

EMBRY-RIDDLE AERONAUTICAL INSTITUTE

BULLETIN
1966-67



DAYTONA BEACH, FLORIDA

ENGINEERING • FLIGHT • MANAGEMENT • MAINTENANCE



*The World's Most Famous Aeronautical School
At The
World's Most Famous Beach*



"THE UNIVERSITY OF THE AIR"



Embry-Riddle Aeronautical Institute is located at the Daytona Beach Municipal Airport — in the center of a complex metropolitan area. Daytona Beach is widely known as the nation's vacation capital. Twenty miles of hard-packed sand beach is publicly owned, offering unequalled opportunities for scenic drives, delightful swimming, challenging surfing or simply basking in the sun. Fresh and salt water fishing here is unequalled. Since the start of automobile racing on its wide beach, the area has become renowned as the "World's Most Famous Beach." The area has fine churches and schools, modern hospitals and splendid parks. It is within easy driving distance of Cape Kennedy, Silver Springs, Cypress Gardens, Marineland and many other celebrated attractions. The city is easily accessible from any point in the nation by bus, train or plane.



*Jack R. Hunt, Harmon Trophy Award
for Aeronaut, 1957; Board of Trustees,
Aerospace Education Foundation.*

A Message to Young Men and Women:

Education — especially aviation education — is a serious business. If you believe that you want to become a part of the rapidly growing and exciting field of aviation, you must be prepared to devote your time and your energy to acquiring the knowledge necessary for this exacting career.

Now, in the "air age" there is a growing list of demands for pilots, engineers, mechanics, administrators, and other related professional jobs. Young men and women with education and imagination will be needed to fill these responsible positions in a growing industry.

There is no short cut to success . . . an education is a good beginning. We at Embry-Riddle are dedicated to the concept that youth must be served . . . provided youth will serve itself.

There is a tremendous challenge in aviation . . . are you ready to accept that challenge?

Sincerely,

Jack R. Hunt
President

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EMBRY-RIDDLE AERONAUTICAL INSTITUTE
CALENDAR
1966-67

	Registration and Placement Exams	Start of Classes	Classes End
1st Trimester	Sept. 1 and 2	Sept. 6	Dec. 16
2nd Trimester	Jan. 3 and 4	Jan. 5	April 20
3rd Trimester	May 1 and 2	May 4	Aug. 17

SCHOOL HOLIDAYS

Memorial Day
Independence Day

Labor Day
Thanksgiving Day

Embry-Riddle Aeronautical Institute operates on a plan whereby the school calendar is divided into three 15-week trimesters each year. Classes are in session five and one half days per week, Monday through Saturday noon.

BOARD OF TRUSTEES

The Board of Trustees is composed of national, state and local members of prominence devoted to the education of young people in aviation skills. These members serve without reimbursement and give freely of their time in establishing broad policy and providing guidance to the administration in the furtherance of the educational goals and objectives of the Institute.



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INSTITUTE ADMINISTRATION

Marshall K. Powers	Dean of Academics A.B., Marietta College; M.A., University of Colorado; Ph.D., University of Florida
Eric Ainsworth	Associate for Public Relations
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Herbert V. Mansfield	Dean of Students B.A., M.A., Stetson University
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Heyward W. Sauls, Jr.	Acting Director of Library Services B.A., Furman University; M.A.T., Duke University
James F. Saunders	Acting Dean, College of Engineering A.A., Montgomery Jr. College; B.S., Virginia Polytechnic Institute; M.S., Rensselaer Polytechnic Institute
Joseph H. Smith	Director of Aircraft Maintenance Division A & P Mechanic, D.M.E., I.A., Private Pilot
Edward P. Yackel	Associate Dean of Academics B.A., Colgate University; M.A., Syracuse University

FACULTY

Albright, Clifton F.	Instructor, Aeronautical Science; ASMEL: Instructor, airplane and instrument.
Beck, Charles E.	Instructor, Mathematics. B.S., Marquette University; M.A.T., Duke University.
Beekman, James G.	Instructor, Aeronautical Science; ASMEL: Instructor, airplane and instrument.
Blaydes, Richard T.	Instructor, Aeronautical Science; ASEL: Instructor, airplane and instrument.
Bloodworth, William H.	Instructor, Aeronautical Science; ASMEL: Instructor, airplane and instrument.
Bolton, Willard J.	Instructor, Maintenance Technology. A & P Mechanic, DME.
Bowden, Milburn L.	Instructor, Aeronautical Science; ASMEL: Instructor, airplane.
Brown, Carl A.	Assistant professor, Aeronautical Science; Dean, School of Aviation Science; ASMEL: Instrument.
Campbell, Roger	Assistant Professor, Social Sciences. A.B. and B.S. Florida Southern; M.A. Stetson University.
Caswell, Charles H.	Instructor, Maintenance Technology. A & P Mechanic. Chief A & P instructor.
Cherry, Ivan R.	Instructor, Maintenance Technology. A & P Mechanic.
Clemson, Joseph R.	Instructor, Aeronautical Science. ASMEL: Instructor, airplane and instrument.

Cornwell, Odbert	Instructor, Aeronautical Engineering. B.A., West Virginia University; MM, Pittsburgh Institute of Aeronautics.
Cramton, Charles	Instructor, Maintenance Technology. A & P Mechanic.
Danforth, John	Assistant Professor, Engineering Technology. M.E., Rensselaer Polytechnic Institute; M.S., Florida State University.
Dean, Ben	Instructor, Maintenance Technology. A & P Mechanic.
DeLagarde, Richard	Instructor, Aeronautical Science and Director of Professional Pilot Training. ASMET: Instructor, airplane and instrument.
Dewey, David	Assistant Professor, Physical Education. B.S., Case Institute of Technology; M.S., Springfield College.
Donnahoo, Beth	Instructor, Mathematics. A.B., Randolph-Macon Womens' College.
*Dunn, Mary	Assistant Professor, Mathematics. B.A., Vanderbilt; M.S., Stetson University.
Ellsworth, Marvin E.	Instructor, Aeronautical Science. ASMET: Instructor, Airplane and instrument.
Fentress, Herman D.	Instructor, Maintenance Technology. A & P Mechanic.
Fleener, Edsel S.	Instructor, Maintenance Technology. A & P Mechanic.
*Foreman, Stephen. J.	Instructor, Aeronautical Science; ASEL: Instructor, airplane.
Green, Walter M.	Instructor, Aeronautical Science; ASMET, SES: Instructor, airplane and instrument.
Grippo, James F.	Instructor, Aeronautical Science; ASEL: Instructor, airplane.

Gumienik, Edward	Instructor, Aeronautical Science; ASEL: Instructor, airplane.
Hirmanpour, Iraj	Assistant Professor, Engineering Science and Mathematics. B.S. and M.S., Louisiana Polytechnic Institute.
Hurst, John W.	Assistant Professor, Mathematics. B.S., University of Kansas; M.S., University of South Carolina.
*Hurlbert, Alfred	Assistant Professor, Social Sciences. A.B. and M.A., West Virginia University; D.O., Kirksville College.
Jencks, Lawrence C.	Instructor, Aeronautical Science; ASEL: Instructor, airplane.
Johnson, Vern K.	Instructor, Aeronautical Science; ASEL: Instructor, airplane and instrument.
*Kennedy, James E.	Instructor, Management Science. B.S.C., Creighton University.
Lamoreaux, Charles R.	Instructor, Aeronautical Science; ASMEL: Instructor, airplane.
Leavitt, Cyril E.	Instructor, Aeronautical Science; ASMEL, SES: Instructor, airplane.
Lehmann, Karl E.	Instructor, Maintenance Technology. A & P Mechanic, G.I., D.M.E.
Lowery, Reginald	Instructor, Engineering Technology. B.S., Virginia Polytechnic Institute.
López, José A.	Instructor, Economics. B. A., Belen School, Havana, Cuba; M.A., University of Miami, LLD, University of Havana.
Madison, Charles	Instructor, Aeronautical Science. Advanced and Instrument Ground Instructor.
Menelski, Leigh F.	Instructor, Aeronautical Science; ASEL: Instructor, instrument.
Mitchell, James	Instructor, Maintenance Technology. A & P Mechanic.

Moles, Lawrence L.	Instructor, Aeronautical Science; ASEL: Instructor, airplane.
Mondshien, Burt	Associate Professor, Management Science and Director of Aviation Management. B.Ae.E., Polytechnic Institute of Brooklyn; M.S., Hofstra College; M.B.A., University of California.
Ott, David E.	Instructor, Aeronautical Science; ASEL: Instructor, airplane and instrument.
Parlagreco, Charles J.	Instructor, Aeronautical Science; ASEL: Instructor, airplane.
Parrish, Wilbur E.	Instructor, Aeronautical Science; ASMEL: Instructor, airplane.
Pate, Carolyn	Instructor, English. B.A., University of Texas.
Peacock, John R.	Instructor, Aeronautical Science; ASEL: Instructor, airplane.
**Powers, Beverly A.	Associate Professor of Mathematics. B.S., Chicago Teachers' College; M.S., University of Illinois.
Powers, Marshall K.	Professor of Social Sciences and Dean of Academics. A.B., Marietta College; M.A., University of Colorado; PhD, University of Florida.
Prosser, John N.	Instructor, Aeronautical Science; ASMEL; Instructor, airplane and instrument.
Roman, Theodore E.	Instructor, Aeronautical Science; ASEL, SES: Instructor, airplane.
Sauls, Heyward	Acting Director of Library Service and Assistant Professor of Humanities. B.A., Furman University; MAT, Duke University.

Saunders, James F.	Assistant Professor, Engineering Sciences. Acting Dean, College of Engineering. A.A., Montgomery Junior College; B.S., Virginia Polytechnic Institute; M.S., Rensselaer Polytechnic Institute.
Sawyer, Lynn	Instructor, Humanities. B.A. and M.A., Stetson University.
Sinnott, Francis J.	Instructor, Aeronautical Science; ASEL: Head, Air Science department; Instructor, Ground School.
Skean, James G.	Instructor, Aeronautical Science; ASMEL: Instructor, airplane.
*Smith, Calvin	Instructor, Aeronautical Science; ASEL: Instructor, airplane.
Smith, J. L.	Instructor, Maintenance Technology. A & P Mechanic.
*Stanford, Frederick	Instructor, Aeronautical Science. ASEL: Instructor, instrument.
Stewart, Bingham	Associate Professor, Humanities. A.B., University of North Carolina; M.S., Radford (Virginia Polytechnic Institute).
*Story, John Jr.	Instructor, Maintenance Technology and Aeronautical Science. ASEL: Instructor, airplane. A & P Mechanic.
Streetman, Eugene	Instructor, Maintenance Technology.
Tacker, Agee C.	Instructor, Aeronautical Science; Chief Pilot; ASMEL: Instructor, airplane and instrument.
Thiele, Joachim M.	Instructor, Aeronautical Science; ASMEL: Instructor, airplane.
Titus, Chandler P.	Instructor, Maintenance Technology. A & P Mechanic — G.I., D.M.E.
Traut, William	Instructor, Physical Science. B.S.M.E., Ilmenau Technical College.

