EMBRY-RIDDLE
The AERONAUTICAL UNIVERSITY

1987-88 Undergraduate Catalog

EMBRY-RIDDLE
The AERONAUTICAL UNIVERSITY

Serving the world of aviation through higher education for more than 60 years

EXECUTIVE OFFICES
Embry-Riddle Aeronautical University
Star Route Box 540
Bunnell, FL 32010
(904) 673-3180

EASTERN U.S. CAMPUS
Embry-Riddle Aeronautical University
Regional Airport
Daytona Beach, FL 32014
(904) 252-5561

WESTERN U.S. CAMPUS
Embry-Riddle Aeronautical University
3200 N. Willow Creek Road
Prescott, AZ 86301
(602) 778-4130

INTERNATIONAL CAMPUS
Embry-Riddle Aeronautical University
950 Williamson Boulevard
Daytona Beach, FL 32014
(904) 239-6914

In Europe contact:
HQ USAFE/DPPEA
Embry-Riddle Aeronautical University
APO New York 09633-6441
Telephone Number —
Wiesbaden Civilian: 06121-810608
Wiesbaden Military: 3723

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*ERAU CALENDAR 1987-88

FALL SEMESTER 1987

August 26-28 ..... Registration
August 31 ..... Classes begin
September 2 ..... Last day for late registration
September 7 ..... HOLIDAY — Labor Day
November 26-27 ..... HOLIDAY — Thanksgiving
December 10 ..... Last day of classes
December 12, 14-17 ..... Final Examinations
December 19 ..... Commencement

SPRING SEMESTER 1988

January 7-8 ..... Registration
January 11 ..... Classes begin
January 13 ..... Last day for late registration
February 15 ..... HOLIDAY — President's Day
April 1 ..... HOLIDAY — Good Friday
April 15 ..... Last day of classes
April 16, 18-21 ..... Final Examinations
April 23 ..... Commencement

SUMMER SEMESTER (TERM A) 1988

May 5-6 ..... Registration for Terms A, B
May 9 ..... Classes begin
May 11 ..... Last day for late registration
May 30 ..... HOLIDAY — Memorial Day
June 24 ..... Last day of classes
June 25-27 ..... Final Examinations

SUMMER SEMESTER (TERM B) 1988

June 29 ..... Registration for Term B
June 30 ..... Classes begin
July 4 ..... HOLIDAY — Independence Day
July 5 ..... Last day for late registration
August 16 ..... Last day of classes
August 17-18 ..... Final Examinations
August 20 ..... Commencement

* Daytona Beach and Prescott Campuses only. International Campus students should contact the local ERAU Resident Center Director for the Academic Calendar applicable to their specific location.

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.


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AN INVITATION FROM THE PRESIDENT

Embry-Riddle Aeronautical University is the world's only accredited aviation institution of higher learning.

Since 1926, more than 60,000 men and women have graduated from Embry-Riddle as engineers, pilots, technicians, computer experts, and managers.

Our graduates are employed by airlines, fixed base operators, NASA, major defense contractors and other aviation support industries. Their success not only paves the way for future Embry-Riddle graduates but also shapes the direction and quality of aviation throughout the world.

Embry-Riddle's mission is to provide men and women with a superior education and the opportunity to compete with top professionals in the established and emerging aviation and aerospace fields.

We welcome you to Embry-Riddle and invite you to meet the challenges and seek the rewards of an aviation career.

Sincerely,

K L Tallman

Kenneth L. Tallman
Lt. General, USAF (Ret.)
President

General Information

Purpose of the University

The purpose of Embry-Riddle Aeronautical University is to provide an aeronautically oriented educational program of such fundamental background, scope and excellence that students may achieve competency and proficiency for productive careers, and in doing so, develop character, judgement, breadth of view and understanding of our social and economic systems.

History of Embry-Riddle

Since its beginning, Embry-Riddle Aeronautical University has played a unique and important role in aviation. Two years before Charles Lindbergh made his historic flight, John Paul Riddle bought two Waco biplanes and opened a flying service. Soon after, he met T. Higbee Embry, a prominent Cincinnati businessman who shared Riddle's passion for flight. Embry contributed some badly needed funding to the operation and went into partnership with Riddle. The Embry-Riddle Company was born May 19, 1926, at Lunken Airport in Cincinnati.

Despite Embry's strong financial backing, the company still faced a number of problems. There was the constant need — and constant shortage — of everything from hangar space to spare parts. Even trained mechanics to repair the Wacos and pilots to fly them safely were in short supply. It was this particular need that later would play an important part in setting a new direction of growth for the Embry-Riddle Company.

The original company remained intact until late 1928, when it was sold to become the first unit of what is now American Airlines.

In 1932, Riddle resigned from American Airlines and moved to Miami, Florida. Aviation education still occupied his mind, and he was convinced that he had a better way to develop it. The company's original name was retained, and Embry-Riddle's first Florida-based home was established along Miami's causeway.

In the late 1930s, Riddle and his new partner, John G. McKay, expanded Embry-Riddle to become the world's largest aviation school. The company operated flight training centers at Florida's Carlstrom, Dorr and Chapman Airfields; Miami's Riddle-McKay Aero College; and the Riddle-McKay Institute in Tennessee, as well as other facilities.

As war approached, allied nations sent thousands of fledgling airmen to Miami to become pilots, mechanics and aviation technicians of all kinds. According to best estimates, somewhere near 50,000 aviation candidates were trained by Embry-Riddle during the war years.

In 1944, Embry-Riddle's curriculum was expanded again, and the one-time flight school became the Embry-Riddle International School of Aviation. Shortly thereafter, it developed an even stronger academic orientation and was redesignated as the Embry-Riddle Aeronautical Institute.

In 1962 the Institute hired Jack Hunt, an aviation consultant, as its business advisor. Hunt reorganized Embry-Riddle as a non-profit institution, planned for further expansion and development, and found a new location — one that offered room for growth. Trimming an initial list of more than 30 Florida locations, Hunt settled on Daytona Beach as the first choice.

On April 24, 1965, a convoy of 30 trucks rolled into the Daytona Beach Airport. On board was everything the Institute owned, from student desks to engine displays. Two hundred thirty-nine students, a staff of about 75, and a collection of rented buildings at the Regional Airport were what Embry-Riddle consisted of when it began its first classes at Daytona Beach.

Shortly after the relocation, Embry-Riddle acquired an 86-acre land tract at the airport. That location has become Embry-Riddle's Eastern Campus. In 1970, Embry-Riddle became a university, and the name was changed to the one known today.

Resident centers were established by the University at four United States military aviation centers in 1970. The centers were established in response to requests from military officials that the University offer its programs at selected locations in order to serve the educational needs of active duty military personnel.

There are now more than 80 resident centers at civilian as well as military locations in the U.S. and Europe. This global network became known as the International Campus in 1979 and now provides flexible educational services to over 26,000 working adults. Embry-Riddle offers three master's level programs at many of these International Campus locations.

In 1978 Embry-Riddle introduced its Western Campus in Prescott, Arizona. This campus is situated on 510 acres and boasts of superb flying weather, making it an outstanding educational facility.

The Independent Studies Program was established in 1980 to serve individuals in the aviation industry who, for various reasons, are unable to attend regularly scheduled classes. Curricular requirements are satisfied by completing a series of independent study courses developed by the University that consist of study guides and audio cassette tapes in addition to textbooks.

Career opportunities in national and international sectors continue to multiply. Embry-Riddle will continue to provide the technically and academically trained personnel needed for the future.

Embry-Riddle is truly an international university. Students from many countries attend ERAU classes. The foreign students comprise approximately one-tenth of the total ERAU student body and constitute another important element in the total educational exposure for students. Aviation is an international business, and the University faculty and staff believe that the mixing of U.S. and foreign students is a valuable experience for all.

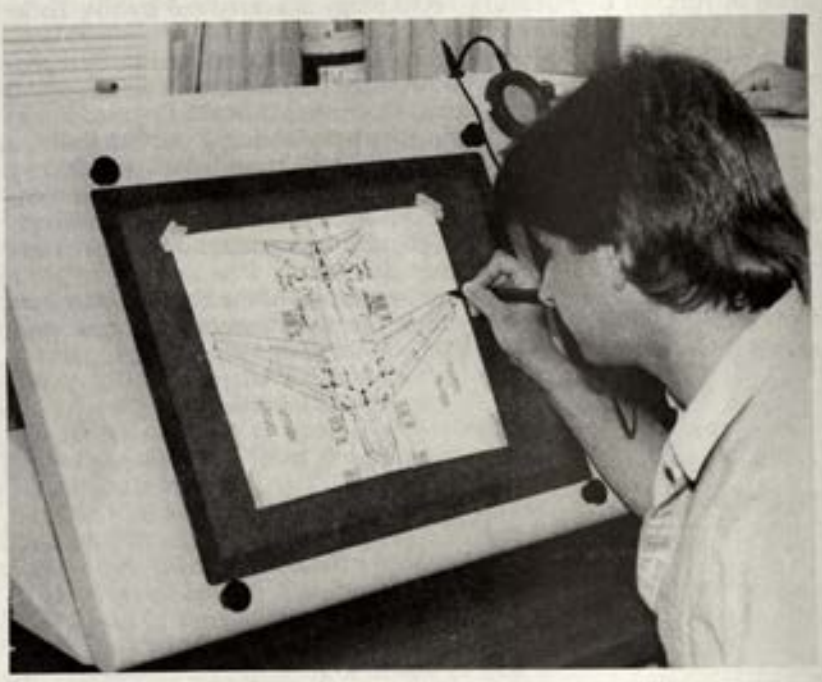
Accreditations and Affiliations

Embry-Riddle Aeronautical University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools(SACS). The Bachelor's Degree program in Aeronautical Engineering at the Daytona Beach Campus is 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 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). 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 Service Members Opportunity College's (SOC) four-year and associate degree programs (SOCAD and SOCNAV).

Admission To The University



GENERAL PROCEDURES

International Campus — Consult the International Campus section of this catalog for additional information which specifically applies to International Campus students.

Daytona Beach and Prescott Campuses — U.S. citizens and resident aliens.

To apply for admission to programs at the Daytona Beach, Florida or Prescott, Arizona campuses, send the below-listed items to:

Embry-Riddle Aeronautical University
Department of Admissions
Executive Offices
Star Route, Box 540
Bunnell, Florida 32010
(800) 222-ERAU

1. Completed application form and $25 application fee (non-refundable) as early as possible prior to desired enrollment date;
2. Official copy of high school academic records (must be sent directly to Embry-Riddle by the high school);
   OR
   evidence of completion of the General Education Development Test (GED). (Scores must be sent directly by the testing agency);
3. FAA Medical Certificate, Class I or II, at least 60 calendar days prior to desired enrollment date (*only required of flight students*);
4. 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 the Level 9 Reading and Writing courses conducted by an English Language Services (ELS) Center. Results must be sent directly to Embry-Riddle by the testing agency;
5. 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. When a student registers for the test, he or she should indicate in the proper space that a transcript of the scores should be sent to Embry-Riddle.

NOTE: ACT or SAT scores are not required for foreign, International Campus or transfer students with earned college credits in basic English or mathematics.

TRANSFER STUDENT PROCEDURES

Transfer students are those who have earned academic credit from another institution of higher education.

To apply for admission as a transfer student, students must provide all items listed under General Procedures, plus the following additional items:

1. Official transcripts from all other previously attended institutions of higher education (*transcripts must be sent to ERAU directly from the institution*).
2. Upon request only, the catalog(s) from such institutions with the descriptions of courses satisfactorily completed marked therein.

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

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

If the prospective 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 that period. After one year, the deposit is permanently forfeited.**

A prospective student **who cancels an application at any point in the admission process may reactivate the application at no additional charge during the ensuing twelve 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.

FOREIGN STUDENT PROCEDURES*

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

Foreign students applying for admission must provide all items listed under General Procedures, plus the following additional items:

1. Completed ERAU application for admission and $50 application fee at least 180 calendar days prior to desired enrollment date.
2. A detailed evaluation of foreign college transcripts, if applicable, by Educational Credentials Evaluators, Inc., PO Box 17499, Milwaukee, WI 53217. The evaluation must be sent directly to ERAU by the evaluator. (This agency charges a fee for this service.)
3. A Test of English as a Foreign Language (TOEFL) minimum score of 500 is required of all students for whom English is not the primary language or students must have achieved a grade of C or higher in the Level 9 Reading and Writing courses conducted by an English Language Services (ELS) Center. Results must be sent directly to Embry-Riddle by the testing agency.
4. A bank letter, affidavit of financial support or scholarship letter.

THE ITEMS ABOVE MUST BE RECEIVED BEFORE THE UNIVERSITY CAN FULLY EVALUATE THE APPLICATION AND CONSIDER THE STUDENT FOR ADMISSION.

If accepted for admission, the prospective foreign student must:

1. Submit an advance deposit of $5,000 to the Department 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 home country.)

ENGLISH FOR AVIATION

For twenty-five years ELS Language Centers have specialized in teaching English as a Second Language. Recently an ELS Center which specializes in English for Aviation was established on the Prescott Campus. The goal of the program is to prepare students to express themselves and to comprehend others, whether the communication is with a control tower, international co-workers, passengers, or others.

As part of the English for Aviation coursework, students will have access to a variety of special ERAU facilities and resources, including simulators, library, classrooms, and various laboratories. They will live in on-campus residence halls and are provided with a full board plan which includes nineteen meals per week.

Students may enroll in the English for Aviation program regardless of where they plan to continue their aviation study or training. Those planning to enroll at either the Prescott or Daytona Beach Campuses will satisfy the University's English language admission requirement by successfully completing the English for Aviation program's advanced level. For more information contact:

English for Aviation
ELS Language Centers
5761 Buckingham Parkway
Culver City, California 90230

READMISSION TO THE UNIVERSITY

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 Admissions Department in the following circumstances:

a. A student enrolls for twelve or more semester hours, or equivalent, with other educational institutions between two periods of attendance at the University. (See Attendance at Other Institutions.)
b. The student is not enrolled at the University for a period of two or more calendar years.

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 ERAU are transferable.
   (b) Grades are not transferable.
   (c) Previous flight experience may be accepted in accordance with the ERAU 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 ERAU 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. Student's who cannot demonstrate the required prerequisite knowledge must repeat the equivalent ERAU course. ERAU 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 ERAU transcript. If the work is not applicable to 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 or lower division) is determined by the college or university initially granting the credit, regardless of the level of the ERAU 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 ERAU regulations governing these tests.
3. Embry-Riddle may, in 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 standards in effect at the time of enrollment and registration 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 awarded for postsecondary educational, work and/or training experience or programs. Normally, all documentation of previous course work, military experience, credit by examination, and any FAA licenses 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. International Campus students should submit this documentation with their applications for admission as degree-seeking candidates. The student will be provided a copy of the completed official evaluation and given thirty calendar days (International Campus: sixty 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 background 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 (CEEB) Advanced Placement Test scores of 5, 4 or 3 on any examination, and 2 or better on the Calculus examinations.

2. Embry-Riddle 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. 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 12 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 of Education.
5. Applicants with certain professional experience in areas related to the curriculum in which they request enrollment may be allowed credit toward advanced standing. Training and experience which satisfy educational objectives of courses in the applicant's curriculum may be credited for advanced standing.
6. Advanced standing may be granted for specific Aeronautical Science courses on the basis of flight related experience 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. Other degree programs for which holders of the FAA A&P Certificate may receive advanced standing are Aircraft Maintenance, Aviation Technology, Aviation Maintenance Management, Professional Aeronautics, Airway Science and Aeronautical Studies with an area of concentration in AMT.
8. Holders of the FCC 1st Class Radiotelephone Operator's License, the FCC 2nd Class Radiotelephone Operator's License, or the FCC General Radiotelephone Operator's License may be granted advanced standing credit for EL 207

or EL 208 Basic Radiotelephone Equipment Theory and Operation.

9. Advanced standing information on 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 considers 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 of $45 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. Students who fail 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.

VETERANS

All ERAU degree programs have been approved by the appropriate state approving agencies for enrollment of persons eligible for U.S. Veterans' Administration benefits under the various public laws.

Eligible persons planning to receive VA Educational Benefits while attending ERAU should contact the Veteran's Affairs Office of the campus they wish to attend for further information and applications for VA benefits. Admissions procedures for veterans and other eligible persons are the same as those for other students.

Title 38, United States Code, sections 1674 and 1724, requires that educational assistance benefits to veterans and other eligible persons be discontinued when the student ceases to make satisfactory progress toward completion of his or her training objective.

Veteran's progress will be measured according to University standards as published in this catalog and the rules and regulations of the Veterans Administration.

The criteria used to evaluate progress are subject to change. Application and interpretation of the criteria are solely in the discretion of ERAU. Students are solely responsible for maintaining compliance with V.A. requirements.

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 Department of Admissions 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 Department of Admissions. Eligibility to take advantage of this is contingent on proper forms being filed with this Department. Staff members will be available to provide necessary assistance to handicapped students for early registration.

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 degree programs:

Bachelor of Science

Aeronautical Engineering — D,P
Aeronautical Science — D,P,I
Aeronautical Studies — D,P,I
Aircraft Engineering Technology — D
Airway Science — D
Aviation Business Administration — D,P,I
Aviation Maintenance Management — D,I
Aviation Technology — D,I
Avionics Technology — D
Computer Science with Aviation Applications — D,P,I
Electrical Engineering — P
Engineering Physics — D
Professional Aeronautics — D,P,I

Associate in Science

Aeronautical Science — D,P,I
Aircraft Maintenance — D,I
Aviation Business Administration — D,P,I
Aviation Safety — I
Avionics Technology — D
Professional Aeronautics — D,P,I

Associate

Aviation Maintenance Technology — D

Master of Science

Aeronautical Engineering — D

Master

Aeronautical Science — D,I
Aviation Management — D,I
Business Administration/Aviation — D,I

I Available at International Campus Locations.
P Available at the Prescott Campus.
D Available at the Daytona Beach Campus.

Areas of Concentration

Students enrolled in the Aeronautical Studies and Airway Science baccalaureate degree programs are required to select a particular area of concentration. These areas of concentration consist of courses — supplemental to the core courses — which provide entry level career focus by imparting specialized knowledge and skills. Specific career options are determined to a large degree by the area of concentration selected by the student.

Areas of concentration in the Professional Aeronautics degree program are determined by the professional aviation background possessed by the student.

Most of the other baccalaureate degree programs contain a sufficient number of elective courses to enable students to pursue their special interests outside of the basic degree in areas such as flight, management, etc.

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 117) offers methods of developing the reading and listening skills necessary for effective communications. The developmental English course (HU 106) trains students in writing and speech. The quantitative skills course (MA 105) helps to prepare students for the introductory mathematics courses in the various curricula such as MA 111, MA 120 and MA 140.

Proof of proficiency in the above basic skills areas is required during the student's first semester. All 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. Some 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.

NOTE: The basic skills courses do not apply toward minimum degree requirements. These courses are provided to assist the students' transition to first level curriculum courses.

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 fields; (3) sufficient general education background for students 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
Communicative Skills	9
Technical Report Writing	3
Other Humanities/Social Sciences	6
Mathematics	6
Physical Science	6
Economics	3
Computer Science	3
	36

AERONAUTICAL ENGINEERING

Embry-Riddle offers the Bachelor of Science degree in Aeronautical Engineering at the Daytona Beach and Prescott campuses.

The Aeronautical Engineering program provides the student the opportunity to acquire specific aircraft 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

Engineering physics is a curriculum which aims 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 this 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

The Aircraft Engineering Technology program at the Daytona Beach campus is designed to provide the aircraft industry with graduates trained to fill support and liaison roles related to engineering activities. The course work concentrates on the application of scientific and engineering principles.

COMPUTER SCIENCE PROGRAM

The curriculum for the Bachelor of Science degree in 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.

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 repairs 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. 277 and FAA Repair Station Certificate No. 708-55.

Type 65: Embry-Riddle offers special AMT courses to students on the International Campus 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 International Campus.

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 Mainte-

nance/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.

AVIONICS TECHNOLOGY

The Avionics 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 offers programs in Avionics Technology that lead to a Bachelor or Associate in Science degree. Avionics Technology may also be selected as an area of concentration in various degree programs.

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 three majors. The Aviation Administration major focuses on the unique aspects of aviation business. The primary thrust of the Computer Information Systems major is to enable graduates to function as applications programmer/analysts in commercial environments. In this program, the student will receive education and training in three different areas: (1) in systems development methodologies, which provide the fundamental problem-solving approaches used in the profession; (2) in technical computer skills, which provide the tools for implementing those problem solutions; and (3) in business theory, which provides an understanding of the context within which the systems are implemented. The General Business major is a more generic curriculum designed to provide the skills needed in any business activity. Aviation Business Administration — Capstone is a two-year upper level program designed for students who desire to enter the business field at the beginning of their junior year. 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.

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 General Aviation 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. These 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 International Campus 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 80 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, four degree program alternatives are available at the *master's level.

The Master of Business Administration in Aviation (MBA-A) blends development of management skills, tools, and techniques with study of the aviation/aerospace industry, with an emphasis placed on the educational needs of the practitioner. The Master of Aeronautical Science (MAS) involves study in the major technical specialties of aviation. The technically oriented students in this program probe the state of the art in areas such as air traffic control and communications, aircraft systems, maintenance management, safety and accident investigation, and select areas of study suited to individual career preferences. The Master of Aviation Management (MAM) departs from the more conventional business administration curriculum by weighting the course of study in favor of the managerial skills most useful to team leaders of aviation specialists. Opportunity is available to tailor one's program to the operational challenges of a particular segment of aviation. The Master of Science in Aeronautical Engineering (MSAE) provides formal post-baccalaureate study in areas of knowledge required by engineers engaged in aircraft-oriented research and development and design activities. The MSAE program is tailored for specialization in the fields of aerodynamics, structures and design.

For more information, request a current **Graduate Catalog** by contacting one of the following:

1. The nearest Embry-Riddle Resident Center location.
2. The Director, Student Records and Registration, International Campus, at the address given in the front of the catalog.
3. Dean of the Graduate School, Daytona Beach Campus, at the address given in the front of the catalog.

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

AIR TRAFFIC CONTROL

ERAU currently participates in cooperative agreements with several of the Federal Aviation Administration (FAA) Regions. Students who meet the eligibility requirements and are selected by the FAA can, upon approval by ERAU, gain on-the-job training in air traffic control career positions while earning college credits. Students who successfully complete two six-month internship periods at an Air Traffic Control Center and all other requirements for the bachelor's degree are eligible to apply for non-competitive, career-conditional appointments with the FAA. For more information, contact the Career Center at the Daytona Beach Campus or the Office of Student Development at the Prescott Campus.

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. Students may earn up to six credit hours, while earning wages commensurate with the work performed, for each Co-op assignment.

To apply for the program, students must have a GPA of 2.25 or better, have completed their freshmen academics (first two semesters), or, if transfer students, have completed one semester at Embry-Riddle. Participation in the program requires the approval of the Co-op faculty advisor and the Co-op Education Administrator, attendance at a Co-op seminar, and the student's success in securing a position. Citizenship requirements are specified by the employer. Final selection for a Co-op job is in the sole discretion of the employer. All arrangements and paperwork for the co-op job assignment must be completed by the last day on which academic courses can be dropped and a full refund received.

Veterans should contact the Veterans' Affairs Coordinator to determine VA benefit options related to the Co-op program. Foreign students should contact the Foreign Student Advisor regarding visa requirements for working in the United States.

Students interested in the program should contact the Career Center, located in the University Center at the Daytona Beach Campus, or the Office of Student Development at the Prescott Campus at least 90 calendar days prior to the beginning of the semester they plan to co-op.

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 the 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.

Students enrolled in ROTC programs may substitute MY or AF courses for AS, MS, EC, and open elective courses in any degree program.

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/technical elective course credit in ERAU 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 semesters 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), 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 and pass an Air Force medical examination 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 subsistance allowance (up to a total of $2000 for the two years). In addition, those attending 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 subsistance 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, Daytona Beach, FL 32014, or AFROTC Det. 027A, Embry-Riddle Aeronautical University, Prescott, AZ 86301. 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, U.S. Army Reserve or National Guard. The program offers both a four-year and 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 courses 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 designed for four-year participants and are normally offered during the freshman and sophomore years. These courses address military organization, equipment, weapons, map reading, land navigation, use of a 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.

3. Advanced Camp

Prior to commissioning, each cadet must successfully complete an evaluation of the skills learned. This evaluation is conducted at Fort Bragg, NC, during June and July. Advanced camp requirements apply only to Advanced Military Science students.

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, and allow completion of all requirements for commissioning within two years. Students attending the summer course at Fort Knox receive approximately $800 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 full tuition, fees and required 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.

There is no requirement to take military science courses or wear a uniform on campus while in college. Time spent in the PLC program counts for pay purposes while on active duty. There is no obligation to the program; candidates have until the end of their senior year to decide on their commission. A guaranteed pilot and flight officer program is available to qualified personnel.

