations. Student projects include the selection of an investment portfolio of \$100,000 and analysis of the investment over time. Prerequisite: MS 332.

MS 435 — Taxation (3,0)**3 Credits**

An introduction into the areas of Federal Taxation and its relationship with business management decisions. Areas of emphasis will be placed on identifying tax aspects concerning: 1) Selection of business entity, 2) Rules of capital gains and losses, 3) Acquisition use, and disposition of fixed assets and 4) others. Prerequisite: MS 312.

**MS 445 — Aviation/Aerospace Database
Management Systems (3,0)****3 Credits**

Introduction to application program development in a database environment with an emphasis on loading, modifying and querying the database using a host language. Discussion and application of data structures, indexed and direct file organizations, models of data including hierarchical, network and relational. Discussion of storage devices, data administration and data analysis, design and implementation. Prerequisite: MS 221.

MS 447 — Information Resource Management (3,0)**3 Credits**

A seminar course providing a broad overview of the information systems management function. The course emphasizes information systems management, with particular attention on planning, organizing and controlling user services and managing the computer information systems development process. Coverage of the subject matter through lectures, readings, discussions and case study analysis. Prerequisite: MS 221.

MS 449 — Strategic Marketing Management (3,0) 3 Credits
A capstone marketing course which focuses on strategic analysis and planning by aviation marketing managers. Emphasis will be given to corporate and marketing strategy; market analysis and targeting; strategic marketing programming; and marketing control. Prerequisite: MS 401.

MS 299, 399, 499 — Special Topics in Management 1-4 Credits
Lectures, laboratories, independent studies or combinations of selected topics in management. Prerequisites: Consent of instructor and approval of the department chair. May be repeated with change of content.

MILITARY SCIENCE ARMY ROTIC

MY 103 — Basic Military Science (1,2.5) 1 Credit
A study of the defense establishment and the organization and development of the United States Army. A study of military courtesy, discipline, customs and traditions of the service. A historical perspective of the role of the different branches of the United States Army and the role they have played in the freedom of our nation. An introduction to physical readiness training. Course includes lectures and laboratory. Field Training Exercises normally include M16-A1 rifle firing, rappelling training, and airmobile helicopter operations.

MY 104 — Basic Military Science (1,2.5) 1 Credit
Fundamentals of land navigation that include map reading, terrain identification, intersection, resection and polar coordinates. A study of the roles the active Army Forces, the Army Reserve Forces and the Army National Guard play in our nation's defense. Continued emphasis on physical readiness training. Course includes lecture and laboratory. Field Training Exercises normally include M16-A1 rifle firing, rappelling training, and airmobile helicopter operations.

MY 203 — Basic Military Leadership I (1,2.5) 1 Credit
A review of the customs and traditions of the Service. The fundamentals of leadership development and the importance of understanding the principles that are important to effective leadership. The course requires mandatory physical training and includes lecture and laboratory. Two weekend training exercises normally include M16-A1 rifle firing, rappelling training, and airmobile helicopter operations.

MY 204 — Basic Military Leadership II (1,2.5) 1 Credit
The fundamentals of Military Geography and their application in the use of navigational aids for the military forces. A study of preventative medicine countermeasures and first aid techniques that

every leader must know. The course requires mandatory physical training and includes both lecture and leadership laboratory. Two weekend training exercises normally include M16-A1 rifle firing, rappelling training, and airmobile helicopter operations.

MY 303 — Officership I (3,4,5)

3 Credits

This course examines the foundations of officership, the character, responsibilities, and status of being a commissioned officer. It is dynamic, challenging, and stressful for it is the course that emphasizes the warrior ethic. The course covers a wide spectrum of subjects, from training in common military skills to fostering a value system that emphasizes service to the nation, readiness to persevere in the face of obstacles, and willingness to make personal sacrifices in pursuit of the greater good. This course includes lecture, advanced leadership laboratory, physical training, and practical field training exercises. Prerequisites: Completed basic military science (or given constructive credit) and be a contracted Army ROTC cadet.

MY 304 — Officership II (3,4,5)

3 Credits

A continuing development of the processes that distinguish commissioned military service from other professional endeavors. The main emphasis of this class will be the preparation of cadets for the six-week advanced camp they normally attend at the end of the junior year. Here their capability to conceptualize, innovate, synthesize information, and make sound decisions while under stress will be evaluated. This course includes lecture, advanced leadership laboratory, enhanced physical training and practical field training exercises. Prerequisite: MY 303.

MY 403 — Advanced Military Leadership I (3,4,5)

3 Credits

A study of military professionalism with emphasis on command and staff relationships, organizational functions and duties of various staff officers that assist in the leadership of the organization. A study of personnel and logistical systems and the role they play in helping the organization optimize operations and improve life in the Army community. Training in staff briefings will be used as an introduction to military procedures. This course includes lecture, laboratory, and physical readiness training.

MY 404 — Advanced Military Leadership II (3,4,5)

3 Credits

A study of ethics and professionalism in the military and the role they play in carrying out the defense policy of the United States. The fundamentals of Military Law, its impact on the American military society and its place in the jurisdictional system. A history of the military courts martial as it relates to the jurisdictional process of American society. A study of the Law of Land Warfare and its relationship to the conduct of soldiers in combat. This course includes lecture, laboratory, and physical readiness training.

PHYSICAL SCIENCE

PS 101 — Basic Chemistry (3,0)

3 Credits

Elementary chemical theory. Covers basic atomic theory, elements, compounds, and mixtures, calculation of weight and weight volume relationships, basic descriptive chemistry. (Cannot be used for credit in chemistry toward degrees in Aerospace or Electrical Engineering.) Prerequisite: MA 111 or MA 120 or corequisite: MA 140.

PS 102 — Explorations in Physics (3,0)

3 Credits

Survey course in elementary physics. Stress will be placed on basic concepts, principles and history of the development of physics. Presentations will include selected topics in mechanics, heat, light, sound, electricity and magnetism, and modern physics. (Cannot be used for credit in physics towards degrees in Aerospace or Electrical Engineering, Aircraft Engineering Technology, Aeronautical Science, or Avionics Technology.) Prerequisite: MA 111 or MA 120.

PS 103 — Technical Physics I (3,1)

3 Credits

Survey course in elementary physics. Stress will be placed on basic physics principles. Problem solving and problem solving logic will be an important, integral part of this course. Topics will include Newton's Laws, projectile motion, circular motion, work, energy, conservation laws, momentum. (Cannot be used for credit in physics toward degrees in Aerospace Engineering, Electrical Engineering, or Aircraft Engineering Technology.) Prerequisite: MA 111 or MA 120 or MA 140. Corequisite: MA 112 or MA 220 or MA 241.

PS 104 — Technical Physics II (3,1)

3 Credits

Application of basic physics principles discussed in PS 103. Other areas will include fluids, properties of matter, thermodynamics, wave motion, sound, simple harmonic motion, kinetic theory, basic electromagnetic theory and elementary circuits. (Cannot be used for credit in physics toward degrees in Aerospace Engineering, Electrical Engineering, or Aircraft Engineering Technology.) Prerequisites: PS 103, MA 112 or MA 220 or MA 241.

PS 107 — Elements of Biological Science (3,0)

3 Credits

A physical science course with emphasis on anatomy and physiology of man including chemical and cellular basis of life, biology of organisms, and ecology.

PS 108 — Contemporary Chemistry (3,0)

3 Credits

Elementary Chemical Theory. The origins and development of chemistry with an overview of the present applications of chemistry and its future potential in human affairs. Applications to scientific decision-making in the business and industrial environment. **Students who take PS 108 may not also take PS 101.**

PS 109 — Current Topics in Space Sciences (1,0) **1 Credit**
A survey seminar intended to explore contemporary topics encountered in the exploration of the upper atmosphere and near space environment.

PS 110 — Chemistry for Engineers (4,3) **5 Credits**
Chemical stoichiometry; states of matter; solutions; thermodynamics; rate of reaction; equilibrium; oxidation-reduction; corrosion; organic compounds; and polymers. Prerequisite: High school chemistry and placement or PS 101.

PS 201 — Engineering Physics I (4,3) **5 Credits**
Vector and scalar quantities. Newton's Laws of motion and gravitation. Friction. Work, energy and power. Torque and rotational motion. Linear and angular momentum. Harmonic motion. Fluid statics and dynamics. Wave motion and sound. Corequisite: MA 242.

PS 202 — Engineering Physics II (4,3) **5 Credits**
Basic thermodynamics and kinetic theory of gases. Electric forces, electric field and Gauss's Law. Electric potential and electrostatic potential energy. Capacitance. Simple D-C circuit theory. Magnetic forces, magnetic field and Ampere's Law. Faraday's Law. Inductance. Electromagnetic oscillations and wave propagation. Geometrical optics. Prerequisite: PS 201.

PS 205 — Physics I w/Laboratory (3,3) **4 Credits**
Estimations; order of magnitude analysis; Newton's Law; Gravitation, Kinematics; Work and Energy; Momentum; Rotation; Harmonic Motion. Prerequisite: MA 241. Corequisite: MA 242.

PS 208 — Physics II (3,0) **3 Credits**
Fluids; Temperature; Heat; First and Second Laws of Thermodynamics; Wave Motion; Acoustics. Prerequisites: PS 205, MA 242. Corequisite: MA 243.

PS 209 — Physics III w/Laboratory (3,3) **4 Credits**
Static Electricity, Gauss's Law, Potential, Ohm's Law, Direct Current circuits, Magnetic Fields, Induced Electromotive Force, Inductance, EM Waves, the nature of Light, images by a single surface, lenses and optical instruments. Prerequisites: PS 208, MA 243.

PS 290 — Physics Laboratory Practicum (0,1) **0 Credits**
Required, non-credit course. Requires the student to direct the operation of basic laboratory for one semester. Includes laboratory preparation, laboratory discussion, and grading of laboratory reports. Students receive pay at the current rate approved for Student Assistants.

PS 301 — Astronomy (3,0)**3 Credits**

A descriptive course dealing with the structure and evolution of the physical universe. Topics include the solar system (Earth, Moon, Sun, and planets), stars, black holes, galaxies, quasars, cosmology and exobiology. Planetarium trips and night observing sessions optional. Prerequisite: PS 102 or PS 103 or PS 201 or PS 205.

PS 303 — Modern Physics (3,0)**3 Credits**

Modern concepts in physics including optics. Topics include refraction, diffraction, and scattering of electromagnetic radiation, special relativity, wave-particle duality, the uncertainty principle, quantum theory of atomic structure, X-rays, lasers and nuclear reactions. Prerequisite: PS 202 or PS 209.

PS 304 — Man and His Environment (3,0)**3 Credits**

A survey course in the environmental problems arising from man's use and abuse of his environment. Ecological, economic, sociologic and technologic principles will be applied to the management control of pollution of the atmosphere, land and water resources of the earth. Prerequisite: PS 101 or PS 110.

PS 305 — Modern Physics Laboratory (0,3)**1 Credit**

Experiments in atomic and nuclear physics, including spectroscopy, nuclear particle analysis, X-Ray analyses, and laser applications. Corequisite: PS 303.

PS 320 — Classical Mechanics (3,0)**3 Credits**

Fundamentals of Mechanics; oscillatory motion; systems of particles; varying Mass, motion under central forces; motion in three dimensions; gyroscopic motion; generalized coordinates; normal coordinates; Lagrangian and Hamiltonian Formulations. Students will write some simple computer programs. Prerequisites: MA 345, ES 204.

PS 401 — Astrophysics (3,0)**3 Credits**

Study of the basic physical processes operating in the astronomical environment; stellar structure and evolution, the interstellar medium, galaxies, cosmology. Astrophysical concepts are emphasized, thus underlining the common features operating within many astronomical systems. Prerequisites: PS 303, MA 441.

PS 299, 399, 499 — Special Topics in Physical Science 1-4 Credits

Lectures or independent study of topics within the fields of the physical sciences impinging on aerospace engineering development or practices and which are of current or anticipated interest will be covered. Prerequisites: Consent of instructor and approval of the department chair.

SAFETY OF FLIGHT

SF 200 — Safety Program Management (3,0)

3 Credits

A study of the principles of the development and management of an effective safety program. The philosophy and historical development of major concepts are examined with particular emphasis on areas of special concern in organizational accident prevention. Students analyze the influence of morale, education and training, the role of the supervisor, and other substantial program elements of value to the safety manager.

SF 210 — Introduction to Aerospace Safety (3,0)

3 Credits

An introduction and overview of the theories, concepts, applications, and practices of the field of aerospace safety. The course is designed for the beginning safety student and is a prerequisite for most of the higher-level safety courses. Material presented covers the major specialty areas such as Human Factors, Mechanical Factors, Accident Investigation, Safety Programs, Safety Statistics, etc.

SF 305 — Mechanical and Structural Factors in Aviation Safety (3,0)

3 Credits

Examination of design, manufacturing, metallurgy and maintenance as to the influence each has on aircraft accidents. A detailed analysis of the "Failure Process" will be conducted. Additional topics include: stress and design loading, fatigue, corrosion, and the envelope of operation.