Wainio, David E.	Instructor, Aeronautical Science; ASMEL, SES: Instructor, airplane and instrument.
Walker, Joe A.	Instructor, Aeronautical Science; ASMEL: Instructor, airplane and instrument.
Walker, Margaret	Instructor, Aeronautical Science; ASMEL: Instructor, airplane and instrument.
Wang, Ming Hsien	Associate Professor, Aeronautical Engineering. B.S., Chinese National North Western College of Engineering; M.S., West Virginia University.
**Wang, Ming Kang	Assistant Professor, Engineering Sciences. M.S., Virginia Polytechnic Institute; B.S., ORD. Engineering College.
Williams, Luther W.	Instructor, Aeronautical Science; ASMEL: Instructor, airplane and instrument.
Yackel, Edward P.	Associate Dean of Academics and Assistant Professor of Physical Science. B.A., Colgate University; M.A., Syracuse University.

*Part Time

**On Leave 1966 - 67

GENERAL INFORMATION

History

Embry-Riddle originated as a flying school at Lunken Airport, Cincinnati, Ohio, in 1926. Since then it participated in the field of aeronautical education both nationally and internationally, and became known as the Embry-Riddle International School of Aviation.

During World War II when the United States Army was in critical need of pilots and mechanics, Embry-Riddle assisted in developing a program to successfully fulfill this need. The school established and operated four, large Army flight schools, and also trained thousands of Army mechanics at its Florida installation.

In September, 1961, Embry-Riddle Aeronautical Institute, a non-profit coeducational institution, replaced the International School of Aviation. Embry-Riddle offers curricula in aeronautical engineering, aeronautical engineering technology, aviation management, aircraft maintenance engineering technology, airframe and powerplant mechanic training to include jet engines, and professional pilot training complete with ground school and synthetic trainers.

Institutional Goals & Objectives

The "University of the Air" has established the following educational goals:

To provide the necessary educational facilities, staff and equipment to afford students the opportunity to acquire a high degree of professionalism in the various aviation disciplines.

To develop professional programs in certain specialized fields in accordance with established academic standards, and to continue to maintain these standards.

To provide an opportunity for every competent, serious-minded student to acquire a college education without regard to race, sex, creed or color.

Accreditation and Affiliation

Embry-Riddle Aeronautical Institute has established contact with the Southern Association of Colleges and Schools and has declared its intention to work closely with the Association in pursuit of accreditation and membership at the earliest possible date.

The associate program in engineering technology is accredited by the Engineers Council for Professional Development, and the main-

tenance and flight programs are approved by the Federal Aviation Agency. The engineering technology and maintenance programs are approved by the Veterans Administration for educational purposes. The Institute is also considered eligible for Federal Grants under the Higher Education Act of 1965.

Requirements for Admission

A. *General.* All applicants must be at least 17 years of age and must present evidence of satisfactory physical and mental health in the form of a letter from a family doctor or similar evidence presented by any competent authority determined by Embry-Riddle Aeronautical Institute. Statements concerning an individual's current health should be based on the result of a medical examination within the 6-month period preceding the date of entry. The examination should include the tuberculin tests. All entering flight students must show evidence of possession of an Airman Class II medical certificate before flight training will commence.

B. *Scholastic.* All applicants must submit evidence of completion of the program of an accredited secondary school. Graduates of non-accredited secondary schools, and those not completing a secondary program who submit evidence of knowledge at the secondary level may be admitted based on the results of their high school record and General Education Development Tests as determined by the Institute and the recommendation of the Committee on Admissions. Students not qualifying to the standards noted above may be admitted on a provisional basis the first trimester as determined by the Committee on Admissions. Students proceeding into the higher education programs, and not formally graduated from a secondary school, must take the high school equivalency examination and attain a satisfactory score before proceeding with college level work.

C. *Admission Fees.* A registration fee of \$10.00 must accompany all applications for admission. Within fifteen (15) days of notification of acceptance, a \$100.00 tuition deposit is required. The tuition deposit is 100% refundable, provided the Institute is notified by letter postmarked sixty (60) days prior to the date of registration, of the intent of the student not to register.

Transfer Students

A. *General.* Students who have completed college level work at an approved institution of higher education, with a grade of "C" or better, and who are in good standing at the school last attended, may be admitted with advanced standing at Embry-Riddle Aeronautical Institute.

Individual course requirements for any curriculum may be waived by advanced placement examination. Permission to take an advanced placement examination is granted by the office of the Dean of the appropriate College or School.

The academic year preceding a student's graduation from Embry-Riddle Aeronautical Institute must be spent in residence. At least 30 hours of any degree program must be completed at Embry-Riddle Aeronautical Institute.

B. Transfer of Previous Flight Experience. Entering students with previous flight experience may be admitted with advanced standing subject to a review of their previous training by the Committee for Admissions. Acceptance of flight time not obtained at an FAA approved flight school must be limited to a maximum of eighty (80) hours. A student desiring credit in degree granting programs must produce a transcript from the institution previously attended indicating the number of flight hours and type of training received. The transcript must be submitted for evaluation prior to an approval for admission.

Registration and Placement Tests

Applicants who have been accepted will be notified promptly and will receive registration instructions prior to the date established for registration.

All entering freshmen who are candidates for any degree, Baccalaureate or Associate, will be required to take Freshman Placement Examinations in Mathematics and English. Examinations will be administered during registration week. The tests will not be used as a basis for granting or denying admission, but are for the purpose of establishing proper placement of the student.

When the results of the Freshman Placement Examinations indicate serious weaknesses in Mathematics (Algebra, Trigonometry, and Plane Geometry) and/or English, the student will be placed in certain remedial sections of Mathematics requiring ten hours per week of class work for five hours of credit, or English sections involving five hours per week for three hours of credit.

The remedial courses (Mathematics 101K and Humanities 101K) must be passed with a grade of "C" or better. Students completing HU101K and/or MA101K with a grade of "B" or higher will receive credit for HU101 and/or MA101. Students earning less than a "C" in either HU101K or MA101K must repeat the course. A student may repeat a remedial course only once.

Foreign Students

The credentials of applicants from foreign countries are evaluated in accordance with the general regulations governing admission. An application, photograph, and detailed transcripts of records must be submitted to the Director of Admissions at least six months in advance of the opening of the class in which the applicant seeks to gain admission. This will allow time for the exchange of necessary correspondence and documents relative to the securing of passports and visas for study in the United States.

Candidates for admission are required to consult the American Consulate or the American Embassy in their country of residence and make arrangements to take an English language examination. The results of this examination are an important factor in determining the acceptability of an applicant. Embry-Riddle must receive this information directly from the Consular Office before a decision concerning admission will be reached.

In addition, candidates for admission must complete all arrangements for the necessary American dollars to cover tuition and living expenses and must furnish advance proof of this according to the amount shown on the Certificate of Eligibility of the U.S. Immigration Service, Form 1-20A. This also is an important factor in determining the acceptability of an applicant.

Acceptance for admission of foreign students will be based on recommendations of the Committee on Admissions and other requirements detailed in this Bulletin and determined on an individual basis. Foreign students approved to enter will be required to present evidence of satisfactory mental and physical health at the time of admission and may be required to submit to a physical examination at the time of admittance at their own expense.

Attendance

Attendance is required of all students in all classes, at all times. In those cases involving illness, grave personal problems, or other circumstances which make attendance impossible, the student is obligated to so inform his instructors and request permission to be absent. Appropriate arrangements will be made between the instructor and the student. Students are not permitted to interrupt training at midtrimester.

If there is a positive correlation between poor academic performance and irregular class attendance, disciplinary action may be taken including dismissal. Required examination, make-up reports or compensatory time could be required by the instructor.

Students desiring to take academic courses or flight training at other institutions in the area must obtain permission of the Registrar of Embry-Riddle Aeronautical Institute prior to enrollment. Students are cautioned that tampering with the full-time student status at the Insitute may have serious consequences with respect to draft status or veteran's benefits.

All students registered for 14 credit hours or 30 clock hours per week at Embry-Riddle Aeronautical Institute will be considered full-time students by Embry-Riddle Aeronautical Institute.

Emergency Medical Treatment

Upon submission and acceptance of an application, parents, sponsors or the student hereby authorizes the school administration to authorize emergency medical treatment when called upon to do so by competent medical authority. It is agreed that no legal action will be brought against the school or its officers when such authorization by the administration is granted.

FEES AND CHARGES

Tuition

Academic Courses (14-18 credit hours).....\$400.00 per Trimester
If credit hours are less than 14 or greater than 18, fees will be charged at the rate of \$29.00 per credit hour.

Vocational Courses (Airframe & Powerplant Mechanic Training)\$400.00 per Trimester

Flight Courses (Professional Pilot Program)*

Phase I	\$1,164.00
Phase II	2,341.00
Phase III	1,235.00

Combined Courses (Any programs offered by the Institute combined with Professional Pilot Training).

Trimester	1	2	3	4	5	6	7	8
Tuition	\$400	400	400	400	400	400	400	400
Flight Lab. Fee	\$585	845	845	780	585	500	—	585

Non-Refundable Fees and Charges

Student Activities (Per Trimester)	\$ 2.00
Application (One time only)	10.00
Matriculation (One time only)	10.00
Graduation (Payable at the beginning of a students final trimester. Includes cap and gown and engraved diploma)**	10.00
Tools (Mechanics)	61.00
Books and Supplies (Mechanics)	35.00

Aircraft Rate Schedule for Full-Time Enrolees

For students enrolled in the flight program requiring additional time, and other regular students in attendance full-time who have previously completed a course of flight instruction, Embry-Riddle Aeronautical Institute offers special reduced rates as noted on Page 17.

*Fees include all equipment, tuition, regular flight lab fee, orals and simulator training.

** Students qualified for the Associate of Science Degree and proceeding for further study may participate and receive the diploma for an additional \$10.00 fee to cover the double costs of graduation. Students may graduate in absentia and receive an appropriate Degree or Diploma for \$5.00 (reference the graduation requirements).

Equipment is available for cross-country or scheduling by pre-arrangement on "if available" basis. Such flights must be approved by the chief instructor pilot.

A/C Type	Rates Per Hour*	
	Dual	Solo
Cessna 150	\$14.00	\$12.00
Cherokee 140	14.00	12.00
Twin-Beech D-18	35.00	none
Douglas DC-3	85.00	none
Oral Instruction	5.00	none
Instrument		
Cherokee 140	15.00	none
Twin-Beech D-18	40.00	none
Douglas DC-3	85.00	none
Oral Instruction	5.00	none

Refunds

In order that the proper services may be provided to students, obligations are entered into by the Institute which continue even if students subsequently withdraw. As a result, full recovery of fees by the student at the time of withdrawal is not possible and an equitable charge must be made to recover loss of income to the Institute as a result of withdrawal.

Students who withdraw from school in good standing within the first twenty-one days commencing on the first day of registration as published, will be charged fifty per cent of tuition, flight and dormitory fees for that trimester and dining room fees in accordance with usage of the Institute's dining facilities. Students withdrawing after that date will receive no refunds except as described in the following paragraph.