For seniors, there is the Aviation Officer Candidate Program (AOC) and the Unrestricted Officer Candidate Program (OC). Guaranteed pilot and flight officer programs are also available. Application is made during the senior year and precommissioning training (10 weeks) occurs after graduation.

Applicants for either the PLC, AOC or OC Program are paid during the training.

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 US Navy Officer Candidate Programs. In fact, only the US 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. The recently inaugurated Naval Aviation Reserve Officer Candidate (AVROC) Program also offers summer training and flight slot designation as early as the end of the sophomore year.

On the Daytona Beach Campus, 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:

Aeronautical Engineering Program
Aircraft Engineering Technology Program
Electrical Engineering Program
Engineering Physics Program
Aviation Computer Program
Aviation Maintenance and Technology Programs
Avionics Technology Programs
Aviation Business and Management Programs
Flight Related Programs

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

AERONAUTICAL ENGINEERING PROGRAM

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

SEMESTER	COURSE NUMBER/TITLE		CREDITS
FIRST	ET 110	Drafting and Descriptive Geometry	2

	MA 241	Calculus and Analytical Geometry I	4
	PS 110	Chemistry for Engineers	5
	HU 122	English Composition and Literature I	3
	SS 110	World History OR	
	SS 120	American History	3
			17
SECOND	MA 242	Calculus and Analytical Geometry II	4
	PS 201	Engineering Physics I	5
	HU 123	English Composition and Literature II	3
	CS 210	Scientific Programming	3
			15
THIRD	ES 201	Statics	3
	MA 243	Calculus and Analytical Geometry III	4
	PS 202	Engineering Physics II	5
	HU 221	Technical Report Writing	3
			15
FOURTH	ES 302	Solid Mechanics	3
	ES 303	Dynamics	3
	ES 304	Fluid Mechanics	3
	PS 303	Modern Physics	3
	MA 345	Differential Equations and Matrix Methods	4
			16
SUMMER SESSION (May be taken any summer term after completion of prerequisites.)			
	EC 210	Microeconomics OR	
	EC 211	Macroeconomics	3
	SS 210	Introduction to Sociology OR	
	SS 220	Introduction to Psychology	3
	HU 219	Speech	3
			9
FIFTH	AE 301	Aerodynamics I	3
	AE 304	Aircraft Structures I	3
	ES 305	Thermodynamics	3
	MA 441	Advanced Engineering Mathematics I	3
	ES 307	Engineering Materials Science w/Lab	3
			15
SIXTH	AE 302	Aerodynamics II	3
	AE 309	Experimental Aerodynamics	2
	AE 404	Aircraft Structures II	3
	AE 413	Airplane Stability and Control	3
	ES 402	Electrical Engineering I w/Lab	3
	HU/SS	Elective (300-400 Level)	3
			17
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
		Technical Elective	3
			15
EIGHTH	AE 421	Aircraft Detail Design	3
	ES 410	Structures and Instrumentation Lab	2
		Technical Elective	3
	HU/SS	Electives (300-400 Level)	6
		Open Elective	3
			17
TOTAL			136

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

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

HUMANITIES/SOCIAL SCIENCES ELECTIVES:
HU 300, 305, 310, 320, 330, 345
SS 310, 320, 331, 340, 398

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

AIRCRAFT ENGINEERING TECHNOLOGY PROGRAM

Aircraft Engineering Technology

Bachelor of Science

ADMISSION REQUIREMENTS

Students entering this program should have a basic background in math, physics and chemistry. College algebra and trigonometry are entry level math courses. Students wishing to strengthen their backgrounds in the basic sciences before enrolling in the prescribed course sequence should consult the Program Chair for guidance in course selection.

DEGREE REQUIREMENTS

The Bachelor of Science degree in Aircraft Engineering Technology requires successful completion of 130 semester credit hours, as outlined in the course list below.

SEMESTER	COURSE NUMBER	TITLE	CREDITS
FIRST	PS 101	Basic Chemistry	3
	HU 122	English Composition and Literature I	3
	ET 101	Engineering Graphics	2
	MA 140	College Algebra	3
	MA 141	Trigonometry	2
	SS 110	World History OR	
	SS 120	American History	3
			16
SECOND	PS 110	Chemistry for Engineers	5
	HU 123	English Composition and Literature II	3
	ET 110	Drafting and Descriptive Geometry	2
	MA 241	Calculus and Analytical Geometry I	4
	EC 210	Microeconomics	3
			17
THIRD	HU 219	Speech	3
	PS 201	Engineering Physics I	5
	MA 242	Calculus and Analytical Geometry II	4
	CS 210	Scientific Programming	3
			15
FOURTH	PS 202	Engineering Physics II	5
	MA 245	Applied Technical Mathematics	3
	SS 210	Sociology OR	
	SS 220	Psychology	3
	HU 221	Technical Report Writing	3
	ET 201	Technical Mechanics	4
			18
FIFTH	ET 301	Applied Aerodynamics I w/Lab	3
	ET 302	Applied Strength of Materials w/Lab	3
	ET 305	Applied Thermodynamics with Lab	4
	ET 312	Applied Electrical Science with Lab	4
	HU/SS	Elective	3
			17
SIXTH	ET 304	Aircraft Structural Analysis w/Lab	4
	ET 307	Manufacturing Processes and Materials with Lab	4
	ET 308	Applied Aerodynamics II	3
	MS 105	American Business Enterprise	3
	HU/SS	(300-400 Level)Elective	3
			17
SEVENTH	ET 303	Aircraft Drafting	3

	ET 401	Mechanical Design	3
	ET 402	Applied Instrumentation Lab	3
	ET 404	Aircraft Performance and Design	3
		MA/Technical Elective	3
			15
EIGHTH	ET 403	Aircraft Detail Design	3
	ET 405	Non-Destructive Testing and Quality Assurance with Lab	3
	ET 406	Aircraft Systems Analysis and Design	3
		MA/Technical Elective	3
		Open Elective	3
			15
TOTAL			130

MATHEMATICS/TECHNICAL ELECTIVES:
ET 399, 499
CS 335, 350, 360
MA 412
PS 303
CE (ET): By Special Arrangement

Students may substitute upper level AF and MY courses or aeronautical certificates for a maximum of 6 credits of the Math/Technical electives.

HUMANITIES/SOCIAL SCIENCES ELECTIVES:
HU 300, 305, 310, 320, 325, 330, 340, 345
SS 305, 310, 320, 331, 340, 398

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

ELECTRICAL ENGINEERING PROGRAM

Electrical Engineering

Bachelor of Science

ADMISSION REQUIREMENTS

To enter this program, students should have demonstrated a 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.

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
	SS 110	World History OR	
	SS 120	American History	3
			15
SECOND	MA 242	Calculus and Analytical Geometry II	4
	PS 201	Engineering Physics I	5
	HU 123	English Composition and Literature II	3
	CS 210	Scientific Programming	3
			15
THIRD	EE 201	Linear Circuits Analysis I	3
	EE 203	Electrical Engineering Laboratory I	1
	MA 243	Calculus and Analytical Geometry III	4
	PS 202	Engineering Physics II	5
	HU 221	Technical Report Writing	3
			16
FOURTH	EE 202	Linear Circuits Analysis II	3
	EE 204	Electrical Engineering Laboratory II	1
	EE 210	Electronic Devices and Circuits	3
	EE 212	Electronic Circuits Laboratory	1
	MA 345	Differential Equations and Matrix Methods	4
	ES 201	Statics	3
			15
FIFTH	EE 220	Digital Circuit Design	3
	EE 222	Digital Circuit Laboratory	1
	EE 230	Operational Amplifiers and A/D-D/A Circuits	3
	MA 441	Advanced Engineering Mathematics I	3
	ES 303	Dynamics	3
	MA 412	Probability and Statistics	3
			16
SIXTH	EE 303	Signals and Filters	3
	EE 320	Introduction to Computer Engineering	3
	EE 322	Computer Engineering Laboratory	1
	EE 340	Electric and Magnetic Fields	3
	ES 305	Thermodynamics	3
	HU 219	Speech	3
			16

SEVENTH	EE 350	Control Systems Analysis and Design	3
	EE 360	Control Systems Laboratory	1
	EE 410	Communications Systems	3
	EE 412	Communications Systems Laboratory	1
	ES 307	Engineering Materials Science w/Laboratory	3
	•	Technical Elective	3
			14
EIGHTH	HU/SS	Elective	3
	ES 403	Heat Transfer	3
	EE 420	Avionics Preliminary Design	3
	EC 210	Microeconomics OR	3
	EC 211	Macroeconomics	3
	•	Technical Elective	
			15
NINTH	EE 450	Elements of Power Systems	3
	EE 452	Power Systems Laboratory	1
	EE 421	Avionics Detail Design	3
	HU/SS	Electives	3
	HU/SS	Elective (300-400 Level)	3
			13
TOTAL			135

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

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

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 Physics I, Calculus I, and Engineering Graphics.

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 and Analytical Geometry I	4
	PS 205	Physics I	4
	SS 110	World History OR	
	SS 120	American History	3
	HU 122	English Composition and Literature I	3
	ET 110	Engineering Graphics	2
			16
SECOND	MA 242	Calculus and Analytical Geometry II	4
	PS 206	Physics II	4
	PS 110	Chemistry for Engineers	5
	HU 123	English Composition and Literature II	3
			16
THIRD	MA 243	Calculus and Analytical Geometry III	4
	PS 207	Physics III	4
	ES 201	Statics	3
	CS 210	Scientific Programming	3
	HU 219	Speech	3
			17
FOURTH	MA 345	Differential Equations and Matrix Methods	4
	PS 303	Modern Physics	3
	*PS 290	Physics Laboratory Practicum	0
	ES 304	Fluid Mechanics	3
	ES 303	Dynamics	3
	HU 221	Technical Report Writing	3
			16

* May be taken during the fourth or fifth semester.

FIFTH	MA 441	Advanced Engineering Mathematics I	3
	PS 320	Classical Mechanics	3
	ES 302	Solid Mechanics	3
	ES 402	Electrical Engineering I	3
	SS 210	Introduction to Sociology OR	
	SS 220	Introduction to Psychology	3
	ET 200	Machine Shop Laboratory	1
			16
SIXTH	MA 442	Advanced Engineering Mathematics II	3
	EP 360	Atmospheric Physics	3
	ES 305	Thermodynamics	3
	ES 405	Electrical Engineering II	3
	EC 210	Microeconomics OR	

	EC 211	Macroeconomics	3
			15
SUMMER SESSION (May be taken any summer term)			
	HU/SS	Electives (300-400 Level)	6
		Open Elective	3
			9
SEVENTH	EP 400	Thermodynamics and Statistical Mechanics	3
	EP 420	Planetary Science	3
	EP 440	Engineering Electricity and Magnetism	3
	ES 307	Engineering Materials Science w/Lab	3
	EP 490	Senior Design Project I	3
			15
EIGHT	EP 450	Space Systems Engineering	3
	EP 491	Senior Design Project II	4
	ES 409	Space Mechanics	3
		Open Elective	3
	AE	Electives	3
			16
TOTAL			136

AE ELECTIVES:
AE 301, 302, 304

AVIATION COMPUTER PROGRAM

Computer Science with Aviation Applications

Bachelor of Science

DEGREE REQUIREMENTS

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
	SS 110	World History OR	
	SS 120	American History	3
			16
SECOND	MA 242	Calculus and Analytical Geometry II	4
	HU 123	English Composition and Literature II	3
	CS 215	Computer Programming II	3
	CS 222	Introduction to Discrete Structures	3
	EC 211	Macroeconomics	3
			16
THIRD	PS 201	Engineering Physics I	5
	HU 219	Speech	3
	CS 230	Organization of Programming Languages	3
	CS 240	Introduction to Fi e Processing	3
	MA 430	Linear Algebra	3
			17
FOURTH	PS 202	Engineering Physics II	5

	HU 221	Technical Report Writing	3
	CS 235	Assembly Language Programming	3
	CS 315	Data Structures	3
	EC 210	Microeconomics	3
			17
FIFTH	CS 330	Systems Design and Documentation	3
	CS 341	Database Management Systems	3
	CS 372	Introduction to Microprocessors	3
	MS 201	Principles of Management	3
	SS 220	Introduction to Psychology	3
			15
SIXTH	CS 335	Introduction to Computer Graphics	3
	CS 338	Numerical Methods	3
	CS 370	Computer Organization	3
	MA 412	Probability and Statistics	3
		Open Elective	3
			15
SEVENTH	CS 420	Operating Systems	3
	CS	Elective(300-400 Level)	3
		• Technical Elective (300-400 Level)	3
		Open Electives	6
			15
EIGHTH	CS	Elective (300-400 Level)	3
	HU/SS	Elective (300-400 Level)	3
		• Technical Elective (300-400 Level)	3
		Open Elective	3
		Open Elective (300-400 Level)	3
			15
TOTAL			126

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

• Technical electives must be chosen from AE, CS, ES, MA, or PS courses.

Computer science electives must be chosen from CS 350, 399, 430, 441, 455, 460, 465, or 499.

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 (21 Credits) plus 15 hours of electives chosen from the following disciplines:
AMT/AS/AV/CS/EL/FA/MS; OR AMT 355 and AMT 455

AND

33 designated credits as follows:

SEMESTER	COURSE NUMBER/TITLE		CREDITS
FIRST	HU 122	English Composition and Literature I	3
	MA 111	College Mathematics for Aviation I	3
	SS 220	Introduction to Psychology	3
	MS 105	American Business Enterprise OR	
	MS 201	Principles of Management	3
	AS 253	History and Regulation of Aviation OR	
	SS 110	World History OR	
	SS 120	American History	3
			15
SECOND	HU 123	English Composition and Literature II	3
	PS 102	Explorations in Physics	3
	EC 211	Macroeconomics	3

MA 112	College Mathematics for Aviation II OR	
MA 211	Statistics with Aviation Applications	3
HU 219	Speech OR	
HU 221	Technical Report Writing	3
CS 105	Introduction to Computers in Aviation OR	
CS 109	Introduction to Computer Programming w/BASIC OR	
CS 210	Scientific Programming	3
		18

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

All of the courses in the Associate in Science degree in Aircraft Maintenance are creditable toward the Bachelor of Science degrees in Aviation Maintenance Management, Aviation Technology and Aviation Business Administration, with the exception of CS 105 which cannot be credited toward the Bachelor of Science degree in Aviation Maintenance Management.

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	Physical Mathematics	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
		12
SECOND	(Airframe I)	
AMT 201	Aircraft Structures and Sheet Metal Fabrication	4
AMT 202	Aircraft Wood, Fabric and Finishes	2
AMT 203	Aircraft Instruments and Communication/Navigation Systems	2
AMT 204	Aircraft Welding, Assembly and Rigging	4
HU 122	English Composition and Literature I	3
		15

THIRD	(Airframe II)	
AMT 205	Aircraft Electrical Systems	4
AMT 206	Hydraulic and Pneumatic Systems	2
AMT 207	Aircraft Environmental and Fuel Systems	3
AMT 208	Aircraft Landing Gear Systems	3
MA 111	College Math for Aviation I	3
		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
	Specified Electives	3
		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
MS 105	American Business Enterprise	3
		15
TOTAL		72

Specified electives must be chosen from AS 253, CS 109, HU 123, HU 219, MA 112 or MS 201.

Aviation Technology

Bachelor of Science

DEGREE REQUIREMENTS

The Bachelor of Science in Aviation Technology requires successful completion of 120 to 148 credit hours. The student must complete a core program and two of the three options in avionics, flight, or maintenance.

* TYPE 147 AMT/FLIGHT

SEMESTER	COURSE NUMBER/TITLE		CREDITS
FIRST	AMT 101	Physical Mathematics	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
			15

SECOND	AMT 201	Aircraft Structures and Sheet Metal Fabrication	4
	AMT 202	Aircraft Wood, Fabric and Finishes	2
	AMT 203	Aircraft Instruments and Communications/Navigation Systems	2
	AMT 204	Aircraft Welding, Assembly and Rigging	4
	MA 111	College Mathematics for Aviation I	3
			15
THIRD	AMT 205	Aircraft Electrical Systems	4
	AMT 206	Hydraulic and Pneumatic Systems	2
	AMT 207	Aircraft Environmental and Fuel Systems	3
	AMT 208	Aircraft Landing Gear Systems	3
	HU 123	English Composition and Literature II	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
	AS 150	Aeronautics I	5
			17
FIFTH	AMT 213	Engine Installation and Operation	2
	AMT 214	Reciprocating Engine Overhaul	4
	AMT 215	Turbine Engines and Turbine Engine Systems	6
	FA 104	Primary Flight	2
			14
SIXTH	FA 105	Private Pilot Certification	2
	AS 253	History and Regulation of Aviation	3
	PS 103	Technical Physics I	3
	MA 112	College Mathematics for Aviation II	3
	AS 201	Meteorology I	3
			14
SEVENTH	FA 205	Basic Attitude Instrument and Advanced Flight Maneuvers	2
	AS 250	Aeronautics II	3
	PS 104	Technical Physics II	3
	HU 221	Technical Report Writing	3
	PS 101	Basic Chemistry	3
			14
EIGHTH	FA 206	Instrument Flight Transition - S.E.	2
	AS 309	Basic Aerodynamics	3
	HU 250	Introduction to Logic	3
	CS 109	Introduction to Computer Programming	

		w/BASIC OR	
	CS 210	Scientific Programming	3
	AS 251	Aeronautics III	3
			14
NINTH	FA 302	Commercial Pilot Certification - S.E.	2
	AS 357	Flight Physiology	3
	AS 310	Aircraft Performance	3
	SS 210	Introduction to Sociology OR	
	SS 220	Introduction to Psychology	3
	EC 210	Microeconomics OR	
	EC 211	Macroeconomics	3
			14
TENTH	AS 408	Flight Safety	3
	HU 219	Speech	3
	AV 301	Avionics for Aviators	3
	HU/SS	Elective (300-400 Level)	3
			12
TOTAL			**144**

* This program available only at the Daytona Beach Campus.

* TYPE 147 AMT/AVIONICS

SEMESTER	COURSE NUMBER/TITLE		CREDITS
FIRST	AMT 101	Physical Mathematics	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
			15
SECOND	AMT 201	Aircraft Structures and Sheet Metal Fabrication	4
	AMT 202	Aircraft Wood, Fabric and Finishes	2
	AMT 203	Aircraft Instruments and Communications/Navigation Systems	2
	AMT 204	Aircraft Welding, Assembly and Rigging	4
	MA 140	College Algebra	3
			15
THIRD	AMT 205	Aircraft Electrical Systems	4
	AMT 206	Hydraulic and Pneumatic Systems	2
	AMT 207	Aircraft Environmental and Fuel Systems	3
	AMT 208	Aircraft Landing Gear Systems	3
	HU 123	English Composition and Literature II	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
	MA 141	Trigonometry	2
			14
FIFTH	AMT 213	Engine Installation and Operation	2
	AMT 214	Reciprocating Engine Overhaul	4
	AMT 215	Turbine Engines and Turbine Engine Systems	6
	HU 221	Technical Report Writing	3
			15
SIXTH	EL 106	Direct and Alternating Current Fundamentals and Circuit Analysis w/Laboratory	6
	MA 241	Calculus and Analytical Geometry I	4
	PS 110	Chemistry for Engineers	5
			15
SEVENTH	EL 220	Introduction to Pulse and Digital Circuits w/Laboratory	4
	EL 223	Solid State Fundamentals and Circuit Analysis w/Laboratory	6
	CS 109	Introduction to Computer Programming w/BASIC OR	3
	CS 210	Scientific Programming	3
	PS 103	Technical Physics I	16
EIGHTH	EL 320	Advanced Digital Circuits and Systems w/Laboratory	4
	EL 323	Electronic Systems Analysis w/Laboratory	5
	HU 250	Introduction to Logic	3
	PS 104	Technical Physics II	3
			15
NINTH	EL 372	Microprocessor Systems w/Lab	3
	AV 310	Aircraft Communications, Navigation and Landing Systems	3
	AV 319	Aircraft Pulse Systems	3
	AV 340	Avionics Equipment Troubleshooting and Repair Laboratory	2
	EC 210	Microeconomics OR	3
	EC 211	Macroeconomics	14
TENTH	AV 323	Low Frequency and Area Navigational Systems	3
	AV 341	Advanced Avionics Equipment Troubleshooting and Repair Laboratory	2

	HU 219	Speech	3
	SS 210	Introduction to Sociology OR	
	SS 220	Introduction to Psychology	3
	HU/SS	Elective (300-400 Level)	3
			14
TOTAL			**148**

* This program available only at the Daytona Beach Campus.

* AVIONICS/FLIGHT

SEMESTER	COURSE NUMBER/TITLE		CREDITS
FIRST	EL 106	Direct and Alternating Current Fundamentals and Circuit Analysis w/Laboratory	6
	MA 140	College Algebra	3
	MA 141	Trigonometry	2
	HU 122	English Composition and Literature I	3
			14
SECOND	EL 220	Introduction to Pulse and Digital Circuits w/Laboratory	4
	EL 223	Solid State Fundamentals and Circuit Analysis w/Laboratory	6
	MA 241	Calculus and Analytical Geometry I	4
			14
THIRD	EL 320	Advanced Digital Circuits and Systems w/Laboratory	4
	EL 323	Electronics Systems Analysis w/Laboratory	5
	CS 109	Introduction to Computer Programming w/BASIC OR	
	CS 210	Scientific Programming	3
			12
FOURTH	AV 310	Aircraft Communications, Navigation and Landing Systems	3
	AV 319	Aircraft Pulse Systems	3
	AV 340	Avionics Equipment Troubleshooting and Repair Laboratory	2
	EL 372	Microprocessor Systems w/Lab	3
	HU 123	English Composition and Literature II	3
			14
FIFTH	AV 323	Low Frequency and Area Navigation Systems	3
	AV 341	Advanced Avionics Equipment Troubleshooting and Repair Laboratory	2
	FA 104	Primary Flight	2
	AS 150	Aeronautics I	5
	PS 103	Technical Physics I	3
			15

SIXTH	FA 105	Private Pilot Certification	2
	AS 201	Meteorology I	3
	PS 104	Technical Physics II	3
	AS 253	History and Regulation of Aviation	3
	HU 219	Speech	3
			14
SEVENTH	AS 250	Aeronautics II	3
	AS 309	Basic Aerodynamics	3
	EC 210	Microeconomics OR	3
	EC 211	Macroeconomics	
	FA 205	Basic Attitude Instrument and Advanced Flight Maneuvers	2
	HU 250	Introduction to Logic	3
			14
EIGHTH	AS 251	Aeronautics III	3
	AS 310	Aircraft Performance	3
	FA 206	Instrument Flight Transition - S.E.	2
	PS 110	Chemistry for Engineers	5
			13
NINTH	AS 357	Flight Physiology	3
	AS 408	Flight Safety	3
	FA 302	Commercial Pilot Certification - S.E.	2
	HU 221	Technical Report Writing	3
	HU/SS	Elective (300-400 Level)	3
			14
TOTAL			**124**

* This program available only at the Daytona Beach Campus.

OTHER MAINTENANCE OPTIONS

Students who possess an FAA A&P Maintenance Certificate (36 Credit Hours will be granted), or students who complete the Type 65 AMT program may also earn the B.S. in Aviation Technology degree by completing the core courses and either the flight or avionics courses described below.

AVIATION TECHNOLOGY TYPE 65** AMT

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 280 Powerplant Theory and Applications	4
**AMT 360 Airframe Systems and Applications	3

**AMT 380	Aircraft Propulsion Systems and Applications	4
	Electives (AMT/AS/AV/CS/EL/FA/MS or AMT 355 and AMT 455)	15
TOTAL		36

**These courses are available only at International Campus locations.

CORE COURSES

COURSE NUMBER/TITLE		CREDITS
CS 109	Introduction to Computer Programming w/BASIC OR	
CS 210	Scientific Programming	3
EC 210	Microeconomics OR	
EC 211	Macroeconomics	3
HU 122	English Composition and Literature I	3
HU 123	English Composition and Literature II	3
HU 219	Speech	3
HU 221	Technical Report Writing	3
HU 250	Introduction to Logic	3
HU/SS	Elective (300-400 Level)	3
MA 111	College Mathematics for Aviation I	3
MA 112	College Mathematics for Aviation II	3
PS 101	Basic Chemistry	3
PS 103	Technical Physics I	3
PS 104	Technical Physics II	3
SS 210	Introduction to Sociology OR	
SS 220	Introduction to Psychology	3
		42

Students who select the Avionics option are required to take MA 140, MA 141, MA 241, and PS 110 in place of MA 111, MA 112, and PS 101.