SF 310 — Aircraft Crash Survival Analysis and Design (3,0)

3 Credits

An in-depth analysis of the accident environment with particular emphasis on the protection of the occupants. The injury mechanisms and causes will be analyzed as will the physics and kinematics of the impact sequence. The intent of the course is to familiarize the student with what can be done to minimize the effects of an accident. Prerequisite: SF 305.

SF 320 — Human Factors in Aviation Safety (3,0)

3 Credits

An examination of the major causative agent in aircraft accidents; the human being. Emphasis is placed on psychologic and physiologic factors which enhance the accident probability. Included is a detailed analysis of Ergonomics (human engineering) and its influence. Prerequisite: SS 220.

SF 330 — Aircraft Accident Investigation (3,0)

3 Credits

A detailed evaluation of methods and procedures involved in aircraft accident investigation. The organization, duties and procedures of the Aircraft Accident Board are analyzed. The student explores procedures for determining accident causes through analysis of such

elements as the function and techniques employed by the trained accident investigator and the role of the specialized laboratory. Analyses are also made of reporting procedures and the all-important follow-up work designed to avoid like or related aircraft accidents.

SF 340 — System Safety in Aviation (3,0)

3 Credits

"System Safety" entails specialized integration of skills and resources in all phases of the life cycle of a given system in furtherance of accident prevention. Its heritage is systems engineering and management theory but amplified to include modern safety practices derived from numerous disciplines. Accordingly, this course reviews the development and implementation of system safety technology in aviation, both civil and military. Students will acquire an understanding of how accident prevention is designed into an aircraft under development, evaluated and enhanced during flight test, and assured or otherwise controlled during operational use; this in juxtaposition with other elements of the total aviation system. Prerequisites: SF 200, SF 210.

SF 350 — Aircraft Crash and Emergency Management (3,0)

3 Credits

Theory, practices, and techniques utilized in the response phase of aircraft crashes and emergencies. Designed as a "real world" introduction to the field of emergency response at the CFR agency level, the airport response and administration levels, and the related and associated entities involved in aircraft mishaps. Prerequisite: SF 210.

SPACE STUDIES

SP 110 — Introduction to Space Flight (3,0)

3 Credits

A survey of the major aspects of space flight. Topics covered include the history of space flight, Space Shuttle operations, and present and future commercial, industrial, and military applications in space.

SP 200 — Planetary and Space Exploration (3,0)

3 Credits

This is a survey course of U.S. and international space programs. The student will be introduced to the Earth and its space environment, to methods of scientific exploration and to spacecraft and payload criteria at the introductory physics level. Prerequisites: PS 103 or PS 201.

SP 210 — Space Transportation System (3,0)

3 Credits

A survey course of the Space Transportation System (STS) at the introductory physics level. Included are manned space flight operations, supporting systems and the Space Shuttle mission, both present and future. A review of Space Shuttle flight profiles, guidance and navigation control, proximity operations and rendezvous and a brief

review of hypersonic orbiter aerodynamics are included. Also covered are future STS applications to space station logistical operations, commercial applications and Department of Defense operations. Prerequisites: PS 103 or PS 201.

SP 215 — Space Stations Systems and Operations (3,0) 3 Credits

This course is designed to provide a brief study of the Space Station flight operations, its supporting elements and planned systems. The survey study will include commercial applications, logistical support, maintenance and servicing design concepts at the introductory level. Prerequisites: PS 102 or PS 103 or PS 201.

SP 220 — Life Support Systems (3,0) 3 Credits

This course is a survey, at the elementary physics level, of the requirements and design considerations for life support systems in space and on other planets. Included are an introduction to basic human physiology, a description of the space environment and a survey of historical life support systems, and a presentation of spacecraft limitations and requirements. Prerequisites: PS 102 or PS 103 or PS 201.

SP 300 — Satellite and Spacecraft Systems (3,0) 3 Credits

Orbital satellites and spacecraft are discussed according to their application, design and environment. The power system, shielding and communication systems are reviewed along with their missions, space environment and limitations. The course will be taught at the introductory physics (PS 104) level. Prerequisites: MA 125; PS 104 or PS 202.

SP 400 — Introduction to Space Navigation (3,0) 3 Credits

This course will introduce the student to basic elements of space navigation at the introductory physics level. The consequences of Newton's law of gravitation and central force motion, including Kepler's three laws of planetary motion are explained. The physical characteristics of the solar system and the Earth/Moon system are reviewed. The basic methods and techniques of navigating in near-earth orbit and the moon and planets are described. Prerequisites: MA 125 and MA 112 and PS 103 or PS 201.

SP 425 — Selected Topics in Space and Aerospace (3,0) 3 Credits

This course introduces students to problems in space operations, space flight or other space-related topics which can be critically addressed from a knowledge base of elementary calculus, elementary physics and the subject matter of any two Space Studies courses. The specific topics will be selected by the course monitor and instructor and published in the **Schedule of Courses** in the preceding semester. This is a required course for the Space Studies minor. Prerequisites: MA 125, PS 104 or PS 202, and any two SP courses.

SOCIAL SCIENCE

SS 102 — College Success (2,0)

1 Credit

A course in which students assess and develop the personal and interpersonal dynamics and intellectual and social demands necessary to succeed in college. Time management, study skills, goal clarification, career concerns, and college resources will be included. This course is graded Pass/Fail and is available to Freshmen only.

SS 110 — World History (3,0)

3 Credits

Designed primarily as a survey of the development and evolution of Western Civilization from 1500 to the present. Emphasis is placed on the effect of Western influence on the world.

SS 120 — American History (3,0)

3 Credits

From 1865 to the present. Reconstruction, the age of big business, the United States as a world power. World War I, World War II, the Great Depression and its aftermath.

SS 130 — History of Aviation in America (3,0)

3 Credits

A survey of the history of America in the Twentieth Century, emphasizing the explosive growth of aviation as a major influence upon the economic, military and societal development of the United States.

SS 204 — Introduction to Geography (3,0)

3 Credits

A survey course designed to acquaint the student with types of maps, map reading and utilization, as well as to show relationships between geography and economics, culture and geopolitics. Man and his use of his environment are stressed, along with the usual emphasis on place, names and locations. Ancillary topics will include climate, demography and transportation. The course is a lower level elective open to students in all degree programs. There are no pre- or corequisites.

SS 210 — Introduction to Sociology (3,0)

3 Credits

Integrated survey of the fundamental concepts of culture, forms of collective behavior, community and social organization, social interaction and social change. The social effects of aviation and the impact of science on the social order living in an air-age will also be investigated.

SS 220 — Introduction to Psychology (3,0)

3 Credits

Designed to help the student become aware of the many factors influencing human behavior and social interaction, and to understand the context of emotional disturbances.

SS 305 — American Military History (3,0) **3 Credits**
Military history with emphasis on military policy, organization and technology as they relate to political, economic, and social developments from 1775 to the present. Prerequisite: SS 110 or SS 120 or SS 130.

SS 310 — Personality Development (3,0) **3 Credits**
A course to acquaint the individual with the environmental factors that affect personality development, emotional stability, and interpersonal relationships in our society. Through an understanding of these factors, the individual will have discovered new modes of adjustment, both in his own life and in his family and occupational setting. Prerequisite: SS 220.

SS 320 — American National Government (3,0) **3 Credits**
Basic issues of American democracy, constitutional principles and the executive, legislative and judicial branches of government. Prerequisite: SS 110 or SS 120.

SS 325 — International Studies (3,0) **3 Credits**
This course is designed to acquaint the student with an overview of the land, the people, the culture and the history with emphasis on current events and policies on the world scene. Prerequisite: SS 110 or SS 120.

SS 331 — Current Issues in America (3,0) **3 Credits**
A course in selected political-economic issues of national and international importance. Extensive use of journals, magazines and newspapers to supplement lectures and discussions. Prerequisite: SS 110 or SS 120.

SS 335 — Human Factors (3,0) **3 Credits**
This course provides the student, particularly those with a limited background in psychology, with an understanding of the basic principles of human factors psychology. The course will focus on the research, principles, and methods that are beneficial (and essential) in optimizing the interactions between people and machine elements of the system, while taking the environment into account. This course places particular emphasis upon the importance of the role of human factors in aviation and aerospace systems. Prerequisite: SS 220.

SS 340 — American Foreign Policy (3,0) **3 Credits**
A survey of the evolution of present American foreign policy, stressing the factors which affect and shape this policy. Attention is given to present governmental offices, agencies and departments and the role each plays in policy formulation. Emphasis is on the period since World War II. Prerequisite: SS 110 or SS 120.

SS 350 — Psychology of Relationships (3,0)**3 Credits**

The course will provide theoretical and practical knowledge of the intrapersonal and interpersonal components of successful relationships. Lectures and discussions will focus on research, theory and applications of Social, Behavioral, Psychoanalytic, Family and Humanistic Psychology to interpersonal, romantic, marital and family relations in contemporary society. Class will also focus on self-knowledge and skills conducive to successful relationships. Prerequisite: SS 220.

SS 398 — Applied Social Psychology (3,0)**3 Credits**

A course to provide practical applications of basic sociological and psychological principles to problems of youth and to familiarize the student with community services available to problem youths. Supervised by the Office of Youth Services, the student will gain insight and experience in the operation of the Office of Youth Services, rehabilitation techniques and interpersonal relations with problem youth. Prerequisite: SS 210 or SS 220.

**SS 299, 399, 499 — Special Topics in the
Social Sciences****1-6 Credits**

Lectures, independent study, and other specially arranged courses not regularly scheduled in the areas of history, sociology, psychology and human culture in general. Prerequisites: Consent of instructor and approval of the department chair.

Academic Regulations And Procedures



STUDENT RESPONSIBILITY

The student is responsible for being informed of all regulations and procedures required for continued attendance at the University. These are generally embodied in this catalog, the **Student Handbook**, the **Flight Operations Manual**, the **Residence Hall Regulations Pamphlet**, **Curriculum Manual**, and **Academic Policies and Procedures** that are published by the University. These documents are available for reference at resident centers, campus records offices, student government offices, and academic departments throughout the University. University regulations will not be waived because a student pleads ignorance of established policies and procedures. A student who is unsure of any regulation should seek help or clarification from his or her academic advisor, program chair, or the Office of Records and Registration.

Academic regulations, curricula and procedures are subject to change without notice or obligation. If such changes occur, they will be published either in an addendum, or in the next catalog to be issued.

For academic regulations pertaining to graduate students, see the **Graduate Catalog**.

REGISTRATION

Students are required to register for each semester in which they plan to enroll. Tuition deposits, registration and payment of fees must be made in accordance with the instructions published by the campus records office or resident center. Students are not officially enrolled until they complete all the requirements of registration, including financial requirements.

Penalties will be charged for late registration and late payment of fees. Late registration will be allowed during the first three days of classes (See the University calendar) if unusual circumstances prohibit the student from registering during the scheduled period. Except for flight courses, registration will not be allowed under any circumstances after the last day for registration, as designated in the academic calendar of this catalog or the resident center schedule, whichever applies.

Because of the unique scheduling requirements associated with flight training, flight course registration continues throughout the semester.

For information on registration procedures at College of Continuing Education locations, contact the appropriate resident center.

CONTINUED ENROLLMENT

Students are considered to be continuing students, regardless of the number of hours for which they register, unless they

1. Enroll at another institution without prior written approval. If prior approval is obtained, students may not earn more than eleven semester (or equivalent) credit hours with other educa-

tional institutions between periods of attendance at the University and remain in continuing student status.

2. Fail to enroll in at least one ERAU course in any two consecutive semesters (excluding summer terms) if they are Daytona Beach or Prescott Campus students. College of Continuing Education students must enroll in at least one class in a two calendar year period.
3. Have been suspended or dismissed from the University.

Students failing to maintain continuous enrollment for any reason are required to reapply for admission. Continuously enrolled students who have left the University for one or more semesters are required to inform the Office of Records and Registration at the campus they wish to attend of the degree program desired at least 60 calendar days prior to the beginning of the semester for which they wish to re-enter.

SCHEDULE OF CLASSES

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

ACADEMIC ADVISING

At the Daytona Beach and Prescott campuses, each new student is assigned an academic advisor. At College of Continuing Education locations, the resident center director is responsible for academic advisement. The academic advisor assists the student in determining and scheduling an academic program to meet the student's educational aims and goals. The advisor's signature is required on all registration and add/drop forms before they will be processed.

Academic advisors post a schedule of office hours, and all students should feel free to call on their advisors at any time assistance or discussion is appropriate.

CLASS ATTENDANCE

Regular attendance and punctuality in accordance with the published class schedule, are expected at all times in all courses. Accordingly, attendance may be included in the grading criteria of an individual class. There are minimum "contact hour requirements" imposed by the FAA for certain classes leading to FAA certificates; these requirements are rigorously enforced. An explanation of the cause of all absences should be given the instructor in advance when possible. Absences are counted from the first scheduled meeting of the class.

An examination is normally given in each course at the end of the semester/term. A student who misses a final examination without advance permission of the instructor may be assigned a grade of F for the course. A grade of incomplete (I) may be given if the student has

obtained advance permission from the instructor or can show satisfactory evidence that the absence could not be prevented.