The refund of tuition, fees and other charges to war orphans and children of permanently or totally disabled veterans who fail to enter the course, or withdraw or discontinued therefrom at any time prior to completion will be in accordance with section 1776, chapter 35, title 38, United States Code.

*These rates do not include ground training services provided for in the Flight Laboratory Fee noted on the preceding page.

STUDENT SERVICES AND ACTIVITIES

Placement

The Placement Office conducts an active service which has had excellent success in placing graduates. Employment cannot be guaranteed, but personal assistance is given so that as each student enters his last trimester, suitable position contacts are arranged for him. Graduates are invited to avail themselves of this service at any time.

Library Facilities

The library subscribes to approximately 150 periodicals and has at its disposal indexes to permit research. It also receives trade journals, house organs and general publications of the major airlines. Photocopying services are available.

An up-to-date reference collection is maintained and kept current for the needs of the aeronautical engineering and related programs, including FAA publications, CAB regulations and NASA documents and reports.

Other services offered include individual reference service, inter-library loan service, and instruction in the use of the library, which is classified according to the Library of Congress system.



Mail

All personal mail and baggage should be addressed as follows:

Name
c/o Embry-Riddle Aeronautical Institute
P. O. Box 2411
Daytona Beach, Florida 32015

All baggage and express packages must be sent prepaid. Baggage is stored at the risk of the student and the Institute accepts no responsibility for theft or missing baggage. Baggage will be stored in a locked room.

Student Government Association

The Student Government Association elects members to its governing body, The Student Council. The Council maintains liaison with the school administration and has been delegated control of traffic; publishes a student newspaper; governs intra-mural athletics; and initiates and conducts various social activities for the entire student body. All full-time students automatically are members of the Student Government Association.



Living Accommodations

Students, if unmarried or unaccompanied by wives, are required to reside in a dormitory. With the consent of the Dean of Students, special exemptions may be allowed. Room fees range from \$130 - \$215 per trimester, two to a room. Board is \$240 per trimester (7-day),

and \$180 per trimester (5-day). A \$20 damage deposit is required and is refundable upon graduation or at the end of the trimester if no damage assessments are made. This deposit also serves as a reservation fee to indicate the student's choice of dormitory accommodations at the time of application or admission.

Embry-Riddle does not maintain apartments or quarters for married students. However, there are many furnished apartments and homes for rent in the area. Several trailer parks are located within a few miles of the school for the convenience of those students owning or desiring to rent a trailer. The office of the Dean of Students maintains listings of available married-student rentals.

Installment Payment Plan

Embry-Riddle will permit students upon application and approval to prorate tuition fees by periodic payments. Students accepted for this plan must sign an agreement to pay in full. There is a \$10.00 service charge which must be paid at registration and with the first monthly payment for every trimester following. The tuition payment plan requires one-fourth ($\frac{1}{4}$) of the trimester charges to be paid on the first of each month during the trimester. One-fourth of the tuition fee will be paid at registration.

Delinquent Accounts

All accounts are due the first of each month and delinquent on the fifth. Students whose accounts are in arrears may be denied registration for a new trimester, graduation, or the release of transcripts of their records. Delinquent students may have privileges for the Installment Plan withdrawn.

Personal Finances

Students are urged to open local bank accounts for their personal convenience. Arrangements for small personal drawing accounts may be made with the school cashier. Personal drawing accounts are a convenience to the student. Cash may be withdrawn on Monday and Friday only.

Financial Aid Program

The Institute participates in all of the financial aid programs of the Federal Government and those guaranteed loan programs set up by the various states. These include grants, loans and work-study programs.

The purpose of the financial aid program at Embry-Riddle is to make available assistance to any needy student who qualifies for ad-

mission. Those who can show need may be granted funds to pursue a college program if matching funds can be arranged. In addition, payment on some loans may be deferred, without interest, until nine (9) months after graduation. Private loan institutions also may be utilized in these programs.

Upon completion of admission procedures and receipt of approval from the Admissions Office, students who require financial assistance may contact the Financial Aids Office, Embry-Riddle Aeronautical Institute, directly, for the necessary forms for the Federal Programs. The following private aid plans may also be utilized by incoming students.

- a. The Investment-in Education Plan; Funds for Education, Inc.;
319 Lincoln Street, Manchester, New Hampshire
- b. The Tuition Plan, Inc.; 575 Madison Avenue, New York, N.Y.
10022
- c. United Student Aid Funds, Inc.; College Station, Indianapolis
5, Indiana

Organizations

Student organizations at Embry-Riddle include the Sailing Club, Parachute Club, Rocket Society, Experimental Aircraft Association and Veterans Association. Students from different sections of the world have organized social groups. Sigma Phi Delta Professional Engineering Fraternity and Alpha Eta Rho International Aviation Fraternity are approved campus fraternities.

Sports

Embry-Riddle, a member of the National Association for Intercollegiate Athletics, participates in intercollegiate competition in soccer, tennis, golf and is preparing to add track and basketball. Students who are on academic probation may not compete in intercollegiate athletics.

ACADEMIC REGULATIONS

Trimester Hour Credits

All credits are recorded in terms of trimester hours. A trimester hour of credit is given for one 55-minute lecture per week throughout the 15-week trimester. In counting credits earned in the laboratory, a trimester hour is considered to be two laboratory hours requiring outside preparation or three laboratory hours requiring little or no outside preparation. Students auditing a course receive neither a grade nor credits.

Grading Procedure

Grade	Relative Standing	Honor Points per Trimester Hour
A	Superior	4
B	Above Average	3
C	Average	2
D	Below Average	1
F	Failure	0
WF	Withdrawal while failing during the last three-fourths of the trimester ...	0
WP	Withdrawal while passing during the last three-fourths of the trimester ...	0
W	Withdrawal during the first fourth of the trimester	0
S	Surveying the course with credit	0
U	Auditing the course without credit	0
G	Passing but incomplete work	0

An incomplete grade is given when a student is unable to complete required work for reasons beyond his control. An incomplete grade must be removed within the first six weeks of the next trimester he is in attendance or the G will revert to an F.

An F on a student's record is permanent. Although the course is repeated and a new grade is obtained, the F will remain on his record for the trimester concerned.

A student may withdraw from a course during the first fourth of a trimester and receive a grade of W. If he withdraws after this period of time, he will receive a WF (Withdrawal while failing) or a WP (Withdrawal while passing). A WF on an academic record is equivalent to an F.

Honor Point Average

The honor point average is designed to give a cumulative numerical equivalent of grades earned. It is computed by dividing the total number of honor points earned by the total number of credits attempted. Honor points are accumulated for grades received as indi-

cated in the preceding paragraph "Grading Procedure." When a WP, W or the U appears with a subject, the credit value of the subject does not count as credits attempted. When an S appears with a subject, credits for the subject are counted for graduation requirements but do not affect the honor point average.

Honor Student

An honor student is one who has attained an honor point average of 3.5 or better for the previous trimester provided he was enrolled in three or more subjects.

Academic Board

The Academic Board, comprised of certain faculty members, reviews the progress of each student, determines eligibility of students for graduation and recommends action to the Dean of Academics as appropriate. A student's progress is reviewed with respect to:

1. Completion of required subjects in proper sequence.
2. Grades and honor points average obtained.

Graduation Requirements

In order to graduate from any curriculum all students must:

1. Successfully complete all required subjects.*
2. Have obtained a final honor point average of 2.0 or better.
3. Satisfy all financial obligations.
4. Be recommended by the Dean of Academics.
5. Participate in graduation ceremonies unless excused by special permission.

Academic Probation

Academic probation is imposed when the cumulative honor point average of any student falls below the following levels:

Trimester	1	2	3	4	5	6
Honor Point Average . .	1.5	1.6	1.7	1.8	1.9	2.0

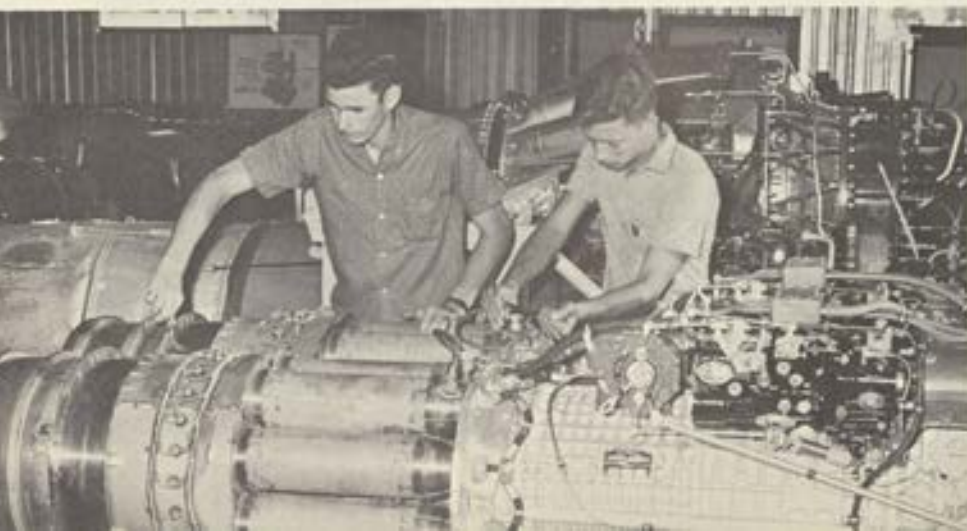
Probation status will be removed whenever the honor point average of the student concerned is equal to or greater than the levels shown above. The award of a degree or certificate will not be made to anyone on academic probation.

Dismissal from the Institute:

When a student makes application for entrance to Embry-Riddle Aeronautical Institute he thereby understands and agrees that the Institute reserves the right to dismiss him at any time if his conduct or academic standing is regarded by the Institute as undesirable, without assigning any further reason therefor. It is understood and agreed that the Institute or any of its officers or faculty, shall not be liable in any way for such exclusion.

*Physical Education (4 trimesters) is required of all students enrolled in degree programs. Two years of active military service may be substituted for the Physical Education requirement.

CURRICULA



BACHELOR OF SCIENCE DEGREE CURRICULUM in AERONAUTICAL ENGINEERING

This program is designed to provide the graduate with a background that will enable him to pursue a career as an aeronautical engineer in industry or government. It will also prepare the student for additional studies at the graduate level. Extensive coverage is given to the broad areas of mathematics, the physical sciences, and the engineering sciences. Aerodynamics, aircraft structures, propulsion, and aeronautical design are covered in depth. The theoretical studies are supplemented with laboratory work which provides the student with a knowledge of experimental methods.