AVIONICS OPTION

COURSE NUMBER/TITLE		CREDITS
EL 106	Direct and Alternating Current Fundamentals and Circuit Analysis with Lab	6
EL 220	Introduction to Pulse and Digital Circuits with Lab	4
EL 223	Solid State Theory and Circuit Analysis with Lab	6
EL 320	Advanced Digital Circuits and Systems with Lab	4
EL 323	Electronics Systems Analysis with Lab	5
EL 372	Microprocessor Systems with Lab	3
AV 310	Aircraft Communications, Navigation and Landing Systems	3
AV 319	Aircraft Pulse Systems	3
AV 323	Low Frequency and Area Navigation Systems	3
AV 340	Avionics Equipment Troubleshooting and Repair Lab	2
AV 341	Advanced Avionics Equipment Troubleshooting	

	and Repair Lab	2
		41

FLIGHT OPTION

COURSE NUMBER/TITLE		CREDITS
AS 150	Aeronautics I	5
AS 201	Meteorology I	3
AS 250	Aeronautics II	3
AS 251	Aeronautics III	3
AS 253	History and Regulation of Aviation	3
AS 309	Basic Aerodynamics	3
AS 310	Aircraft Performance	3
AS 357	Flight Physiology	3
AS 408	Flight Safety	3
AV 301	Avionics for Aviators	3
FA 104	Primary Flight	2
FA 105	Private Pilot Certification	2
FA 205	Basic Attitude Instrument and Advanced Flight Maneuvers	2
FA 206	Instrument Flight Transition	2
FA 302	Commercial Pilot Certification - S.E.	2
		42

AV 301 is not required if the Avionics option is selected.

AVIONICS TECHNOLOGY PROGRAMS

Avionics Technology

Bachelor of Science
Associate in Science

DEGREE REQUIREMENTS

The Bachelor of Science degree in Avionics 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 140	College Algebra	3
	MA 141	Trigonometry	2
	PS 110	Chemistry for Engineers	5
	SS 110	World History OR	
	SS 120	American History	3
			16
SECOND	EL 106	Direct and Alternating Current Fundamentals and Circuit Analysis w/Lab	6
	MA 241	Calculus and Analytic Geometry I	4
	HU 123	English Composition and Literature II	3
	SS 210	Introduction to Sociology OR	
	SS 220	Introduction to Psychology	3
			16
THIRD	EL 220	Introduction to Pulse and Digital Circuits with Laboratory	4
	EL 223	Solid State Fundamentals and Circuit Analysis with Laboratory	6
	MA 242	Calculus and Analytic Geometry II	4
	CS 210	Scientific Programming	3
			17
FOURTH	EL 320	Advanced Digital Circuits and Systems with Laboratory	4
	EL 323	Electronic Systems Analysis with Laboratory	5
	PS 201	Engineering Physics I	5
	HU 221	Technical Report Writing	3
			17
FIFTH	EL 372	Microprocessor Systems w/Lab	3
	MA 245	Applied Technical Mathematics	3

	PS 202	Engineering Physics II	5
	ET 101	Engineering Graphics	2
	ET 201	Technical Mechanics	4
			17
SIXTH	AV 310	Communications, Navigation and Landing Systems	3
	AV 319	Aircraft Pulse Systems	3
	AV 340	Avionics Equipment Troubleshooting and Repair Laboratory	2
	ET 302	Applied Strength of Materials with Laboratory	3
	ET 305	Applied Thermodynamics with Laboratory	4
			15
SEVENTH	AV 401	Avionics Communication System Design Considerations	3
	AV 402	Avionics Pulse System Design Considerations	3
	ET 307	Manufacturing Processes and Materials with Laboratory	4
	HU 219	Speech	3
		Open Elective	3
			16
EIGHTH	AV 411	Integrated Aviation Logistics Support	3
	AV 421	Avionics System Integration and Design	3
	EC 210	Microeconomics OR	
	EC 211	Macroeconomics	3
	HU/SS	Elective (300-400 Level)	3
		Open Elective	3
			15
TOTAL			129

Associate in Science

DEGREE REQUIREMENTS

The Associate in Science degree in Avionics Technology requires successful completion of 76 to 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
	MA 140	College Algebra	3
	MA 141	Trigonometry	2
	HU 122	English Composition and Literature I	3
			14

SECOND	EL 223	Solid State Fundamentals and Circuit Analysis with Laboratory	6
	EL 220	Introduction to Pulse and Digital Circuits with Laboratory	4
	MA 241	Calculus and Analytical Geometry I	4
	ET 101	Engineering Graphics	2
			16
THIRD	EL 323	Electronic Systems Analysis with Laboratory	5
	EL 320	Advanced Digital Circuits & Systems with Laboratory	4
	HU 123	English Composition and Literature II	3
	CS 109	Introduction to Computer Programming w/BASIC OR	3
	CS 210	Scientific Programming	
			15
FOURTH	AV 340	Avionics Equipment Troubleshooting and Repair Laboratory	2
	AV 310	Aircraft Communications and Navigation Systems	3
	AV 319	Aircraft Pulse Systems	3
	PS 103	Technical Physics I OR	3
	PS 201	Engineering Physics I	5
	HU 221	Technical Report Writing	3
	EL 372	Microprocessor Systems with Laboratory	3
			17-19
FIFTH	AV 341	Advanced Avionics Equipment Troubleshooting and Repair Lab	2
	AV 323	Low Frequency and Area Navigation Systems	3
	AV	Elective	3
	SS 210	Introduction to Sociology OR	3
	SS 220	Introduction to Psychology	
	EC 210	Microeconomics OR	3
	EC 211	Macroeconomics	
			14
TOTAL			76 or 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

Aviation Business Administration (Capstone)

Bachelor of Science

ADMISSION REQUIREMENTS

Admission to the Bachelor of Science in Aviation Business Administration (Capstone) program is limited to students possessing 60 semester (or equivalent) credit hours of approved course work which must be comprised of:

Courses	Credits
Communication Skills:	
English Composition	3
Rhetoric, speech, or writing	3
College Mathematics:	
Algebra, and/or trigonometry, and/or calculus	6
Physical Sciences	6
General Education:	
Economics, sciences, humanities/social sciences	18
Electives selected from any of the following: Accounting, business administration, computer science, engineering, finance, maintenance, management, marketing, operations analysis, personnel, psychology, transportation.	15
Open Electives	9
TOTAL	60

SEMESTER	COURSE NUMBER/TITLE		CREDITS
FIRST	CS 109	Introduction to Computer Programming w/BASIC	3
	EC 210	Microeconomics	3
	HU 219	Speech	3
	HU 221	Technical Report Writing	3
	MS 201	Principles of Management	3
			15

SECOND	AS 253	History and Regulation of Aviation	3
	MA 222	Business Statistics OR	
	MA 211	Statistics w/Aviation Applications	3
	MS 210	Financial Accounting I	3
	MS 311	Marketing	3
		Specified Elective (300-400 Level)	6
			18
THIRD	MA 320	Decision Mathematics	3
	MS 212	Financial Accounting II	3
	MS 317	Organizational Behavior	3
	MS 314	Human Resource Management	3
	MS 332	Corporate Finance I	3
	MS 401	Management Planning and Control	3
			18
FOURTH	AS 405	Aviation Law	3
	HU/SS	Elective (300-400 Level)	3
	MS 312	Managerial Accounting	3
	MS 320	Business Information Systems	3
	MS 431	Business Policy	3
		Specified Elective (300-400 Level)	3
			18
TOTAL			69

SPECIFIED ELECTIVES:
AS 360, 401, 408, 409, 412
EC 420
MS 322, 405, 408, 410, 412, 415, 419, 425

Students whose prior academic program includes courses from the above curriculum must take an equivalent number of credit hours of AS/CS/CIS/EC/MS or CE courses.

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 semester credit hours, normally completed within eight semesters.

Students may select a major in Aviation Administration, Computer Information Systems, or General Business.

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

AVIATION 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
	MS 201	Principles of Management	3
	SS 110	World History OR	
	SS 120	American History OR	
	AS 253	History and Regulation of Aviation	3
			15
SECOND	CS 218	COBOL Programming	3
	HU 123	English Composition and Literature II	3
	MA 220	Quantitative Methods II	3
	PS	Elective	3
	SS 220	Introduction to Psychology	3
			15
THIRD	HU 219	Speech	3
	EC 211	Macroeconomics	3
	MA 222	Business Statistics	3
	PS	Elective	3
	MS 210	Financial Accounting I	3
			15
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
			18
FIFTH	EC 310	Labor Economics	3
	MS 312	Managerial Accounting	3
	MS 317	Organizational Behavior	3
	MS 320	Business Information Systems	3
		Specified Electives	6
			18
SIXTH	MS 332	Corporate Finance I	3
	MS 390	Business Law	3
		Specified Electives	6
		Open Elective	3
			15
SEVENTH	MS 401	Management Planning and Control	3
		Specified Elective	3
	HU/SS	Electives	6
		Open Elective	3
			15

EIGHTH	MS 431	Business Policy	3
	HU/SS	Elective (300-400 Level)	3
		Open Electives	9
			15
TOTAL			126

SPECIFIED ELECTIVES:
AS 360, 401, 405, 408, 409, 412
EC 420
MS 322, 405, 408, 410, 412, 415, 419, 425

COMPUTER INFORMATION SYSTEMS MAJOR

This major is available only at the Daytona Beach Campus. Students entering this major are expected to have completed a basic typing or word-processing course. Those who have not should enroll in CS 101 - Introduction to Keyboard Operations.

SEMESTER	COURSE NUMBER/TITLE		CREDITS
FIRST	CS 109	Introduction to Computer Programming w/BASIC	3
	SS 110	World History OR	
	SS 120	American History OR	
	AS 253	History and Regulation of Aviation	3
	HU 122	English Composition and Literature I	3
	MA 120	Quantitative Methods I	3
	CIS 110	Introduction to Computer Based Systems	3
			15
SECOND	MA 220	Quantitative Methods II	3
	HU 123	English Composition and Literature II	3
	CIS 220	Applications Program Development I	3
	HU/SS	Elective	3
	MS 201	Principles of Management	3
			15
THIRD	CIS 230	Applications Program Development II	3
	EC 210	Microeconomics	3
	MA 222	Business Statistics	3
	HU 219	Speech	3
	HU 221	Technical Report Writing	3
	PS	Elective	3
			18
FOURTH	EC 211	Macroeconomics	3
	MA 320	Decision Mathematics	3
	CIS 300	Systems Analysis Methods	3
	MS 210	Financial Accounting I	3
	PS	Elective	3
		Open Elective	3
			18

FIFTH	CIS 305	Structured Systems Analysis and Design	3
	SS 220	Introduction to Psychology	3
	MS 212	Financial Accounting II	3
	HU 250	Introduction to Logic	3
		Open Elective	3
			15
SIXTH	CIS 310	Data Structures	3
	EC 310	Labor Economics	3
	MS 312	Managerial Accounting	3
	MS 311	Marketing	3
		Open Elective	3
			15
SEVENTH	CIS 400	Database Program Development	3
	CIS	Elective	3
	MS 332	Corporate Finance I	3
	HU/SS	Elective (300-400 Level)	3
		Open Elective	3
			15
EIGHTH	CIS 405	Applied Software Development Project	3
	CIS	Elective	3
	MS 317	Organizational Behavior	3
		Aviation Elective	3
		Open Elective	3
			15
TOTAL			126

CIS ELECTIVES:
CIS 410, 415, 420, 425, 430, 435, 440, 445

AVIATION ELECTIVES:
AS 360, 401, 408, 409, 412
EC 420
MS 322, 405, 408, 410, 412, 415, 419, 425

GENERAL BUSINESS 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
	MS 201	Principles of Management	3
	SS 110	World History OR	
	SS 120	American History OR	
	AS 253	History and Regulation of Aviation	3
			15

SECOND	CS 218	COBOL Programming	3
	HU 123	English Composition and Literature II	3
	MA 220	Quantitative Methods II	3
	PS	Elective	3
	SS 220	Introduction to Psychology	3
			15
THIRD	HU 219	Speech	3
	EC 211	Macroeconomics	3
	MA 222	Business Statistics	3
	PS	Elective	3
	MS 210	Financial Accounting I	3
	HU/SS	Elective	3
			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
			18
FIFTH	EC 310	Labor Economics	3
	MS 312	Managerial Accounting	3
	MS 317	Organizational Behavior	3
	MS 320	Business Information Systems	3
		Specified Elective	3
			15
SIXTH	MS 332	Corporate Finance I	3
	MS 390	Business Law	3
		Specified Electives	6
		Aviation Elective	3
			15
SEVENTH	MS 401	Management Planning and Control	3
		Specified Elective	3
	HU/SS	Elective	3
		Open Electives	6
			15
EIGHTH	MS 431	Business Policy	3
	HU/SS	Elective (300-400 Level)	3
		Open Electives	9
			15
TOTAL			126

SPECIFIED ELECTIVES:
EC 312
MS 308, 335, 420, 421, 433, 434, 435, 449

AVIATION ELECTIVES:
AS 360, 401, 405, 408, 409, 412
EC 420
MS 322, 405, 408, 410, 412, 415, 419, 425

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 OR	
	AS 253	History and Regulation of Aviation	3
			15
SECOND	EC 211	Macroeconomics	3
	HU 123	English Composition and Literature II	3
	MA 220	Quantitative Methods II	3
	PS	Elective	3
	SS 220	Introduction to Psychology	3
			15
THIRD	HU 219	Speech	3
	EC 210	Microeconomics	3
	MA 222	Business Statistics	3
	MS 210	Financial Accounting I	3
		Open Elective	3
			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
			18
TOTAL			63

SPECIFIED ELECTIVES:
AS 360, 401, 405, 408, 409, 412
EC 420
MS 322, 405, 408, 410, 412, 415, 419, 425

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	Physical Mathematics	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	Aircraft Wood, Fabric and Finishes	2
AMT 203	Aircraft Instruments and Communications/Navigation	2
AMT 204	Aircraft Welding, Assembly and Finishes	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	3

	MA 220	Quantitative Methods II	3
	MS 210	Financial Accounting I	3
	SS 110	World History OR	
	SS 120	American History OR	
	AS 253	History and Regulation of Aviation	3
			15
THIRD	EC 310	Labor Economics	3
	HU 219	Speech	3
	MA 222	Business Statistics	3
	MS 212	Financial Accounting II	3
	SS 220	Introduction to Psychology	3
			15
FOURTH	HU 221	Technical Report Writing	3
	MS 311	Marketing	3
	MS 312	Managerial Accounting	3
	MA 320	Decision Mathematics	3
	PS	Elective	3
			15
FIFTH	MS 314	Human Resource Management	3
	MS 317	Organizational Behavior	3
	MS 332	Corporate Finance I	3
	MS 401	Management Planning and Control	3
	PS	Elective	3
			15
SIXTH	HU/SS	Elective (300-400 Level)	3
	MS 320	Business Information Systems	3
	MS 390	Business Law	3
	MS 419	Aviation Maintenance Management	3
	MS 431	Business Policy	3
			15
TOTAL			150

** AVIATION MAINTENANCE MANAGEMENT TYPE 65 AMT

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 280	Powerplant Theory and Applications	4
**AMT 360	Airframe Systems and Applications	3
**AMT 380	Aircraft Propulsion Systems & Applications	4
	Electives (AMT, AS, AV, CS, EL, FA, MS) OR AMT 355 and AMT 455	15
TOTAL		36

**These courses are available only at International Campus 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
			15
SECOND	EC 210	Microeconomics	3
	HU 123	English Composition and Literature II	3
	MA 220	Quantitative Methods II	3
	MS 210	Financial Accounting I	3
	SS 110	World History OR	
	SS 120	American History OR	
	AS 253	History and Regulation of Aviation	3
			15
THIRD	EC 310	Labor Economics	3
	HU 219	Speech	3
	MA 222	Business Statistics	3
	MS 212	Financial Accounting II	3
	SS 220	Introduction to Psychology	3
			15
FOURTH	HU 221	Technical Report Writing	3
	MS 311	Marketing	3
	MS 312	Managerial Accounting	3
	MA 320	Decision Mathematics	3
	PS	Elective	3
			15
FIFTH	MS 314	Human Resource Management	3
	MS 317	Organizational Behavior	3
	MS 332	Corporate Finance I	3
	MS 401	Management Planning and Control	3
	PS	Elective	3
			15
SIXTH	HU/SS	Elective (300-400 Level)	3
	MS 320	Business Information Systems	3
	MS 390	Business Law	3
	MS 419	Aviation Maintenance Management	3
	MS 431	Business Policy	3
			15
TOTAL			126

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
			15
SECOND	EC 210	Microeconomics	3
	HU 123	English Composition and Literature II	3
	MA 220	Quantitative Methods II	3
	MS 210	Financial Accounting I	3
	SS 110	World History OR	
	SS 120	American History OR	
	AS 253	History and Regulation of Aviation	3
			15
THIRD	EC 310	Labor Economics	3
	HU 219	Speech	3
	MA 222	Business Statistics	3
	MS 212	Financial Accounting II	3
	SS 220	Introduction to Psychology	3
			15
FOURTH	HU 221	Technical Report Writing	3
	MS 311	Marketing	3
	MS 312	Managerial Accounting	3
	MA 320	Decision Mathematics	3
	PS	Elective	3
			15
FIFTH	MS 314	Human Resource Management	3
	MS 317	Organizational Behavior	3
	MS 332	Corporate Finance I	3
	MS 401	Management Planning and Control	3
	PS	Elective	3
			15
SIXTH	HU/SS	Elective (300-400 Level)	3
	MS 320	Business Information Systems	3
	MS 390	Business Law	3
	MS 419	Aviation Maintenance Management	3
	MS 431	Business Policy	3
			15
TOTAL			126

AVIATION MAINTENANCE MANAGEMENT—AVIONICS

SEMESTER	COURSE NUMBER	TITLE	CREDITS
FIRST	EL 106	Direct and Alternating Current Fundamentals and Circuit Analysis w/Laboratory	6
	HU 122	English Composition and Literature I	3
	MA 140	College Algebra	3
	MA 141	Trigonometry	2
			14
SECOND	EL 220	Introduction to Pulse and Digital Circuits w/Laboratory	4
	MS 201	Principles of Management	3
	EL 223	Solid State Fundamentals and Circuit Analysis w/Laboratory	6
	MA 241	Calculus and Analytical Geometry I	4
			17
THIRD	EL 320	Advanced Digital Circuits and Systems w/Laboratory	4
	EL 323	Electronic Systems Analysis w/Laboratory	5
	HU 123	English Composition and Literature II	3
	CS 109	Introduction to Computer Programming w/BASIC	3
			15
FOURTH	EL 372	Microprocessor Systems w/Lab	3
	AV 310	Aircraft Communications, Navigation, and Landing Systems	3
	AV 319	Aircraft Pulse Systems	3
	MA 222	Business Statistics	3
	HU 219	Speech	3
	EC 211	Macroeconomics	3
			18
FIFTH	AV 323	Low Frequency and Area Navigation Systems	3
	AV 340	Avionics Equipment Troubleshooting and Repair Laboratory	2
	HU 221	Technical Report Writing	3
	EC 210	Microeconomics	3
	MA 320	Decision Mathematics	3
	SS 110	World History OR	
	SS 120	American History OR	
	AS 253	History and Regulation of Aviation	3
			17

SIXTH	AV 341	Advanced Avionics Equipment Troubleshooting and Repair Laboratory	2
	EC 310	Labor Economics	3
	MS 210	Financial Accounting I	3
	MS 311	Marketing	3
	PS 103	Technical Physics I	3
	SS 220	Introduction to Psychology	3
			17
SEVENTH	MS 212	Financial Accounting II	3
	MS 314	Human Resource Management	3
	MS 317	Organizational Behavior	3
	MS 332	Corporate Finance I	3
	MS 401	Management Planning and Control	3
	PS	Elective	3
			18
EIGHTH	MS 312	Managerial Accounting	3
	MS 320	Business Information Systems	3
	MS 390	Business Law	3
	MS 419	Aviation Maintenance Management	3
	MS 431	Business Policy	3
	HU/SS	Elective (300-400 Level)	3
			18
TOTAL			134

FLIGHT RELATED PROGRAMS

Aeronautical Science

Aeronautical Studies

Aviation Maintenance Technology
Avionics
Computer Science
Management
Radiotelephone Maintenance Technology

Airway Science

Aircraft Systems Management
Airway Computer Science
Aviation Maintenance Management

Aviation Safety

Professional Aeronautics

Aeronautical Science

Bachelor of Science
Associate in 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.

REQUIRED FLIGHT COURSES

All flight students are required to take FA 104, FA 105 and FA 205. The specific flight courses taken thereafter will vary according to the type of multi-engine aircraft operated by a particular campus. While flight courses must be taken in the sequence indicated below, students will not always begin flying in the first 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 125 credit hours is required. Students must complete seven flight courses. 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 104	Primary Flight	2
	AS 150	Aeronautics I	5
	HU 122	English Composition and Literature I	3
	MA 111	College Mathematics for Aviation I	3
			13
SECOND	FA 105	Private Pilot Certification	2
	HU 123	English Composition and Literature II	3
	MA 112	College Mathematics for Aviation II	3
	MS 105	American Business Enterprise OR	
	MS 201	Principles of Management	3
	PS 103	Technical Physics I	3
			14
THIRD	FA 205	Basic Attitude Instrument and Advanced Flight Maneuvers	2
	AS 250	Aeronautics II	3
	HU 219	Speech	3
	CS 109	Introduction to Computer Programming w/BASIC OR	
	CS 210	Scientific Programming	3
	PS 104	Technical Physics II	3
	EC 210	Microeconomics OR	
	EC 211	Macroeconomics	3
			17
FOURTH	FA 206	Instrument Flight Transition - S.E. OR	
	FA 207	Multi-Engine Transition	2
	AS 251	Aeronautics III	3
	AS 253	History and Regulation of Aviation	3
	AS 201	Meteorology I	3
	HU 221	Technical Report Writing	3
	SS 220	Introduction to Psychology	3
			17
FIFTH	FA 302	Commercial Pilot Certification - S.E. OR	
	FA 314	Instrument Flight Transition - M.E.	2
	AS 305	Aircraft Engines - Reciprocating	3
	AS 309	Basic Aerodynamics	3
	AS 352	Meteorology II	3
	HU/SS	Elective (300-400 Level)	3
		Open Elective	3
			17
SIXTH	FA 340	Multi-Engine Class Rating OR	
	FA 315	Commercial Pilot Certification - M.E.	1
	AS 357	Flight Physiology	3
	AS 310	Aircraft Performance	3
	AS 311	Aircraft Engines - Turbine	3
	AS/SF	Elective (300-400 Level)	3

		Open Elective	3
			16
SEVENTH	FA	Elective (300-400 Level)	1
	AS 355	Global Navigation	3
	AS 356	Aircraft Systems and Components	3
	AV 301	Avionics for Aviators	3
	AS/SF	Elective (300-400 Level)	3
		Open Elective	3
			16
EIGHTH	AS 408	Flight Safety	3
	AS/SF	Electives (300-400 Level)	6
		Open Electives	6
			15
TOTAL			125

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

ASSOCIATE IN SCIENCE DEGREE AERONAUTICAL SCIENCE

An Associate in Science degree in Aeronautical Science is granted upon completion of 63-64 credit hours and may be obtained in five semesters. Students must complete six flight courses. Upon completion of the curriculum, the student is qualified to be examined for the FAA Commercial Pilot Certificate with Instrument and Single-Engine or Multi-Engine ratings.

SEMESTER	COURSE NUMBER/TITLE		CREDITS
FIRST	FA 104	Primary Flight	2
	AS 150	Aeronautics I	5
	HU 122	English Composition and Literature I	3
	MA 111	College Mathematics for Aviation I	3
			13
SECOND	FA 105	Private Pilot Certification	2
	HU 123	English Composition and Literature II	3
	MA 112	College Mathematics for Aviation II	3
	MS 105	American Business Enterprise OR	
	MS 201	Principles of Management	3
	PS 103	Technical Physics I	3
			14
THIRD	FA 205	Basic Attitude Instrument and Advanced Flight Maneuvers	2
	AS 250	Aeronautics II	3
	HU 219	Speech OR	
	HU 221	Technical Report Writing	3
	CS 109	Introduction to Computer Programming	

		w/BASIC OR	
	CS 210	Scientific Programming	3
	EC 210	Microeconomics OR	
	EC 211	Macroeconomics	3
			14
FOURTH	FA 206	Instrument Flight Transition - S.E. OR	
	FA 207	Multi-Engine Transition	2
	AS 251	Aeronautics III	3
	AS 253	History and Regulation of Aviation	3
	AS 201	Meteorology I	3
	HU/SS	Elective	3
	SS 220	Introduction to Psychology	3
			17
FIFTH	FA 302	Commercial Pilot Certification - S.E. OR	2
	FA 314	Instrument Flight Transition - M.E. and	
	FA 315	Commercial Pilot Certification - M.E.	3
		Open Elective	3
			5-6

Total credits required are 63-64 depending upon the flight option selected.