UNIT OF CREDIT

The semester credit hour is the unit of credit used throughout the University system. Quarter hours transferred will be converted to semester credit hours on the following basis: a quarter hour equals two-thirds of a semester hour.

CLASSIFICATION OF STUDENTS

All audited courses and courses taken for credit are counted in determining the student's load for a semester/term.

Twelve semester hours constitute the minimum load for full-time student status during the fall and spring semesters at the Daytona Beach and Prescott campuses. The minimum load for full-time student status during each summer term is six semester hours. Students carrying less than the minimum full-time load are classified as part-time students. The normal maximum load for students is 18 hours per semester, or nine hours per summer term.

College of Continuing Education students should refer to the College of Continuing Education section of this catalog for information concerning course loads.

At all locations, a student whose cumulative GPA is 3.00 or higher may enroll for an overload with prior approval of the appropriate Dean or his designee.

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

Freshman:	27 hours or less
Sophmores:	28-57 hours
Juniors:	58-87 hours
Seniors:	88 hours or more

GRADING SYSTEM

The following grades are used by the faculty to indicate the quality of work performed by students. Grade designations and grade points for each hour of academic credit are listed below:

A	Superior	4
B	Above Average	3
C	Average	2
D	Below Average	1
F	Failure	0
AU	Audit	0
I	Passing, but incomplete	0
P	Passing (credit)	0
S	Satisfactory (non credit)	0
X	Credit by examination or advanced standing	0

T	Accepted by transfer	0
N	No grade submitted by instructor	0
W	Withdrawal from course	0
WF	Withdrawal from the University - Failing	0
XP	Course Equivalency Examination passed and advanced standing granted	0
XF	Course Equivalency Examination failed and advanced standing not granted	0

The I grade is temporary and may be given only at the end of a course when students cannot complete the required work because of severe hardship beyond their control, as determined by the instructor. At the Daytona Beach and Prescott campuses, a grade of I must be made up no later than 30 class days (15 class days for summer terms) after the last scheduled class day of the semester in which the I was assigned. College of Continuing Education students should refer to the College of Continuing Education section of this catalog for the procedure which they must follow. When an I grade is not made up within the prescribed time period, it will be changed to an F.

If students stop attending class and fail to complete the official withdrawal procedure, a grade of F will be assigned for each course in which they were enrolled.

A grade point average (GPA) is computed for each student at the end of each semester/term. The semester/term GPA is determined by dividing the number of grade points earned during the semester/term by the number of semester credit hours attempted. Only courses for which grades of A,B,C,D,F, and WF are awarded count as hours attempted. In addition to the semester/term GPA, a cumulative GPA is computed for each student for all credit work completed at the University with the exception of Basic Skills courses. These courses do not apply to a student's degree program and are not computed into the GPA.

Except for flight and basic skills courses, a course may be repeated as often as necessary or as desired with the second grade replacing the first, and the third replacing the second. The third and all subsequent grades will be used in computing GPA. All attempts will remain on the student's permanent record. Flight courses may be repeated only once. Students are responsible for indicating courses being repeated at the time of registration.

AUDITING AND WITHDRAWING FROM A COURSE

A student may change registration from audit to credit only during the "Add" period at the beginning of the semester/term. A change from credit to audit may be made only during the authorized withdrawal period (see below). When a student auditing a course fails

to maintain satisfactory attendance, as determined by the instructor, a grade of W will be assigned.

A Daytona Beach or Prescott campus student may withdraw from a course at any time during the first 40 class days of a semester and during the first 20 class days of a summer term and receive a grade of W. A student may not drop a course after the official date listed in the Schedule of Classes. Basic skills courses cannot be dropped without the approval of the appropriate department chair. At these campuses, the student must file a change of registration with the campus records office.

Flight courses may be dropped at any time prior to the first attempt of the final course phase check. A grade of W will be awarded if withdrawal is accomplished prior to the first attempt of the final course phase check.

College of Continuing Education students should refer to the College of Continuing Education section of this catalog for the procedure which they must follow.

GRADE REPORTS

Grade reports are issued at the end of each semester/term. All reports of grades are mailed directly to the student at the most current address on file in the Office of the 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 semester/term, as blanket authorizations are prohibited by law.

WARNING, PROBATION, SUSPENSION AND DISMISSAL

A student at the Daytona Beach or Prescott campuses whose cumulative GPA is less than 2.0 for one semester will be placed on academic warning. A student whose cumulative GPA is less than 2.0 for three consecutive semesters will be placed on academic probation. Students on probation are classified as students not in good standing and may not serve as an elected member of the Student Government Association, may not participate in intercollegiate athletics as a member of a University team, may not serve on the editorial staff of a campus publication or work on campus and shall lose eligibility for financial aid programs. The academic program of a student on warning or probation may be restricted by the Dean. When academic probation is removed by converting a grade of I to a grade of A, B, C, or D, the academic probation will not become part of the student's permanent academic record.

A student whose cumulative GPA is less than 2.0 for three consecutive semesters, or a student on academic probation whose cumulative GPA at the end of the subsequent semester is below 2.0,

will be suspended from the University unless the student maintains a semester/term GPA greater than 2.0.

Any student who has a semester/term GPA of less than 1.0 may be suspended or placed on academic probation at the discretion of the Provost or College Dean.

Students who are unable to successfully complete any Basic Skills course in two attempts will be suspended from the University and must apply for readmission. In order to be readmitted, the student must have earned transferable credit at another accredited institution in an appropriate first-level English or Mathematics course equivalent to the ERAU course required by the student's degree program.

A student who has been suspended and readmitted will be on probationary status until the cumulative GPA has been raised to 2.0. If the semester/term GPA falls below 2.0 during the probationary period, the student will be dismissed. Any previously suspended student who has been restored to good standing and whose academic performance subsequently deteriorates to a level which would qualify for initial suspension, will be dismissed.

Once confirmed, academic dismissal is final and the student will not be readmitted to the University.

College of Continuing Education students should refer to the College of Continuing Education section of this catalog for the procedure which they must follow.

The University reserves the right to suspend or dismiss a student at any time and without further reason, if the student's conduct, academic standing or other performance is regarded as undesirable. "Undesirable conduct" is defined by the University as any conduct which poses a risk of danger 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 him or herself; or conduct which is disruptive of the educational process of the University; or any other just cause.

Success in aviation training requires a commitment to excel and the discipline to avoid unsafe practices or habits. The use of drugs constitutes an unsafe practice and is totally incompatible with aviation environment. In recognition of this, it is the policy of ERAU that using or possessing marijuana, or any narcotic, stimulant or hallucinogenic drug will be cause for immediate suspension or dismissal.

Embry-Riddle Aeronautical University is committed to intellectual integrity in all its academic pursuits. Sanctions may, therefore, be imposed by faculty, departments, divisions, or campuses of the University for cheating (defined as using inappropriate sources of information on a test), or being a party to obtaining or possessing an examination prior to the time the examination is scheduled, or plagiarism (defined as presenting as one's own, the ideas, words, or products of another).

Such sanctions may involve a failing grade on the assignment, a failing grade for the course, suspension or even dismissal from the University.

Academic dishonesty is further defined to include the following:

1. Forgery and unauthorized alteration or misuse of one's own or another's academic records or transcripts.
2. Knowingly furnishing fake or misleading information to the University when seeking admission to the University or campus.
3. Forging, altering, falsifying, destroying, or unauthorized use of a University document, record, or identification. (Utilizing ERAU stationery, business cards, logo, or otherwise identifying oneself as an agent of the University for personal, non-University business.)
4. Misuse of computing facilities and/or security violations (including attempted violations) of computing facilities.

Any student who has been suspended or dismissed from the University for any reason must file for readmission with the appropriate admissions office. (A student suspended for poor scholarship may apply for readmission subsequent to completing a minimum of fifteen hours of academic credit with a GPA of 2.5 or more from an institution with accreditation acceptable to ERAU, or twelve calendar months after the date of suspension.)

The University reserves the right to refuse admission to students from other colleges or universities where they were on probationary status or were academically dismissed. If the University admits such students, they will be admitted on probationary status.

CATALOG APPLICABILITY

For a student at either the Daytona Beach or Prescott campus, the catalog in effect at the initial matriculation is applicable as long as the student remains in his or her original degree program and major/area of concentration. If the student leaves the University and must reapply for admission, the catalog in effect at the time of readmission will apply. (Circumstances requiring readmission to the University are listed under the Readmission to the University heading of the General Information chapter.)

College of Continuing Education students should refer to the College of Continuing Education section of this catalog for the procedure which they must follow.

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

Students who fail to complete the curriculum requirements of the degree program in which they enroll within a period of ten calendar years from the date of original enrollment will become subject to the curriculum requirements of the catalog in effect on the last day of the ten-year period.

GRADUATION HONORS

Graduation honors are awarded only to students completing a baccalaureate program and recognize excellence of performance throughout the student's academic career. To be eligible, the student must have completed at least 45 credit hours in residence at ERAU. The level of graduation honors will be based on the cumulative grade point average for all courses taken at ERAU and those courses transferred from other institutions which are directly applicable to the student's degree program.

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

Honors Level	Cumulative GPA
Summa Cum Laude	3.90-4.00
Magna Cum Laude	3.70-3.89
Cum Laude	3.50-3.69

To be recognized for honors at the Commencement Ceremony, the student shall have completed all courses for the degree except, possibly, for the last flight course and the student must be enrolled in the last flight course.

DEAN'S LIST AND HONOR ROLL

Recognition of academic excellence is provided on a semester basis for full-time students at the Daytona Beach and Prescott campuses. A Dean's List and Honor Roll are published at the end of each semester. In order to be eligible for semester honors, the student must have earned an overall cumulative GPA of at least 2.00 and a semester GPA of 3.50-4.00 for the Dean's list or 3.20-3.49 for the Honor Roll. A student will not be awarded semester honors if a grade of D or F has been received during the semester/term.

College of Continuing Education students should refer to the College of Continuing Education section of this catalog for the procedure which they must follow.

GRADUATION REQUIREMENTS

All students must complete the general requirements as prescribed by the University and the specific requirements for the degree sought. The following summary of graduation requirements is provided for all students:

1. All required courses for a particular degree listed in the applicable catalog must be successfully completed.
2. The minimum number of credit hours required for the degree as listed in the applicable catalog must be successfully completed.
3. For students pursuing their degrees at the Prescott or Daytona Beach campuses, the last 30 academic credit hours must be completed with Embry-Riddle for a bachelor's degree; the last

15 academic credits must be completed with Embry-Riddle for an associate degree. College of Continuing Education students should refer to the College of Continuing Education section of this catalog for the procedure which they must follow.

4. For a baccalaureate degree, a minimum of 40 credit hours in upper division (300 and 400 level) courses must be successfully completed. For transfer courses, the course level is determined by the educational institution which initially granted the credit. Exceptions to the 40-hour upper division requirement are authorized only when the specified required courses preclude achievement within the minimum credit hour requirements in the catalog listing for the degree.
5. A minimum cumulative GPA of 2.00 for all work completed with the University is required for any undergraduate degree. Candidates for the award of the B.S. in Aerospace Engineering, the B.S. in Electrical Engineering, and the B.S. in Aircraft Engineering Technology degrees must also earn a minimum cumulative GPA of 2.00 in all required AE, EE, ES, or ET core courses.
6. Students will not be issued a diploma or transcript of their records until all debts or obligations owed to the University have been satisfied.
7. Students will not be issued a diploma unless their behavior is in good standing, according to University policies and regulations. This includes, but is not limited to, not being on disciplinary probation.
8. An Application for Graduation must be initiated by the student and received within the time limit specified by the appropriate campus records office. In the event the graduating student will not attend a scheduled graduation exercise, the diploma will be mailed to the address requested by the student.

TWO DEGREES OF THE SAME RANK

In order for a student to earn a second baccalaureate degree, a minimum of 30 credit hours of ERAU course work over and above that which is required for the declared primary degree must be completed. At least 60 credit hours must be ERAU courses and at least 20 of the thirty additional credit hours must be in upper-division courses.

To earn a second associate degree, the student must complete at least 15 credit hours of ERAU course work over and above that which is required for the primary degree; at least 24 credit hours must be ERAU courses.

AREA OF CONCENTRATION/MINOR

Areas of concentration and minors are designed to provide preparation in a specialized field. Students should consult with their Program Chair for information concerning designating an area of

concentration or minor. The area of concentration/minor elected will be entered on the student's academic transcript when the degree information is posted at the time of graduation.

CHANGE OF DEGREE PROGRAM

At the Daytona Beach and Prescott campuses, students may apply to change their degree programs if they meet academic qualifications and the degree program capacity is not full. At least one semester (minimum of 12 credit hours) must be completed in the original degree program before applying. Students should contact their current program chair to initiate a change of degree program.

When a student elects to change degree programs, or to change to a different area of concentration or major within a degree program, the requirements of the catalog currently in effect at the time the request was approved apply except for certain programs. Students considering such changes should contact their academic advisor or department chair to determine how they will be affected.

Students at College of Continuing Education locations should contact their Resident Center representative for information on changing their degree programs.