Subject No.	Subject	Lecture	Lab.	Credits
HU-101	English Composition	3	0	3
MA-101	Algebra & Trigonometry	5	0	5
PS-105	Chemistry I	3	3	4
ET-101	Engineering Graphics I	0	6	2
SS-201	American History	3	0	3
HU-102	Technical Report Writing	2	0	2
MA-201	Calculus & Analytic Geometry I	5	0	5
PS-106	Chemistry II	2	3	3
ET-102	Engineering Graphics II	0	6	2
SS-205	Psychology	2	0	2
MA-202	Calculus & Analytic Geometry II	5	0	5
PS-201	Physics I	4	3	5
EC-220	Economics of Industrial Organization	3	0	3
HU-202	Public Speaking	2	0	2
MA-205	Differential Equations	3	0	3
PS-202	Physics II	4	3	5
ES-201	Statics	3	0	3
ES-203	Fluid Mechanics	3	0	3
MA-301	Advanced Engineering Mathematics I	3	0	3
ES-301	Strength of Materials	3	0	3
ES-305	Thermodynamics	3	0	3
AE-301	Aerodynamics I	4	0	4
ES-307	Metallurgy and Materials Science	3	0	3

ES-311	Materials & Processes Laboratory	0	3	1
AE-311	Aircraft Systems Lab.	0	3	1
MA-302	Advanced Engineering Mathematics II	3	0	3
AE-302	Aerodynamics II	3	0	3
AE-304	Aircraft Structures I	3	0	3
ES-303	Dynamics	3	0	3
AE-310	Wind Tunnel Laboratory	1	3	2
AE-312	Airframe Laboratory	0	3	1
AE-401	Advanced Aerodynamics I	3	0	3
AE-404	Aircraft Structures II	3	0	3
AE-420	Aircraft Design I	2	3	3
ES-404	Electrical Theory	3	0	3
ES-401	Vibrations	3	0	3
AE-421	Aircraft Design II	0	6	3
AE-406	Jet & Rocket Propulsion	3	0	3
ES-405	Electronics	2	3	3
ES-403	Heat Transfer	3	0	3
AE-411	Aircraft Propulsion Lab.	0	3	1
AE-405	Aircraft Structures III	2	0	2
	Physical Education (4 trimesters)			
Required courses				123
Elective courses				
Humanities				9
Technical				9
Total				141

BACHELOR OF SCIENCE DEGREE CURRICULUM in AERONAUTICAL ENGINEERING TECHNOLOGY

The graduate Engineering Technician is a vital part of the "engineering manpower team". He develops and translates ideas and designs of engineers and scientists into plans and blueprints that can be understood and used by skilled workmen. The engineering technician's responsibilities parallel those of the engineer. His knowledge in engineering design enables him to assume duties in all phases of the aircraft, missile, and spacecraft industry. His talents are needed and utilized along the line from preliminary design through flight test and final production.

Subject No.	Subject	Lecture	Lab	Credits
HU-101	English Composition	3	0	3
MA-101	Algebra and Trigonometry	5	0	5
ET-101	Engineering Graphics I	0	6	2
PS-201	Physics I	4	3	5
HU-102	Technical Report Writing	2	0	2
MA-201	Calculus and Analytic Geometry I	5	0	5
ET-102	Engineering Graphics I	0	6	2
ES-201	Statics	3	0	3
PS-202	Physics II	4	3	5
SS-205	Psychology	2	0	2
MA-202	Calculus & Analyt. Geom. II	5	0	5
ES-303	Dynamics	3	0	3
ES-203	Fluid Mechanics	3	0	3
AE-312	Airframe Laboratory	0	3	1
HU-202	Public Speaking	2	0	2
EC-101	Economics I	3	0	3
ES-301	Strength of Materials	3	0	3
ES-305	Thermodynamics	3	0	3
AE-301	Aerodynamics I	4	0	4
AE-302	Aerodynamics II	3	0	3
AE-310	Wind Tunnel Lab.	1	3	2
AE-304	Aircraft Structures I	3	0	3
AE-420	Aircraft Design I	2	3	3
ET-301	Aircraft Drafting	0	6	2
AE-411	Aircraft Propulsion Lab.	0	3	1
HU-301	Business English	2	0	2
ES-307	Metallurgy and Materials Science	3	0	3
AE-404	Aircraft Structures II	3	0	3
ET-302	Aircraft Detail Design	0	6	2
AE-421	Aircraft Design II	0	6	3
AE-311	Aircraft Systems Lab.	0	3	1
EC-201	Economics II	3	0	3
SS-201	American History	3	0	3
MA-205	Differential Equations	3	0	3
ES-403	Heat Transfer	3	0	3
PS-105	Chemistry I	3	2	4
AE-401	Advanced Aerodynamics I	3	0	3
SS-101	World History	3	0	3
SS-404	Philosophy	3	0	3
PS-106	Chemistry II	2	2	3
ES-404	Electrical Theory	3	0	3
AE-406	Jet and Rocket Propulsion	3	0	3
	Physical Education (4 trimesters)			

Required courses:

123



ASSOCIATE OF SCIENCE DEGREE CURRICULUM in AERONAUTICAL ENGINEERING TECHNOLOGY

A graduate of this program will be prepared for employment as an engineering technician in the aerospace field. The program covers the basic sciences and engineering sciences and provide technical skills which are combined by the engineering technician to support engineering activities. The program is designed so that the graduate will have the background required to continue his formal education.

Subject No.	Subject	Lecture	Lab.	Credits
HU-101	English Composition	3	0	3
MA-101	Algebra & Trigonometry	5	0	5
PS-105	Chemistry I	3	3	4
ET-101	Engineering Graphics I	0	6	2
SS-201	American History	3	0	3
HU-102	Technical Report Writing	2	0	2
MA-201	Calculus & Analyt. Geom. I	5	0	5
PS-106	Chemistry II	2	3	3
ET-102	Engineering Graphics II	0	6	2
SS-205	Psychology	2	0	2
HU-202	Public Speaking	2	0	2
MA-202	Calculus & Analyt. Geom. II	5	0	5
PS-201	Physics I	4	3	5
EC-220	Economics of Industrial Organization	3	0	3

ET-361	Aircraft Drafting	0	6	2
MA-205	Differential Equations	3	0	3
PS-202	Physics II	4	3	5
ES-201	Statics	3	0	3
ES-203	Fluid Mechanics	3	0	3
HU-301	Business English	2	0	2
AE-311	Aircraft Systems Lab.	0	3	1
ES-301	Strength of Materials	3	0	3
ES-305	Thermodynamics	3	0	3
AE-301	Aerodynamics I	4	0	4
ES-307	Metallurgy and Materials Science	3	0	3
ES-311	Materials and Processes Lab.	0	3	1
ET-215	Electrical Technology	3	3	4
AE-302	Aerodynamics II	3	0	3
AE-304	Aircraft Structures I	3	0	3
ES-303	Dynamics	3	0	3
AE-310	Wind Tunnel Lab	1	3	2
AE-312	Airframe Lab	0	3	1
ET-302	Aircraft Detail Design	0	6	2
AS-117	Aircraft Engines and Systems	4	0	4
	Physical Education (4 trimesters)			
Required courses				101
Elective courses				
Humanities				3
Total				104

BACHELOR OF SCIENCE DEGREE CURRICULUM in AIRCRAFT MAINTENANCE ENGINEERING TECHNOLOGY

This program is designed to produce qualified maintenance engineering technicians. It is similar to the aeronautical engineering technology programs and also includes airframe and powerplant mechanic training. A graduate maintenance engineering technician would provide support for engineering activities associated with the overhaul, repair, and modification of aircraft. All candidates for graduation must fulfill the requirements of the Airframe and Powerplant Mechanic Curriculum, page 34.

Subject No.	Subject	Lecture	Lab.	Credits
HU-101	English Composition	3	0	3
MA-101	Algebra & Trigonometry	5	0	5
PS-105	Chemistry I	3	3	4
ET-101	Engineering Graphics I	0	6	2
SS-201	American History	3	0	3
HU-102	Technical Report Writing	2	0	2
MA-201	Calculus & Analyt. Geometry I	5	0	5
PS-106	Chemistry II	2	3	3
ET-102	Engineering Graphics II	0	6	2
SS-205	Psychology	2	0	2
HU-202	Public Speaking	2	0	2
MA-202	Calculus & Analyt. Geom. II	5	0	5
PS-201	Physics I	4	3	5
EC-220	Economics of Industrial Organ.	3	0	3
ET-301	Aircraft Drafting	0	6	2
MA-205	Differential Equations	3	0	3
PS-202	Physics II	4	3	5
ES-201	Statics	3	0	3
ES-203	Fluid Mechanics	3	0	3
HU-301	Business English	2	0	2
ES-303	Dynamics	3	0	3
ES-301	Strength of Materials	3	0	3
ES-305	Thermodynamics	3	0	3
AE-301	Aerodynamics I	4	0	4
ES-307	Metallurgy and Materials Science	3	0	3
ES-311	Materials and Processes Lab.	3	0	1
MA-301	Advanced Engineering Mathematics I	3	0	3
AE-302	Aerodynamics II	3	0	3
AE-304	Aircraft Structures I	3	0	3
AE-310	Wind Tunnel Lab.	1	3	2
ET-215	Electrical Technology	3	3	4
AE-404	Aircraft Structures	3	0	3
AE-420	Aircraft Design I	2	3	3
ET-302	Aircraft Detail Design I	0	6	2
	Physical Education (4 trimesters)			
	Required courses			104
	Elective courses			
	Humanities			6
	Technical			10
	Total			120



ASSOCIATE OF SCIENCE DEGREE CURRICULUM in AIRCRAFT MAINTENANCE ENGINEERING TECHNOLOGY

This program is designed to produce qualified maintenance engineering technicians. It is similar to the aeronautical engineering technology programs and also includes airframe and powerplant mechanic training. A graduate maintenance engineering technician would provide support for engineering activities associated with the overhaul, repair, and modification of aircraft. All candidates for graduation must fulfill the requirements of the Airframe and Powerplant Mechanic Curriculum, page 34.

Subject No.	Subject	Lecture	Lab.	Credits
HU-101	English Composition	3	0	3
MA-101	Algebra & Trigonometry	5	0	5
PS-105	Chemistry I	3	3	4
ET-101	Engineering Graphics I	0	6	2
SS-201	American History	3	0	3
HU-102	Technical Report Writing	2	0	2
MA-201	Calculus & Analyt. Geometry I	5	0	5
PS-106	Chemistry II	2	3	3
ET-102	Engineering Graphics II	0	6	2
SS-205	Psychology	2	0	2

HU-202	Public Speaking	2	0	2
MA-202	Calculus & Analyt. Geom. II	5	0	5
PS-201	Physics I	4	3	5
EC-220	Economics of Industrial Organ.	3	0	3
ET-301	Aircraft Drafting	0	6	2
MA-205	Differential Equations	3	0	3
PS-202	Physics II	4	3	5
ES-201	Statics	3	0	3
ES-203	Fluid Mechanics	3	0	3
HU-301	Business English	2	0	2
ES-303	Dynamics	3	0	3
ES-301	Strength of Materials	3	0	3
ES-305	Thermodynamics	3	0	3
AE-301	Aerodynamics I	4	0	4
ES-307	Metallurgy and Materials Science	3	0	3
ES-311	Materials and Processes Lab.	3	0	1
Physical Education (4 trimesters)				
Required engineering courses				81
Elective courses				
Humanities				3
Total				84

BACHELOR OF SCIENCE DEGREE CURRICULUM in AVIATION MANAGEMENT

The objective of this program is to provide the student with an understanding of and competence in the management aspects of the Aviation industry. Graduates of this curriculum may consider employment in Airport Management with Airframe and Powerplant industries, with Air Carriers, in Flight Services Operations, or in a government agency serving the Aviation Community. This program is an extension of the Associate Program in Aviation Management.