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 redispatching 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 available only at the Daytona Beach Campus and is recommended for students in any degree program; the only requirement is the completion of the applicable Aeronautical Science courses. Students in programs other than Aeronautical Science must be sure to complete the applicable prerequisites for required courses. Dispatcher preparation is predicated upon the successful completion of the following Aeronautical Science courses with 100 percent attendance required:

AS 150 Aeronautics I
AS 201 Meteorology I
AS 250 Aeronautics II
AS 251 Aeronautics III
AS 305 Aircraft Engines - Reciprocating
AS 310 Aircraft Performance
AS 311 Aircraft Engines-Turbine
AS 356 Aircraft Systems and Components
*AS 410 Air Carrier Operations

*AS 410 is an elective course in the Aeronautical Science curriculum and serves as the capstone to the Dispatcher Program.

In order to credit any of the courses listed above toward the Aircraft Dispatcher Certification Program, the student must enroll in the program prior to taking the courses and must maintain a record of 100 percent attendance throughout the course.

Aeronautical Studies

Bachelor of Science

DEGREE REQUIREMENTS

The Bachelor of Science Degree in Aeronautical Studies may be earned in eight semesters. Successful completion of a minimum of 122 semester credit hours is required. The core program consists of 83 credit hours in the following disciplines:

Aeronautical Science
Computer Science
Humanities
Mathematics
Management/Economics
Physical Science
Social Science

In addition to the core courses, an area of concentration is required. This provides the student with sufficient skills and knowledge in a

chosen discipline preparatory for entry into a specific career field in aviation.

AREAS OF CONCENTRATION

Aviation Maintenance Technology
Avionics
Computer Science
Management
Radiotelephone Maintenance Technology

A description of each area of concentration and the courses required are listed on the following pages.

AVIONICS

The goal of the avionics area of concentration is to provide highly specialized technical knowledge in the theory of operation, trouble-shooting and repair of avionics equipment. Special attention is given to laboratory presentations and hands-on participation by the students.

SEMESTER	COURSE NUMBER/TITLE		CREDITS
FIRST	AS 150	Aeronautics I	5
	HU 122	English Composition and Literature I	3
	MA 140	College Algebra	3
	MA 141	Trigonometry	2
			13
SECOND	AS 253	History and Regulation of Aviation	3
	HU 123	English Composition and Literature II	3
	EC 210	Microeconomics OR	
	EC 211	Macroeconomics	3
	MA 241	Calculus and Analytical Geometry I	4
	MS 105	American Business Enterprise OR	
	MS 201	Principles of Management	3
			16
THIRD	HU 219	Speech	3
	AS 201	Meteorology I	3
	PS 103	Technical Physics I	3
	EL 106	Direct and Alternating Current Fundamentals and Circuit Analysis w/Laboratory	6
			15
FOURTH	CS 109	Introduction to Computer Programming w/BASIC	3
	AS 211	Aircraft Engines and Systems	3
	SS 110	World History OR	
	SS 120	American History	3
	EL 223	Solid State Fundamentals and Circuit Analysis w/Laboratory	6
			15

FIFTH	SS 210	Introduction to Sociology OR	
	SS 220	Introduction to Psychology	3
	PS	Elective	3
	EL 220	Introduction to Pulse and Digital Circuits	4
		Open Electives	6
			16
SIXTH	HU 221	Technical Report Writing	3
	EL 323	Electronics Systems Analysis w/Laboratory	5
	EL 320	Advanced Digital Circuits and Systems	4
		Open Elective	3
			15
SEVENTH	AS/SF	Elective	3
	HU/SS	Elective (300-400 Level)	3
	AV 319	Aircraft Pulse Systems	3
	AV 340	Avionics Equipment Troubleshooting and Repair Laboratory	2
	AV 310	Aircraft Communication, Navigation, and Landing Systems	3
	EL 372	Microprocessor Systems w/Lab	3
			17
EIGHTH	AS 405	Aviation Law	3
	AS 409	Aviation Safety	3
		Open Electives (300-400 Level)	6
	AV 341	Advanced Avionic Equipment Troubleshooting and Repair Laboratory	2
	AV 323	Low Frequency and Area Navigation Systems	3
			17
TOTAL			124

COMPUTER SCIENCE

The increasing use of computers in all phases of the aviation industry makes this area of concentration a highly relevant program. The program can be applied to manufacturing, marketing, or general operation of aircraft and many other related career areas. The student augments the core programs of aeronautical science, general science and humanities with training in the theory and utilization of computers.

SEMESTER	COURSE NUMBER/TITLE		CREDITS
FIRST	AS 150	Aeronautics I	5
	HU 122	English Composition and Literature I	3
	MA 111	College Mathematics for Aviation I OR	

	MA 120	Quantitative Methods I	3
	SS 110	World History OR	
	SS 120	American History	3
			14
SECOND	AS/SF	Elective	3
	HU 123	English Composition and Literature II	3
	MA 112	College Mathematics for Aviation II OR	
	MA 220	Quantitative Methods II	3
	CS 109	Introduction to Computer Programming w/BASIC	3
	MS 105	American Business Enterprise OR	
	MS 201	Principles of Management	3
			15
THIRD	HU 219	Speech	3
	PS 102	Explorations in Physics OR	
	PS 103	Technical Physics I	3
	SS 210	Introduction to Sociology OR	
	SS 220	Introduction to Psychology	3
	EC 210	Microeconomics OR	
	EC 211	Macroeconomics	3
	CS 115	Computer Programming I	3
			15
FOURTH	AS 201	Meteorology I	3
	AS 211	Aircraft Engines and Systems	3
	AS 253	History and Regulation of Aviation	3
	CS 215	Computer Programming II	3
	CS 222	Introduction to Discrete Structures	3
			15
FIFTH	HU 221	Technical Report Writing	3
	PS	Elective	3
	CS 240	Introduction to File Processing	3
		Open Electives	9
			18
SIXTH	HU/SS	Elective (300-400 Level)	3
	CS 315	Data Structures	3
	MA 211	Statistics with Aviation Applications OR	
	MA 222	Business Statistics	3
		Open Elective	3
		Open Elective (300-400 Level)	3
			15
SEVENTH	CS 330	Systems Design and Documentation	3
	CS 341	Database Management Systems	3
	CS	Electives (300-400 Level)	6
		Open Electives (300-400 Level)	3
			15

EIGHTH	AS 405	Aviation Law	3
	AS 409	Aviation Safety	3
	CS	Electives (300-400 Level)	9
		Open Elective (300-400 Level)	3
TOTAL			125

MANAGEMENT

The individual who desires to enter the aviation field prepared to move into a position of responsibility in management or operations should consider this area of concentration.

SEMESTER	COURSE NUMBER/TITLE		CREDITS
FIRST	AS 150	Aeronautics I	5
	HU 122	English Composition and Literature I	3
	MA 111	College Mathematics for Aviation I OR	
	MA 120	Quantitative Methods I	3
	SS 110	World History OR	
	SS 120	American History	3
			14
SECOND	EC 210	Microeconomics	3
	HU 123	English Composition and Literature II	3
	MA 112	College Mathematics for Aviation II OR	
	MA 220	Quantitative Methods II	3
	CS 109	Introduction to Computer Programming w/BASIC	3
	AS 253	History and Regulation of Aviation	3
			15
THIRD	HU 219	Speech	3
	EC 211	Macroeconomics	3
	PS 102	Explorations in Physics OR	
	PS 103	Technical Physics I	3
	SS 210	Introduction to Sociology OR	
	SS 220	Introduction to Psychology	3
	MS 210	Financial Accounting I	3
			15
FOURTH	AS 201	Meteorology I	3
	AS 211	Aircraft Engines and Systems	3
	PS	Elective	3
	MS 201	Principles of Management	3
	MS 212	Financial Accounting II	3
			15
FIFTH	HU 221	Technical Report Writing	3
	EC 310	Labor Economics	3
	MS 312	Managerial Accounting	3
	EC/MS	Elective (300-400 Level)	3
		Open Electives	6
			18

SIXTH	AS/SF	Electives	3
	HU/SS	Elective (300-400 Level)	3
	MA 211	Statistics with Aviation Applications OR	
	MA 222	Business Statistics	3
	MS 331	Transportation Principles	3
	EC/MS	Elective (300-400 Level)	3
			15
SEVENTH	EC/MS	Elective (300-400 Level)	3
	MS 314	Human Resource Management	3
		Open Elective (300-400 Level)	3
		Open Electives	6
			15
EIGHTH	AS 405	Aviation Law	3
	AS 409	Aviation Safety	3
	EC/MS	Elective (300-400 Level)	3
	MS 332	Corporate Finance I	3
		Open Elective (300-400 Level)	3
			15
TOTAL			122

AVIATION MAINTENANCE TECHNOLOGY

The individual who wishes to combine maintenance training and experience with an academic degree program and who may be interested in the supervision of aircraft maintenance activities will find that this area of concentration fills those requirements. This program integrates the knowledge and experience of aircraft and powerplant maintenance with the broader perspective of management, science and the humanities.

TYPE 147 AMT PROGRAM

(Available only to students at the Daytona Beach Campus.)

SEMESTER	COURSE NUMBER/TITLE		CREDITS
FIRST	AS 150	Aeronautics I	5
	HU 122	English Composition and Literature I	3
	MA 111	College Mathematics for Aviation I OR	
	MA 120	Quantitative Methods I	3
	SS 110	World History OR	
	SS 120	American History	3
			14
SECOND	AS/SF	Elective	3
	HU 123	English Composition and Literature II	3
	MA 112	College Mathematics for Aviation II OR	
	MA 220	Quantitative Methods II	3
	MS 105	American Business Enterprise OR	
	MS 201	Principles of Management	3
	CS 109	Introduction to Computer Programming w/BASIC	3
			15

THIRD	HU 219	Speech	3
	EC 210	Microeconomics OR	
	EC 211	Macroeconomics	3
	PS 102	Explorations in Physics OR	
	PS 103	Technical Physics I	3
	SS 210	Introduction to Sociology OR	
	SS 220	Introduction to Psychology	3
	AS 253	History and Regulation of Aviation	3
			15
FOURTH	AS 201	Meteorology I	3
	HU 221	Technical Report Writing	3
	PS	Elective	3
		Open Electives (300-400 Level)	6
			15
FIFTH	AMT 101	Physical Mathematics	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
		Open Elective (300-400 Level)	3
			15
SIXTH	AMT 201	Aircraft Structures and Sheet Metal Fabrication	4
	AMT 202	Aircraft Wood, Fabric and Finishes	2
	AMT 203	Aircraft Instruments and Communication/Navigation Systems	2
	AMT 204	Aircraft Welding, Assembly and Rigging	4
	HU/SS	Elective (300-400 Level)	3
		Open Elective (300-400 Level)	3
			18
SEVENTH	AMT 205	Aircraft Electrical Systems	4
	AMT 206	Hydraulic and Pneumatic Systems	2
	AMT 207	Aircraft Environmental and Fuel Systems	3
	AMT 208	Aircraft Landing Gear Systems	3
	AS 405	Aviation Law	3
			15
EIGHTH	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
	AS 409	Aviation Safety	3
		Open Elective (300-400 Level)	3
			18

NINTH	AMT 213	Engine Installation and Operation	2
	AMT 214	Reciprocating Engine Overhaul	4
	AMT 215	Turbine Engines and Turbine Engine Systems	6
		Open Electives (300-400 Level)	6
			18
TOTAL			143

TYPE 65 AMT PROGRAM

(Available only to students at International Campus locations.)

The student must complete the Type 65 AMT courses and the core curriculum described below for a total of 125 credit hours.

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 280	Powerplant Theory and Applications	4
AMT 360	Airframe Systems and Applications	3
AMT 380	Aircraft Propulsion Systems and Applications	4
	Designated Electives AMT/AS/AV/CS/EL/FA/MS (At least nine of these credits must be upper level)	15
	Open electives (upper level)	6
TOTAL		42

All open electives including the Core must be upper level. AS 211 replaced in the Core by open elective (300-400 level).

CORE CURRICULUM

COURSE NUMBER/TITLE		CREDITS
AS 150	Aeronautics I	5
AS 201	Meteorology I	3
AS 211	Aircraft Engines and Systems	3
AS/SF	Electives	3
AS 253	History and Regulation of Aviation	3
AS 405	Aviation Law	3
AS 409	Aviation Safety	3
CS 109	Introduction to Computer Programming w/BASIC	3
EC 210	Microeconomics OR	
EC 211	Macroeconomics	3
HU 122	English Composition and Literature I	3
HU 123	English Composition and Literature II	3
HU 219	Speech	3
HU 221	Technical Report Writing	3
HU/SS	Elective (300-400 level)	3
MA 111	College Math for Aviation I OR	
MA 120	Quantitive Methods I	3
MA 112	College Math for Aviation II OR	

MA 220	Quantitive Methods II	3
MS 105	American Business Enterprise OR	
MS 201	Principles of Management	3
PS	Electives (3 credits must be Physics)	6
SS 110	World History OR	
SS 120	American History	3
SS 210	Introduction to Sociology OR	
SS 220	Introduction to Psychology	3
	Open Electives (300-400 Level)	6
	Open Electives	12
TOTAL CORE CREDITS		83

RADIOTELEPHONE MAINTENANCE TECHNOLOGY

The Radiotelephone Maintenance Technology program offered at European (USAF) locations consists of a series of theory and laboratory courses in the fundamental principles of electricity, electronics and electronic circuits and systems. The curriculum is designed, in part, to assist experienced electrical/electronics personnel prepare for the Federal Communications Commission General Class Radiotelephone Operator's License.

The student must complete the core curriculum described under the Type 65 AMT program, plus the courses listed below for a total of 125 credit hours.

COURSE NUMBER/TITLE		CREDITS
EL 101	Basic Electronic Concepts & D-C Circuits	4
EL 102	Fundamentals of A-C and A-C Analysis	4
EL 103	Semiconductor Fundamentals	4
EL 207	Basic Radiotelephone Equipment Theory and Operation	3
EL 221	Introduction to Pulse and Digital Circuits	4
EL 222	Basic Electronic Circuits & Systems	4
EL 321	Advanced Digital Circuits & Systems	4
EL 322	Advanced Electronic Circuits & Systems	4
	Open Electives (300-400 Level)	12
		43

AS 100 replaces AS 150 in the Core.

Airway Science

Bachelor of Science

ADMISSION

Graduates of an FAA approved Airway Science degree program are eligible to fill positions with the FAA in a number of career specializa-

tions. 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.

DEGREE REQUIREMENTS

The Bachelor of Science Degree in Airway Science requires the successful completion of 131 to 155 semester credit hours depending upon the area of concentration chosen.

AIRCRAFT SYSTEMS MANAGEMENT

The Aircraft Systems Management area of specialization prepares students for the positions of Air Traffic Control Specialist and Aviation Safety Inspector (General Aviation Operations).

SEMESTER	COURSE NUMBER	TITLE	CREDITS
FIRST	AS 150	Aeronautics I	5
	FA 104	Primary Flight	2
	HU 122	English Composition and Literature I	3
	MA 111	College Mathematics for Aviation I	3
	MS 201	Principles of Management	3
			16
SECOND	FA 105	Private Pilot Certification	2
	HU 123	English Composition and Literature II	3
	MA 112	College Mathematics for Aviation II	3
	EC 210	Microeconomics	3
	PS 103	Technical Physics I	3
	SS 110	World History OR	
	SS 120	American History OR	
	AS 253	History and Regulation of Aviation	3
			17
THIRD	AS 250	Aeronautics II	3
	AS 201	Meteorology I	3
	EC 211	Macroeconomics	3
	FA 205	Basic Attitude Instrument and Advanced Flight Maneuvers	2
	HU 219	Speech	3
	PS 104	Technical Physics II	3
			17
FOURTH	AS 251	Aeronautics III	3
	FA 206	Instrument Flight Transition - S.E. OR	
	FA 207	Multi-Engine Transition	2
	CS 115	Computer Programming I	3
	SS 220	Introduction to Psychology	3
	MS 210	Financial Accounting I	3
	MA 211	Statistics w/Aviation Applications	3
			17
FIFTH	AS 360	Introduction to Air Traffic Control	3

	AS 309	Basic Aerodynamics	3
	PS 101	Basic Chemistry	3
	AS 305	Aircraft Engines - Reciprocating	3
	FA 302	Commercial Pilot Certification - S.E. OR	
	FA 314	Instrument Flight Transition - M.E.	2
	HU 221	Technical Report Writing	3
			17
SIXTH	FA 340	Multi-Engine Class Rating OR	
	FA 315	Commercial Pilot Certification - M.E.	1
	AS 310	Aircraft Performance	3
	AS 311	Aircraft Engines - Turbine	3
	AS 356	Aircraft Systems and Components	3
	AS 404	Principles of Instruction I	3
	CS 215	Computer Programming II	3
			16
SEVENTH	FA 400	Certified Flight Instructor - S.E.	1
	AS 352	Meteorology II	3
	AS 357	Flight Physiology	3
	AS 361	Enroute/Terminal Non-Radar Air Traffic Control	3
	AS 406	Principles of Instruction II	3
	MS 314	Human Resources Management	3
			16
EIGHTH	FA 409	Certified Flight Instructor - Instrument	1
	FA 411	Certified Flight Instructor - M.E.	1
	AS 408	Flight Safety	3
	AV 301	Avionics for Aviators	3
	MS 317	Organizational Behavior	3
	MS 320	Business Information Systems	3
	AS 410	Air Carrier Operations	3
			17
TOTAL			133

AIRWAY COMPUTER SCIENCE

The Airway Computer Science area of specialization prepares students for the positions of Air Traffic Control Specialist and Computer Specialist.

SEMESTER	COURSE NUMBER	TITLE	CREDITS
FIRST	AS 150	Aeronautics I	5
	HU 122	English Composition and Literature I	3
	MA 111	College Mathematics for Aviation I	3
	SS 110	World History OR	
	SS 120	American History	3
			14
SECOND	AS 250	Aeronautics II	3
	HU 123	English Composition and Literature II	3
	MA 112	College Mathematics for Aviation II	3

	MS 201	Principles of Management	3
	CS 109	Introduction to Computer Programming w/BASIC	3
	SS 220	Introduction to Psychology	3
			18
THIRD	AS 251	Aeronautics III	3
	AS 201	Meteorology I	3
	EC 211	Macroeconomics	3
	PS 103	Technical Physics I	3
	CS 115	Computer Programming I	3
	CS 220	Digital Logic and Computer Operation	3
			18
FOURTH	AS 211	Aircraft Engines and Systems	3
	EC 210	Microeconomics	3
	PS 104	Technical Physics II	3
	AS 253	History and Regulation of Aviation	3
	CS 215	Computer Programming II	3
	CS 222	Introduction to Discrete Structures	3
			18
FIFTH	MA 211	Statistics w/Aviation Applications	3
	HU 221	Technical Report Writing	3
	MS 210	Financial Accounting I	3
	CS 230	Organization of Programming Languages	3
	CS 240	Introduction to File Processing	3
			15
SIXTH	AS 360	Introduction to Air Traffic Control	3
	CS 235	Assembly Language Programming	3
	CS 315	Data Structures	3
	PS 101	Basic Chemistry	3
	MS 314	Human Resource Management	3
	HU 219	Speech	3
			18
SEVENTH	AS 361	Enroute/Terminal Non-Radar Air Traffic Control	3
	SS 320	American National Government	3
	CS 372	Introduction to Microprocessors	3
	CS 330	Systems Design and Documentation	3
	CS 341	Database Management Systems	3
			15
EIGHTH	AS 409	Aviation Safety	3
	CS 350	Computer Modeling and Simulation	3
	CS	Electives (300-400 Level)	6
	MS 317	Organizational Behavior	3
			15
TOTAL			131

AVIATION MAINTENANCE MANAGEMENT

The Aviation Maintenance Management area of specialization prepares students for the position of Aviation Safety Inspector (General Aviation Airworthiness).

SEMESTER	COURSE NUMBER/TITLE		CREDITS
FIRST	AS 150	Aeronautics I	5
	HU 122	English Composition and Literature I	3
	MA 111	College Mathematics for Aviation I	3
	SS 110	World History OR	
	SS 120	American History	3
			14
SECOND	AS 250	Aeronautics II	3
	HU 123	English Composition and Literature II	3
	MA 112	College Mathematics for Aviation II	3
	MS 201	Principles of Management	3
	AS 253	History and Regulation of Aviation	3
			15
THIRD	CS 115	Computer Programming I	3
	EC 210	Microeconomics	3
	PS 103	Technical Physics I	3
	AS 251	Aeronautics III	3
	AS 201	Meteorology I	3
	MA 211	Statistics w/Aviation Applications	3
			18
FOURTH	HU 219	Speech	3
	EC 211	Macroeconomics	3
	PS 104	Technical Physics II	3
	CS 215	Computer Programming II	3
	PS 101	Basic Chemistry	3
	SS 220	Introduction to Sociology	3
			18
FIFTH	AS 360	Introduction to Air Traffic Control	3
	HU 221	Technical Report Writing	3
	AMT 101	Physical Mathematics	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
			18
SIXTH	HU/SS	Elective (300-400 Level)	3
	AS 361	Enroute/Terminal Non-Radar Air Traffic Control	3
	AMT 201	Aircraft Structures and Sheet Metal	

	AMT 202	Aircraft Wood, Fabric and Finishes	2
	AMT 203	Aircraft Instruments and Communications/Navigation Systems	2
	AMT 204	Aircraft Welding, Assembly and Rigging	4
			18
SEVENTH	MS 314	Human Resource Management	3
	AS 409	Aviation Safety	3
	AMT 205	Aircraft Electrical Systems	4
	AMT 206	Hydraulic and Pneumatic Systems	2
	AMT 207	Aircraft Environmental and Fuel Systems	3
	AMT 208	Aircraft Landing Gear Systems	3
			18
EIGHTH	HU/SS	Elective (300-400 Level)	3
	MS 419	Aviation Maintenance Management	3
	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
			18
NINTH	MS 317	Organizational Behavior	3
	CS 330	System Design and Documentation	3
	AMT 213	Engine Installation and Operation	2
	AMT 214	Reciprocating Engine Overhaul	4
	AMT 215	Turbine Engines and Turbine Engine Systems	6
			18
TOTAL			155

Aviation Safety

Associate in Science

ADMISSION REQUIREMENTS

Admission to the Aviation Safety degree program is limited to military aviators possessing FAA Commercial Pilot certification. This program is available only at certain locations.

DEGREE REQUIREMENTS

The Associate in Science in Aviation Safety may be completed in the equivalent of four semesters of academic study. A minimum of 63 credit hours is required.

COURSE NUMBER/TITLE		CREDITS
AS 100	Foundations of Aeronautics	4
AS 201	Meteorology I	3
AS 250	Aeronautics II	3
AS 253	History and Regulation of Aviation	3
AS 357	Aviation Physiology	3
CS 105	Introduction to Computers in Aviation OR	
CS 109	Introduction to Computer Programming w/BASIC OR	
CS 210	Scientific Programming	3
EC 210	Microeconomics OR	
EC 211	Macroeconomics	3
HU 122	English Composition and Literature I	3
HU 123	English Composition and Literature II	3
HU 219	Speech	3
HU 221	Technical Report Writing	3
HU/SS	Elective	3
MA 111	College Math for Aviation I	3
MA 112	College Math for Aviation II OR	
MA 211	Statistics w/Aviation Applications	3
MS 105	American Business Enterprise OR	
MS 201	Principles of Management	3
PS 102	Explorations in Physics	3
SF 200	Safety Program Management	3
SF 219	Aviation Psychology	2
SF 303	Introduction to Aircraft Structures	3
SF 308	Subsonic Aerodynamics	3
SF 330	Aircraft Accident Investigation	3
TOTAL		63

Professional Aeronautics

Bachelor of Science
Associate in Science

INTRODUCTION

The Professional Aeronautics degree program was conceived and developed for the individual who has already acquired a body of aviation knowledge and an identifiable set of aviation skills through experience or a combination of training and experience. The curricula of the associate and bachelor programs are designed to build on this specialized core of knowledge and experience. In addition to the general education requirements, the degrees provide required and elective courses to prepare the student for career growth and increased responsibility.

SPECIAL ADMISSION REQUIREMENTS

Admission to Professional Aeronautics is restricted to individuals who possess an aviation skill or skills as identified under the areas of concentration listed on the following pages.

ADVANCED STANDING

Aeronautical technology credit will be granted to enrolled students for completion of the training and experience specified by the University for the various approved areas of concentration. The number of credits granted depends upon the combination of professional credentials and qualifications, and the length and level of experience.

Subsequent enrollment in courses related to the aeronautical specialty for which aeronautical technology credit has been granted is inconsistent with the philosophy of the Professional Aeronautics degree. Credit for courses of this type will not be applied toward the requirements for the degree.

AREAS OF CONCENTRATION

The approved areas of concentration, specific qualifications and the range of credit hours available are as follows:

Aircraft Dispatcher (45 Credit Hours):
Individuals who have obtained an FAA Aircraft Dispatcher Certificate and who have been employed as an Aircraft-Flight Dispatcher for three years.