ATTENDANCE AT OTHER INSTITUTIONS

Once admitted to the University as degree candidates, students are required to complete all work to be applied toward their degrees with the University unless prior written authorization is granted to take courses and/or training at other institutions. Students desiring to take academic courses (including all flight courses) at other institutions while enrolled at Embry-Riddle must process a "Petition to take Courses at Another Institution" form obtained from the campus records office.

In considering a petition to take courses at another institution, the student's GPA, the availability of the course or courses in the ERAU curriculum, and the availability of substitutable courses will be taken into account. Students may be authorized to enroll in a course or courses at another local institution only when it is essential that a course or courses be taken at a specific time and schedule conflicts preclude completion of the work within the University.

Students who attend other schools without proper authorization will not receive transfer credit for the courses taken and are subject to dismissal from the University. College of Continuing Education students should refer to the College of Continuing Education section of this catalog for the procedure which they must follow. Acceptable standards for transfer of courses are listed in the Admission to the University chapter of this catalog.

FLIGHT TRAINING AT OTHER INSTITUTIONS

Once a student has enrolled at Embry-Riddle, all subsequent flight training must be completed in residence at the University. Flight training at other schools while enrolled at Embry-Riddle is not permitted without **advanced written authorization** from the appropriate authority. When permission to fly outside of Embry-Riddle is granted, no academic credit will be accepted or awarded by Embry-Riddle except that academic credit may be granted for helicopter training completed at an approved Part 141 school. Credit will be awarded for successful completion of this program on a PASS/FAIL basis if prior written permission is obtained from the appropriate authority. Credit will not exceed one credit hour for the flight portion or three credits for the academic portion. Enrolled students who receive flight training outside Embry-Riddle without proper prior approval are subject to dismissal from the University. This applies to currently enrolled students and to students not currently enrolled but maintaining "continuous enrollment." (For a definition of continuous enrollment, see the Continued Enrollment heading of this chapter.)

In degree programs requiring flight training, at least one flight course must normally be completed in residence at Embry-Riddle, regardless of any advanced standing or transfer credits which may be granted. Exceptions may be made for currently qualified military trained pilots possessing FAA certification or for currently qualified, fixed-wing airline pilots.

Only those FAA Flight Certificates and ratings awarded as the result of flight training received at ERAU will be recorded on the student's transcript.

SUMMER FLIGHT

All Aeronautical Science and Airway Science students majoring in flight may be required to attend one full summer semester, A and B terms, or divide this into two summers — taking A term one year and B term another year.

WITHDRAWAL

A Daytona Beach or Prescott campus student who leaves the University for any reason must officially process a withdrawal clearance. Students withdrawing must do so through the Office of Records and Registration. When a student files an official withdrawal from the university after the end of the scheduled withdrawal period, a WF grade will be assigned for all courses for which the student is enrolled unless an exception is granted for medical reasons or other extenuating circumstances by the Provost/College Dean.

College of Continuing Education students should contact their Resident Center representative for information on withdrawal.

PRIVACY OF STUDENT RECORDS

The rights and privacy of students are the subject of Public Law 93-380 which became effective in 1974. The law requires that a student sign individual release forms for each company, school, or individual to whom he or she desires that information be released. The University may disclose certain items of directory information without prior written consent, unless notified in writing to the contrary by the student. Directory information consists of the following: student 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, most recent previous school attended and photograph. Additionally, the law authorizes students to review their files. Any student desiring additional information concerning the law should contact the Dean of Students Office.

Financial Assistance

FINANCIAL AID INFORMATION

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

Embry-Riddle believes the primary responsibility for financing an education lies first with the student and the student's family. Therefore, the student should begin preparing for educational costs by applying for financial aid early, saving money, looking for ways to reduce costs, and becoming 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.

ELIGIBILITY REQUIREMENTS

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

1. Be U.S. citizens or eligible non-citizens;
2. Be enrolled or accepted for enrollment as at least a half-time student in a degree program;
3. Be making satisfactory progress toward a degree;
4. Be registered with Selective Service if required to do so;
5. Establish financial need;
6. Not be in default on a loan or owe a repayment on a previous financial aid award received at any institution.

Students receiving assistance from the State of Florida must also take the College Level Academic Skills Test (CLAST) before the end of the semester in which they will complete 60 credit hours in order to be eligible for such assistance at junior and senior levels. Florida students should register to take the CLAST test by the posted deadline date and receive course counseling from an advisor in order to assure adequate preparation for the exam. Failure to take the test will result in the suspension of eligibility for state aid.

THE APPLICATION PROCESS

Applications are mailed to students after they apply for admission to the University. Returning students 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 College of Continuing Education locations may request their financial aid materials through the Resident Center or contact the Financial Aid Office directly.

A detailed explanation of how to apply for financial aid, specific program requirements, forms needed, application deadline dates and other information can be found in the **Financial Assistance Programs** brochure. Information about other financing programs can be found in the brochure entitled "**Financing Options for Parents and Students.**"

PROGRAMS AVAILABLE

The major categories of financial assistance programs include loans, grants and 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 financial need of the student, however there are programs designed to assist the higher income family also.

Loans

- | | |
|----------------|---|
| Federal — | <ul style="list-style-type: none">● SSL (Stafford Student Loan — formerly Guaranteed Student Loan)● PLUS Loan (Parent Loans for Undergraduate Students)● SLS (Supplemental Loans for Students)● Perkins Loan |
| Embry-Riddle — | <ul style="list-style-type: none">● REAL (Embry-Riddle Repayable Educational Assistance Loan) |

Grants

- | | |
|-----------|--|
| Federal — | <ul style="list-style-type: none">● Pell Grant● Supplemental Educational Opportunity Grant |
| State — | <ul style="list-style-type: none">● Arizona State Student Incentive Grant● Florida Tuition Voucher Program● Florida Student Assistance Grant● Florida Undergraduate Scholars Fund● Florida Vocational Gold Seal Endorsement Scholarship● Grants from other states |

Employment

- | | |
|----------------|---|
| Federal — | <ul style="list-style-type: none">● College Work-Study Program |
| Embry-Riddle — | <ul style="list-style-type: none">● Student Employment Program● Off-Campus referral program● Resident Advisor Program |

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 g.p.a. of at least 3.00. Scholarships are very competitive. A limited number of scholarships are awarded to entering freshmen and community college transfers who possess outstanding academic credentials. For further information about scholarships, contact the Financial Aid Office of the campus you plan to attend.

SHORT-TERM LOANS

The university also offers, on a limited basis, help to students who encounter financial emergencies. These short-term loans are available at the Cashier's Office for a 30-day period.

- Patrick B. Owens Memorial Student Loan Fund
- Ila Brignall Emergency Loan Fund
- Walter Lux Memorial Loan Fund
- Women's Club Loan Fund
- Joan Pilcher Memorial Loan Fund

FINANCING OPTIONS

These programs are used to supplement financial assistance awards or to provide the higher income family with programs compatible with their existing investment strategies. Some of these programs include:

- EXCEL Loan
- Manufacturers Hanover Education Loan
- Knight Extended Repayment Plan
- Education Credit Corporation
- Collegeaire
- Manufacturers Hanover Educational Line of Credit
- Knight Insured Tuition Payment Plan
- Flight Funds

Information about these programs can be obtained directly from the companies which sponsor them. A complete listing appears in the brochure entitled **Financing Options for Parents and Students**.

OTHER FINANCIAL ASSISTANCE PROGRAMS

● AIR FORCE ROTC

Air Force ROTC (AFROTC) offers yearly scholarships covering a student's college education for two, three, and four years. Each scholarship pays for tuition, laboratory and incidental fees, and textbooks and also includes a \$100 per month (tax free) allowance (up to a total of \$1000 per year).

Students never enrolled in a college or university as a full-time student are eligible for the four-year scholarship, provided they can complete their four-year degree before their 25th birthday. High School students interested in a four-year scholarship must apply to Air Force ROTC Headquarters, Maxwell Air Force Base AL, 36112, before **December 1st of their senior year**. Application forms for the scholarship are available at any university AFROTC Department, or from your local Air Force recruiter.

Freshmen and Sophomores enrolled in the Air Force ROTC program at Embry-Riddle are also eligible for other Air Force ROTC scholarships. Freshmen can compete for three-year scholarships, while sophomores compete for two-year scholar-

ships. Students apply for these scholarships through the AFROTC Department at Embry-Riddle.

Junior college transferees can also compete for two-year scholarships. These scholarships are on a competitive basis; however, students must apply through the AFROTC Department before January of their entering junior year.

Students who receive four-year ROTC Type I or II tuition scholarships will be provided with free room and board four-year scholarships from Embry-Riddle. For details on how to apply, contact your campus ROTC representative.

● ARMY ROTC SCHOLARSHIPS

Army Reserve Officers' Training Corps offers scholarships that provide up to \$7500 or 80% for tuition per year whichever is higher. Students also receive \$450 per year for books, up to \$400 for fees, and \$100 each academic month for three and four year winners. All students enrolled in the Advanced Course receive \$100 per academic month. Students may qualify to join the Army Reserve or National Guard while enrolled in Army ROTC and receive additional pay as an E-5 officer trainee.

General requirements to apply for an Army ROTC scholarship include:

1. Be a full-time student.
2. Be a United States citizen.
3. Have a SAT score of 850 or higher (ACT 19 or higher).
4. Have a minimum GPA of 2.5

Applications for scholarships are available at the Army ROTC Department. For information concerning eligibility and application, see the Reserve Officers' Training Programs section in the Guide to Curriculum chapter of this catalog. For details on how to apply contact your campus Army ROTC representative.

● ROTC ROOM AND BOARD SCHOLARSHIPS

Students who receive 4 year Air Force ROTC tuition scholarships are eligible to receive a room and board scholarship from Embry-Riddle. Students who receive 4 year Army ROTC tuition scholarships at the Daytona Campus or are 3 year advance designates at the Prescott Campus are also eligible to receive the room and board scholarship from Embry-Riddle.

Room and board scholarships are available during the fall and spring semesters of the academic year. A 2.5 c.g.p.a. is required for renewal.

Contact your campus ROTC representative for details on how to apply.

- **UNITED STATES MARINE CORPS PLATOON LEADERS CLASS PROGRAM**

To be eligible for the U.S. Marine Corps Platoon Leaders Class Program a student must be enrolled full time. Openings are available for **males** that are freshmen, sophomores and juniors and **females** that are juniors with an expected graduation date of December 1992 through August 1993.

The program offers a guaranteed aviation contract to young men who meet the physical and mental qualifications. The Marine Corps also offers contracts in various non-flying military fields. In addition, financial assistance is available for qualified individuals.

If you have any questions, contact Captain Jaffrey or Gunnery Sergeant Scott at 800/432-2061 or collect at 407/240-2204.

- **FLIGHT LEADERSHIP/FELLOWSHIP PROGRAM**

The Flight Leadership/Fellowship Program is available to students at the Prescott campus who enroll in the Aeronautical Science degree program. Students are selected for the Flight Leadership portion of the program based upon academic excellence and leadership potential. Selections for the Flight Fellowship portion of the program are made from those Flight Leadership students who complete all required flight courses, attain a Certified Flight Instructor Rating and continue to demonstrate outstanding academic and leadership qualities.

While not every Flight Leadership student is offered a fellowship, those who are selected serve as Flight Instructors and, while completing their advanced studies, can accumulate a significant number of flight hours before completing their academic training.

The Flight Leadership/Fellowship Program is highly competitive. Interested students should contact the Chairman of the Flight Department at the Prescott campus for additional information.

- **AVIATION MAINTENANCE TECHNOLOGY FELLOWSHIP PROGRAM**

The Aviation Maintenance Technology Fellowship is designed to assist students with the desire to complete an Embry-Riddle bachelor degree program utilizing their maintenance skills and certification to defray some of their tuition expenses. Selected students will serve as Assistant Maintenance Lab Instructors within the AMT curriculum, assisting the faculty in the conduct of scheduled laboratory training and the upkeep of aircraft and other training aids utilized by the department. The Fellowship Program provides for a 65 percent, or greater, tuition waiver for selected students. Requirements for application to the program are:

1. Enrolled in a bachelor degree program for at least 6 credit hours each semester.
2. Airframe and Powerplant certification.
3. Completed more than one semester as a laboratory assistant within the AMT department for AMT faculty member(s).
4. ERAU CGPA of 2.5 or above.
5. Student must be able to work a minimum of 350 hours per semester. Hours worked above the required 350 will be paid for in accordance with the established rate for student employees.
6. Students requesting employment in selected areas are subject to drug clearance prior to placement.

Students interested in the program should contact the Aviation Maintenance Technology Department's administration office for further qualifications, information and application procedures.

STUDENT GOVERNMENT ASSOCIATION LEADERSHIP PROGRAM

The Student Government Association (SGA) at each residential campus offers partial tuition for elected officials of the organization. The amount of the waiver varies, depending upon the position held. The purpose is to stimulate interest in holding elected office and to recognize the commitment these student leaders make in such positions.

For information about the criteria students must meet in order to run for candidacy in the SGA election or for other information about the program, contact the Student Government Association office.