Subject No.	Subject	Lecture	Lab.	Credits
HU-101	English Composition	3	0	3
MA-100	Basic College Math	4	0	4
PS-101	Physical Science I	3	0	3
SS-101	World History	3	0	3
GA-101	History of Aviation	3	0	3
HU-102	Technical Report Writing	2	0	2

HU-202	Public Speaking	2	0	2
PS-102	Physical Science II	3	0	3
SS-201	American History	3	0	3
MS-210	Accounting I	2	2	3
MS-211	Business Law	3	0	3
MS-310	Management Accounting	2	2	3
EC-101	Economics I	3	0	3
SS-205	Psychology	2	0	2
SS-301	American Government	3	0	3
HU-301	Business English	2	0	2
EC-201	Economics II	3	0	3
EC-220	Economics of Industrial Organization	3	0	3
MS-312	Business Statistics	2	2	3
SS-203	Sociology	3	0	3
MS-313	Personnel Administration	3	0	3
HU-307	Contemporary Literature	3	0	3
GA-205	Government & Aviation	3	0	3
MS-301	Principles of Management	3	0	3
MS-410	Finance	3	0	3
GA-401	Airport Development	2	0	2
MS-413	Psychology of Management	3	0	3
EC-301	Economic Geography	3	0	3
EC-310	Labor Economics	3	0	3
HU-408	Fine Arts I	2	0	2
MS-320	Small Business Management	3	0	3
MS-401	Mgt. Planning & Control	3	0	3
MS-311	Marketing	3	0	3
MS-420	Industrial Management	3	0	3
MS-430	Application of Management Science	3	0	3
HU-409	Fine Arts II	2	0	2
MS-412	Management Information Sys.	3	0	3
	Physical Education (4 trimesters)			

Required courses	105
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Elective courses	27
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Total	132
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ASSOCIATE OF SCIENCE DEGREE CURRICULUM in AVIATION MANAGEMENT

The objective of this program is to provide the student with an understanding of and competence in the management aspects of the Aviation industry. Graduates of this curriculum may consider em-

ployment in Airport Management with Airframe and Powerplant industries, with Air Carriers, in Flight Services Operations, or in a government agency serving the Aviation Community.

Subject No.	Subject	Lecture	Lab.	Credits
HU-101	English Composition	3	0	3
MA-100	Intro. To College Math	4	0	4
PS-101	Physical Science I	3	0	3
SS-101	World History	3	0	3
GA-101	History of Aviation	3	0	3
HU-102	Technical Report Writing	2	0	2
HU-202	Public Speaking	2	0	2
PS-102	Physical Science II	3	0	3
SS-201	American History	3	0	3
MS-210	Accounting I	3	1	3
MS-211	Business Law	3	0	3
MS-310	Management Accounting	3	1	3
EC-101	Economics I	3	0	3
SS-205	Psychology	2	0	2
SS-301	American Government	3	0	3
HU-301	Business English	2	0	2
EC-201	Economics II	3	0	3
EC-220	Economics of Industrial Organization	3	0	3
MS-312	Business Statistics	3	0	3
SS-203	Sociology	3	0	3
MS-313	Personnel Administration	3	0	3
HU-307	Contemporary Literature	3	0	3
GA-205	Government & Aviation	3	0	3
MS-301	Principles of Management	3	0	3
	Physical Education (4 trimesters)			
Required courses				69
Elective courses				12
Total				81

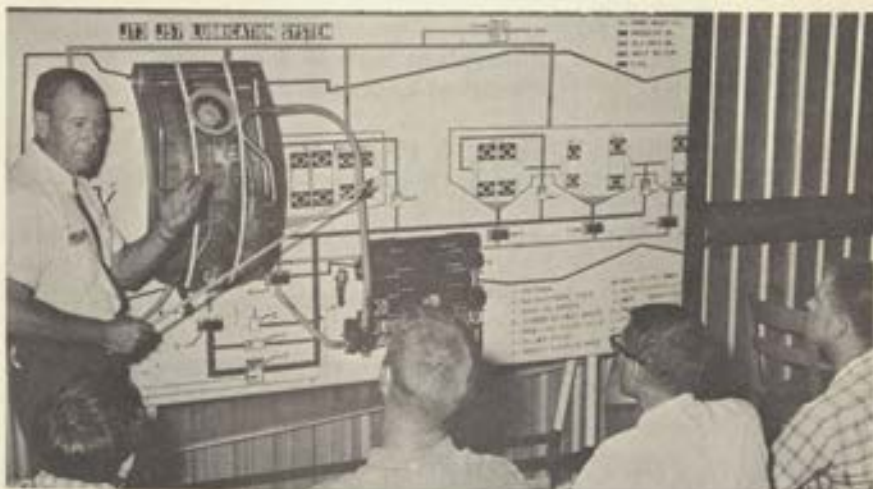
AIRFRAME AND POWERPLANT MECHANIC CURRICULUM

This course is a combination of the Airframe and Powerplant curriculums and provides a total of 1800 classroom and shop hours for the teaching of all the skills necessary to provide the graduate with a theoretical and practical knowledge, as well as a manipulative abil-

ity to repair aircraft, engines and systems. In addition, the graduate is repeatedly tested to ensure that he possesses adequate knowledge to successfully pass the FAA examination for the Airframe and Powerplant Certificate which will permit him to sell his services to the public as a government-certified aviation mechanic.

Trimester	Subject No.	Subject
First	SL-11	Basic Aircraft Science & Welding
	SL-12	Powerplant Science & System
Second	SL-13	Aircraft Systems
	SL-14	Electrical Laboratory
Third	SL-15	Thrust & Propulsion Lab.
	SL-16	Engine & Accessory Overhaul and Maintenance
Fourth	SL-17	Aircraft Structures & Repairs
	SL-18	Aircraft Assembly & Weight and Balance

Total hours 1800



AIRFRAME MECHANIC CURRICULUM

The course limits its study to the airframe subjects and licensing requirements of the Airframe and Powerplant Mechanic Curriculum described above.

Trimester	Subject No.	Subject	
First	SL-11	Basic Aircraft Science & Welding	
	SL-13	Aircraft Systems	
Second	SL-14	Electrical Laboratory	
	SL-17	Aircraft Structures & Repairs	
Third	SL-18	Aircraft Assembly & Weight Balance	
Total hours			1125

POWERPLANT & TURBINE ENGINE MECHANIC CURRICULUM

2½ Trimesters (15 weeks each)

This course limits its study to the powerplant subjects and licensing requirements of the Airframe and Powerplant Mechanic Curriculum described above.

Trimester	Subject No.	Subject	
First	SL-12	Powerplant Science & Systems	
	SL-14	Electrical Laboratory	
Second	SL-15	Thrust & Propulsion Laboratory	
	SL-16	Engine Overhaul, Accessory & Maintenance	
Third	SL-18	Aircraft Assembly and Weight and Balance	
Total hours			1125

ASSOCIATE OF TECHNOLOGY CURRICULUM

in

AIRCRAFT MAINTENANCE MANAGEMENT

This curriculum is designed to prepare the Airframe and Powerplant Mechanic for managerial positions by enabling him to develop writing skills and advance his general, overall knowledge at the college level.

Subject No.	Subject	Lecture	Lab.	Credits
MA-100	College Math	4	0	4
HU-101	English Composition	3	0	3

SS-205	General Psychology	2	0	2
PS-101	Physical Science I	3	0	3
ET-101	Engineering Graphics I	0	6	2
SS-201	American History	3	0	3
SL-11	Basic Aircraft Science & Welding	0	5	5
SL-12	Powerplant Science & System	0	5	5
ET-102	Engineering Graphics II	0	6	2
SL-13	Aircraft Systems	0	5	5
SL-14	Electrical Laboratory	0	5	5
PS-102	Physical Science II	3	0	3
SL-15	Props. & Accessory Overhaul	0	5	5
SL-16	Engine Overhaul & Maintenance	0	5	5
HU-102	Technical Report Writing	2	0	2
HU-202	Public Speaking	2	0	2
SL-17	Basic Aircraft Science & Welding	0	5	5
SL-18	Aircraft Assembly & Weight	0	5	5
Physical Education (4 trimesters)				
Required courses				66
Elective courses				
Technical				3
Total				69

BACHELOR OF SCIENCE DEGREE CURRICULUM in AERONAUTICAL SCIENCE

This curriculum is tailored to provide students with a college-level academic program while they receive flight training. Successful completion of the scheduled flight courses makes students eligible for Federal Aviation Agency commercial pilot certificates, including the instrument and multi-engine ratings.

Subject No.	Subject	Lecture	Lab.	Credits
HU-101	English Composition	3	0	3
MA-101	College Algebra & Trigonometry	5	0	5
GA-101	History of Aviation	3	0	3
PS-101	Physical Science Survey	3	0	3
AS-101	Primary Air Science	3	0	3
FC-101	Primary Flight	0	3	1
HU-102	Technical Report Writing	2	0	2

SS-201	American History	3	0	3
EC-101	Economics I	3	0	3
AS-112	Basic Air Science I	4	0	4
ET-110	Aircraft Engines-Reciprocating	3	2	4
FC-112	Basic Flight	0	4	1
SS-205	Psychology	2	0	2
HU-202	Public Speaking	2	0	2
EC-201	Economics II	3	0	3
MS-420	Small Business Management	3	0	3
AS-113	Basic Air Science II	3	0	3
ET-111	Aircraft Engines-Turbine	3	2	4
FC-201	Advanced Flight I	0	4	1
SS-301	American Government	3	0	3
MS-313	Personnel Administration	3	0	3
GA-205	Government and Aviation	3	0	3
AS-201	Advanced Air Science I	3	2	4
ET-210	Aircraft Systems & Components	3	2	4
FC-202	Advanced Flight II	0	3	1
MS-311	Business Law	3	0	3
EC-420	Air Transportation	3	0	3
GA-307	Flight Physiology	2	0	2
AS-307	Aircraft Performance	3	0	3
AS-302	Advanced Air Science II	3	2	4
FC-305	Instrument Flight	0	3	1
MS-218	Accounting I	3	0	3
AS-305	High Altitude Meteorology	3	0	3
GA-310	Air Carrier Operations	3	0	3
GA-403	ICAO Structure & Procedures	2	0	2
AS-309	High Speed Aerodynamics	2	0	2
FC-406	Multi-Engine Laboratory	0	2	1
MS-310	Management Accounting	3	0	3
GA-407	Certification of Transport and Turbine Aircraft	2	0	2
GA-408	Flight Safety	3	0	3
GA-401	Airport Development	2	0	2
MS-413	Psychology of Management	3	0	3
AS-401	Advanced Air Science III	3	0	3
FC-401	Advanced Flight Refresher	0	3	1
Physical Education (4 trimesters)				
Required courses				118
Elective courses				23
Total				141

ASSOCIATE OF SCIENCE DEGREE CURRICULUM in AERONAUTICAL SCIENCE

This program is designed for the student who is interested in a career as a general aviation or airline pilot. In addition to intensive flight training to make them eligible for Federal Aviation Agency certificates, students pursue college-level subjects in both aviation-related and other academic fields.