Airline Command Pilot (60 Credit Hours):
Individuals who possess the following qualifications and experience: (1) a record of employment as a pilot by a major airline (an airline operating under FAR Part 121) and qualified to fly as captain; (2) an FAA Airline Transport Pilot Certificate with at least one type rating in a current air carrier aircraft; and (3) a minimum of 5,000 flight hours as pilot-in-command or second-in-command in aircraft with a maximum certified gross takeoff weight of more that 70,000 pounds.

Airways Facilities Technology (60 Credit Hours):
Technicians who have attained journeyman level in computers, navigational aids, communications, radar or Navy airways maintenance career fields.

Air Carrier Pilot (45 Credit Hours):
Individuals with a record of employment by a major airline (an airline required to operate under FAR Part 121) as pilot, first officer, or second officer, and with a minimum of 1,000 hours as pilot-in-command or second-in-command in current air carrier aircraft.

Air Traffic Control Technology (60 Credit Hours):
Technicians who have attained journeyman level qualifications as flight service specialists, enroute air traffic controllers, or terminal air traffic controllers.

Aviation Maintenance Technology (Civilian Aviation Maintenance Personnel)(45 Credit Hours):
Individuals who possess an FAA Airframe and Powerplant Certificate, a minimum of three' years work experience in aviation maintenance subsequent to obtaining FAA certification, and whose experience is on

aircraft operated by a major airline in accordance with FAR Part 121 or aircraft which are turbine powered, pressurized and operated by a corporation.

Aviation Maintenance Technology (Military Aviation Maintenance Personnel)(45 Credit Hours):
Individuals who possess an FAA Airframe and Powerplant Certificate and a minimum of five years' work experience in military aviation maintenance.

Aviation Safety Technology (60 Credit Hours):
Military aviators/pilots who have additionally completed an approved Aviation Safety Officer Program (36 months OJT).

Certified Flight Instructor (18 Credit Hours):
Individuals who possess an FAA Flight Instructor Certificate with Instrument rating and a minimum of 500 hours' experience as a flight instructor.

Commuter Airline Pilot (30 Credit Hours):
Individuals who (1) have a record of employment by air carriers holding FAA operating certificates under Part 135; (2) hold an FAA Airline Transport Pilot Certificate with a Multi-Engine rating; and (3) have a current Part 135 pilot-in-command flight check.

Corporate Pilot (45 Credit Hours):
Individuals with a record of employment as a pilot in corporate aviation, a type rating, and a minimum of 1,000 hours as pilot-in-command or second-in-command in turbine-powered aircraft.

Electronic Operations/Maintenance Technology (30 Credit Hours):
Individuals who have attained supervisory level in an approved aviation electronics specialty.

Flight Technology (45 Credit Hours):
Rated military aviators/pilots (36 months OJT).

Navigation Systems Technology:
Individuals with 48 months' experience (including required schooling) in one of the following specializations will receive credit as indicated:
Navigator (30 credit hours)
Electronic Warfare Officer (45 credit hours)
Navigator Bombardier (45 credit hours)
Weapons Systems Officer (45 credit hours)

Specialists and technicians who have acquired requisite military training and experience in an aviation occupation listed below may be eligible for 18 to 30 semester hours of aeronautical technology credits.
Aircraft Maintenance
Aviation Weather
Electronic Operations/Maintenance
Flight Operations Administration
Flight Simulation Operations

DEGREE REQUIREMENTS

Bachelor of Science in Professional Aeronautics

Including the aeronautical technology credits granted on the basis of professional qualifications, the Bachelor of Science degree requires 126 credit hours. The curriculum provides study opportunities in the humanities, social sciences, mathematics, physical sciences, computer science, aeronautical science, economics and management.

Associate in Science in Professional Aeronautics

Qualification for one of the approved areas of concentration and the equivalent of three semesters of study may be combined to complete the associate degree. At least 63 credit hours including the aeronautical technology credit awarded for professional qualifications are required for the degree. Study embraces the humanities, social sciences, physical sciences, mathematics, computer science, economics and management.

For those who qualify for 30 or more aeronautical technology credits, 24 may be applied to the associate degree: 18 credits in aeronautical technology and 6 credits as open electives.

Candidates who qualify for the Aircraft Maintenance area of concentration may elect to take the Type 65 series of AMT courses. (AMT 240, AMT 260, AMT 270, AMT 280, AMT 360, AMT 380) totaling 21 credit hours. Selection of this option necessitates the following modification to the standard curriculum listed in the first column of the curriculum.

1. AS 405 course requirement deleted.
2. AMT 360 and AMT 380 are utilized as specified electives.
3. AMT 240, AMT 260, AMT 270, and AMT 280 are utilized as open electives.

The resulting total requirement for the Associate in Science degree is 72 credit hours.

ASSOCIATE AND BACHELOR CURRICULUM

The curriculum to be followed by each student depends upon the amount of aeronautical technology credit granted in the approved area of concentration. The curriculum listed below is organized according to the different amounts of aeronautical technology credit normally available.

The credit awarded in an approved area of concentration encompasses all related training and experience completed by the student. Training and experience in unrelated specialties will be evaluated in accordance with advanced-standing procedures described elsewhere in the catalog. For example, a candidate who qualifies for the air carrier pilot area of concentration will not be granted additional advanced standing credit for related aeronautical science and flight technology

courses. The policy of not granting duplicate credit applies in this and other similar instances.

Following is an outline of the several curricular requirement tracks based upon the amount of aeronautical technology credit granted. The column on the left identifies the associate degree curriculum and the other four columns are applicable to the bachelor degree.

CURRICULUM	Associate	Bachelor			
AERONAUTICAL TECHNOLOGY CREDIT					
(lower level)	18	18	20	30	40
(For Professional Qualifications) (upper level)			10	15	20
AERONAUTICAL SCIENCE					
AS 253 History and Regulation of Aviation	3	3	3	3	3
AS 405 Aviation Law	3	3	3	3	3
HUMANITIES AND SOCIAL SCIENCES					
English Composition and Literature	6	6	6	6	6
Speech		3	3	3	3
HU 221 Technical Report Writing	3	3	3	3	3
HU/SS Electives	3	6	3	3	3
HU/SS Electives (300-400 level)		3	3	3	3
COMPUTER SCIENCE/MATHEMATICS					
CS 109 Introduction to Computer Programming w/BASIC OR					
CS 105 Introduction to Computers in Aviation	3	3	3	3	3
MA 111 College Math for Aviation I	3	3	3	3	3
*MA 112 College Mathematics for Aviation II OR					
MA 320 Decision Mathematics	3	3	3	3	3
MA 211 Statistics with Aviation Applications		3	3	3	3
PHYSICAL SCIENCES					
Physical Science, chemistry, physics, earth science, astronomy, geology, biology, zoology and physiology courses.	3	6	6	6	6
ECONOMICS/MANAGEMENT					
EC 211 Macroeconomics		3	3	3	3
**EC 210 Microeconomics	3	3	3	3	3
MS 105 American Business Enterprise OR					
MS 201 Principles of Management	3	3	3	3	3
MS 110 Accounting I		3	3	3	3
SPECIFIED ELECTIVES: (select from list)	3	33	27	18	12
OPEN ELECTIVES (any discipline)	6	18	15	9	
TOTAL	63	126	126	126	126

SPECIFIED ELECTIVES:

AS 309, AS 310, AS 352, AS 357, AS 360, AS 401, AS 409, AS 410, AS 412
AMT 360, AMT 380
CS 318
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 303, SF 308, SF 330

* Either MA 112 or MA 211 satifies the requirements of the Associate degree curriculum.

** Either EC 210 or EC 211 satisfies the requirements of the Associate degree curriculum.

Course Descriptions

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

AE	Aeronautical Engineering
AF	Air Force Aerospace Studies
AMT	Aviation Maintenance Technology
AS	Aeronautical Science
AV	Avionics Technology
CE	Cooperative Education
CIS	Computer Information Systems
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
SS	Social Science

Corequisites and prerequisites may be waived only by permission of the responsible department chair or resident center director.

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

AERONAUTICAL ENGINEERING

AE 101 — Introduction to Aeronautical Engineering **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.(Offered only at the Prescott campus.)

AE 301 — Aerodynamics I **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 304, MA243. Corequisite: ES 305.

AE 302 — Aerodynamics II **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 of 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 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 302, ES 303.

AE 309 — Experimental Aerodynamics **2 Credits**
This laboratory consists of a series of aerodynamic experiments using the wind tunnel, simple and multiple manometers, 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. Prerequisite: CS 210. Corequisite: AE 301.

AE 401 — Advanced Aerodynamics I **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 Credits**
Shear flow and bending stress analysis of semi-monocoque structural members. Tapered beams; beams with unsymmetrical cross section. Cutouts in wing and fuselage members. Deflection analysis using energy methods; shearing deformations; wing warping and twisting. Structural stability. Connections. Computer-aided analysis. Prerequisite: AE 304.

AE 407 — Matrix Structural Methods **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 Credits**
A study of ramjets, pulsejets, turbojets and turboprops. Thrust efficiency, fuel consumption, nozzle flow and Rayleigh and Fanno line conditions. Subsonic and supersonic diffusers, mass flow, energy transfer, centrifugal and axial compressors, engine and aircraft flight performance, solid and liquid propellant rocket motors. Prerequisite: AE 302.

AE 409 — Aircraft Composite Structures **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 302, ES 307.

AE 411 — Advanced Experimental Aerodynamics **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 Credits**
Development of longitudinal, lateral and directional stability and control, control surface design, control effectiveness and size requirements. Dynamic control theory. Handling characteristics of aircraft. Prerequisites: MA 345, CS 210. Corequisite: AE 302.

AE 415 — In-Flight Laboratory **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 **3 Credits**
Airplane conceptual design principles are developed to meet modern aerodynamic, 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 **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 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 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 Credits**
The development of rotating-wing aircraft and the helicopter. Hovering theory and vertical flight performance analysis. Auto-rotation, 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 Aeronautical Engineering **1-5 Credits**
Lectures, laboratories or seminars on selected topics in aeronautical 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 Credit**
Examines the role of the U.S. military in today's world, through a study of all Department of Defense forces and missions. Emphasizes

the purpose, organizations, equipment and capabilities of the U.S. Air Force as they relate to the total force structure. The Leadership Laboratory exposes students to the organization and function of a military unit.

AF 102 — U.S. Military Forces (General Military Course) **1 Credit**

Continuation of AF 101.

AF 201 — The Development of Air Power (General Military Course) **1 Credit**

Includes the development of flight from balloons through the current employment of U.S. air power including peaceful employment such as relief missions and civic action programs through the 70's. The Leadership Laboratory exposes students to the function and organization of a military unit.

AF 202 — The Development of Air Power (General Military Course) **1 Credit**

Continuation of AF 201.

AF 301 — Air Force Management and Leadership (Professional Officers Course) **3 Credits**

A study of the managerial and leadership responsibilities of an Air Force officer. An in-depth study of those areas providing leaders with the expertise to develop and manage the human resources needed to achieve organizational goals. The course includes effective use of the communicative skills — listening, speaking and writing to effectively manage an organization. Other topics include an understanding of how behaviors, habits and attitudes, time management, and human motivation increases performance. A leadership laboratory also provides responsibility, authority and leadership experiences in line and staff positions of an organization.

AF 302 — Air Force Management and Leadership (Professional Officers Course) **3 Credits**

Continuation of AF 301.

AF 401 — National Security Forces in Contemporary American Society (Professional Officers Course) **3 Credits**

An examination of the professional military officer and conditions that affect civil-military relations. This includes an in-depth analysis of the international and domestic environment as it affects formulation and implementation of the U.S. defense policy. Additional study involves the framework of defense policy, evolution of U.S. strategy, and the management of conflict. The course concludes with an examination of the military justice system and its implications for the professional officer. The Leadership Laboratory provides advanced leadership experiences in military officer activities.

AF 402 — National Security Forces in Contemporary American Society (Professional Officers Course) **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 International Campus locations only.

AMT 101 — Physical Mathematics **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 **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 **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 **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 **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 **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 — Aircraft Wood, Fabric and Finishes **2 Credits**
A course of study encompassing the use of wood and various fabrics in structural design of aircraft, and the methods of working and finishing these materials. Includes the application of paint, dope and resins.

AMT 203 — Aircraft Instruments and Communication/Navigation System **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 **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 **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 **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 **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 **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 **3 Credits**
A basic study of the theory of operation of reciprocating engines and determination of efficiency. The effectiveness of lubrication systems and lubrication component repair methods.

AMT 210 — Aircraft Powerplant Systems **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 **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 Propeller Systems **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 **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 211.

AMT 214 — Reciprocating Engine Overhaul **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 non-destructive testing are included in this course. Prerequisite: AMT 209.

AMT 215 — Turbine Engines and Turbine Engine Systems **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 216 — Aircraft Maintenance for Pilots **3 Credits**
A course designed to broaden the knowledge of the professional pilot and give an intimate knowledge of the airframes and powerplants of aircraft. Subject areas include the 25 items of preventive maintenance that a pilot is authorized to perform by FAR Part 43.3(h).

AMT 240 — General Aeronautics and Applications **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 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 Credits**
A study of aircraft wood, dope, fabric, sheet metal, welding theory and methods of fabrication. (Type 65.)

AMT 280 — Powerplant Theory and Applications **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 355 — Aircraft Maintenance Practicum **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 comple-

tion of all required Type 65 AMT course work. (This course applies only to the Type 65 AMT Program.)

AMT 360 — Airframe Systems and Applications **3 Credits**
A study of airframe hydraulic, pneumatic, environmental, fuel, landing gear and auxiliary systems. (Type 65.)

AMT 380 — Aircraft Propulsion Systems and Applications **4 Credits**
A comprehensive study of theory, principles of operation, controls and systems for propellers and turbine engines. (Type 65.)

AMT 455 — Advanced Aircraft Maintenance Practicum **8 Credits**
Enrolled students who are qualified for the award of AMT 355 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 100 — Foundations of Aeronautics **4 Credits**
Aerodynamics, engines, systems, Federal Aviation Regulations, navigation, meteorology, communication, Airman Information Manual, and flight physiology. The student is eligible to take the FAA Private Pilot written examination upon satisfactory completion. (This course offered only by the International Campus.)

AS 150 —Aeronautics I **5 Credits**
A study of the basic aeronautical subject areas necessary for the student to satisfactorily operate an aircraft as a Private Pilot. Subjects include: basic aerodynamics, aircraft performance, weights and balance, Federal Aviation Regulations, aircraft systems and operating procedures, VFR flight planning and the physiological aspects of flight. At the completion of this course, the student will be prepared to take the FAA Private Pilot Written Examination.

AS 201 — Meteorology I **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 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 250 — Aeronautics II **3 Credits**
A study of the techniques, procedures, and regulations pertaining to instrument flight in the National Airspace System. Topics include: attitude instrument flying, navigational equipment and facilities, the airway system, and air traffic control procedures. At the completion of this course, the student will be prepared to take the FAA Instrument Airplane Written Examination. Prerequisite: AS 150.

AS 251 — Aeronautics III **3 Credits**
A study and review of the operations, regulations, and procedures necessary to perform competently as a Commercial Pilot. Subjects include: complex and multiengine aircraft operations, advanced weight and balance computations and cross-country planning, meteorology, FAR, AIM and other flight publications. Study includes a discussion of precision flight maneuvers required for Commercial Pilot Certification. At the completion of this course, the student will be prepared to take the FAA Commercial Pilot Written Examination. Prerequisite: AS 250.

AS 253 — History and Regulation of Aviation **3 Credits**
A survey of aviation from its early development to the present. Emphasis is on the historical and legislative aspects as they related to the development and control of aviation by the government. Past and present historical and legislation events and acts will be examined to demonstrate this correlation in the development of aviation as it is today.

AS 305 — Aircraft Engines — Reciprocating **3 Credits**
Mechanical relationships, components, construction, power calculations, carburetion, induction, fuel-air requirements, and federal regulations.

AS 309 — Basic Aerodynamics **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 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. Corerequisite: AS 311.

AS 311 — Aircraft Engines — Turbine **3 Credits**
Thrust factors, gas generators, Mach effects, diffusion, turbofans and turboprops. Prerequisite: PS 104.

AS 352 —Meteorology II **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 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 251, AS 310.

AS 356 — Aircraft Systems and Components **3 Credits**
Electrical, environmental, hydraulic, fuel, ignition and lubrication systems including theory of operation and calculations. Prerequisites: PS 104.

AS 357 — Flight Physiology **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 360 — Introduction to Air Traffic Control **3 Credits**
This course provides the student with an introduction to the air traffic control system at the operational level. It describes the components of the National Airspace System with emphasis on interrelationships between enroute, terminal, tower, flight service functions and the pilot.

AS 361 — Enroute/Terminal Non-Radar Air Traffic Control **3 Credits**
This course covers the basic Air Traffic Control procedures for Instrument Flight Rules (IFR) operations, separation standards, holding aircraft, departures/arrivals, and general and special controls. Students will have the opportunity to practice air traffic control skills. Prerequisite: AS 360.

AS 396 — Air Traffic Control Practicum I **9 Credits**
This course consists of instruction/training conducted for a period of six months at a Federal Aviation Administration (FAA) enroute or ter-

minal facility. It includes facility training in a non-radar environment to prepare the student for Assistant Controller Certification while being operationally productive. Prerequisites: AS 360, a satisfactory score on the FAA written examination for air traffic control program applicants and selection for an internship in accordance with criteria specified in FAA Region/Embry-Riddle Aeronautical University written agreements.

AS 401 — Airport Development and Operations **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 253.

AS 404 — Principles of Instruction I **3 Credits**
Development of a flight training syllabus, lesson plan construction, teaching methods. Application of teaching and learning fundamentals to flight maneuvers and performance evaluation. Prerequisites: Commercial Pilot Certificate or FA 302 or FA 315.

AS 405 — Aviation Law **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. Prerequisite: AS 253.

AS 406 — Principles of Instruction II **3 Credits**
Educational theories and techniques. Applied educational psychology. Development of methods for instrument flying instruction. Cognitive and motivational theories. Prerequisites: AS 404 or a CFI-Airplane Certificate.

AS 408 — Flight Safety **3 Credits**
Pilot performance as influenced by attitude, motivation and perception. Ideal and practical, personal and organizational safety goals and procedures. Human factors, principles of investigation, surveys of accidents. Prerequisites: AS 309, AS 357, Commercial Pilot Certificate.

AS 409 — Aviation Safety **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 or Airway Science-Flight students.

AS 410 — Air Carrier Operations **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 251, AS 310.

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

AS 452 — Electronic Navigation and Flight Control Systems **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, AS355, and AV 301.

AS 497 — Air Traffic Control Practicum II **9 Credits**
This course is a continuation of training received in AS 396 and is preceded by an intervening period of full-time campus study. The course is conducted for a period of six months at an FAA enroute or terminal facility. The student will demonstrate the ability to actually control aircraft in a live environment. Upon satisfactory completion of the course, the student will have attained qualification and certification on a non-radar control position of operation and may be eligible for Civil Service appointment to the FAA when baccalaureate degree requirements are completed. Prerequisites: AS 361, AS 396 and selection in accordance with criteria specified in FAA Region/Embry Riddle Aeronautical University written agreements.

AS 299, 399, 499 — Special Topics in Aeronautical Science **1-3 Credits**
Lectures, seminars, 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.

AVIONICS TECHNOLOGY

AV 301 — Avionics for Aviators **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. (Not available to Avionics Technology students.)

AV 310 — Aircraft Communications, Navigation, and Landing Systems **3 Credits**
An advanced study of electronic communication, navigation and landing equipment used in aircraft. Subject areas include VHF naviga-

tion, communication transceivers, instrument landing systems, microwave landing systems and audio systems. Prerequisites: EL320, EL 323.

AV 319 — Aircraft Pulse Systems **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 320, EL 323.

AV 320 — Aircraft Surveillance Systems **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 310, AV 319, EL 372.

AV 323 — Low Frequency and Area Navigation Systems **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 310, AV 319, EL 372.

AV 324 — Avionics System Integration and Flight Control **3 Credits**
An advanced course in system integration and flight control used on aircraft. Subject areas include instrumentation, electronic flight instrument systems, data bases, and integrated flight control systems. Prerequisites: AV 310, AV 319, EL 372.

AV 325 — Long Range Navigation Systems **3 Credits**
An advanced course in long range navigation systems used on aircraft. Subject areas include long range low frequency navigation systems, inertial navigation, navigation and flight management systems. Prerequisites: AV 310, AV 319, EL 372.

AV 340 — Avionics Equipment Troubleshooting and Repair Laboratory **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 310, AV 319.

AV 341 — Advanced Avionics Equipment Troubleshooting and Repair Laboratory **2 Credits**
A continuation of AV 340. 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 340.

AV 401 — Avionics Communication System Design Considerations **3 Credits**
An intensive study and investigation of communications systems using a theoretical and mathematical approach. Subjects include: discrete and linear integrated circuits, receivers, transmitters, antennas, propagation, fiber optics, lasers, power systems, system trade-off,

noise and interference consideration. Prerequisites: AV 310, EL 372, PS 110, PS 202, MA 245.

AV 402 — Avionics Pulse System Design Considerations **3 Credits**
An intensive study and investigation of current and proposed microwave pulse systems. Subjects include: digital circuits, pulse equipment design, microwave theory, servo systems, information theory concepts of digital communications, differential phase shift keying and discussions on data link, microwave landing systems and beacon mode S codes with respect to digital data. Prerequisites: AV 319, EL 372, PS 110, PS 202, MA 245.

AV 411 — Integrated Aviation Logistics Support **3 Credits**
An introduction to logistics engineering in aviation support systems. Subjects include: field service, customer service, publications, product support, training, packaging, computer resources, reliability, maintainability, and logistics engineering. Prerequisites: AV 401, AV 402.

AV 421 — Avionics System Integration and Design **3 Credits**
Design applications in avionic system integration and mainframe considerations. Subjects include: avionics package design, aircraft factors that affect avionics package design, FAA regulations and certification, agencies involved in the design, licensing and standardization of avionics systems, and manufacturers specifications. Prerequisites: AV 401, AV 402.

COOPERATIVE EDUCATION

CE — 296, 297 **3 to 6 Credits**
Aeronautical Engineering (AE), Aircraft Engineering Technology (ET), Aviation Management (AM), Avionics (AV), Computer Science (CS), 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 determined by the faculty co-op advisor, based on the work assignment. Prerequisite: Approval by faculty cooperative education advisor and director of cooperative education.

CE — 396, 397 **3 to 6 Credits**
Continuation of CE — 296, 297

CE — 496, 497 **3 to 6 Credits**
Continuation of CE — 396, 397

COMPUTER INFORMATION SYSTEMS

CIS 110 — Introduction to Computer-Based Systems **3 Credits**
An overview of computer information systems. This survey course introduces computer hardware, software, procedures, systems, and human resources and explores their integration and application in business and in other segments of society. The fundamentals of computer problem solving and programming in a higher-level programming language are discussed and applied.

CIS 220 — Applications Program Development I **3 Credits**
An introduction to computer programming in a business environment. Emphasis on structured program design, development, testing, implementation, and documentation of common business-oriented applications using a higher level language. Application of top-down design strategies and structured programming techniques for designing and developing problem solutions. Prerequisite: CIS 110.

CIS 230 — Applications Program Development II **3 Credits**
A continuation of CIS 220. Emphasis on structured methodology of program design, development, testing, implementation, and documentation of common business-oriented applications. Coverage of sequential and random access files and processing techniques and development of programs and systems of programs for batch and interactive environments. Prerequisite: CIS 220.

CIS 300 — Systems Analysis Methods **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: CIS 220.

CIS 305 — Structured Systems Analysis and Design **3 Credits**
Advanced study of structured systems development. Emphasis on strategies and techniques of structured analysis and structured design for producing logical methodologies for dealing with complexity in the development of information systems. Prerequisites: CIS 230, CIS 300.

CIS 310 — Data Structures **3 Credits**
Algorithms for basic data structures such as stacks, queues, lists, and trees; algorithms for implementation and use of graphs; design and analysis for internal and external sorting/searching/merging; algorithms for dynamic storage allocation, garbage collection, and compaction. Prerequisites: CIS 230 or CS 216.

CIS 400 — Database Program Development **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. Prerequisites: CIS 305, CIS 310.

CIS 405 — Applied Software Development Project **3 Credits**
Application of computer programming and system development concepts, principles and practices to a comprehensive system development project. A team approach is used to analyze, design and document realistic systems of moderate complexity. Use of project management methods, project scheduling and control techniques, formal presentations and group dynamics in the solution of information systems problems. Development of a database to support the system. Prerequisite: CIS 400.