ATHLETIC GRANTS

The University offers a limited number of Athletic Grants for qualified students at the Daytona Beach Campus. Awards are available for the sports of baseball, basketball, golf, soccer and tennis. The maximum value of such grants is the actual cost of tuition for a year. Most grants are given as partial tuition waivers. To qualify, students must meet both University and NAIA eligibility requirements. The grants are highly competitive and interested students should contact the Athletic Department for specific details.

VETERANS' EDUCATION BENEFITS

All Embry-Riddle degree programs have been 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).

Eligible persons planning to receive DVA Education Benefits while attending Embry-Riddle should contact the Veterans' Affairs Office of the campus they wish to attend for further information and

applications for benefits. 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 2 terms/semesters, however, may be required to repay the DVA for any/all benefits received if they do not achieve full admission status during that time.

Title 38, United States Code, sections 1674 and 1724, requires that education assistance to veterans and other eligible persons be discontinued when the student ceases to make satisfactory progress toward completion of his or her training objective. Accordingly, benefits will be interrupted for Daytona Beach and Prescott Campus students who remain on academic probation beyond 2 semesters, and for College of Continuing Education students who remain on academic probation beyond 2 consecutive periods of 12 credit hours. A specific request must be submitted by the student to reinstate benefits. The U.S. Department of Veterans' Affairs will determine eligibility for reinstatement.

Veterans' progress will be measured according to University standards as published in this catalog and the rules and regulations of the DVA applies.

The criteria used to evaluate progress are subject to change. Application and interpretation of the criteria are solely in the discretion of Embry-Riddle. Students are responsible for notifying the Veterans' Affairs Office of any change in their enrollment, change in personal information affecting their eligibility, and for maintaining compliance with University and Department of Veterans' Affairs requirements.

Students may receive education benefits only for courses which are required for their designated degree program.

Students who receive DVA benefits may be subject to stricter academic regulations and should be aware of how auditing courses, enrollment status, withdrawals, repeating a course, changing degree programs, and other actions may affect their eligibility to receive benefits.

University Campuses



UNIVERSITY CAMPUSES

The year-round clear flying weather and the resort communities surrounding our residential eastern campus in Daytona Beach, Florida, and western residential campus in Prescott, Arizona, offer students outstanding environments in which to study, fly and enjoy recreational activities.

Embry-Riddle offers many cocurricular activities that appeal to almost every taste. Students take advantage of the many opportunities for personal growth and development through social and pre-professional fraternities and sororities and cultural and recreational activities. Embry-Riddle's award-winning Precision Flight Demonstration Teams offer students the opportunity to compete nationally in precision air and ground events. For those who are interested, Embry-Riddle has the largest all-volunteer Air Force ROTC detachment in the country, the fastest-growing Army ROTC detachment, and a Naval Aviation Club which furnishes the U.S. Navy with the second largest number of naval aviation officers, following the U.S. Naval Academy. Embry-Riddle athletes participate in intercollegiate and intramural competition in many sports including golf, tennis, baseball, lacrosse, basketball, wrestling, rugby and volleyball.

DAYTONA BEACH CAMPUS

The Daytona Beach campus, located adjacent to the Daytona Beach Regional Airport, contains 23 main buildings set on 86 acres and is but a short distance from the world's most famous Atlantic Ocean beach. The high technology industry located in Daytona Beach and in the area around Orlando provide the University with an outstanding support base. In addition, within a one-hour drive is the Kennedy Space Center.

The campus offers up-to-date equipment and facilities. The Gill Robb Wilson Aviation Technology Center houses classrooms, single and multi-engine simulators, a weather room, and a dispatch headquarters. Flight instruction is given in Embry-Riddle's fleet of 80 aircraft plus simulators, including single-engine Cessnas, Piper Cadets, and Mooneys, multi-engine Cessna Crusaders, and simulators such as Frasca 242 T multi-engine turbine simulators.

The Samuel Goldman Aviation Maintenance Technology center houses instruction in maintenance and repair of fixed-wing and helicopter airframes, powerplants (reciprocating and turbine), and avionics. This four-building complex contains laboratories and classrooms equipped with the most modern tools to provide the student with maintenance theory as well as 'hands-on' techniques for readying vehicles for flight. The Avionics Lab (FAA certified repair station 707-50) is designed and equipped with state-of-the-art equipment to simulate the avionics environment that graduates will



encounter in industry. Engine test cells allow students to test the effectiveness of their repairs. The advanced reciprocating engine lab (FAA certified repair station 708-55) overhauls engines for the Embry-Riddle fleet. The engineering science laboratories building houses subsonic and supersonic wind tunnels and a smoke tunnel; structures, materials, aircraft design and composite materials laboratories, and the cad/cam system.

The Lindberg Center provides modern classroom facilities and houses the reading, chemistry and physics laboratories. The computer science complex provides 'hands-on' experience with both mainframe and personal computers.

Embry-Riddle is proud of its multi-million dollar Airway Science Simulation Laboratory at Daytona which simulates the various 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, traffic control, weather information, airports and airways, and pilot and aircraft performance. A new center for Aviation/Aerospace Research supports both undergraduate and graduate research and creative activities.

The John Paul Riddle Student Service Center contains a full service cafeteria, fully equipped bookstore, mailroom, career planning and cooperative education placement center, counseling center, health services, registration and records, College of Continuing Education, parking office, communication office, flight deck grill, landing strip snack bar, student activities office, and meeting rooms.

Spruance Hall, located at the main entrance to the campus fronting on Clyde Morris Boulevard, incorporates a floor plan designed for students' convenience. The building houses the admissions office, personnel office, university accounting office, student financial services, student employment, cashier, dean of students, and financial aid. The office of the President and staff are 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 facility includes individual study carrels as well as group seating. The collection includes more than 44,000 books as well as periodicals, documents, newspapers, and microfilm, media programs, and a historical aviation collection which consists of materials dating 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 6,000 libraries nationwide for shared cataloging and 200 databases that list documents, reports, conference proceedings, journal articles, doctoral dissertations, and many other kinds of information.

COLLEGE OF AVIATION TECHNOLOGY

The College of Aviation Technology is dedicated to providing the highest standard of professional education and training in aviation maintenance, avionics, engineering technology, and the aeronautical sciences, including flight.

The primary purpose of the college is to provide a marketable high quality aeronautically oriented education to prepare its students for immediate productivity and career growth potential. Practical, hands-on experience and exposure to the latest advances in knowledge and equipment are an integral part of all of the college's curricula. Our dedicated, highly-qualified faculty are the primary reasons that our programs enjoy both a national and an international reputation for excellence. All of the college's faculty are holders of impressive industry, academic, and technical credentials, as well as years of flight maintenance, and teaching experience. The aviation maintenance and flight programs are approved by the Federal Aviation Administration and have unique FAA authorization as part of their curricula.

COLLEGE OF ENGINEERING AND AVIATION SCIENCE

The College of Engineering and Aviation Science offers professional degrees in the fields of engineering, business and computer science. It has a secondary mission in that it includes the support areas of mathematics, physical sciences, humanities and social sciences, as well as the Reserve Officer Training Corps for the Army and Air Force. Students in the various programs receive a well-rounded education in which not only the technical aspects of their future careers are emphasized, but also the humanistic and social aspects of professional life as well. Particular emphasis is placed on being able to communicate effectively by helping the students to acquire both written and verbal communication skills.

Throughout the various programs offered within the college, primary emphasis is placed on aviation and aerospace. A unique opportunity is thus furnished to those students whose future career plans include these two fields. Students may, for example, take courses in aeronautical design while, at the same time, being able to examine (or to fly if they are qualified) actual aircraft in which the various design components are being used. A complete laboratory experience is provided in those curricula to which it is appropriate. Our graduates enjoy a vast horizon of career opportunities.

STUDENT SERVICES AND ACTIVITIES

Embry-Riddle Aeronautical University takes the position that a well-rounded education consists of more than classroom experience. The opportunities for cocurricular involvement are limitless. Students are encouraged to take advantage of the services described in this section to make the most of their academic experience.

STUDENT ACTIVITIES

The Department of Student Activities provides students with the opportunity for cocurricular involvement. Educational and social experiences may be obtained through participation in one or more of the eighty Student Organizations on campus. Involvement in Student Organizations develop social responsibility, group dynamics, social interaction, leadership, communication and decision making skills. The Department sponsors an Activities Fair at the beginning of the Fall and Spring semester to promote the Student Organizations to the student body. The staff is available to assist students in joining an existing Student Organization or in establishing a new one. The types of organizations that are available include fraternities, a sorority, sports club, special interest groups, honorary societies, aviation clubs, military organizations and religious clubs. The Department also sponsors the Student Leadership Development Program which develops leadership potential in superior students and encourages participation as campus and community leaders. Students interested in this program should contact the Department for additional information. In addition to leadership opportunities, the Department coordinates Homecoming activities that occur during November.

The center for cocurricular programs is the John Paul Riddle Student Center. Activities in this facility include movies, comedy shows, dances, lectures, and other social events. The Student Center houses the Dean of Student Affairs, Department of Student Activities, Student Government Association, AVION Newspaper, PHOENIX Yearbook, Entertainment Committee, Career Center, Information/Telecommunication Center, Health Services, Counseling/Orientation Services, Institutional Research, The Hairport, Bookstore, Mailroom, Registration and Records, College of Continuing Education, Parking Services, Student Center Conference Room, full service cafeteria, Snack Bar, and meeting rooms.

SAFETY AND SECURITY

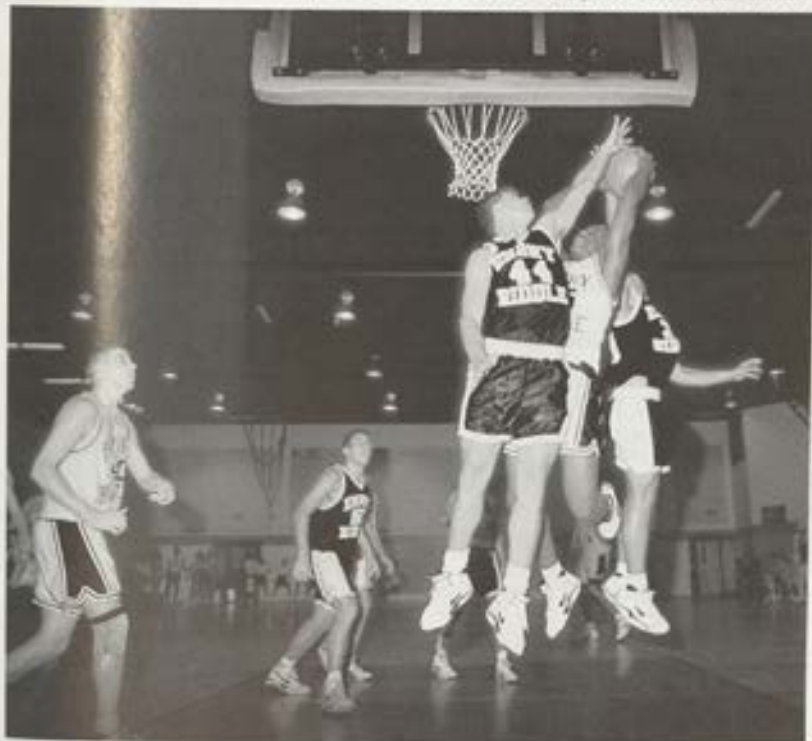
Safety and Security at Embry-Riddle Aeronautical University is provided by the University's Safety Department. The Safety Department is an in-house segment of the University consisting of both full-time officers and part-time student assistants. Coverage is provided 24 hours per day, 365 days per year. The Safety Department includes a Patrol Service section, a Parking Services section, and a Crime Prevention section. The Department is a part of the Division of Student Affairs.

The Patrol Services section provides 24 hour protection 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 flight line. The Parking Services section manages the campus parking traffic, and enforcement functions. It also provides support service

for special events as required. The Crime Prevention section actively engages in safety, education, and crime prevention programs for students, faculty, and staff. The Department operates a Communications Office and maintains regular contact with the Daytona Beach Police Department in order to collectively provide for as safe an environment as possible.

STUDENT GOVERNMENT ASSOCIATION

The Student Government Association (S.G.A.) serves the individual student and represents the student body to the Embry-Riddle administration. The S.G.A. enjoys a unique position among student organizations in the degree of responsibility delegated to its members. The President of the S.G.A. is a voting member on the University's Board of Trustees. Students can obtain valuable knowledge and experience by participating in one or more of the diverse divisions of the S.G.A. The two governing boards are the Student Representative Board (S.R.B.) and the Student Finance Board (S.F.B.). In addition, the four divisions of the S.G.A. are the AVION Newspaper, Entertainment Committee, PHOENIX Yearbook, and Student Court.



INTRAMURALS AND RECREATIONAL SPORTS

The Department of Intramurals and Recreational Sports at the Daytona Beach campus provide 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, and other sports upon request.

The campus has a beautiful swimming pool with diving and swim competition facilities. The Aeronautilus Fitness Center features 13 Nautilus machines, a computerized rowing machine, several exercise bicycles, and is complemented by an adjoining free weight room. Outdoor lighted basketball courts, tennis courts, a lighted softball field, four outdoor lighted volleyball courts, and an indoor racquetball complex round out the recreational facilities.