Subject No.	Subject	Lecture	Lab.	Credits
HU-101	English Composition	3	0	3
MA-101	College Algebra & Trigonometry	5	0	5
GA-101	History of Aviation	3	0	3
PS-101	Physical Science Survey	3	0	3
AS-101	Primary Air Science	3	0	3
FC-101	Primary Flight	0	3	1
HU-102	Technical Report Writing	2	0	2
SS-201	American History	3	0	3
EC-101	Economics I	3	0	3
AS-112	Basic Air Science I	4	0	4
ET-110	Aircraft Engines-Reciprocating	3	2	4
FC-112	Basic Flight	0	4	1
SS-205	Psychology	2	0	2
HU-202	Public Speaking	2	0	2
AS-113	Basic Air Science II	3	0	3
ET-111	Aircraft Engines-Turbine	3	2	4
FC-201	Advanced Flight I	0	4	1
GA-205	Government & Aviation	3	0	3
GA-310	Air Carrier Operations	3	0	3
EC-420	Air Transportation	3	0	3
GA-307	Flight Physiology	2	0	2
AS-201	Advanced Air Science I	3	2	4
ET-210	Aircraft Systems & Components	3	2	4
FC-202	Advanced Flight II	0	3	1
AS-307	Aircraft Performance	3	0	3
AS-302	Advanced Air Science II	3	2	4
FC-305	Instrument Flight	0	3	1
GA-403	ICAO Structure & Procedures	2	0	2
GA-408	Flight Safety	3	0	3
	Physical Education (4 trimesters)			

Required courses	80
Elective courses	10
Total	90

PROFESSIONAL PILOT COURSE CURRICULUM (3 trimesters of 15 weeks each)

This program is concerned exclusively with teaching students how to fly. Students receive concentrated training in various types of flying, including instrument and multi-engine flight. Ground school subjects, closely correlated with flying, round out the students' professional training. Successful completion of the course makes students eligible for Federal Aviation Agency commercial pilot certificates with the instrument and multi-engine ratings.

PHASE I

Subject No.	Subject	Lecture	Lab.	Credits
AS-101A	Primary Air Science	5	0	5
FC-101A	Primary & Basic Flight	0	5	2

PHASE II

AS-117	Aircraft Engines & Systems	3	2	4
AS-114	Basic Air Science I & II	5	0	5
FC-203	Advanced Flight I & II	0	10	2

PHASE III

AS-201A	Advanced Air Science I	3	2	4
FC-305A	Instrument Flight	0	3	1
FC-406	Multi-Engine Lab.	0	2	1

ELECTIVES

AS-404	Fundamentals of Flight			
	Instructing	3	0	3
FC-404	Flight Instruction Lab.	0	3	1
FC-409	Instrument Flight Instruction			
	Laboratory	0	3	1
FC-401	Advanced Flight Refresher	0	3	1
FC-407	Multi-Engine Flight II	0	0	0

Required courses	24
Elective courses	6

Total	30
Total flight hours — 200	

COMBINED AERONAUTICAL PROGRAMS

Students who are enrolled at Embry-Riddle in programs other than Professional Pilot, Associate in Aeronautical Science, or Bachelor in Aeronautical Science, may elect to receive flight training while pursuing their other studies. Successful completion of the phases of the curriculum outlined below makes the student eligible for Federal Aviation Agency certificates and ratings at the level indicated.

PRIVATE PILOT

Subject No.	Subject	Lecture	Lab.	Credits
AS-101	Primary Air Science	3	0	3
AS-112	Basic Air Science	4	0	4
FC-101	Primary Flight	0	3	1

COMMERCIAL PILOT

AS-101	Primary Air Science	3	0	3
FC-101	Primary Flight	0	3	1
AS-112	Basic Air Science I	4	0	4
FC-112	Basic Flight	0	4	1
AS-113	Basic Air Science II	3	0	3
FC-201	Advanced Flight I	0	4	1
AS-117	Aircraft Engines and Systems	3	2	4
FC-202	Advanced Flight II	0	3	1

Required courses	18
Flight hours — 160	

INSTRUMENT RATING

AS-201	Advanced Air Science I	3	2	4
FC-305	Instrument Flight	0	3	1

Required courses	5
Flight hours — 20	

MULTI-ENGINE RATING

FC-406	Multi-Engine Laboratory	0	2	1
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Required courses	1
Flight hours — 20	

COURSE DESCRIPTIONS



COURSE DESCRIPTIONS

DEPARTMENT OF AERONAUTICAL ENGINEERING

AE-301 AERODYNAMICS I

4 Credits

A study of the atmosphere and the fundamental dynamics and thermodynamics of air. Laminar and turbulent boundary layers and vortex motion. Development of lift drag and moment equations and their variation with Mach number and Reynolds number. Supersonic airfoil theory. Correlating factors influencing wing design. Theories of drag and their application. Momentum, blade element, and vortex theories of propellers. Prerequisites: MA-202, ES-203.

AE-302 AERODYNAMICS II

3 Credits

Static performance, including power required and power available for level flight. Effect of weight and altitude on power climb performance, ceiling determination, and time to climb. Special performance problems including take-offs and landings, range, and endurance. Maneuvers such as spins, stalls, turning, gliding and diving. Theory of control surfaces and their design. Longitudinal, lateral and directional stability and control. Prerequisite: AE-301.

AE-304 AIRCRAFT STRUCTURES

3 Credits

Structural analysis as applied to unsymmetrical cross sections, and introduction to shear flow. Prerequisite: ES-301.

AE-310 WIND TUNNEL LABORATORY

2 Credits

Speed setting calibration. Pressure distribution with multi-manometer of NACA airfoil on two dimensional wing and the calculation, tabulation, and plotting of the lift coefficient, center of pressure, pitching moment coefficient, and the profile and total drag coefficient at all flight angles of attack for both the plain wing and the wing with deflected flaps. Airfoil characteristics from data. Laminar, transition, and turbulent flow boundary layer. Three dimensional wing tip vortex flow direction and magnitude variation. Prerequisite: AE-301.

AE-311 AIRCRAFT SYSTEMS LABORATORY

1 Credit

Laboratory work with hydraulic, electric, propeller and fuel system mock-ups and cutaways.

AE-312 AIRFRAME LABORATORY

1 Credit

Airframe configurations and various aerodynamic and structural design features.

AE-401 ADVANCED AERODYNAMICS I

3 Credits

Kinematics and dynamics of a fluid field, stream function in two dimensional incompressible flow; theorem of stokes, Kutta-Joukowski

Theorem. Introduction to compressible fluid, and some applications of one-dimensional compressible flow. Wave phenomena, Normal shock, oblique shock, Prandtl-Meyer expansion waves and reflection of waves. Prerequisites: AE-301, AE-302, MA-302.

AE-402 ADVANCED AERODYNAMICS II 3 Credits

The dynamics of viscous fluid, boundary layers, Principle of Similarity; Transition and turbulent flow, Navier-Stokes Equations, Aerodynamic characteristic of wing, and real fluid effects in high speed flight. Prerequisites: AE-401.

AE-404 AIRCRAFT STRUCTURES II 3 Credits

Analysis of members of semi-monocoque structures, external loads on the airplane and air load distribution. Analysis of aircraft materials, members in combined stress joints and fittings. Prerequisite: AE-304.

AE-405 AIRCRAFT STRUCTURES III 2 Credits

Deflection of airplane structures, and statically indeterminate structures. Design of web in shear. Strain energy principle, method of least work and special method analysis. Prerequisite: AE-404.

AE-406 JET AND ROCKET PROPULSION 3 Credits

A study of ramjets, pulsejets, turbojets, and turboprops. Thrust and propulsion, engine efficiencies, fuel consumptions, nozzle flows 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-401.

AE-411 AIRCRAFT PROPULSION SYSTEMS 1 Credit
LABORATORY

A study of piston, jet, and rocket powerplants used in aircraft.

AE-420 AIRCRAFT DESIGN I 3 Credits

Principles of the design of modern aircraft to meet prescribed aerodynamic, structural, and performance specifications. Prerequisites: AE-302, and AE-304. Corequisite: AE-404.

AE-421 AIRCRAFT DESIGN II 3 Credits

Design of aircraft and aircraft components; projects encompassing the principles of the engineering and aeronautical sciences. Prerequisites: AE-420 and AE-404.

AE-450 SPECIAL TOPICS IN AERONAUTICAL ENGINEERING

3 Credits

Lectures, laboratories, or seminars on selected topics in aeronautical engineering. Prerequisites: consent of instructor. May be repeated with a change of content.

DEPARTMENT OF AIR SCIENCE

AS-101 PRIMARY AIR SCIENCE

3 Credits

Pre-flight facts including aircraft components, the four forces, axes of the aircraft, elementary aerodynamics, basic instrumentation and systems, FAA regulations for the student pilot, general service and flight safety, basic weight and balance for light aircraft and elementary radio communications procedures.

AS-101A PRIMARY AIR SCIENCE

5 Credits

Pre-flight facts, elementary aerodynamics, basic instrumentation and systems; basic aircraft performance; airplane stability and control; general service and flight safety; weight and balances; basic flight computer; basic aerial navigation; meteorology; FAA regulations for the student pilot.

AS-112 BASIC AIR SCIENCE I

4 Credits

Basic aerodynamics for pilots, continued study of instruments and systems; basic aircraft performance; airplane stability and control. Basic flight computer. Basic aerial navigation including, dead reckoning, pilotage and elementary radio aids. Meteorology; A study of weather affecting the safe operation of aircraft including interpretations of weather data. Prerequisite: AS-101.

AS-113 BASIC AIR SCIENCE II

3 Credits

Continuation and advanced study of the subjects in AS-112 with emphasis on interpretation of weather phenomena and data including weather maps, sequence reports, winds aloft and area forecasts. Continued study of FAA regulations and the Airman's Information Manual.

AS-114 BASIC AIR SCIENCE I & II

5 Credits

A continuation and advanced study of the subjects offered in AS-101A with emphasis on navigation and the interpretation of weather phenomena and data. Continued study of FAA regulations for the Commercial Pilot and the Airman's Information Manual.

AS-117 AIRCRAFT ENGINES AND SYSTEMS 4 Credits

A comprehensive study of technical terminology including the "language" of maintenance; aircraft engines and accessories; aircraft systems; aircraft structure, stress and certification; maintenance procedures, methods, practices and the servicing of aircraft.

AS-201 ADVANCED AIR SCIENCE I 4 Credits
201A

FAA regulations governing instrument flight; domestic air route traffic control system; radio navigation procedures; enroute and terminal area radio charts; approach and landing aids and charts; advanced meteorology and surface radar. Distance measuring and transponder equipment. Prerequisite: AS-113 or AS-114.

AS-302 ADVANCED AIR SCIENCE II 4 Credits

Continued study of FAA regulations including those pertinent to charter and air taxi operations; advanced navigation including pressure pattern techniques, Doppler, Decca and the fundamentals of inertial guidance systems airborne radar and automatic flight control and approach systems including Cat. II. Prerequisite: AS-201 or 201A.