CIS 410 — Software and Hardware Concepts **3 Credits**
A survey of technical topics related to computer systems with emphasis on the relationships between hardware architecture, system software, and applications software. The architecture of processors and storage systems are explored and the implications for systems software design are covered along with the impact of hardware and system software design on the development of application programs in a business environment. Prerequisite: CIS 230.

CIS 415 — Office Automation **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: CIS 300.

CIS 420 — Decision Support Systems **3 Credits**
An analysis of the highest level of information support systems which serve the manager user. This system provides quantitative-based information derived from one or more data bases within and/or external to an organization and used to aid managers in the decision-making process. Theoretical concepts will be applied to real-world applications with an analysis of examples from specific organizations. Prerequisite: CIS 110.

CIS 425 — Advanced Database Concepts **3 Credits**
Investigation and application of advanced database concepts including database administration, database technology and selection and acquisition of database management systems. In-depth practicum in data modeling and system development in a database environment. Overview of future trends in data management. Prerequisite: CIS 400.

CIS 430 — Distributed Data Processing **3 Credits**
The features of centralized, decentralized and distributed systems will be examined. Technology implications of computer hardware, software and communications are discussed as they relate to the design,

development and implementation of distributed data processing systems. Prerequisite: CIS 400.

CIS 435 — EDP Audit and Controls **3 Credits**
An introduction to the fundamentals of EDP auditing. Emphasis on EDP controls, types of EDP audits, and concepts and techniques used in EDP audits. Exposure to risk assessment and professional standards in the field of EDP auditing. Prerequisite: CIS 400.

CIS 440 — Information Systems Planning **3 Credits**
An introduction to the financial, technical and strategic information systems planning processes. Emphasis on the relationship of the informations systems planning process to the overall business goals, policies, plans, management style and industry condition. Emphasis on the means of selecting large systems projects; assessing the installation's current state; determining processing, staffing, software, hardware and financing approaches. Prerequisite: CIS 405.

CIS 445 — Information Resource Management **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: CIS 405.

COMPUTER SCIENCE

CS 101 — Introduction to Keyboard Operations **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 102 — Word Processing Concepts and Techniques **1 Credit**
Introduces students to the fundamentals of keyboard operations and word processing and provides familiarity with various word processing equipment and software. (General elective credit only; not creditable as a computer science elective.)

CS 103 — Word Processing File Organizations/ Revisions **1 Credit**
Introduces students to the fundamentals of file organizations utilized in word processing systems and develops skills in word processing operations and concepts including data manipulations, storage and sorting. (General elective credit only; not creditable as a computer science elective.)

CS 104 — Word Processing Advanced Techniques **1 Credit**
Advanced techniques in word processing operations including data base creation and maintenance, mathematical applications and production of documents and manuscripts. (General elective credit only; not creditable as a computer science elective.)

CS 105 — Introduction to Computers in Aviation **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 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 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 141.

CS 210 — Scientific Programming **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. Prerequisite: MA 112 or MA 220 or MA 241.

CS 215 — Computer Programming II **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 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. Prerequisites: CS 109 or CS 210.

CS 218 — COBOL Programming **3 Credits**
A first course in the use of the COBOL language giving a firm foundation in the concepts of structured programming design and structured COBOL programming. It will provide the capability of solving a wide range of business-type problems using the language. The structured

design methodologies used in this course are based on top-down design, functional decomposition, pseudocode, and structured walk-through. Topics include introduction to structured programming and design, input/output operations, arithmetic functions, report editing, comparing nested IF statements, control breaks-single and multiple level, and table processing. Commercial aviation examples are used. Prerequisites: CS 109 or CS 210.

CS 220 — Digital Logic and Computer Operation **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 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 Credits**
Specification and analysis of various programming languages; problem solution and programming in each language studied; compilation and interpretation; introduction to formal language concepts. Prerequisite: CS 215.

CS 235 — Assembly Language Programming **3 Credits**
Introduction to computer architecture; assembler concepts and instruction format; addressing techniques; interrupt processing, especially input/output; segmentation, linkage, and external procedures; programming projects to develop understanding of assembly language concepts. Prerequisites: CS 215, CS 220.

CS 240 — Introduction to File Processing **3 Credits**
Characteristics and utilization of bulk storage devices; data structures and algorithms used in file processing; sequential and random access files; applications involving file processing packages. Prerequisite: CS 215.

CS 315 — Data Structures **3 Credits**
Algorithms for basic data structures such as stacks, queues, lists, and trees; algorithms for implementation and use of graphs; design and analysis of algorithms for internal and external sorting/searching/merging; algorithms for dynamic storage allocation, garbage collection, and compaction. Prerequisite: CS 240.

CS 318 — Advanced BASIC Programming with Aviation Applications **3 Credits**
Heavy emphasis on file processing techniques, array manipulations and string manipulation. The student will apply structured programming techniques using the extended BASIC language. Prerequisite: CS 109.

CS 320 — Advanced COBOL with Aviation Applications **3 Credits**
Emphasis is placed on designing and writing programs using structured programming concepts. Topics include sorting multiple input files, sequential file processing — data editing and updating, indexed sequential access method and random updating. Programs are implemented using an indexed sequence access method. Prerequisite: CS 218.

CS 330 — Systems Design and Documentation **3 Credits**
Introduction to system development cycle and the techniques and problems of planning, analysis, design, implementation, documentation, and evaluation of an information system. Prerequisites: CS 215, HU 221, or permission of the instructor.

CS 335 — Introduction to Computer Graphics **3 Credits**
Introduction to computer graphics, algorithms, graphics programming, graphics design, use of graphics packages, and applications of computer graphics to aviation, business and scientific problems. Prerequisites: CS 235 and MA 241 or permission of the instructor.

CS 338 — Numerical Methods **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 230, MA 242 or permission of the instructor.

CS 340 — Computer Processing of Statistical Data **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 341 —Database Management Systems **3 Credits**
Introduction to database concepts; examination of the characteristics and use of specific database management systems; practical considerations and applications of database management systems in operational environments. Prerequisite: CS 215.

CS 350 — Computer Modeling and Simulation **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: CS 215, MA 412 or MA 222.

CS 360 — Advanced FORTRAN Programming **3 Credits**
Techniques in data reduction, modular programming at the systems level, array manipulation. Practical applications in applied programming. Prerequisites: CS 210 and permission of the instructor.

CS 370 — Computer Organization **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 Credits**
Basic concepts of CPU architecture and operation; 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 Credits**
Development, structure, and functions of operating systems; demand service models; development of concurrent models. Prerequisite: CS 370.

CS 430 — Numerical Analysis **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 345.

CS 436 — Computer Graphics II with Aviation Applications **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 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. Prerequisites: CS 315, CS 341.

CS 445 — Interfacing **3 Credits**
Introduction to microcomputers and microcontrollers, effect of the microprocessor on the system, memory, and microcomputer input/output methods. The subjects of interface components and their characteristics, designing interface circuits, interfacing to standard buses and peripherals. Interface layout and construction. Interface software design and implementation. Prerequisite: CS 372.

CS 450 — Real-time Systems **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 420.

CS 455 — Artificial Intelligence **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 strate-

gies, searching strategies, predicate calculus and rule based deductions, goal directed planning, applications of understanding, representation of knowledge frames and scripts, programming languages and databases for artificial intelligence, knowledge based systems, and robotic systems. Prerequisite: CS 315.

CS 460 — Telecommunications Systems **3 Credits**
Techniques and applications in telecommunications. Types 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 Applications of Computers to Aviation **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 seminars on selected topics in computer science. Prerequisite: Consent of the instructor and the department chair.

ECONOMICS

EC 210 — Microeconomics **3 Credits**
An introduction to economic principles, problems and policies with emphasis on microeconomic theory and current domestic problems. Prerequisites: MA 105 or Placement Test.

EC 211 — Macroeconomics **3 Credits**
An introduction to economic principles, problems and policies with emphasis on macroeconomic theory, business fluctuation, fiscal and monetary policy, and economic growth. Prerequisites: MA 105 or Placement Test.

EC 310 — Labor Economics **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. Prerequisite: EC 210.

EC 312 — Money and Banking **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. Prerequisites: EC 211, MA 222.

EC 420 — Economics of Air Transportation **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. Prerequisites: MS 105 or MS 201, EC210, EC 211.

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

ELECTRICAL ENGINEERING

EE 201 — Linear Circuits Analysis I **3 Credits**
Volt-ampere characteristics for passive circuit elements. Resistive network circuit theory and simplification. Kirchoff's current and voltage laws. Introduction to linear network theorems and transformations. Transient response of RC, RL and RLC circuits. Steady state and impedance circuit analysis for sinusoidal sources. Prerequisites: MA 242, PS 201.

EE 202 — Linear Circuits Analysis II **3 Credits**
Continuation of EE 201. Complex plane, resonance and coupled circuits, Bode diagrams. Introduction to magnetic circuits and transformers. Prerequisite: EE 201.

EE 203 — Electrical Engineering Laboratory I **1 Credit**
Problem sessions, electrical instrumentation and measurement, verification of theory presented in EE 201, working knowledge of electronic test equipment. Corequisite: EE 201.

EE 204 — Electrical Engineering Laboratory II **1 Credit**
Problem sessions, verification of theory presented in EE 202. Elements of circuit modeling and design. Corerequisite: EE 202.

EE 210 — Electronic Devices and Circuits **3 Credits**
Diode, bipolar transistor, and FET circuit models for the design and analysis of electronic circuits. Single and multi-stage analysis and design. Amplifier operating point design, frequency response and Bode plots. Switching of transistors as applied to digital characteristics. Corerequisite: EE 202.

EE 212 — Electronic Circuits Laboratory **1 Credit**
Laboratory experiments in the measurement of electronic device characteristics. Design of biasing networks, small signal amplifiers and switching circuits. Corequisite: EE 210.

EE 220 — Digital Circuit Design **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, count-

ing devices, sequential logic circuits, R-S 232 interfacing, tri-state and other interfacing techniques. Prerequisite: EE 210.

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

EE 230 — Operational Amplifiers and A/D — D/A Circuits **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 202, EE 210.

EE 303 — Signals and Filters **3 Credits**
Mathematics for filtering and spectral analysis of continuous and discrete systems. Solutions to filtering approximations via Butterworth, Chebyshev, elliptic and others. Digital filter design methods. Description of deterministic signals through the use of Fourier Series. Prerequisites: EE 210, MA 441, PS 202.

EE 320 — Introduction to Computer Engineering **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, and interfacing devices will be studied. Hardware and software relationships will also be discussed. Prerequisites: EE 220, EE 230.

EE 322 — Computer Engineering Laboratory **1 Credit**
"Hands-on" experience with a microcomputer is provided through weekly experiments involving hardware and software techniques. Corequisite: EE 320.

EE 340 — Electric and Magnetic Fields **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, and radiation from antennas. Prerequisites: MA 441, PS 202, EE 202.

EE 350 — Control Systems Analysis and Design **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 including z-transforms, stability, design and synthesis. Prerequisites: EE 220, EE 230, EE 320.

EE 360 — Control Systems Laboratory **1 Credit**
Laboratory experiments involving the principles of operation and design of linear control systems. Experiments to support theory introduced in EE 350. Corequisite: EE 350.

EE 410 — Communication Systems **3 Credits**
Theory and appplication 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 VLF, OMEGA, ACARS, voice and others. Prerequisites: EE 303, EE 340, MA 441.

EE 412 — Communication Systems Laboratory **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 Credits**
Senior level project. Students will work as members of a team. The electrical engineering students will be involved with the design, development, documentation, procurement, testing, and end construction of an electrical/electronic subsystem required for an aircraft. Electrical Engineering students will work with other engineers in the overall aircraft design. Prerequisites: Senior level standing and completion of all EE courses through EE 412.

EE 421 — Avionics Detail Design **3 Credits**
Continuation of EE 420. Completion of project initiated in EE 420. Prerequisite: EE 420.

EE 450 — Elements of Power Systems **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. Prerequisites: EE 350, EE 410.

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

ELECTRONICS TECHNOLOGY

EL 101 — Basic Electronic Concepts and D-C Circuits **4 Credits**
A detailed study of basic electronic theory and D-C circuit concepts. Subject areas include the physical nature of matter, electrical terms, units and components, sources of D-C, resistance, inductance and capacitance, Ohm's Law and D-C circuit analysis. Corequisites: EL 102, MA 111.

EL 102 — Fundamentals of A-C and A-C Circuit Analysis **4 Credits**

A detailed study of A-C theory and A-C circuit characteristics. Subject areas include vectors and phase relationships, inductive and capacitive reactance, impedance, series and parallel resonant circuits, transformer theory and A-C circuit analysis. Corequisites: MA 111 or its equivalent, EL 101.

EL 103 — Semiconductor Fundamentals **4 Credits**

A detailed study of semiconductors and their use as active devices. Subject areas include semiconductor doping, the PN junction diode, bipolar junction transistor operation and characteristic curves, load line analysis, active device parameters, active device equivalent circuits, amplifier coupling techniques, amplifier frequency response, power supply considerations. Prequisites: EL 101 and 102.

EL 106 — Direct and Alternating Current Fundamentals and Circuit Analysis with Laboratory **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 105, HU 106, and HU 117.

EL 207 — Basic Radiotelephone Equipment Theory and Operation **3 Credits**

A preparatory course for the FCC General Radiotelephone Operator's Licensing. Classroom presentations include a review of basic electronic theory which is applicable to FCC General Class Radiotelephone licensing, basic FCC law (Element I), basic operating practices (Element II), and basic radiotelephone (Element III). Prerequisite: EL 222. Corequisite: EL 321.

EL 208 — Basic Radiotelephone Equipment Theory and Operation **3 Credits**

A preparatory course for the FCC General Radiotelephone Operator's Licensing. Classroom presentations include a review of basic electronic theory which is applicable to FCC General Class Radiotelephone licensing, basic FCC law (Element I), basic operating practices (Element II), and basic radiotelephone (Element III). Prerequisite: EL 323.

EL 220 — Introduction to Pulse and Digital Circuits **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 multivators. Prerequisite: EL 106. Corequisite: EL 223.

EL 221 — Introduction to Pulse and Digital Circuits **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 multivators. Prerequisites: EL 101 and 102. Corequisite: EL 103.

EL 222 — Basic Electronic Circuits and Systems **4 Credits**
An introductory course in electronic circuits and their use in electronic communication systems. Subject areas include RF amplifier circuits, oscillator circuits, operational amplifiers, frequency multipliers, noise consideration, amplitude and SSB modulation, AM and SSB transmitters and receivers. Prerequisites: EL 103.

EL 223 — Solid State Fundamentals and Circuit Analysis with Laboratory **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. Prerequisite: EL 106.

EL 310 — Advanced Electronic Troubleshooting Analysis, Instruments and Techniques **2 Credits**
A survey of basic and advanced test instruments and related measuring techniques. Subject areas include the theory of measurement, nature and sources of error, test instrument operating theory, calibration and use. Corequisite: EL 221. (Offered on International Campus only.)

EL 320 — Advanced Digital Circuits and Systems **4 Credits**
A continuation of EL 220. Subject areas include shift registers, counting circuits, comparator circuits, memories, arithmetic logic, and an introduction to computer organization. Prerequisite: EL 220.

EL 321 — Advanced Digital Circuits and Systems **4 Credits**
A continuation of EL 221. Subject areas include shift registers, counting circuits, comparator circuits, memories, arithmetic logic, and an introduction to microprocessors and computer organization. Prerequisite: EL 221.

El 322 — Advanced Electronic Circuits and Systems **4 Credits**
Continuation of EL 222. This course presents some of the more advanced circuits and their use in electronic communication systems. Subject areas include frequency synthesizers, antenna theory, transmission lines, radio-wave propagation, FM modulation, FM receivers and transmitters, microwave hardware, microwave active devices and circuits, broadband communication techniques, pulse and data communication systems, and radar fundamentals. Prerequisites: EL 222 and EL 321.

EL 323 — Electronic Systems Analysis with Laboratory 5 Credits
Introduction to communications and microwave devices, circuits, and systems. Subject areas include AM, FM, and SSB modulation and receivers, transmission lines, wave propagation, antennas, wave guides, microwave devices, data communications and radar fundamentals. Prerequisite: EL 223.

EL 372 — Microprocessor Systems with Laboratory 3 Credits
An advanced digital 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 320.

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

ENGINEERING PHYSICS

EP 360 — Atmospheric Physics 3 Credits
An introduction to the physics of the Earth's atmosphere with emphasis on the mesosphere, thermosphere, and exosphere. Ionization, diffusion, photochemistry, and charged particle-magnetic field interaction in the aerospace medium. Electromagnetic wave propagation and applications to radio communications, solar wind-magnetosphere coupling, magnetic and ionospheric storms, auroras, cosmic rays, radiation belts, the ozone layer, greenhouse effect, and the global atmospheric electricity circuit. Prerequisite: PS 303.

EP 400 — Thermodynamics and Statistical Mechanics 3 Credits
Basic Thermodynamics; Entropy; Kinetic Theory; Distribution of Molecular Velocities; Maxwell-Boltzmann Statistics; Bose-Einstein Statistics; Feri-Dirac Statistics; Microcononical Ensemble; Cononical Ensemble. Prerequisites: ES 305, MA 345.

EP 420 — Planetary Science 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: EP 360.

EP 440 — Engineering Electricity and Magnetism 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: PS 320, MA 442.

EP 450 — Space Systems Engineering **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 420.

EP 490 — Senior Design Project I **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 **4 Credits**
Continuation and completion of EP 490. Prerequisite: EP 490.

ENGINEERING SCIENCE

ES 201 — Statics **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. Friction. Area moments of inertia; tensor properties. Prerequisite: PS 201. Corequisite: MA 243.

ES 302 — Solid Mechanics **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. Energy methods. Prerequisites: ES 201, CS 210.

ES 303 — Dynamics **3 Credits**
A vector treatment of the kinematics and laws of motion of particles and rigid bodies. Acceleration, momentum, work, energy and power. Prerequisites: ES 201, CS 210. Corequisite: MA 345.

ES 304 — Fluid Mechanics **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. Prerequisite: CS 210. Corequisite: ES 303.

ES 305 — Thermodynamics **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. Reversible processes and conventional power and refrigeration cycles. One dimensional compressible flow. Prerequisite: PS 202.

ES 307 — Engineering Materials Science with Laboratory **3 Credits**
Materials used in aeronautical engineering applications. Properties of materials and their measurement. 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: PS 110, PS 202.

ES 402 — Electrical Engineering I With Laboratory **3 Credits**
Introduction to 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.

ES 403 — Heat Transfer **3 Credits**
One and two-dimensional steady and unsteady-state conduction heat transfer including an introduction to finite-difference and finite-element methods of analysis. Free and forced convection heat transfer. Radiation heat transfer. Prerequisites: ES 304 or permission of instructor, ES 305, MA 345.

ES 405 — Electrical Engineering II **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 electro-magnetic energy conversion devices. Automatic control systems-dynamic response, feedback control and transducers. Prerequisite: ES 402.

ES 409 — Space Mechanics **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 303, MA 441.

ES 410 — Structures and Instrumentation Laboratory **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.

ES 412 — Structural Dynamics **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 and laboratory demonstrations of system dynamic performance. Prerequisites: ES 302, ES 303, MA 345.

ES 299, 399, 499 — Special Topics in Engineering Science **1-6 Credits**
Lectures, laboratories or seminars 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 **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 **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 **1 Credit**
Introduction to basic machining techniques.

ET 201 — Technical Mechanics **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 **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 **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 **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 **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 **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 **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 Credits**
Compressible flow, shock waves, supersonic flow, airfoil characteristics, nozzle flow. Prerequisites: ET 301, MA 245.

ET 312 — Applied Electrical Science with Laboratory **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 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 302 or ET 302.

ET 402 — Applied Instrumentation Laboratory **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 **3 Credits**
Design of load bearing structures representative of those employed in aircraft, along with supporting stress analysis and production, drawings. Projects include use of composite materials and cost analysis. Prerequisites: ET 201, ET 303, ET 304.

ET 404 — Aircraft Performance and Design **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 **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. Prerequisites: ET 302.

ET 406 — Aircraft Systems Analysis and Design **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 299, 399, 499 — Special Topics in Engineering Technology **1-3 Credits**
Seminar courses on specialized topics or independent design and/or laboratory projects. Prerequisite: Permission of program chair.

FLIGHT-ACADEMIC

FA 104 — Primary Flight **2 Credits**
An introduction to the fundamentals of flight. During this flight course the student will accomplish his/her first solo flights in an airplane. Corequisite: AS 150.

FA 105 — Private Pilot Certification **2 Credits**
Continued flight training in those pilot operations required of a private pilot. At the successful completion of this course the student will have gained the aeronautical experience necessary to apply for an FAA Private Pilot Certificate. Prerequisites: FA 104, AS 150, and successful completion of the FAA Private Pilot written examination.

FA 205 — Basic Attitude Instrument and Advanced Flight Maneuvers **2 Credits**
Flight and simulator training in basic attitude instrument flight techniques, maximum performance and precision commercial flight

maneuvers, and advanced cross-country operations. Prerequisites: FA 105 and an FAA Private Pilot Certificate. Corequisite: AS 250.

FA 206 — Instrument Flight Transition — Single-Engine **2 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. Prerequisites: FA 205, AS 250, and successful completion of the FAA Instrument Pilot written examination.

FA 207 — Multi-Engine Transition **2 Credits**

Flight training in multi-engine pilot operations as they pertain to a private pilot. At the successful completion of this course the student will have gained the aeronautical experience necessary to apply for the addition of a multi-engine class rating to his/her existing FAA Private Pilot Certificate. Prerequisite: FA 205.

FA 302 — Commercial Pilot Certification — Single Engine **2 Credits**

An introduction to complex airplane operations and a review of selected pilot operations required of a commercial pilot. At the successful completion of this course the student will have gained the aeronautical experience necessary to apply for an FAA Commercial Pilot Certificate with Instrument Airplane and Single-Engine Land ratings. Prerequisites: FA 206, AS 251, and successful completion of the FAA Commercial Pilot written examination.

FA 306 — Instrument Rating **2 Credits**

Instruction and flight training necessary to maneuver the aircraft safely and accurately in actual or simulated instrument conditions within the National Airspace System while complying with ATC procedures and instructions. The course is designed for a student who has the FAA Commercial Certificate. Prerequisite: AS 250.

FA 314 — Instrument Flight Transition — Multi-Engine **2 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. Prerequisites: FA 207, AS 250, successful completion of the FAA Instrument Pilot written examination, and a multi-engine class rating.

FA 315 — Commercial Pilot Certification — Multi-Engine **1 Credit**

A review of selected pilot operations required of a commercial pilot. At the successful completion of this course the student will have gained the aeronautical experience necessary to apply for an FAA Commercial Pilot Certificate with Instrument Airplane, Single-Engine Land, and Multi-Engine Land ratings. Prerequisites: FA 314, AS 251, and successful completion of the FAA Commercial Pilot written examination.

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 400 — Certified Flight Instructor-Single Engine **1 Credit**
Instruction, flight training and practice teaching that will allow the student to obtain the aeronautical skill and knowledge necessary to apply for a Certified Flight Instructor Certificate with an Airplane Single-Engine Land Rating. Prerequisite: AS 404.

FA 409 — Certified Flight Instructor — Instrument **1 Credit**
Instruction, flight training and practice teaching that will allow the student to obtain the aeronautical skill and knowledge necessary to apply for a Certified Flight Instructor Certificate with an Instrument Airplane rating. Prerequisites: AS 404,AS 406 and FA 400.

FA 411 — Certified Flight Instructor — Multi-Engine **1 Credit**
Instruction to qualify the student for the FAA Multi-Engine Instructor's Certificate. All of the prescribed subjects listed for the FA 340 Multi-Engine course will be practiced to include teaching methodology and techniques. Prerequisites: AS 404 and FA 400.

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 103 — Writing English as a Second Language **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 106 — Developmental English **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 113 — Reading English as a Second Language **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 117 — Reading and Study Skills **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 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 106 or passing grade on Placement Test.

HU 123 — English Composition and Literature II **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 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 Credits**
A continuation of HU 130.

HU 219 — Speech **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 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 122, HU 123.

HU 230 — Advanced Spanish Conversation and Reading **3 Credits**
A continuation of HU 130 and HU 135 with emphasis on development of fluency in conversation and reading.

HU 250 — Introduction to Logic **3 Credits**
Principles of valid thinking; the nature of inductive and deductive inferences and their applications. Prerequisite: HU 123.

HU 300 — World Literature **3 Credits**
Major works and literary trends in world literature. Prerequisites: HU 122 and HU 123.

HU 305 — Modern Literature **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 122 and HU 123.

HU 310 — American Literature **3 Credits**
A survey of intellectual backgrounds, major works and literary trends in American literature. Prerequisite: HU 123.

HU 320 — Aesthetics of Visual and Musical Arts **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 122 and HU 123.

HU 325 — Exploring Film **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.

HU 330 — Values and Ethics **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.