The Director works closely with clubs and organizations to assist with planning and implementing sports programs and activities. The Recreational Sports Office provides most of the equipment needed for sports activities; however, students are encouraged to bring basic sporting equipment with them.

ATHLETICS

The Athletic Department at the Daytona Beach Campus sponsors varsity intercollegiate competition in the following sports: basketball, baseball, golf, soccer and tennis. These teams are governed by the National Association of Intercollegiate Athletics (NAIA).

All full-time undergraduate students are eligible to try out for varsity teams, and are admitted free to most home contests.

Anyone interested in more information concerning tryouts, schedule, etc. should contact the Athletic Department.

CAMPUS MINISTRY

The Office of Campus Ministry on the Daytona Beach Campus is staffed through a freewill association of on-campus clergymen. Their ministry is expanded through the concern of local clergy ministering to many students living off campus. While deeply concerned with students, the Office of Campus Ministry also reaches out to the whole academic environment of faculty, administrators, and staff. Ecumenical cooperation, team ministry, and a high concern for social justice questions and issues characterize the office. Counseling, prayer, Bible study, and discussion groups are among the ministries operative now.

SERVICES AND FACILITIES FOR DISABLED STUDENTS

Recognizing that some students may require special accommodations or additional assistance with adapting to college life, the University has appointed the Director of Health Services as the Coordinator of Services for Disabled Students.

Each student's needs are addressed on an individual basis. The Coordinator provides resources information and assistance with barrier-free access, lifestyle management, testing arrangements and tutorial referrals. Students who anticipate the need for special accommodations should contact the University Director of Admissions at their earliest convenience.

Students who have specific disabilities of the learning processes should request special review of their academic credentials when applying for admission to the University. To be considered academically disabled, students will be required to submit documentation of their disabilities, including diagnostic testing and recommendations, when filing the application for admission.

HEALTH SERVICES

Maintaining good health helps insure a productive college career. Because wellness is a lifelong, personal responsibility, the Health services staff is committed to helping students improve and maintain their health through education and lifestyle modification.

The department's services include treatment of conditions and injuries commonly experienced by young adults, individual health counseling, referrals, medical grounding of flight students, and educational programming. Local hospitals, some with 24-hour emergency services, are within a short distance of the Daytona Beach Campus. Reference materials and audio-visual learning aids complement the personal aspects of a health program tailored toward students pursuing careers in the aviation industry.

All students are required to submit, prior to enrollment, certified (by a physician, nurse or community health care agency) proof of their immunity to Measles, Mumps, Rubella, and Tetanus. **This data is mandatory for course registration** and should be entered on the Medical Report form provided by the Admissions Department. The Medical Report should also include the signature of the student, parent, or guardian authorizing emergency medical care, as directed by competent health care professionals. In addition, students who plan to enroll in flight courses should obtain, prior to arrival, a Class I or Class II Medical Certificate from a physician certified by the FAA as an Aviation Medical Examiner. This medical certificate is required for all flight courses.

Health Insurance is not mandatory, but strongly recommended. Students may purchase group coverage, at the Daytona Beach campus, each semester during pre-registration and registration periods. Rates are determined annually; information on benefits and premiums is available at Health Services.

THE COUNSELING CENTER

The Counseling Center staff assists students in pursuing successful college careers through individual counseling, university-related educational programs and experimental groups. Professionals trained

in counseling help students discuss and explore personal, social, family, peer, and other concerns in complete confidence. Areas of concern may include homesickness, relationships, illness or death in the family, poor academic performance, study skills, stress reduction, time management, and basic adjustment to university life. Additionally, the Center maintains a variety of self-help materials. Books, pamphlets, audio and video cassette tapes are available to students.

The Counseling Center coordinates Student and Parent Orientation programs. The goal of Student Orientation is to assist students in making a smooth transition into the Embry-Riddle community. Through interactions among students, upper-classmen, faculty and staff, information and guidance are combined with friendship and entertainment. Parent Orientation provides parents of new students an introduction to the campus and student life. Presentations by faculty, staff, and student orientation leaders address concerns which are common to families of new students.

UNIVERSITY-MANAGED HOUSING

University Housing provides and operates residential facilities for full-time, unmarried students. These facilities include two on-campus residence halls and one off-campus apartment complex which, combined, house 981 students. Each residence hall and apartment complex is co-educational and is managed by a specially trained live-in staff. Accommodations also include a limited number of specially equipped units available for handicapped students. The University can facilitate only those handicapped students who are self-sufficient or require minimal assistance, as determined by the Director of Housing. Applications for University housing typically exceed available accommodations; therefore, students are urged to apply as early as possible. Priority for housing reservation is determined primarily on a first-come, first-served basis. Housing confirmations are made only for students who have been accepted for admission to the University and have paid the tuition deposit as well as the housing prepayment fee. This prepayment must also be accompanied by the housing contract in order to confirm a University housing space. For further information regarding University housing at the Daytona Beach campus, please consult the Housing Services brochure, which is available from the Admissions Office.

OFF-CAMPUS HOUSING

The Off-Campus Housing Office strives to meet the needs of the commuter student population. The office operates a rental listing service which maintains an up-to-date list of properties available for students to rent and a list of students seeking roommates. To take advantage of this service, students must visit the office. The office cannot reserve housing for individuals or give out listings over the telephone. The office also provides information and assistance concerning tenant/landlord rights, advice on general housing prob-

lems, information on Small Claims Court, and referrals to local agencies when appropriate. In addition to these services, the office also provides the 'Guide To Off-Campus Living', sample leases, guide to area realtors, city maps, bus schedules, and consumer information, all of which are available upon request.

INTERNATIONAL STUDENT SERVICES

The Office of International Student Services assumes primary responsibility within the University for the general welfare of foreign students. The staff provides a variety of special technical and advisory services which include the processing of forms and documents required by the student's government, sponsor, the University, and the U.S. Government. In addition, the office coordinates a wide variety of campus and community programs which strive to facilitate an interchange of cultures and enrich the student's stay in the United States. Staff members also provide information and orientation about the American educational system and the University at large.

CAREER CENTER

The Career Center encompasses career development, cooperative education and job search services. The staff assists students in making career choices, preparing for their careers and obtaining career related employment in the aviation and aerospace industries. The Career Center is dedicated to helping students effectively use their education by providing them with the knowledge and skills necessary to compete in today's highly competitive employment market, and by assisting in their transition from campus to career.



PRESCOTT CAMPUS

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 some 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 flows 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 lab have modern computer-aided design equipment. The aircraft structures and composite labs analyze structural aspects of aerospace vehicles and includes 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 aviation communications systems lab, the analog/digital control system lab and the aviation power systems and electronic lab all provide resources for avionics design and other student projects.

The new Flight Training Center, which is located at Ernest A. Love Field, just minutes from campus, includes the simulator laboratory and flight operations center. The lab offers eight highly advanced simulators including a turbojet multi-engine Frasca 242 T simulator, three AST 300 multi-engine simulators, two Frasca 141 single engine simulators, and two AST 200 single-engine simulators. Flight instruction is provided in the University's fleet of 52 aircraft including single-engine Cessnas and multi-engine Piper Seminoles and Beechcraft Duchesses which are outfitted with the most recent communications and navigational equipment.

One of the benefits of enrollment at this campus is the smaller student body. Both faculty and students enjoy the low student/teacher ratio. Students benefit from individual attention in the classroom and on the flight line as well as from many forms of academic assistance available: the Counseling Center, the Career Center, the Reading/Writing Lab, The Computer Lab and academic advising the tutoring programs.

Other facilities to support classroom instruction include an increased number of student computers with the latest software, a Center for Aerospace Safety Education, a crash investigation lab, a weather lab, an aircraft engines lab and a newly expanded library. This 10,000 square-foot facility provides individual student desks, group study tables and study rooms. The collection includes more than 24,000 books as well as periodicals, documents, newspapers,

microfilm, media programs and a technical and historical book collection. The library is open seven days a week throughout the academic term, with extended hours during final examinations. A computer link to 7,900 libraries nationwide provides access to materials and databases that identify journal articles, conference proceedings, doctoral dissertations and other kinds of information through subject searches. The campus library is also a member of a network which shares an automated circulation system with local community colleges and public libraries. More than 150,000 titles and 197,000 books can be accessed by this system. The media section of the library contains more than 8,000 audio/visual materials, including films and videotapes for both classroom and individual films for student use.



STUDENT SERVICES AND ACTIVITIES

Embry-Riddle Aeronautical University takes the position that students' academic experience should be supplemented with extra-curricular activities that enhance the personal and educational development of all students. At Prescott, there are numerous opportunities for cocurricular involvement.

STUDENT ACTIVITIES

The Student Activities Department networks with other areas of the campus to develop a master calendar of campus programs and activities. Events scheduled during the year include concerts, performing arts, lectures, films/movies, field trips, dances and theme events. A student involved in the organization of these programs can receive training and experience in the areas of finance, contracts, publicity and public relations.

The Student Activities Department serves the student and the University community by assisting and maintaining club and organization registration. Currently, there are 44 campus-recognized clubs and organizations. The Student Activities Department has a professional staff which assists students interested in forming a new club or organization. Students wanting to join or establish a club should contact the office for more information.

The types of organizations include fraternities, sports clubs, special interest groups, honorary societies, aviation clubs, military organizations and religious clubs.

INTRAMURALS/RECREATION

Recreational opportunities at the Prescott campus and in the area are excellent. A large variety of athletic equipment is available for usage by the student at no charge. Facilities include indoor racquetball courts, tennis courts, an outdoor swimming pool, running track, gymnasium and a fully-equipped weight room. The Athletic Department in the Student Affairs Division strives to create an atmosphere of competition and fun by offering a variety of sporting events for students. Whether the student's goal is to find a highly competitive league to demonstrate their athletic skills or they just want to participate to have fun and reduce the stress from study, you're sure to find what you're looking for in intramurals/athletics.

The campus Intramural Department sponsors competition in a wide variety of activities ranging from team sports, such as flashball (flag football variation), basketball and floor hockey, to individual competition in such sports as table tennis, racquetball and billiards. The Intramural Department utilizes University facilities as well as some excellent city athletic facilities. Intramurals are open to all students, staff and their immediate families.

Wrestling, soccer and rugby teams currently participate on the intercollegiate level with other clubs, colleges and universities. The

ski club, bicycle club and skydiving club offer additional recreational opportunities.

In addition to the on-campus recreational opportunities, the area offers a virtually unlimited variety of outdoor recreational opportunities. Hiking, rock climbing, fishing, skiing and river rafting are but a few of the activities available in the Prescott National Forest and surrounding areas. The Grand Canyon, a man-made surfing pool, Indian reservations and beautiful lakes are within a three-hour drive. Within six hours' driving time, one can enjoy deep sea fishing, the international flavor of Mexico, the beaches of Southern California or the shows of Las Vegas and other attractions.

STUDENT GOVERNMENT ASSOCIATION

All full-time students registered at Prescott for a specific semester are regular members of the Student Government Association (SGA) for that semester. The governing body of this association is the Student Council. The council serves as the connecting and communicating link between the University Administration and the SGA. The president of the Student Council is a voting member of the University's Board of Trustees. By serving as a trustee, the president is able to acquire and share with students a great deal of information and insight regarding the University. The S.G.A. also provides a number of valuable student services through the four campus service organizations. These are the Student Entertainment Committee, Horizons Newspaper, K.F.L.I. Radio Station and Contrails Yearbook.

UNIVERSITY-MANAGED HOUSING

University Housing at the Prescott offers both on-campus and off-campus facilities. Since applications for this housing usually exceed available accommodations, students are advised to apply as early as possible.

On campus housing is provided for 450 students in the five three-story residence halls. These accommodations are reserved for new students during the first academic year. The residence halls are completely furnished. They are air conditioned and have telephones in the bedrooms and a hook-up for cable television in each lounge. Coin-operated laundry and vending facilities are available. Although there is no cooking allowed in the residence halls, the University provides barbeque and picnic areas for student use.

Contracted off-campus housing is provided for 275 students in University-managed apartments. These accommodations are reserved for continuing students. Each apartment is furnished and includes a full kitchen, air conditioning and semi-furnished bedrooms. There is no specified married housing.

OFF-CAMPUS HOUSING

The Housing Office is equipped to serve the needs of those students

not living in University-managed housing. Listings of current rentals and of students seeking roommates are maintained. Brochures, maps and other information about Prescott living are available.

Information concerning tenant/landlords rights, advice on general housing problems, information on Small Claims Court and referrals to local agencies is provided where appropriate.

In addition, the office provides a **Commuter Student Information Manual, Apartment Complex Guide**, sample leases, guide to area realtors, city maps, bus schedules and consumer and legal information.

FOOD SERVICES

Food services at the Prescott campus are designed to provide a wide variety of nutritious and great-tasting meals for all students. All campus residential students are required to join the meal plan. The cafeteria provides three meals a day (two a day on weekends) with a wide selection at each meal. The snack bar (Aerodrome) provides fast foods such as pizza, sandwiches, fruits, salads and ice cream on a cash basis. From time-to-time, the student Entertainment Committee provides performances by local and regional entertainers in the Aerodrome's relaxed coffee house atmosphere.