AS-305 HIGH ALTITUDE METEOROLOGY 3 Credits

A study of meteorological conditions affecting flight operations at altitudes above 20,000 feet including the 'jet stream', clear air turbulence and other phenomena.

AS-307 AIRCRAFT PERFORMANCE 3 Credits

A comprehensive study of the performance characteristics of aircraft including advanced weight and balance, performance curves, power schedules, runway gradients, VI, VR and V2 speeds, cruise control and other factors affecting the operation of large reciprocating and turbine powered aircraft.

AS-309 HIGH SPEED AERODYNAMICS 2 Credits

A study of the aerodynamics behavior of high speed aircraft including transonic and supersonic flight.

AS-401 ADVANCED AIR SCIENCE III 3 Credits

A study of the regulations relating to airline transport pilots and operations of large air carrier aircraft; review of advanced air navigation techniques for instrument flight; international air traffic control procedures and route structure.

AS-404 FUNDAMENTALS OF FLIGHT INSTRUCTING 3 Credits

A comprehensive study of the fundamentals of teaching and learning; effective teaching methods; instructional management; aeromedical information for instructors; instructor responsibilities; aerodynamics; airplane performance; flight training syllabus; federal regulations for instructors and maneuver analysis.



DEPARTMENT OF ECONOMICS

EC-101 ECONOMICS I

3 Credits

A study of the economic interrelationships between supply, demand, cost and price. Microeconomic theory will be emphasized.

EC-201 ECONOMICS II

3 Credits

Application of micro-economic theory to national and international macroeconomic situations and problems, such as: The public Economy; International Trade, Monetary and Financial Policy. Prerequisite: EC-101.

EC-220 ECONOMICS OF INDUSTRIAL ORGANIZATION

3 Credits

An introduction to and an overview of the economic factors effecting Industrial Organization. Organization forms; private enterprise; the price system; cost and financing; new product decisions; optimization.

EC-301 ECONOMIC GEOGRAPHY 3 Credits

Understanding of the physical factors in environment. Production in agriculture, forestry, mining and manufacture studied.

EC-310 LABOR ECONOMICS 3 Credits

The economic characteristics of the labor market; the determination of wages, hours of work, and working conditions; the control of the labor market by unions, employers and the states; history of organized labor.

EC-420 ECONOMICS OF AIR TRANSPORTATION 3 Credits

A study of the Economic aspects of Airways, Airports, Federal aid Air Carriers and Federal Regulation.

DEPARTMENT OF ENGINEERING SCIENCE

ES-201 STATICS 3 Credits

Fundamental concepts and definitions of forces, moments, and couples. Components and resultants of force systems. Equilibrium of force systems. Analysis of trusses, frames and cables. Friction, centroids and moments of inertia. Prerequisite: MA-103, MA-104, or MA-202.

ES-203 FLUID MECHANICS 3 Credits

Fluid properties and definitions. Fluid statics. Basic concepts and equations of fluid-flow. Viscous effects. Reynolds number. Dimensional analysis and dynamics similitude. Flow through pipe and two-dimensional ideal fluid flows. Prerequisites: MA-202.

ES-301 STRENGTH OF MATERIALS 3 Credits

Stresses and strains in tension, compression and shear. Torsion. Shear and bending moment in beams. Fixed and continuous beams. Deflections of beams. Analysis of plane stress and strain. Columns. Riveted and welded connections. Energy methods. Theories of failure. Prerequisite: ES-201.

ES-303 DYNAMICS 3 Credits

Kinematics and kinetics of translation, rotation and general plane motion; work, energy, and power; impulse, momentum, and impact. Prerequisite: ES-201.

ES-305 THERMODYNAMICS 3 Credits

The various processes of energy exchanges between heat and mech-

anical power with certain gases and vapors for the design of all types heat engines, turbines, missiles, compressors, and refrigerators. A study of all basic laws and principles governing both the non-flow and steady-flow processes fundamental in performance cycles of equipment mentioned, whether by use of different ideal gases, vapors, or mixtures. Prerequisite: MA-202, PS-202.

ES-307 METALLURGY AND MATERIALS SCIENCE 3 Credits

A study of the fundamental nature of metals, alloys, and plastics with emphasis on those used in the aircraft industry. Crystal structure, crystallization, and elements of the solid state semiconductors. Phase and equilibrium diagrams. Heat treatment of steel and other alloys. Surface hardening methods and methods of shaping materials. Various physical tests of materials. Materials-joining processes. Corrosion and its prevention. High temperature problems. Prerequisite: PS-202, PS-105, and PS-106.

ES-311 MATERIALS AND PROCESSES LABORATORY 1 Credit

Sheet metal. Welding. Riveting, power grinding, power saw, nibbler, drill press, lathe, rolls, crimping machine. Basic shop procedures. Corequisite: ES-307.

ES-401 MECHANICAL VIBRATIONS 3 Credits

Fundamental principles. Rotation. Simple harmonic motion. Complex numbers. Undamped and damped free vibration. Forced vibration. Two-degrees of freedom. Multi-mass torsional and transverse systems. Equivalent torsional systems. Balancing. Dynamic Dampers. Prerequisite: ES-303 and MA-205.

ES-403 HEAT TRANSFER 3 Credits

Thermal condition. Dimensional analysis. Free and forced convection. Conduction and convection and radiation combined. Experimental establishment of conductivities and emissivities. Prerequisites: ES-305.

ES-404 ELECTRICAL THEORY 3 Credits

Fundamental principles of electric and magnetic circuits and the application of these principles to the theory and performance of direct and alternating-current machines. A study of DC and AC circuits, vacuum-tube characteristics, and electronic devices. Prerequisites: PS-202, MA-205.

ES-405 ELECTRONICS FOR ENGINEERS 4 Credits

Fundamentals of electronics; electronic devices; electronic design, circuits and systems; communications and radar. Prerequisite: ES-404.

ES-407 ADVANCED STRENGTH OF MATERIALS 3 Credits

Unsymmetrical bending, curved beams, torsion, thick-walled cylinders, stress concentrations, thin plates and shells, and energy methods. Prerequisite: ES-301.

ES-409 SPACE MECHANICS 3 Credits

Review of mathematical and mechanical fundamentals including vectors. The two-body problem; orbits, satellite launch; cotangential transfer between circular orbits; interception and rendezvous; long range ballistic trajectories. Gyrodynamics and Gyroscopic instruments, precession and nutation, gyrocompass, stable and three-axes platform, inertial navigation. Vehicle motion. Performance and Optimization single and multi-stage rocket, flight trajectories, utilization of propellant, gravity turn. Generalized theories of Mechanics: system with constraints, generalized coordinates, D'Alembert and Hamilton's principles, LaGrange equations, Missile Dynamics Analysis. Prerequisite: ES-303 and MA-301.

ES-411 MECHANICAL BEHAVIOR OF MATERIALS 3 Credits

Engineering materials under tension, compression and shear. Impact, fatigue, creep, theories of failure, and environmental effects. Prerequisite: ES-301.

ES-450 SPECIAL TOPICS IN ENGINEERING SCIENCE 3 Credits

Lectures, laboratories, or seminars on selected topics in engineering science. Prerequisite: Consent of instructor. May be repeated with a change of content.



DEPARTMENT OF ENGINEERING TECHNOLOGY

ET-101 ENGINEERING GRAPHICS

2 Credits

Principles of lettering. Drawing instruments and their use. Line-work code and drafting techniques. Geometrical constructions. Multi-view projection. Sectional and auxiliary views and revolutions. Dimensioning, shop processes and tolerances. Threads and fasteners.

ET-102 ENGINEERING GRAPHICS II

2 Credits

Continuation of Engineering Drawing I. Detail and assembly drawings. Comparison of the following methods of graphic representation: orthographic, axonometric, oblique and perspective projections. Introduction of descriptive geometry; the principles of orthographic projection applied to the solution of three dimensional problems. Space relationship of points, lines and planes. Curved and wrapped surfaces. Intersections and developments. Vector applications. Prerequisite: ET-101.

ET-110 AIRCRAFT ENGINES — RECIPROCATING

4 Credits

Types of reciprocating engines; theory of engines and principles of operation; power and its measurement; BMEP; ratings; general operating instructions including starting, ground operation, cold weather operation and flight operation; turbo-charging; types, purpose and results of supercharging.

ET-111 AIRCRAFT ENGINES — TURBINE

4 Credits

Study of gas turbine fundamentals including thrust, factors affecting thrust, gas generator, mach number, thrust specific fuel consumption, engine station designations, deffusers and diffusion, types of gas turbine engines. Turbine engine components including turbofan engine fan sections, compressors fuel manifolds and nozzels, thrust reversers, noise supressors, fuel systems and fuel controls, turboprop fuel controls and propellor governors; gas turbine engine operation; engine operational characteristics.

ET-210 AIRCRAFT SYSTEMS AND COMPONENTS

4 Credits

A comprehensive study of aircraft systems including: fuel systems, oil systems, hydraulic systems, electrical systems; pressurization systems and de-ice and anti-ice systems. Conventional and unconventional flight control system. Types of aircraft structure and stresses on the aircraft.

ET-215 ELECTRICAL TECHNOLOGY

4 Credits

D-C and A-C circuit analysis. Magnetism. Electron tubes and semiconductor devices. Applications of electronics. Instrumentation and

measurements. Prerequisite: PS-202, 3 hours of lecture, 3 hours of lab.

ET-301 AIRCRAFT DRAFTING

2 Credits

General conventions. Layout drawings, detail drawings and assembly drawings. Local and general notes. Linework and lettering quality. Dimensioning conventions. Drafting of formed sheet metal parts, welded tube structures, mechanical parts, extrusions and standard aircraft parts. 6 hours drafting. Prerequisite: ET-102.

ET-302 AIRCRAFT DETAIL DESIGN

3 Credits

Projects include structural and mechanical design and specification of shop processes. Selection of various AN and NAS standard parts. Design of riveted, bolted and welded aircraft parts. Design of control cable and swaged end-fitting, control push-pull rod with turnbuckle, and end-fittings and torque tube with hinge bearing. Selection of optimum skin thickness and stiffener spacing in wing two-cell box beam. Prerequisite: ET-301. Corequisite: AE-304.



DEPARTMENT OF FLIGHT

FC-101 PRIMARY FLIGHT

1 or 2 Credits

101A

Preflight operations; starting; taxiing; takeoffs and landings; airport traffic patterns; simulated emergencies; use of radio for communications; maneuvering at minimum controllable airspeed; stalls from all normally anticipated flight attitudes; primary instruments.

FC-112 BASIC FLIGHT

1 Credit

Airplane documents; airworthiness records; airplane performance; airplane loading; including fuel oil and baggage capacities; precision maneuvers; basic instruments use of radio aids to VFR navigation;

cross-country flying short and soft field landings and takeoffs. Prerequisite: FC-101.