HU 340 — Introduction to Philosophy **3 Credits**
An integrated study of man and the concepts of his culture, including views about himself, society, religion, science, the nature of knowledge, and some of the major philosophical systems such as dialectical materialism, pragmatism and existentialism.

HU 345 — Religions of Mankind **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.

HU 350 — Journalism **2 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.

HU 355 — Creative Writing **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 122 and HU 123.

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

MATHEMATICS

MA 105 — Quantitative Skills **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 106 — Basic Algebra and Trigonometry **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 Credits**
A pre-calculus course designed for the student of aviation. Linear equations, systems of equations, functions and graphing, exponents and roots, quadratic equation, ratio and proportion, trigonometric ratios, right triangle solutions and vectors. Prerequisites: MA 105 or placement.

MA 112 — College Mathematics for Aviation II **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 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 105 or placement.

MA 140 — College Algebra **3 Credits**
Fundamentals of exponents, radicals, linear and quadratic equations, inequalities, and complex numbers. Introduction to functions, conics, elementary theory of equations, sequence and series, exponential and logarithmic functions, matrix algebra, and systems of equations. Prerequisite: MA 105 or equivalent.

MA 141 — Trigonometry **2 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; laws of sines and cosines; inverse trigonometric functions; trigono-

metric form of a complex number. Prerequisite: MA 105 or equivalent. Corequisite: MA 140.

MA 211 — Statistics with Aviation Applications **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 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 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 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 equivalent. Corequisite: MA 141.

MA 242 — Calculus and Analytical Geometry II **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 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 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 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 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 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 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 430 — Linear Algebra **3 Credits**
Matrix algebra; vector spaces and subspaces, inner products; systems of linear equations, eigenvalues and eigenvectors. Prerequisite: MA 243 or the consent of the department chair.

MA 441 — Advanced Engineering Mathematics I **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 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 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, seminars, 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 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.

MS 110 — Accounting I **3 Credits**
An introduction to accounting; double entry, income statement, balance sheet, interpretation of accounts; partnerships and corporations. Prerequisite: MA 105 or Placement Test. (This course offered only by the International Campus.)

MS 201 — Principles of Management **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 Credits**
Fundamental principles applicable to the accounting cycle, asset valuation, income determination, financial reporting, and owners equity. Prerequisites: MA 105 or Placement Test, CS 109 or permission of the instructor.

MS 212 — Financial Accounting II **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 308 — Public Administration **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 105 or MS 201.

MS 311 — Marketing **3 Credits**
Marketing theory; marketing management, sales management; market research. Public and customer relations, advertising, distribution. Prerequisite: MS 105 or MS 201.

MS 312 — Managerial Accounting **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 110 or MS 210.

MS 314 — Human Resource Management **3 Credits**
This course will examine the functions to be accomplished in effectively managing human resources. An indepth 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 210 or SS 220, MS 201.

MS 317 — Organizational Behavior **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 210 or SS 220 and MS 201.

MS 320 — Business Information Systems **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: CS 105 or CS 109 or CS 210, MS210.

MS 322 — Aviation Insurance **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 105 or MS 201.

MS 331 — Transportation Principles **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, EC 211 and MS 105 or MS 201.

MS 332 — Corporate Finance I **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 105 or MS 201.

MS 335 — International Business **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: CS 109, EC 210 or EC 211, MA 222.

MS 350 — Analysis Methods for Management **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 on International Campus only.)

MS 390 — Business Law 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 105 or MS 201.

MS 401 — Management Planning and Control 3 Credits
The requirements 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: CS 109,EC 210, MS 201, MS 314.

MS 405 — General Aviation Marketing 3 Credits
Basic marketing concepts and procedures involved in the sale of general aviation aircraft and components to private industry and government. Particular emphasis on corporate aviation and commuter airlines. Prerequisites: EC 210, MS 311.

MS 408 — Airport Management 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 201,EC 210, EC 211.

MS 410 — Management of Air Cargo 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. Prerequisites: EC 210, EC 211, MS 201, MS 210, MS 331.

MS 412 — Airport Planning and Design 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. Prerequisites: MA 211 or MA 222, CS 109, MS 408.

MS 415 — Airline Management 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: MS 201, MS 210, EC 210.

MS 419 — Aviation Maintenance Management 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: MS 201, MA 211 or MA 222.

MS 420 — Industrial Management 3 Credits
An intensive study of management in all organizations — service oriented and product oriented. Scheduling, inventory control procure-

ment, quality control and safety are investigated. Particular attention to applications of these to aviation oriented activities. Prerequisites: EC 210, MS 201, MS 314.

MS 421 — Small Business Management **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. Prerequisites: EC 210, MS 201, and MA 112 or MA 120.

MS 425 — Trends and Current Problems in Air Transportation **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. Prerequisites: EC 210, EC 211, MS 201.

MS 431 — Business Policy **3 Credits**
Case problems in determining business policy, instituting policy and appraising the results. The viewpoint is that of top and middle management. Prerequisites: MA 320, MS 212, MS 314, MS 317, MS 332 and MS 401.

MS 433 — Management of the Sales Force **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. Prerequisites: MS 311, MS 314.

MS 434 — Corporate Finance II **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. Prerequisites: MS 332 or permission of the instructor.

MS 435 — Taxation **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 or permission of the instructor.

MS 449 — Strategic Marketing Management **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 311.

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

MILITARY SCIENCE ARMY ROTC

MY 103 — Basic Military Science **1 Credit**
A study of the defensive establishment and the organization and development of the United States Army. A study of the military courtesy, discipline, customs and traditions of the service. An 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.

MY 104 — Basic Military Science **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 national defense. Continued emphasis on physical readiness training. Course includes lecture and laboratory.

MY 203 — Basic Military Science **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.

MY 204 — Basic Military Science **1 Credit**
A study of Von Clausewitz's theory of the principles of war and its application in the 21st century. The fundamentals of Military Geography and its 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 laboratory.

MY 303 — Advanced Military Science **3 Credits**
An introduction to the fundamentals of management such as motivation, individual behavior, human groups and organizational structure. In addition, the study of power and politics, strategy and tactics, personal values versus organizational values, the approaches to lead-

ership that provide a basis for development of the Army junior officers' managerial skills. Extensive classroom teaching and practical exercises involving effectively communicating orally and in writing to direct and control groups and organizations. This course includes lecture, an advanced laboratory, and physical readiness training.

MY 304 — Advanced Military Science **3 Credits**
A continuing development of the managerial processes such as individual and group decision making, analytic aids to decision making, setting objectives, formulating plans and policies, staffing, coordinating, directing, and controlling groups and organizations. This course includes lecture, an advanced laboratory, and physical readiness training.

MY 403 — Advanced Military Science **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 management of the organization. A study of personnel and logistical systems and the role they play in helping the organization attain its goals. An introduction to the organizational effectiveness process and the role it plays in improving the quality of life in the Army community. This course includes lecture, laboratory, and physical readiness training.

MY 404 — Advanced Military Science **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 governing the conduct of soldiers in combat. This course includes lecture, a laboratory, and physical readiness training.

PHYSICAL SCIENCE

PS 101 — Basic Chemistry **3 Credits**
Elementary chemical theory with application for the Aeronautical Science and Aviation Business Administration student. 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 Aeronautical or Electrical Engineering.) Prerequisite: MA 111 or MA 120.

PS 102 — Explorations in Physics **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 toward degrees in Aeronautical or Electrical

Engineering, Aircraft Engineering Technology, Aeronautical Science, or Avionics Technology.) Prerequisite: MA 111 or MA 120.

PS 103 — Technical Physics I **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 Aeronautical Engineering, Electrical Engineering, or Aircraft Engineering Technology.) Prerequisite: MA 111 or MA 120. Corequisite: MA 112.

PS 104 — Technical Physics II **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 Aeronautical Engineering, Electrical Engineering, or Aircraft Engineering Technology.) Prerequisites: PS 103, MA 112.

PS 107 — Elements of Biological Science **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 110 — Chemistry for Engineers **5 Credits**
Chemical stoichiometry; chemical applications of the Ideal Gas Law; solutions; thermochemistry; rate of reaction; equilibrium; oxidation-reduction; corrosion; organic compounds; and polymers. Prerequisite: High school chemistry and placement.

PS 201 — Engineering Physics I **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. Four lectures per week and one three-hour laboratory per week. Corequisite: MA 242.

PS 202 — Engineering Physics II **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. Four lectures per week and one three-hour laboratory per week. Prerequisite: PS 201.

PS 205 — Physics I w/Laboratory **4 Credits**
Estimations; order of magnitude analysis; Newton's Law; Gravitation; Kinematics; Work and Energy; Momentum; Rotation; Harmonic Motion. Prerequisite: High School Physics. Corequisite: MA 241.

PS 206 — Physics II w/Laboratory **4 Credits**
Fluids; Temperature; Heat; First and Second Laws of Thermodynamics; Wave Motion; Acoustics. Prerequisite: PS 205. Corequisite: MA 242.

PS 207 — Physics III w/Laboratory **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. Prerequisite: PS 206. Corequisite: MA 243.

PS 290 — Physics Laboratory Practicum **0 Credits**
Required, non-credit course. Requires the student to direct the operation of a 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 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 consent of the instructor.

PS 303 — Modern Physics **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.

PS 304 — Man and His Environment **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 320 — Classical Mechanics **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 303.

PS 299, 399, 499 — Special Topics in Physical Science **1-4 Credits**
Topics within the fields of the physical sciences impinging on aeronautical engineering development or practices and which are of current or anticipated interest will be discussed on a seminar basis. Prerequisites: Consent of instructor and approval of the department chair.

SAFETY OF FLIGHT

SF 200 — Safety Program Management **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 219 — Aviation Psychology **2 Credits**
An analysis of the factors influencing human behavior and social interactions as they pertain to aviation safety. Emphasis is placed on recognition and modification of psychological stress situations and behavioral problems that are potentially hazardous to aviation operations.

SF 303 — Introduction to Aircraft Structures **3 Credits**
An analysis of aircraft structural factors related to the prevention and investigation of aircraft accidents. These factors include interpreting the principles of statics, tensile, compressive and shear stresses, deformation analysis, service life considerations, and classification and recognition of structural failures.

SF 308 — Subsonic Aerodynamics **3 Credits**
A study of subsonic aerodynamics, stressing application to rotary wing aircraft. Included are application of subsonic flow phenomena, description of aerodynamic force development, interpretation of performance relationships, and analyzing stability, control and structural considerations as they pertain to rotary wing and subsonic fixed wing aircraft.

SF 330 — Aircraft Accident Investigation **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.

SOCIAL SCIENCE

SS 110 — World History **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 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 205 — Applied Individual-Group Psychology **1 Credit**
A course in which students will be enabled to assess and develop those personal and interpersonal dynamics necessarily related to pursuing their academic, career and life goals.

SS 210 — Introduction to Sociology **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 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 300 — Psychology of Career Planning **1 Credit**
A course designed to make the student more aware of the important considerations in the area of career development and decision making. Areas to be covered will include occupational orientation testing, job search planning and strategy, interview techniques, and paths to career goals. Lectures will include current opportunities and trends reinforced by visits of aviation industry representatives.

SS 305 — American Military Experience **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: AS 253 or SS 110 or SS 120.

SS 310 — Personality Development **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 Credits**
Basic issues of American democracy, constitutional principles and the executive, legislative and judicial branches of government.

SS 331 — Current Issues in America **3 Credits**
A course in selected political-social-economic issues of national and international importance. Extensive use of journals, magazines and newspapers to supplement lectures and discussions.

SS 340 — American Foreign Policy **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.

SS 398 — Applied Social Psychology **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**
Independent study, seminars, travel seminars 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, Academic Standards, Curriculum Standards and academic 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 standards 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. 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. (The late registration fee of $50 applies in such cases.) 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. No late registration fee is applied to flight course registration.

For information on registration procedures at International Campus locations, contact the appropriate resident center and see the International Campus section of this catalog.

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 credit hours at another institution and remain in continuing student status. For clarification, please see Attendance at Other Institutions.
2. Leave the University for two consecutive calendar years;
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 International Campus locations, the resident center representative 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 written approval of a student's course selection is required before a student will be allowed to register.

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 normally is 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 transfered 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.

International Campus students should refer to the International Campus 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 Vice Chancellor for Academic Affairs 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:

Freshmen:	27 hours or less
Sophomores:	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
WP	Withdrawal from the University-Passing	0
WF	Withdrawal from the University-Failing	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 forty-two calendar days (twenty-one calendar days for summer terms) after the last scheduled class day of the semester in which the I was assigned. International Campus students should refer to the International Campus 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. When students process an official withdrawal from the University prior to the final examination period, they will be assigned a grade of W for all courses in which they were enrolled and the date of withdrawal will be entered on the student's transcript.

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 total number of grade points earned during the semester/term by the number of semester credit hours attempted. When a W, X, I, N, AU, S, T or P grade is recorded for a course, the hour value does not 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.

Except for flight 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 nine weeks of a semester and during the first four and one-half weeks of a summer term. Developmental 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.

International Campus students should refer to the International Campus 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 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 two 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 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 campus Vice Chancellor for Academic Affairs. 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.

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 Vice Chancellor for Academic Affairs.

International Campus students should refer to the International Campus 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. "Un-

desirable 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 the 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 campus records 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 enrolled 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.)

International Campus students should refer to the International Campus 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

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.

International Campus students should refer to the International Campus 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 thirty academic credit hours must be completed with Embry-Riddle for a Bachelor's degree; the last twelve academic credits must be completed with Embry-Riddle for an Associate degree. International Campus students should refer to the International Campus section of this catalog for the procedure which they must follow.
4. For a baccalaureate, a minimum of forty 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 forty-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 Aeronautical 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, a minimum of thirty credit hours of ERAU course work over and above that which is required for the declared primary degree must be completed. At least sixty credit hours must be ERAU courses and at least twenty of the thirty additional credit hours must be in upper-division courses.

To earn a second associate degree, the student must complete at least twelve credit hours of ERAU course work over and above that which is required for the primary degree; at least twenty-four credit hours must be ERAU courses.

AREA OF CONCENTRATION/MAJOR

Several degree programs require the student to select an area of concentration or major which is designed to provide students with preparation in their specialized field. Students should select an area of concentration/major at the time of application for admission to a degree program. The area of concentration or major which the student selects will be entered on the student's permanent academic record (the transcript).

CHANGE OF DEGREE PROGRAM

At the Daytona Beach and Prescott Campuses, students may change their degree programs during any registration period if they meet academic qualifications and the degree program capacity is not full. 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 International Campus locations should contact their Resident Center representative for information on changing their degree programs.

ATTENDANCE AT OTHER INSTITUTIONS

Once admitted to the University, 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. International Campus students should refer to the International Campus 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.

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.

NON-DEGREE STUDENT STATUS

Embry-Riddle recognizes the needs of working adult learners for retraining 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 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. Only degree seeking students who have formally been admitted to ERAU are eligible for financial aid programs. An adult learner desiring non-degree student status can receive information and register for courses in the campus Office of Records and Registration.

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 WP or WF grade, based on the student's performance, will be assigned in all courses; and the date of withdrawal will be entered on the student's permanent record. Withdrawal is defined as withdrawing from a particular term or semester and allows the students to maintain their status as continuing students.

International Campus 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. 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 six federal financial aid programs, several state programs, and several University administered scholarship and employment programs. The University makes an effort, within the limitations of its available financial resources, to ensure that no qualified student is denied the opportunity to obtain an education because of inadequate funds.

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 publications distributed by the Financial Aid Office. Financial aid awards rarely cover all expenses of the students who attend Embry-Riddle.

All financial aid programs sponsored by external agencies are subject to the rules and regulations of that agency and are beyond the control of Embry-Riddle. Students are advised to be aware of such rules and regulations and should check with the external agency from time to time to ensure that they remain in compliance.

To be considered eligible to apply for any of the financial aid programs at Embry-Riddle, students must be U.S. citizens or permanent residents of the U.S., enrolled or accepted for enrollment in good standing as at least a half-time student in a degree program and, for the most part, have financial need. Also, students must maintain academic standards of progress as defined by the University to maintain eligibility for financial aid.

Academic standards of progress at Embry-Riddle require a student to maintain a cumulative grade point average (CGPA) of at least 2.0 *and* make reasonable progress toward completing a degree based on credit hour completion each semester. Refer to the Standards of Satisfactory Progress Brochure for a complete description of the academic standards of progress and other important information.

All students receiving financial aid from the State of Florida are required to pass the COLLEGE LEVEL ACADEMIC SKILLS TEST (CLAST) before the semester/term in which they will complete their 60th credit hour toward degree completion. It is very important that Florida students prepare to register by posted deadline dates and receive course counseling from their program chairperson in order to select courses that will provide adequate background preparation. Failure to pass this examination will cause the temporary suspension of state aid. Students who fail may retake the examination.

Most financial aid awards are made on a first-come/first-served basis because of limited funds. Therefore, students should apply for financial aid *early*, beginning in January for the following academic year. Students applying for financial aid after January for enrollment the following academic year should not expect to be awarded a Perkins Loan (formerly National Direct Student Loan) or a Supplemental

Educational Opportunity Grant. Funds in these programs are extremely limited. Students must reapply again each year in order to reestablish their eligibility. Applications are mailed to students who apply for admission to the University. Returning students may pick up their application materials at the financial aid office by the first of January. Notices will be posted on campus to remind students of the availibility of the forms. Students attending International Campus locations may pick up their Financial Aid materials at the Resident Center or contact the International Campus Financial Aid Office directly.

A detailed explanation of how to apply for financial aid, specific program requirements, forms needed, application deadline dates and other important information can be found in the Financial Aid Brochure. Also, students may consult the Financial Aid Office at the campus they plan to attend to answer any questions concerning financial aid. International Campus students should contact their Resident Center Director for financial aid information. Graduate students should refer to the Graduate Catalog.

Financial aid at Embry-Riddle is in the form of grants, loans, employment and scholarships.

GRANTS

Grants are a form of financial aid which *do not* need to be repaid. Most grants are based on financial need.

- Pell Grant
- Supplemental Educational Opportunity Grant
- State Grants (Florida residents see CLAST information)
- Florida Tuition Voucher (see CLAST information)
- Florida Academic Scholars Fund (see CLAST information)

LOANS

Loans are a form of financial aid which *must* be repaid at low interest. Long-term loans are usually paid back after the student graduates. Short-term loans are normally for emergencies only and are usually paid back within 30-60 calendar days.

LONG-TERM LOANS

- Perkins Loan (formerly National Direct Student Loan)
- Guaranteed Student Loans
- PLUS Loan (Parents Loan for Undergraduate Students)
- ERAU Repayable Educational Assistance Loan (REAL)

SHORT-TERM LOANS
Students apply at the Cashier's Office.

- Emergency Loan Fund — established by the Ila Brignall Memorial and Strickler Loan Fund.
- Walter Lux Memorial Loan

EMPLOYMENT

Employment opportunities exist for students meeting certain eligibility requirements to work part time either on or off campus to help pay for their educational costs. Students interested in employment are requested to contact the Student Employment Office after registration and class scheduling are completed.

- College Work-Study Program
- Embry-Riddle Student Employment Program
- Resident Advisor Program

SCHOLARSHIPS

Scholarships are awarded to students according to their academic achievement and high probability of success in an aviation career. Students applying for a scholarship must complete a Scholarship Application available, upon request, from the Financial Aid Office during the month of January. Scholarships are extremely limited. Some scholarships are available only at certain campuses. For further information about scholarships, contact the Financial Aid Office of the campus you plan to attend.

OTHER FINANCIAL ASSISTANCE PROGRAMS

- AIR FORCE ROTC SCHOLARSHIPS
  Air Force ROTC (AFROTC) offers yearly scholarships covering a student's college education for two, two and one-half, three, three and one-half, 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 $2000).

  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.

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 and one-half and three-year scholarships, while sophomores compete for two and one-half and two-year scholarships. Students apply for these scholarships through the AFROTC Department at Embry-Riddle.

Junior college transfers can also compete for a two-year scholarship. 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 tuition scholarships will be provided with free room and board four-year scholarshps from ERAU. For details on how to apply, contact your campus ROTC representative.

- ARMY ROTC SCHOLARSHIPS

The Army Reserve Officer Training Corps offers scholarships that provide full tuition, flight fees (if required for the degree), lab fees and an allowance for textbooks and supplies to qualified ROTC students. Scholarship students also receive $100 (tax free) per month while in school.

The Army ROTC program is offered in both a four-year and two-year option.

Applications for two-year, three-year and four-year scholarships are available at the Army ROTC Department.

General requirements to apply for an Army ROTC scholarship include:

— Be enrolled full time in any bachelors' degree program.
— Be a United States citizen.
— Have a SAT score of 850 or higher (ACT 17 or higher).
— Have a minimum college GPA of 2.0.

Applications for one, two, three, and four-year scholarships are available in the spring semester at the Army ROTC Department. For information concerning eligibility and application, see the Reserve Officer Training Programs section in the Guide to the Curriculum chapter of this catalog.

Students who receive four-year ROTC tuition scholarships will be provided with free room and board four-year scholarships from ERAU. For details on how to apply, contact your campus ROTC representative.

- MARINE CORPS COMMISSIONING

The Marine Corps offers three training programs: Platoon Leaders Class Program (PLC), either a six or ten-week session; Aviation Officer Candidate Program, ten weeks; and Unrestricted Officer Candidate Program, ten-week session. Applicants for either the PLC, AOC or OC Program are paid during the training. The six-week training sessions pay approximately $1,200 each and do not incur any active duty

obligation. Pay during the ten-week sessions is approximately $2,000 and does not incur any active duty obligation.

Please note that additional information concerning Reserve Officer Training Programs and Military Training Programs is in the Reserve Officer Training Programs section in the Guide to the Curriculum chapter.

- 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 continue to demonstrate the ability and desire to become outstanding flight instructors.

While not every Flight Leadership student is selected for a fellowship, those who are serve as Assistant 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, yet rewarding. Interested students should contact the Chairman of the Aeronautics Department at the Prescott campus for additional information.

- AVIATION MAINTENANCE FELLOWSHIP PROGRAM

The Maintenance Fellowship Program provides a 75 to 100 percent tuition waiver per semester to selected students, with Airframe and Powerplant licenses, who are selected to serve as Assistant Maintenance Instructors. The fellowship students must agree to a maintenance instructional load of 300 hours per semester (20 hours per week for 15 or 16 weeks). Maintenance Fellows who exceed the normal load during the semester will be paid for the extra hours in accordance with the currently established hourly rate. Students for the Maintenance Fellowship Program will be selected from those who have participated in the Leadership Program. Maintenance Fellows must maintain continuous enrollment. Successful completion of the Leadership Program is not an automatic guarantee of selection for the Maintenance Fellowship Program. For additional information, contact the Dean of the College of Aviation Technology.

- TUITION PAYMENT PLANS

Several companies offer monthly installment tuition payment plans to assist parents and students in paying their educational expenses. For further information contact the Financial Aid Office.

University Campuses

DAYTONA BEACH CAMPUS

The eastern campus of the University is located in one of the prime recreational resort areas in the southeastern United States. The mild climate offers ten months of summer and two months of fall/spring weather. This provides an outstanding environment in which to study, work, and fly. During breaks in the rigorous demands of mastering the high technology studies at Embry-Riddle Aeronautical University, the world's most famous Atlantic Ocean beach is a short distance from the main entrance to the campus. In addition, the high technology industry located in Daytona Beach and in the area around Orlando provides an outstanding support base for a Space Age Aeronautical University. The campus reflects the pride we feel towards our heritage in aviation and the world airway system. We plan to serve an important role in helping mankind move into the new frontier: the usage and exploration of outer space.

The campus offers unique educational experiences to meet the challenges with a keen eye on preparing graduates for the 21st century. ERAU is a pioneer in its recognition of aviation and flying as activities befitting the status of a learned profession. As such, we educate people to be productive citizens, sensitive human beings, and skilled practitioners. This philosophy is reflected in the content of all the degree programs. The aeronautical science program is very popular, and many of our graduates are skilled aviators who go on to serve the needs of our national airway system. Our undergraduate aeronautical engineering program gets high praise throughout the aerospace/military/industrial complex. In addition, it ranks in the upper ten percent by size in the United States. ERAU is a major source of aeronautical engineers for both industry and the military. If you wish to fly military aircraft, note that our Air Force ROTC cadet program is not only the largest in the United States but also is second only to the Air Force Academy for numbers of assigned pilot slots. If helicopters are your interest, our fast growing Army ROTC cadet corps will get your attention. If your interest is in maintaining aircraft or spacecraft, the maintenance technology program will serve your needs. The fact that you will be served by a world-ranked aviation maintenance technology program should also please you. Many students like the exciting environment of a technological university campus but do not want to be engineers, mechanics, or pilots. For these students we offer aviation-related programs in business administration, computer science, avionics, and computer information systems. All of our programs at the associate, bachelor's, or master's level will prepare you for a career in aviation and a great deal more.