SERVICES/FACILITIES FOR HANDICAPPED

Prescott Campus has incorporated facilities for the convenience of the handicapped. Faculty and staff are ready to assist students requiring specialized attention. Because of the terrain of the campus, it would be advisable to contact Health Services to discuss individual requirements.

HEALTH SERVICES

Health Services, under the direction of a registered nurse, is an on-campus facility providing students with the education and guidance that is necessary to maintain good health. Services that are available include treatment of minor illnesses and injuries, student health counseling and educational services for preventative care. Listings of community health service facilities are available for students requiring further medical services.

Supplemental health insurance is available through the Health Services Office to active students. It is recommended but not mandatory.

All students are required to submit, prior to enrollment, physician-certified proof of their immunity to Measles, Mumps, Rubella and Tetanus. **This data is mandatory for course registration** and should be entered on the Medical Report form provided by the Admissions Department. The Medical Report should also include the signature of the student, parent, or guardian authorizing emergency medical care, as directed by competent health care professionals. In addition, students who plan to enroll in flight courses should obtain, prior to

arrival, a Class I or Class II Medical Certificate from a physician certified by the FAA as an Aviation Medical Examiner. This medical certificate is required for all flight courses.





COUNSELING SERVICES

The Counseling Office provides a network of services to generate the self-development and well-being of the students.

Personal counseling sessions provide an opportunity for students to discuss and explore any concerns or feelings that are important to their growth. Educational programs in "wellness" called WellAware Programs, focus on four areas: skills development, substance abuse, health/physical fitness, and relationships/emotions. These programs are offered for faculty and staff enrichment, as well as for student enhancement. The Counseling Office also acts as a liaison between students, faculty, administration and the community to promote a consortium of caring resources anxious to meet the needs of our students.

CAMPUS MINISTRY

Student Life Center staff members recognize that the purpose for students attending the University is to develop skills and acquire knowledge for future life. The staff also realizes that at the very time students are experiencing exponential growth intellectually, it may be at the expense of neglecting other facets of wellness which is necessary for academic success. While staff members cannot be expected to monitor a student's spiritual growth, it is important to make students aware of the opportunities for continued spiritual development within the Prescott community.

Educational programs are offered to enhance spiritual growth, and pastoral counseling is provided as requested. Participation of church groups at Freshman Orientation, as well as an area **Church Directory**, is provided to encourage continued spiritual enhancement of our students.

INTERNATIONAL STUDENT SERVICES

The Office of International Student Services assumes primary responsibility for the general welfare of foreign students. Staff members perform a variety of services including the processing of forms and documenting of files required by the students' government, sponsor, institution or the United States Government. Staff members also act as a liaison between the student and immigration officials. The office coordinates a variety of campus and community programs which strive to facilitate a cross-cultural awareness and enrich the students' sojourn in the United States.

The International Student Association is a very active club on campus, providing opportunities for foreign students to speak in the community of Prescott, participate in campus events and volunteer community service.

A newsletter, *The Outer Limits*, is published monthly to keep the students informed of international updates, International Student Activities and campus events.

CAREER CENTER

The Career Center offers a variety of services and programs to help students prepare for success. Career information in each degree area, the availability of specific jobs, the most recent data on trends in aviation and advice from industry leaders are available.

Services include career counseling, job referrals and job placements as well as help with resume writing, job search methods and interviewing skills.

MAIL SERVICE

Prior to a student's arrival, all personal mail and baggage should be addressed as follows:

NAME

Embry-Riddle Aeronautical University
3200 Willow Creek Rd
Prescott AZ 86301-3720

All baggage and express packages must be prepaid. Baggage is stored at the risk of the student and the University accepts no responsibility for theft or missing luggage.

During registration students are assigned a mailbox which they are required to check on a daily basis, not only for personal mail but also for official University notices.



COLLEGE OF CONTINUING EDUCATION

For more than twenty-one years, Embry-Riddle has recognized that the people who work in civilian and military aviation are highly motivated to seek a college education. Many of these people have had to suppress their ambition, at least temporarily, because irregular work schedules, frequent travel, job relocations, and family responsibilities have prevented them from participating in college programs with conventionally scheduled daytime classes. For the remainder who could fit classes into their schedules, the available programs did not match their interests and career objectives. Embry-Riddle has responded to this lack of opportunity by accepting invitations to open resident centers at locations with large populations of aviation professionals. These resident centers now number more than ninety and, together with the Department of Independent Studies, make up the College of Continuing Education of the University.

Innovation to meet the needs of adult, part-time students has been the main trigger for the growth and success of the College of Continuing Education. Innovation continues to provide a primary solution to obstacles frustrating those who seek higher education in aviation. Some examples include scheduling terms and classes to fit off-duty hours of the students served by a resident center. Study is accelerated by compressing the same number of classroom hours scheduled at the residential campuses into terms which are several weeks shorter. The starting and ending dates of terms vary from one resident center to another. Classes may be scheduled in the early morning, at lunch hours, in the evening, on weekends, and at shift changes, depending upon the need of the majority of students.

The procedural information and rules described in the general sections of this catalog apply to all students. However, the varied scheduling of College of Continuing Education terms and classes necessitates that adjustments be made to some procedures and the application of some regulations. The adjustments which apply to College of Continuing Education students only are described later in this section.

The degree programs offered by the College of Continuing Education are listed in the Guide to the Curriculum section of this catalog. However, all programs and courses listed in the catalog are not available at every center. The program and course selection at individual resident centers is based upon the assessed needs of the students and other local factors. Certain degree programs are available at most resident centers, while others may be found at only a few locations. Since the first resident center opened at Fort Rucker, Alabama in 1970, the College of Continuing Education network of resident centers has stretched from western Europe to Hawaii, with more than sixty sites in the continental United States. Our students are employees of many of the major airlines, airports, aviation

manufacturers, the Federal Aviation Administration, or on active, Reserve or National Guard duty with the Air Force, Army, Coast Guard, Marine Corps, and Navy. They work as air traffic controllers, aircraft mechanics, pilots, dispatchers, flight attendants and engineers, avionics specialists, inspectors, and managers. In addition to the service members stationed at an installation, many of the resident centers located on military installations are authorized to enroll civilian government employees, dependents, and local civilians. All resident centers are approved for veterans' educational training and by the appropriate agencies of the states where they are located. A list of resident centers may be found at the end of this section and they should be contacted directly for specific program information.

The College of Continuing Education maintains a comprehensive system of academic quality control. The curricula, academic standards, and academic policies are the same throughout the University. Standardization of individual course content is accomplished by the Department of Academic Standards and the Department of Academic Support, which provide course outlines, identify textbooks, and obtain and disseminate instructional support materials. Students are able to transfer from one center to another, or to process an intercampus transfer to one of the residential campuses, confident that their previous academic work will be of consistent quality and will integrate with course work at the new location.

Faculty are selected based upon their academic credentials and professional experience. The currency of their background and its relevance to aviation are emphasized. The faculty includes American and foreign aviation and business executives, professional pilots, civilian and military technical specialists, and professors from other prestigious academic institutions. The applications of faculty candidates are reviewed and approved by the Deans of the United States and Europe divisions and the Provost of the College of Continuing Education.

Generally, working toward a college degree on a part-time basis is considered to require a long, hard effort. Though it is perhaps the only alternative for some, students do report some compensating advantages. The subject matter of many of the courses frequently ties in directly with a problem or project at work. This sets up a special exchange of knowledge which enhances both the job and classroom experience. Since many faculty and students are employed in full-time aviation careers, classes often provide a unique opportunity to study the application of new techniques and theories to the challenges and problems of aviation as they are happening. The College of Continuing Education student graduates with a unique and valuable combination of academic and experiential credentials.

DEPARTMENT OF INDEPENDENT STUDIES

Several years ago it became apparent that the growing network of resident centers would never be able to reach everyone who harbored

the ambition for higher education in aviation. Some lived in small communities where establishment of a resident center was not feasible, others lived and worked in isolated spots around the world, and still others worked in professions where the word schedule had no real meaning. The Department of Independent Studies was developed to extend the opportunity to work toward an Embry-Riddle degree to such people. The following degree programs are offered through the Department:

A.S. and B.S. in Professional Aeronautics

B.S. in Aviation Business Administration

Degree requirements may be completed through a combination of independent study, completion of general education courses at local accredited colleges or universities, and completion of standardized national testing programs such as CLEP or DANTES. The courses required for a degree may be completed through the Department of Independent Studies without taking courses in residence at an Embry-Riddle campus or resident center.

Independent study versions of many of the aviation oriented and other Embry-Riddle courses are offered through the department. Each course includes the textbook(s), a specially developed study guide, and a set of audio/video cassette tapes. A term of fifteen weeks is allowed to complete a course. A comprehensive, proctored final examination is required at the end of each course; most courses require a proctored mid-term exam. If a student is ready, the final examination can be taken and the course can be completed before the end of the fifteen-week period.

Pursuit of a degree through the Department of Independent Studies is approved for Veterans Administration educational benefits for eligible veterans. Tuition assistance for active duty United States military personnel is approved by the Defense Activity for Non-Traditional Education Support (DANTES).

TYPE 65 AVIATION MAINTENANCE TECHNOLOGY (AMT) COURSES

The degree programs offered at the resident centers have always been popular with people who repair and maintain aircraft. Frequently, these highly skilled specialists are thoroughly trained in one technical specialty, but lack exposure to the other aspects of airframe and powerplant maintenance and the underlying theory. The Type 65 Aviation Maintenance Technology series of courses was developed at Embry-Riddle to expand the existing knowledge of experienced, but unlicensed, aircraft maintenance personnel.

The courses provide an awareness of the wide variety of problems, considerations and practices involved in maintaining an aircraft or fleet of aircraft in an airworthy condition. They establish a core of knowledge as a base for professional advancement in technical and managerial careers in aviation maintenance. The Type 65 AMT courses also serve as a source of valuable information for the many

aviation professionals whose work is related to the operation of aircraft, although perhaps not directly involved in aircraft maintenance. Advanced standing credit is granted for appropriate Type 65 AMT courses to students who possess Federal Aviation Administration Airframe and/or Powerplant Certificates. The Type 65 courses are listed elsewhere in the catalog with the degree programs to which they apply.

ADMISSION TO THE UNIVERSITY

The process of applying for admission begins at a resident center or the Department of Independent Studies. The addresses of offices which may be contacted for information about specific locations are listed with the resident centers at the end of this section.

A complete application for admission consists of the following:

1. Completed College of Continuing Education Application for Admission form.
2. Application fee of \$15 (non-refundable).
3. Official copy of high school academic records OR official evidence of successful completion of the General Education Development (GED) Test. Satisfactory completion of secondary school may also be documented by the following: copies of military records certified by an Education Services Officer or military Director of Personnel; indication on a transcript from a regionally accredited college or university; a notarized affidavit.
4. Official transcripts sent directly to an Embry-Riddle resident center from all postsecondary institutions previously attended.
5. Official CLEP or DANTES test result reports sent directly to an Embry-Riddle resident center from the testing agency. With the prior approval of a resident center director College of Continuing Education students may take CLEP or DANTES tests after being formally admitted to the University. Test results must be received by the Records Office prior to application for graduation.
6. Third-party documentation of professional training and experience which may qualify for advanced standing credit.

Foreign applicants who are not permanent residents of the United States may be admitted only to certain resident centers in the States of Florida, Arizona and California or, with specific limitations and requirements, to certain centers in the European Division. Individuals interested in further information should contact the nearest Florida resident center, or the Headquarters of the European Division.

The degree curricula contained in the University catalog in effect on the date the application for admission was received and the application fee was paid at the resident center will be used to process admission applications. After the application packet has been evaluated and processed, an official letter of acceptance is sent to the student. A copy of the official evaluation of academic credentials

applied to the degree program into which the student has been accepted is included with the letter of acceptance. A student may question any aspect of the official evaluation during the 60-day period following the date of the letter of acceptance. The official evaluation will not be changed after the 60-day period expires.

The complete admission record of applicants accepted for admission who do not enroll in an Embry-Riddle course within the one year period following the date of acceptance is destroyed. In order for an individual in this category to enroll, the entire admissions sequence must be repeated, including the resubmission of all required documents.

Students who have been admitted to the University and enrolled in courses, but who interrupt their enrollment for more than two calendar years, must apply for readmission. Readmission will be in accordance with the catalog in effect at the time of readmission.

TRANSFER AND ADVANCED STANDING CREDIT

Transfer and advanced standing credit for College of Continuing Education students will be posted to the ERAU transcript only after all of the following have taken place: the complete application for admission and application fee have been received by the resident center, the student has been officially accepted into an ERAU degree program, and the student has subsequently enrolled in an ERAU course after the admission date. Non-degree seeking students are ineligible for the award of transfer and advanced standing credit.

PHYSICAL SCIENCE LABORATORY

College of Continuing Education students are strongly encouraged to take at least one physical science course with a laboratory to satisfy degree requirements for physical science. However, the University recognizes that the facilities to offer such classes are not available at most resident centers and that local institutions do not typically offer such classes at times and locations accessible by College of Continuing Education students. Therefore, appropriate physical science courses without laboratories completed in residence, or at institutions listed as accredited in the current Accredited Institutions of Postsecondary Education published by the American Council on Education for the Council on Postsecondary Accreditation, will be accepted in lieu of a course with laboratory to satisfy the physical science requirements in the degree programs offered by the College of Continuing Education.

CONTRACT FOR DEGREE

The Contract for Degree is an alternative designed to assist the College of Continuing Education student transferred to a location not serviced by an Embry-Riddle campus or resident center. Individuals who are currently, or have been previously, enrolled in Embry-Riddle courses and/or degree programs at resident centers are eligible to apply for a Contract for Degree by submitting a formal application

and required supporting documentation to the College of Continuing Education Admissions, Records and Registration Office.

Once approved for a Contract for Degree, students continue to work toward the Embry-Riddle degree by taking courses at local, regionally accredited colleges and universities. All such courses must be approved by Embry-Riddle prior to enrollment. Contract for Degree students must pay an annual contract maintenance fee and complete a minimum of twelve (12) semester credit hours or the equivalent, in each year that the contract is in effect. Degree requirements as described in this catalog under the heading GRADUATION REQUIREMENTS must be fulfilled.

MILITARY DEGREE COMPLETION PROGRAMS FOR ACTIVE DUTY PERSONNEL

All branches of the United States armed forces offer opportunities (sometimes referred to as 'Bootstrap') to accelerate completion of degree programs by qualified members. Eligible College of Continuing Education students may choose to take advantage of these opportunities. Center directors and the Admissions and Records Department are ready to assist with the preparation of application for these programs. Completed applications must be submitted at least ninety days prior to the first date of the term in which the student desires to begin the program.

REGULATIONS AND PROCEDURES

The information presented in this section applies to College of Continuing Education students only and supplements the regulations and procedures described in the similarly titled sections in the general body of the catalog.

CLASSIFICATION OF STUDENTS

Six semester hours constitutes the minimum load for full-time student status for students enrolled at a Resident Center. Students carrying less than the minimum full-time load are classified as part-time students. The maximum load for students is twelve (12) hours per term. A student whose cumulative GPA is 3.00 or higher may enroll for an overload of three credit hours with prior approval from the Center Director. Request for overloads in excess of three credits must be approved by the Division Dean.

GRADING SYSTEM

The I grade is temporary and may be given only at the end of a course when students cannot complete the required work because of severe hardship beyond their control, as determined and approved by the instructor. A grade of I (incomplete) must be redeemed no later than the end of the third calendar month following the end of the term

in which the course was taken. Students must submit a written petition to the instructor in order to receive an I grade.

Students taking a course by independent study who determine that they will not be able to complete the course by the term ending date may petition for an extension of up to five weeks. Petitions must be submitted to the Director of the Department of Independent Studies or the resident center director, as appropriate, at least two weeks prior to the term ending date. If the extension is granted, then an I grade will be issued.

Petitions for an I grade must include a full explanation of the circumstances contributing to the need for the incomplete grade. Appropriate third party evidence corroborating the circumstances must accompany a petition.

Students who wish to appeal a final course grade must first discuss the matter with the instructor. If the matter remains unresolved, students must contact the resident center director for information about the procedure to be followed. Written appeals must be initiated within eight weeks following the issuance of the final grade.

AUDITING AND WITHDRAWING FROM A COURSE

College of Continuing Education students must process all requests to change a registration through the appropriate resident center or the Department of Independent Studies. The "Add" period at College of Continuing Education resident centers extends to the end of the first week of a term, unless otherwise established by any contract or memorandum of understanding/agreement currently in effect. Students may change a course registration from audit to credit only during the "Add" period.

The authorized withdrawal period at College of Continuing Education resident centers extends to the middle of the term, unless otherwise established by any contract or memorandum of understanding/agreement currently in effect.

GRADE REPORTS

Grade reports are issued to students by resident centers or the Department of Independent Studies at the end of every term. If a student fails to complete the formal withdrawal process during the allowed withdrawal period, a grade of F will be assigned for the course.

DEANS LIST AND HONOR ROLL

Students who display outstanding academic performance are recognized by being named to the Dean's List or Honor Roll. Students who attain an overall cumulative GPA of 3.50-4.00 after a minimum of 12 consecutive credit hours of course work will be named to the Dean's List; similarly, students who attain a cumulative GPA of 3.20-3.49 after a minimum of 12 consecutive credit hours of course work will be named to the Honor Roll. Grades for all courses

attempted during terms involved in defining each 12 consecutive credit hour block are used in calculating the cumulative GPA. A student receiving a D or F grade within the 12 credit hour period will not be eligible for the Dean's list or Honor Roll regardless of the cumulative GPA.

Once on the Dean's List or Honor Roll, a minimum additional block of 12 Embry-Riddle credit hours must be completed before they are again eligible for recognition.

WARNING, PROBATION, SUSPENSION, AND DISMISSAL

A College of Continuing Education student whose cumulative GPA falls below 2.0 for 12 consecutive credit hours of course work will be placed on academic warning. If the cumulative GPA remains below 2.0 after an additional 12 credit hours of academic work, the student will be placed on academic probation. A student whose cumulative GPA remains below 2.0 for a third consecutive period of 12 credit hours, or whose cumulative GPA falls below 1.0 for any consecutive twelve credit hours of course work, will be suspended from the University unless the student maintains a term GPA greater than 2.0.

ATTENDANCE AT OTHER INSTITUTIONS

Resident centers may not be permitted to offer all of the courses required for a degree, particularly in the general academic disciplines, because of local policies, contracts, or memoranda of understanding/agreement. Students will be permitted to take required courses at other regionally accredited colleges or universities by obtaining the approval of the resident center director prior to enrollment. The criteria for accepting courses in transfer are described elsewhere in this catalog and will be applied to courses completed in accordance with the provisions of the section titled Transfer Credit.

GRADUATION REQUIREMENTS

Students are required to complete a minimum of 15 Embry-Riddle credits for an associate degree and 30 Embry-Riddle credits for a bachelor's degree. However, they may be exempted from the requirement that these credits be the last credits earned to complete the degree. College of Continuing Education students are required to be enrolled in Embry-Riddle courses for their last term prior to graduation. Students participating in a valid Contract for Degree are exempted from this requirement.

FINANCIAL INFORMATION

Tuition at the resident centers is established to meet the costs of operation and to be in accordance with contracts or memoranda of understanding/agreement. Therefore, tuition may vary to some extent from one location to another. Contact the resident center director for specific information.

Registration, when accepted by the University, constitutes a financial contract between the University and the student. Failure to make payment of any amount owed to the University when due is considered sufficient cause to suspend a student and withhold grades, transcripts, or diplomas until the debt has been satisfied. Full payment of tuition fees, and textbook charges is due upon registration.

Tuition is refundable in full if a proper and acceptable withdrawal is accomplished before the close of business at the resident center on the day that marks the end of the first calendar week of a term or as stated in any contracts or memoranda of understanding/agreement in effect on that date. Refunds will not be made subsequent to that time.

SOURCES OF ADDITIONAL INFORMATION

College of Continuing Education students should contact the director of the resident center that they attend, or any of the offices for which addresses are listed below, for more information and guidance:

1. For general academic and admission information:
Admissions, Records and Registration Department
College of Continuing Education
Embry-Riddle Aeronautical University
600 S. Clyde Morris Blvd.
Daytona Beach, FL 32114-3900
Telephone: (904) 226-6910
2. For information about resident centers in the United States:
Dean, United States Division
College of Continuing Education
Embry-Riddle Aeronautical University
600 S. Clyde Morris Blvd.
Daytona Beach, Florida 32114-3900
Telephone: (904) 226-6970
3. For information about resident centers in Florida:
Director, Florida Region
Embry-Riddle Aeronautical University
Executive Airport Business Center
1885 West Commercial Boulevard, Suite 120
Fort Lauderdale, Florida 33309
Telephone: (305) 495-8788/8789

4. For information about resident centers in Europe:
Embry-Riddle Aeronautical University
Unit 4495
APO AE 09196
Telephone: 011-49-611-810608
5. For information about independent study, contact the director of the nearest resident center or The Department of Independent Studies at:
Director, Department of Independent Studies
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Embry-Riddle Aeronautical University
600 S. Clyde Morris Boulevard
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6. For financial aid information:
Financial Aid Office
Embry-Riddle Aeronautical University
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Telephone: (904) 226-6195
7. For veterans' educational benefits:
Veterans Affairs Office
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8. For student financial services:
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Marrs, Harry H.

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COLLEGE OF CONTINUING EDUCATION RESIDENT CENTERS

Air Force Locations

United States: Andrews Air Force Base, Maryland
Barksdale Air Force Base, Louisiana
Beale Air Force Base, California
Castle Air Force Base, California
Charleston Air Force Base, South Carolina
Davis-Monthan Air Force Base, Arizona
Eglin Air Force Base, Florida
Ellsworth Air Force Base, South Dakota
Elmendorf Air Force Base, Alaska
Fairchild Air Force Base, Washington
Grand Forks Air Force Base, North Dakota
Griffiss Air Force Base, New York
Hickam Air Force Base, Hawaii
Hill Air Force Base, Utah
Homestead Air Force Base, Florida
Keesler Air Force Base, Mississippi
Kirtland Air Force Base, New Mexico
Langley Air Force Base, Virginia
Laughlin Air Force Base, Texas
Loring Air Force Base, Maine
Luke Air Force Base, Arizona
Malmstrom Air Force Base, Montana
March Air Force Base, California
MacDill Air Force Base, Florida
McChord Air Force Base, Washington
McClellan Air Force Base, California
McConnell Air Force Base, Kansas
McGuire Air Force Base, New Jersey
Minot Air Force Base, North Dakota
Mountain Home Air Force Base, Idaho
Nellis Air Force Base, Nevada
Norton Air Force Base, California
Offutt Air Force Base, Nebraska
Patrick Air Force Base, Florida
Pope Air Force Base, North Carolina
Randolph Air Force Base, Texas
Bergstrom Air Force Base, Texas
Seymour-Johnson Air Force Base, North Carolina
Travis Air Force Base, California
Tyndall Air Force Base, Florida
Williams Air Force Base, Arizona
Wright-Patterson Air Force Base, Ohio

Europe:

Alconbury (RAF), England
Aviano Air Base, Italy
Bentwaters (RAF), England
Berlin (Tempelhof), Germany
Bitburg Air Base, Germany
Geilenkirchen Air Base, Germany
Hahn Air Base, Germany
Lakenheath (RAF), England
Mildenhall (RAF), England
Ramstein Air Base, Germany
Rhein Main Air Base, Germany
Soesterberg Air Base, The Netherlands
Spangdahlem Air Base, Germany
Upper Heyford (RAF), England

Army Locations

United States:

Fort Bragg, North Carolina
Fort Campbell, Kentucky
Fort Eustis, Virginia
Hunter Army Air Field, Georgia
Fort Knox, Kentucky
Fort Lewis, Washington
Fort Rucker, Alabama
National Guard, Columbus, Ohio

Europe:

Finthen Air Field, Germany
Fulda (Fliegerhorst Air Field), Germany
Giebelstadt Air Field, Germany
Hanau Air Field, Germany
Illesheim Air Field, Germany
Katterbach Air Field, Germany
Mannheim (Coleman Air Field), Germany
Nuernberg (Feucht Air Field), Germany
Schwaebisch Hall Air Field, Germany
Stuttgart Air Field, Germany
Wiesbaden Air Base, Germany

Navy Locations

United States:

Naval Air Station Alameda, California
Naval Air Station Barbers Point, Hawaii
Naval Air Station Cecil Field, Florida
Naval Air Station Jacksonville, Florida
Naval Air Station Mayport, Florida
Naval Air Station Corpus Christi, Texas

Naval Air Station Kingsville, Texas
Naval Air Station Key West, Florida
Naval Air Station Lemoore, California
Naval Air Station Memphis, Tennessee
Naval Air Station Moffett Field, California
Naval Air Station Norfolk, Virginia
Naval Air Station Patuxent River, Maryland
Naval Air Station Whidbey Island, Washington

Europe: Rota NAS, Spain
Sigonella NAS, Italy

Marine Corps Locations

United States:
Kanehoe Marine Corps Air Station, Hawaii

Civilian Locations

United States:
Fort Lauderdale Center, Florida
FAA Technical Center, Atlantic City, New Jersey
Sky Harbor Airport, Phoenix, Arizona
Cincinnati Center, Ohio
East Valley Center, Mesa, Arizona
Shawnee Aviation Center, Louisville, Kentucky

FACULTY AND ADMINISTRATION

The administration and Faculty of Embry-Riddle are listed below. An asterisk(*) denotes the College of Continuing Education; a plus (+) denotes the Prescott Campus; all others are assigned to Daytona Beach Campus.

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

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Office	Name
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Treasurer	John A. King
Attorney General	John A. King
Surrogate	John A. King
Recorder of Deeds	John A. King
Register of the Land Office	John A. King
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Register of the County Office	John A. King
Register of the City Office	John A. King
Register of the Town Office	John A. King
Register of the Village Office	John A. King
Register of the Ward Office	John A. King
Register of the Precinct Office	John A. King
Register of the District Office	John A. King
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