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 dispatch headquarters. The Samuel Goldman Aviation Maintenance Technology Center houses instruction in maintenance and repair of fixed-wing and helicopter airframes, powerplants (reciprocating and turbine), and avion-

ics. 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 provide students with an exceptional means for determining how well the engine they have just repaired and assembled performs in a "live" situation. The advanced reciprocating engine lab (FAA Certified Repair Station 708-55) overhauls engines for the ERAU fleet. The Engineering Science Laboratories building is designed for the Aeronautical Engineering and Aircraft Engineering Technology programs. Laboratories in engineering offer subsonic and supersonic wind tunnels and a smoke tunnel which enables students to visualize complex airflow patterns and to measure velocity, pressure distributions, and aerodynamic forces on airfoil and airplane models. This building also includes structures, materials, aircraft design and composite materials laboratories, as well as the latest in computer technology including the CAD-CAM system. The Lindbergh Center provides modern classroom facilities for students pursuing various degree programs and is home to the reading, chemistry, and physics laboratories. The Computer Science complex provides excellent "hands-on" experience through computer labs. The Jack R. Hunt Memorial Library offers a wide variety of information to support the research and classroom activities. In addition to an outstanding aviation collection, many other curriculum support materials are available in a variety of formats. The University Center contains a full-service cafeteria, a fully equipped bookstore, mailroom, cashier, Career Planning and Placement Center, Cooperative Education, Student Employment, the Counseling Center, Health Services, Flight Deck grill and meeting rooms. An atmosphere of informal relaxation characterizes the University Center, where there are many opportunities to exchange viewpoints with other students and to meet students from over 70 different countries. The Recreation Area complex includes intramural fields, swimming pool, racquetball courts and a Nautilus fitness center operated by the Student Government Association. Both coeducational on-campus and off-campus accommodations are available to students who prefer to reside in university-managed housing. The Off-Campus Housing Office maintains a referral service of units in the Daytona Beach area for both married and single students.

The University Administration Building is located at the main entrance to the campus fronting on Clyde Morris Boulevard. The offices of the President and his staff are located on the second floor. The first floor houses the Office of Admissions, the Personnel Office, University Accounting Office, Student Financial Services, Dean of Students, Financial Aid, and Office of Records and Registration.

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, 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 reason that our programs enjoy both a national and an international reputation for excellence. All of the college's faculty are the holders of impressive industry 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, technology, business, and computer scienc . 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 English 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 Student Activities Office is the central location for the programming of campus events. Valuable educational and social experiences may be obtained through active participation in campus activities and organizations. This involvement complements the student's education and contributes to the overall development of the student. This office is the registration point for chartered clubs and organizations. Students interested in joining or establishing a club should contact the staff for information.

There are approximately sixty chartered clubs on the Daytona Beach Campus. The types of organizations include fraternities, a sorority, sports clubs, special interest groups, honorary societies, military organizations and religious clubs. The center for cocurricular programming is the University Center. Activities provided in this building include concerts, dances, movies, lectures, and social events. The University Center houses the Student Activities Office, Student Government Association, AVION Newspaper, PHOENIX Yearbook, Mailroom, Bookstore, HAIRPORT, Health Services, Counseling Center, Cashier's Office, Career Center, Cafeteria, Entertainment Committee, Information/Communication Center, Common Purpose Room, and the Faculty/Staff Lounge.

STUDENT GOVERNMENT ASSOCIATION

The Student Government Association (S.G.A.) serves the individual students and represents the student body to the ERAU 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 Administrative Council (S.A.C.) 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.

RECREATION/ATHLETICS

The Department of Recreation at the Daytona Beach Campus provides a wide variety of intramural sports and contests throughout the year. Leagues and tournaments emphasize mental, social, and physical well being. Activities include tennis, volleyball, softball, floor hockey, flag football, and other sports upon request. The campus has a beautiful swimming pool with diving and swim competition facilities and a Universal Gym for weight lifting and body building. A recently added Nautilus Fitness Center complements this facility. The jogging and exercise trail meanders for 1.3 miles through the campus

with 20 exercise stations along its route. An outdoor basketball court, tennis courts, a softball field, and an indoor racquetball complex round out the recreational facilities.

The Director of Recreation works closely with clubs and organizations to assist with planning and implementing sports programs and activities. Currently, the golf and baseball clubs participate on the intercollegiate level with other clubs, colleges, and universities. The Recreation Office provides most of the equipment needed for sports activities; however, students are encouraged to bring basic sporting equipment with them.

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 PHYSICALLY HANDICAPPED STUDENTS

Any student entering a university for the first time must learn to adjust to the new environment. For physically handicapped students, the adjustment is not always an easy one. They must learn to cope on a daily basis with inclement weather and many other obstacles which they may never have had to face alone. This section describes several services which the Daytona Beach Campus offers to the handicapped student. Recognizing the need for services for the handicapped student, the Director of Health Services has been appointed as the Coordinator for Handicapped Students. The new student is acquainted with facilities and services for the handicapped student through one-to-one contact with the staff of the Department of Admissions, which arranges early registration. Eligibility to take advantage of this is contingent on proper forms being filed with this office. Staff members are present at early registration to assist students through the process. If physical limitations prevent a student being tested in a group situation, individual arrangements may be made. These arrangements are available for all testing, including proficiency, in-class and take home tests.

HEALTH SERVICES

The Health Services staff is committed to providing students the education and guidance necessary to achieve and maintain good health by preventive care. Available services include assessment and

treatment of minor illnesses and injuries, individual health counseling, medical grounding of flight students, and small group educational programming. Reference materials and audiovisual learning aids complement the personal aspects of the preventive approach to student health. Good health is the responsibility of the individual student and insures a productive college career. Another responsibility of the student is the Medical Report form provided by the Admissions Office (an FAA Medical WILL NOT meet this requirement). This Medical Report form provides authority from the parents, sponsors, or student, if a legal entity, to the University administration for emergency treatment as directed by competent medical authority. It is agreed that no legal action will be brought against the University or its officers when such authorization is granted. Those who plan to enroll in a flight program are advised to obtain, prior to arrival, a Class I or Class II Medical Certificate from a physician certified as an Aviation Medical Examiner. Students must possess this certificate for all flight courses.

Health insurance is not mandatory for students but is strongly recommended. At the Daytona Beach Campus a student group insurance program is available. Rates are determined annually; premiums are non-refundable. Information is available at the Health Services Office. Local hospitals are close to the Daytona Beach Campus, and referral services are provided by qualified University Health Services staff.

THE COUNSELING CENTER

The Counseling Center staff assists students in pursuing successful college careers through individual counseling and educational programming. Professionals trained in counseling and guidance help students with personal, social, and educational concerns or problems. Areas of concern may include homesickness, social relationships, illness or death in the family, poor academic performance, study skills, stress reduction, time management, and basic adjustment to university life. For those students whose concerns are outside the scope of the center, referral services are available. Staff members will assist students in identifying University and/or community resources to meet their individual needs. Additionally, the center maintains a variety of self-help materials. Books, pamphlets, and audio-cassette tapes are avaiable to students on a loan basis.

The Counseling Center coordinates student and family orientation programs. The goal of student orientation is to assist students in making smooth transitions into the ERAU community. Through interactions among new students, upperclassmen, faculty, and staff, information and guidance are combined with friendship and entertainment. Family orientation provides parents and spouses of new students an introduction to the campus and student life. Presentations by faculty, staff and student 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 two off-campus apartment complexes which, combined, house over 1100 students. Each residence hall and apartment complex is coeducational and is operated by a live-in staff of professionals and student assistants. 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, which comprises 75 percent of the student body at the Daytona Beach campus. 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. NOTE: The office cannot reserve housing for individuals or give out listings over the telephone. A Discount Motel Program is available and is designed to offer students a comfortable and economical place to stay while looking for permanent accommodations. The program is available at the beginning of the spring and fall semesters. The beginning and ending dates for this program and the rates vary by season. The office also provides information concerning tenant/landlord rights, advice on general housing problems, information on Small Claims Court, and referrals to local agencies when appropriate. In addition to these services, the office also provides the Apartment Complex Guide, sample leases, guide to area realtors, city maps, bus schedules, and consumer information, all of which are available upon request.

FOREIGN STUDENT SERVICES

The Office of Foreign 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 documentation required by

the students' governments or sponsors, the institution or the U.S. government, including immigration liaison. In addition, the office coordinates a wide variety of campus and community programs which strive to facilitate an interchange of cultures and enrich the students' sojourn 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, student placement services, and industry relations. The basic goal of the staff is to assist students in making career choices, preparing for their careers and obtaining career related employment in the aviation and aerospace industries through cooperative education, career counseling, and placement services. The Career Center is dedicated to helping students effectively use their education and training by assisting in the employer/employee selection process. Every student is encouraged to become knowledgeable of and to use all of the services available through the Career Center.

JACK R. HUNT MEMORIAL LIBRARY

The Jack R. Hunt Memorial Library is a 20,000-square-foot facility with a seating capacity of 270. The facility includes individual study carrels as well as group seating. The collection consists of books, periodicals, documents, newspapers, and media programs, and a historical aviation collection which includes 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 rapid interlibrary loans. DIALOG service provides access to more than 200 databases that list documents, reports, conference proceedings, journal articles, doctoral dissertations, and many other kinds of information.

PRESCOTT CAMPUS

The western campus of ERAU covers some 510 acres and is located in Prescott, Arizona, 100 miles north of Phoenix. Here, in one of the most picturesque portions of the Grand Canyon State, a mile above sea level, students can pursue an education in an environment which is dedicated to excellence in aviation education and is surrounded by unsurpassed beauty.

With modern classrooms, residence halls and the latest in equipment and facilities, Prescott provides the highest caliber programs. In addition to the Aeronautical Science degree program, Prescott offers baccalaureate degrees in Aeronautical Studies, Aviation Business Administration, Professional Aeronautics, Aeronautical Engineering, Electrical Engineering and Computer Science.

Flight instruction is given in the ERAU Prescott fleet of Cessna single engine trainers and Piper Seminole multi-engine aircraft. All of these contemporary aircraft are equipped with the most technically advanced equipment. Flight operations are conducted from the Flight Training Center at the Earnest A. Love Field just minutes from the campus. In addition, Prescott provides single and multi-engine aircraft simulators to enhance the students' ability to perfect their flying technique. Prescott's pride is its Flight Team, which competes in regional and national air meets sponsored by the National Intercollegiate Flying Association.

On the Prescott campus, students learn the aviation business from professionals in the field. The majority of the faculty have a solid aviation background in addition to superb academic qualifications. On the ground and in the air, students benefit from the knowledge of former airline pilots, Navy and Air Force aviators, FAA inspectors, meteorologists and a host of other aviation professionals.

The smaller size of the student body at Prescott benefits both students and faculty. With a lower student-teacher ratio, students benefit from indvidual attention in the classroom and on the flight line. Facilities to support the classroom instruction include a newly expanded, modern 25,000-volume library; an audio visual center with a wide range of sophisticated electronic learning aids; subsonic and supersonic wind tunnels; fully equipped graphics, composite materials, aircraft design, and several other laboratories; and the latest in computer hardware and software, which have become an integral part of the majority of the programs offered on this campus.

Another outstanding facility is the campus auditorium. Used for seminars, workshops, and many other events, this 375-seat facility has superb acoustics, and is equipped with two concert grand pianos, theatrical lighting, and complete audio visual systems.

Air Force and Army ROTC are available to all qualified men and women. ROTC studies prepare students for active duty assignments as commissioned officers in their respective services.

CAMPUS STUDENT SERVICES AND ACTIVITIES

The Student Activities Department, in coordination with the Student Association, organizes a wide range of activities including dances, barbecues, concerts, movies and special events. The Student Activities Department sponsors intramural atheletic competition in many popular team, dual and individual sports, as well as intercollegiate club activities in soccer and rugby. Campus recreational facilities include a gymnasium, weight room, swimming pool, racquetball courts, jogging trails and a game room.

Because Prescott is located in one of the finest recreational areas in the Southwest, students, faculty and staff enjoy an unlimited variety of outdoor recreational opportunities. Hiking, skiing, boating, rock climbing, lake fishing, and river rafting, along with the Grand Canyon, Indian country, ghost towns and Arizona deserts are within a two-hour drive. Within six hours' driving time, one can enjoy the beaches, deep-sea fishing and other attractions of southern California; the international flavor of old Mexico with its fiestas, bullfights, shopping bargains; or Broadway shows and big name entertainment at Las Vegas.

The city of Prescott also has much to offer students. Recently named one of the "10 Most Livable Cities in America" by a national news magazine, it boasts an old west tradition going back to the world's oldest rodeo held on the 4th of July. Due to its mile-high location, and mild four-season climate (it enjoys 350 flying days a year), Prescott has become a popular retirement and tourist community. A city of about 25,000, with an equal number of people living in a thirty-mile radius, Prescott has one of the most complete recreational programs in the Southwest.

With its beautiful natural surroundings, complemented by two golf courses, sixteen tennis courts, a half dozen fishing lakes, and many other recreational opportunities, Prescott offers something for everyone. But most of all, it offers the finest aviation education in the world.

UNIVERSITY-MANAGED HOUSING

University Housing provides and operates both on-campus and off-campus residential facilities for full-time, unmarried students. Since applications typically exceed available accommodations (except during the summer terms), however, students are urged to apply as early as possible. Priority for room reservations, in the case of new students, is based on the date of receipt of the housing contract and the partial semester prepayment, provided that the student has been confirmed for admission to the University and the tuition deposit has been paid. ERAU reserves the right to allocate housing in its discretion.

The Prescott Campus provides on-campus accomodations for 460 single students in five completely furnished residence halls. Features of the residence halls include air conditioning, *hookups* for private

telephones and cable television, coin operated laundry and vending facilities, and a barbecue and picnic area. The residence halls are coeducational and are supervised by trained University personnel.

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.

OFF-CAMPUS HOUSING

The Off-Campus Housing Office strives to meet the needs of the commuter student population, which comprises 60 percent on the Prescott Campus. In an effort to serve the needs of students residing in off-campus housing, the following services are available.

The Off-Campus Housing Office assists students who are looking for off-campus accommodations in Prescott or the nearby community. The University Housing staff maintains listings of current rentals and students seeking roommates. Maps, brochures, and other information about living in Prescott are available at the Off-Campus Housing Office.

The office also provides information concerning tenant/landlord rights, advice on general housing problems, information on small claims court, and referrals to local agencies when appropriate.

In addition to those services, the office also provides the Commuter Student Information Manual, Apartment Complex Guide, sample leases, guide to area realtors, city maps, bus schedules, and consumer and legal information.

For further information regarding University Housing, please consult the Housing Services brochure, which is available from the Admissions Office.

MAIL SERVICE

Prior to a student's arrival, all personal mail and baggage should be addressed as follows:

NAME
Embry-Riddle Aeronautical University
3200 N. Willow Creek Road
Prescott, Arizona 86301

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 mail room box which they are required to check on a daily basis, not only for personal mail but also for official University notices. The correct address should then be as follows:

NAME
ERAU BOX #——
3200 N. Willow Creek Road
Prescott, Arizona 86301

DINING SERVICE

The Food Service Division operates with the philosophy of caring about students. They provide students with tasteful, well-balanced, nutritious meals at reasonable prices. Students can select from a number of meal plans, pay cash, or use discount cards for their meals from the dining service.

At Prescott, all on-campus students subscribe to a meal plan. Off-Campus students wishing to obtain a meal plan may contact the Housing Office.

INTERNATIONAL CAMPUS

For more than fifteen 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 eighty and, together with the Center for Independent Studies, make up the International Campus 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 International Campus. 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 the 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 International Campus terms and classes necessitates that adjustments be made to some procedures and the application of some regulations. The adjustments which apply to International Campus students only are described later in this section.

The degree programs offered on the International Campus 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 International Campus network of resident centers has stretched from western Europe to Hawaii, with more than forty 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, dis-

patchers, flight attendants and engineers, avionics specialists, inspectors, and managers. In addition to the servicemembers 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 benefits 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.

The International Campus 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 campus Department of Academic Standards, which provides course outlines, identifies textbooks, and obtains and disseminates instructional support materials. Students are able to transfer from one center to another, or to one of the residential campuses, confident that their previous academic work will integrate smoothly 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 Vice Chancellor for Academic Affairs.

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 International Campus student graduates with a unique and valuable combination of academic and experiential credentials.

CENTER FOR 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 Center for 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 Center:

Associate in Science in Professional Aeronautics
Bachelor of Science in Professional Aeronautics
Bachelor of Science in Aviation Business Administration (Capstone)

Degree requirements may be completed through a combination of independent study, completion of general education courses at local colleges or universities, and completion of standardized national testing programs such as CLEP or DANTES. The requirements for a degree may be completed through the Center for Independent Studies without taking courses in residence at an ERAU campus or resident center.

Independent study versions of many of the aviation oriented and other ERAU courses are offered through the center. Each course includes the textbook(s), a specially developed study guide, and a set of audio/video cassette tapes. A term of twelve weeks is allowed to complete a course. A comprehensive, proctored final examination is required at the end of each course. If a student is ready, the final examination can be taken and the course can be completed before the end of the twelve-week period.

Pursuit of a degree through the Center for 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 uncertificated, 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 Center for 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 International Campus Application for Admission form.
2. Application fee of $15.
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 ERAU from all postsecondary institutions previously attended.
5. Official CLEP or DANTES test result reports sent directly to ERAU from the testing agency. With the prior approval of a resident center director, International Campus students may take CLEP or DANTES tests after being formally admitted to the University.
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 should contact the nearest resident center or the International Campus Director of Records and Registration for information concerning additional requirements.

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 sixty-day period following the date of the letter of acceptance. The official evaluation will not be changed after the sixty-day period expires.

The complete admission record of applicants accepted for admission who do not enroll in an ERAU 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 interupt their enrollment for more than two calendar years, must reapply for readmission. Readmission will be in accordance with the catalog in effect at the time of readmission.

CONTRACT FOR DEGREE

The Contract for Degree is an alternative designed for active duty military personnel and others who may be involuntarily relocated to areas not served by Embry-Riddle. Applicants for a Contract for Degree must be, or have been, enrolled in ERAU courses at an International Campus resident center. Once approved for a Contract for Degree, students can continue to work toward a degree from ERAU by taking courses at regionally accredited colleges or universities in their local area. All courses must be approved in advance of enrollment by the Director of Records and Registration. Contract for Degree students must pay an annual contract maintenance fee of $25 and complete a minimum of the equivalent of twelve semester credit hours in each year that the contract is in effect. The requirement that the student must be enrolled at the University during the last term preceding graduation is waived for students participating in a valid Contract for Degree.

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 International Campus students may choose to take advantage of these opportunities. Center directors and the Director of Records and Registration are ready to assist with the preparation of applications 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 International Campus students only and supplements the regulations and procedures described in the similarly titled sections in the general body of the catalog.

CLASSIFICATION OF STUDENTS

The length of terms vary at International Campus locations. Therefore, the following student classifications and credit hour load limitations apply:

Term Length: 6 to 10 Weeks
Full-time student enrollment — minimum of 6 credit hours
Maximum student enrollment — 12 credit hours

Term Length: 12 Weeks
Full-time student enrollment — minimum of 8 credit hours
Maximum student enrollment — 15 credit hours

GRADING SYSTEM

A grade of I (incomplete), must be redeemed no later than the end of the second term following the term in which the course was taken.

Students who wish to appeal a final course grade should first discuss the matter with the instructor. If the matter remains unresolved, students should 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

International Campus students must process all requests to change a registration through the appropriate resident center or the Center for Independent Studies. The "Add" period at International Campus 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 International Campus 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 Center for Independent Studies at the end of every term.

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 twelve 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 twelve consecutive credit hours of course work will be named to the Honor Roll.

Once students have been recognized by being named to the Dean's List or Honor Roll, a minimum additional block of twelve ERAU credit hours must be completed before they are again eligible for recognition.

WARNING, PROBATION, SUSPENSION, AND DISMISSAL

An International Campus student whose cumulative GPA falls below 2.0 for twelve consecutive credit hours of course work will be

placed on academic warning. If the cumulative GPA remains below 2.0 after an additional twelve credit hours of academic work, the student will be placed on probation. A student whose cumulative GPA remains below 2.0 for a third consecutive period of twelve credit hours, or whose cumulative GPA falls below 1.0 for any consecutive twelve credit hours of course work, will be subject to suspension from the University.

The decision to suspend or place a student who is subject to suspension or probation is made by the Vice Chancellor for Academic Affairs based upon the circumstances of individual cases.

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

International Campus students are required to complete a minimum of twelve ERAU credits for an associate degree and thirty ERAU credits for a bachelor's degree. However, they are exempted from the requirement that these credits be the last credits earned to complete the degree.

International Campus students are required to be enrolled in ERAU 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 varies to some extent from one location to another.

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

International Campus 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 concerning any of the following topics:

1. Course Equivalency Examinations
2. Academic Advising
3. Changing Degree Programs or Catalogs
4. Financial Assistance
5. Veterans Educational Benefits
6. Withdrawal from the University (withdrawal from all courses after the withdrawal period ends but prior to final examinations)
7. Readmission Procedure after Suspension or Dismissal

1. For general academic and admission information:

Director, Records and Registration
International Campus
Embry-Riddle Aeronautical University
950 Williamson Boulevard
Daytona Beach, Florida 32014

2. For information about resident centers in the United States:

Dean, United States Division
International Campus
Embry-Riddle Aeronautical University
950 Williamson Boulevard
Daytona Beach, Florida 32014

3. For information about resident centers in Florida:

Director of ERAU Programs, South Florida
Embry-Riddle Aeronautical University
Executive Airport Business Center
1895 West Commercial Boulevard, Suite 140
Fort Lauderdale, Florida 33309

4. For information about resident centers in Europe:

Dean, European Division
HQ USAFE/DPPEA
Attention: Embry-Riddle Aeronautical University
APO, New York 09633-6441

5. For information about independent study, contact the director of the nearest resident center or write:

Director, Center for Independent Studies

International Campus
Embry-Riddle Aeronautical University
Regional Airport
Daytona Beach, Florida 32014

INTERNATIONAL CAMPUS RESIDENT CENTERS

Air Force Locations

United States:
Andrews Air Force Base, Maryland
Castle Air Force Base, California
Davis-Monthan Air Force Base, Arizona
Elmendorf Air Force Base, Alaska
Grand Forks Air Force Base, North Dakota
Griffiss Air Force Base, New York
Hickam Air Force Base, Hawaii
Holloman Air Force Base, New Mexico
Homestead Air Force Base, Florida
Keesler Air Force Base, Mississippi
Kirtland Air Force Base, New Mexico
Langley Air Force Base, Virginia
Loring Air Force Base, Maine
Luke Air Force Base, Arizona
March Air Force Base, California
McClellan Air Force Base, California
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
Seymour-Johnson Air Force Base, North Carolina
Williams Air Force Base, Arizona
Europe:
England
West Germany
Netherlands
Spain

Army Locations

United States:
Fort Bragg, North Carolina
Fort Campbell, Kentucky
Fort Eustis, Virginia
Fort Shafter, Hawaii
Schofield Barracks, Hawaii
Hunter Army Air Field, Georgia
Fort Knox, Kentucky

Fort Lewis, Washington
Fort Ord, California
Fort Rucker, Alabama
Europe:
West Germany

Navy Locations

United States:
Naval Air Station Alameda, California
Naval Air Station Corpus Christi, Texas
Naval Air Station Lemoore, California
Naval Air Station Memphis, Tennessee
Naval Air Station Meridian, Mississippi
Naval Air Station Moffett Field, California
Naval Air Station Norfolk, Virginia
Naval Air Station Patuxent River, Maryland
Naval Air Station Whidbey Island, Washington
Europe:
Italy

Marine Corps Locations

United States:
Kanehoe Marine Corps Air Station, Hawaii

Civilian Locations

United States:
Central and South Florida
FAA Technical Center, Atlantic City, New Jersey

Faculty And Administration

The Administration and Faculty of Embry-Riddle are listed below. An asterisk (*) denotes the International Campus; a plus (+) denotes the Prescott Campus; a cross (†) denotes the Executive Offices and all others are assigned to the Daytona Beach Campus.

OFFICERS OF THE UNIVERSITY

Tallman, Kenneth L. †
President. B.S., U.S. Military Academy; M.S., George Washington University; C-ASMEL-I.

Ledewitz, Jeffery H.†
Executive Vice President, Administration. B.A., Stetson University; M.A., George Washington University; Ed.D., Oklahoma State University.

Williams, John W., Jr. †
Executive Vice President, Academics. B.S. and M.A., Appalachian State University; Ph.D., Mississippi State University; C-ASMEL-I.

Harmon, William J.†
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Williams, Charles S.*
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Thompson, Dianne R.†
Corporate Secretary/Treasurer. A.A., Daytona Beach Community College; B.S., Embry-Riddle Aeronautical University.

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Zimmerman, Bettye J. *
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Stockton, Wendell R.*
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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
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