FC-201 ADVANCED FLIGHT I

1 Credit

Review and continued study of the subjects in FC-112; advanced precision maneuvers including chandelles, lazy eights and eights-on-pylons and 720 degree power turns; gliding spirals; 180 degree side approaches and 360 degree overhead approaches; accuracy landings.

FC-202 ADVANCED FLIGHT II

1 Credit

Review and continued study of the subjects in FC-201; extensive navigation training including radio navigation utilizing VHF and LF radio navigation aids; air surveillance radar approaches; night operations including night navigation; extensive basic instrument training including radar approach procedures. Prerequisite: FC-201.

FC-203 ADVANCED FLIGHT I & II

2 Credits

A combination of the subjects in FC-201 and 202. Prerequisite: FC101A.

**FC-305 INSTRUMENT FLIGHT
& 305A**

1 Credit

Pre-requisite FC 202 or 203. Instrument flight planning; filing and instrument flight plan; aircraft performance, range and fuel requirements; required instrumentation and equipment and their proper use; advanced instrument flight techniques; recovery from unusual attitudes; emergency procedures; IFR navigation and instrument approach procedures including VOR, ILS, DME and ADF and radar approach procedures, holding procedures; missed approach procedures; compliance with ATC procedures including actual IFR cross-country flying.

**FC-401 ADVANCED FLIGHT REFRESHER
(Commercial & Instrument Rating)**

1 Credit

Advanced recurrency training for the Instrument rated Commercial Pilot including re-review of all air maneuvers, short and soft field landings; cross-wind landings; instrument flight planning; instrument cross-country flying; instrument enroute procedures and navigation; instrument approach procedures of all types; emergency procedures.

FC-404 FLIGHT INSTRUCTION LABORATORY

1 Credit

Pre-requisite AS 404 and Commercial License. Practice in the explanation and demonstration of all prescribed flight maneuvers and

the practical in-flight application of teaching techniques and methods. Demonstration and practice of basic acrobatic maneuvers including the vertical recovery, split "S", loops, spins, clover leaf, barrel roll, aileron roll, immelman and cuban eight.

*** FC-406 MULTI-ENGINE LABORATORY**

1 Credit

Pre-requisite FC 305 or 305A. Multi-engine aircraft systems, loading and performance; VMC V₁ and V₂ speeds; theories of multi-engine flight; pre-flight procedures; basic airwork; landings and take-offs; cruise control and fuel management; emergency procedures-general, engine-out emergencies; night landings and take-offs; multi-engine instrument flight including all types of approaches; emergency procedures in instrument flight including engine-out instrument approaches and missed approaches; a typical IFR cross-country flight of 5 hours duration. This training given in Twin-Beech D-18 type aircraft.

FC-407 MULTI-ENGINE FLIGHT II

No Credits

Pre-requisite FC 406. A review of the procedures in FC 406 in aircraft with gross weight in excess of 12,500 pounds leading to a type-rating with instrument qualifications. Aircraft used for this training is the Douglas DC-3.

**FC-409 INSTRUMENT FLIGHT INSTRUCTOR
LABORATORY**

1 Credit

Pre-requisite AS 404 and Commercial License. Training in the practical application of instruction techniques as applied to instrument flying.

FC-10S MULTI-ENGINE RATING

No Credit

Multi-engine aircraft systems, loading and performances; pre-flight, take offs and landings, basic maneuvers; single engine operation; emergency procedures; flight and fuel consumption planning. Ten (10) flight hours & eight (8) hours of oral instruction.

DEPARTMENT OF GENERAL AVIATION

GA-101 HISTORY OF AVIATION

3 Credits

An interpretative survey of the evolution of flight from the earliest recordings to the present. Emphasis is placed on the effect of aviation on civilization and culture.

GA-205 GOVERNMENT AND AVIATION

3 Credits

A detailed study of the Federal Aviation Agency, its scope, powers,

* Available only to full-time students who have completed pre-requisite training at ERAI in resident programs.

responsibilities and limitations and their effect on commercial and general aviation. Rights of pilots in legal proceedings. The CAB's role in accident investigation.

2 Credits

GA-307 FLIGHT PHYSIOLOGY

Aeromedical information of significance to pilots. Hypoxia, Anoxia, Vertigo, vision, hearing, spatial disorientation, general health, drugs and other factors including the psychological aspects of flight.

3 Credits

GA-310 AIR CARRIER OPERATIONS

Organization and operating procedures of the trunk and feeder airlines of the United States; a public relations for the pilot; employer-employee relationships; crew scheduling and the operations manual. Study of the Airline Pilots Association.

2 Credits

GA-312 COMMUTER AIRLINES

A study of the establishment, operation and control of "third-level" airlines and their role in the air transportation industry including the National Third-Level Airline Association; pertinent CAB regulations; equipment types; availability and operational suitability.

2 Credits

GA-401 AIRPORT DEVELOPMENT

An exploration into the techniques of developing an airport in conjunction with the Federal Aviation Regulations, local and state government agencies, and projected aviation needs. An overview of the problem of developing airports, including research and awareness with emphasis on the proper preparation of an Airport Master Plan.

GA-403 ICAO STRUCTURE & PROCEDURES

2 Credits

A study of the International Civil Aviation Organization and its function in the regulation of international air commerce and non-commercial flight. International pilot certification requirements and significant variances in international flight rules. Publications pertinent to international flight. Aircraft entry and exit requirements.

GA-407 CERTIFICATION OF TRANSPORT AND TURBINE AIRCRAFT

3 Credits

A study of the regulations, procedures and other requirements governing the certification of transport category aircraft including special safety features and operating limitations.

GA-408 FLIGHT SAFETY

3 Credits

A study of accident prevention and flight safety programs. Acci-

dent prevention: including various preventative measures centered upon definitive areas in which accidents occur.

DEPARTMENT OF HUMANITIES

HU-101 ENGLISH COMPOSITION 3 Credits

This course is designed to build individual proficiency in the expression of thoughts into writing. It consists of instruction in sentence construction, parts of speech, vocabulary and rules of writing. Instruction stresses the importance to an engineer of being able to write well. During the course students prepare compositions, business correspondence and long form reports.

HU-102 TECHNICAL REPORT WRITING 2 Credits

The student becomes familiar with and adept at handling all phases of industrial publications. Includes memorandum writing; staff studies; long form technical reports; advertising and illustrations; graphs, tables and charts, and beginning library research. Prerequisite: HU-101.

HU-202 PUBLIC SPEAKING 2 Credits

Fundamentals of voice production, improvement of vocal quality, pitch and intensity. Group and individual exercises for improving articulation and enunciation on speech sounds. Practice in analysis and delivery of various types of public speeches. Introduction to organization, phrasing and diction. Prerequisite: HU-101.

HU-301 BUSINESS ENGLISH 2 Credits

Fundamentals of business writing, commercial and government writing, employment correspondence with emphasis of making job applications, and development of the research report are all parts of this advanced course. Prerequisite: HU-101.

HU-307 CONTEMPORARY LITERATURE 3 Credits

The mainstreams of literature of this century are discussed in a critical way. Each author is analyzed as to his technique, philosophy, and biographical influences. Representative writings from France, England, America, Italy, Russia, Ireland, Germany, Spain and Scandinavia are studied for their impact on English-speaking readers.

HU-408 FINE ARTS I (art) 2 Credits

This course serves as an introduction to the fine and functional arts. The student is led through a graded series of problems in de-

sign to develop an appreciation of good and functional dimension. The course strives to develop the student's critical judgment in evaluating art.

HU-409 FINE ARTS II (music) 2 Credits

This course serves as an introduction to the history and appreciation of music that lives. Recordings, readings, and lectures with same report work on the part of the student make up the basis of the course.

DEPARTMENT OF MATHEMATICS

MA-100 BASIC COLLEGE MATHEMATICS 4 Credits

Fundamental arithmetic and algebraic operations. Equations. Functions and Graphs. Exponents. Geometry. Statistics. Introduction to Trigonometry.

MA-101 ALGEBRA AND TRIGONOMETRY 5 Credits

Fundamental algebraic operations. Real and complex numbers. Polynomials. Equations. Inequalities. Exponents. Probability. Series. Determinants. Logarithms. Trigonometric functions, identities and equations. Radian measure.

MA-201 CALCULUS AND ANALYTIC GEOMETRY I 5 Credits

Graphs and equations of loci, lines, and conics. Limits. Differentiation of algebraic, trigonometric and exponential functions. Applications of first and second derivatives. Prerequisite: MA-101.

MA-202 CALCULUS AND ANALYTIC GEOMETRY II 5 Credits

Meaning and use of integration in problems of areas, volumes, centroids, moments. Polar coordinates. Solid analytic geometry. Partial derivatives. Multiple integrals. Series. Prerequisite: MA-201.

MA-205 DIFFERENTIAL EQUATIONS 3 Credits

Treatment of ordinary differential equations including principal types of first and second order equations, simultaneous equations, and linear equations, with constant coefficients. Applications to physics and mechanics. The Laplace Transform. Prerequisite: MA-202.

MA-301 ADVANCED ENGINEERING MATHEMATICS I 3 Credits

Vector algebra, differential and integral vector calculus, partial derivatives, line and surface integrals, matrices and cartesian tensors. Prerequisite: MA-205.

MA-302 ADVANCED ENGINEERING MATHEMATICS II 3 Credits

Infinite series, Fourier series and orthogonal functions, functions of complex variables, partial differential equations. Prerequisite: MA-301.

MA-309 COMPUTER PROGRAMMING 3 Credits

Fundamentals of computers; use of computers for engineering problems; programming; FORTRAN; preparation of programs for engineering problems.

MA-403 COMPLEX VARIABLES 3 Credits

Complex numbers. Analytic functions. Integrals. Derivatives. Powers series. Conformal mapping. Special functions. Applications. Prerequisite: MA-202.

MA-450 SPECIAL TOPICS IN MATHEMATICS 3 Credits

Lectures or seminars covering specially selected topics in mathematics. Prerequisite: Consent of instructor.

DEPARTMENT OF MANAGEMENT SCIENCE

MS-210 ACCOUNTING I 3 Credits

An introduction to accounting: double entry, income statement, balance sheet, interpretation of accounts; partnerships and corporations. 2 lectures and 2 hours of laboratory per week.

MS-211 BUSINESS LAW 3 Credits

A survey of the legal aspects of business transactions. Contracts, agency, bailments, negotiable instruments.

MS-301 PRINCIPLES OF MANAGEMENT 3 Credits

The fundamental functions of management: Planning, Organization, Staffing, Directing and Controlling are studied. Principles governing the proper discharge of these functions are developed. Case studies will be used.

MS-310 MANAGEMENT ACCOUNTING 3 Credits

Discussion of budgetary control, non-manufacturing costs, uniform cost accounting systems; analysis and control through cost accounting; other managerial reports. 2 lectures and 2 hours of laboratory per week. Prerequisite: MS-210.

MS-311 MARKETING**3 Credits**

Marketing theory; marketing management; Sales management; market research. Public and customer relations; advertising; distribution. Government agencies as customers.

MS-312 BUSINESS STATISTICS**3 Credits**

Tabulation and presentation of business data; measures of central tendency and dispersion; elementary probability and the normal curve of error; reliability of the arithmetic mean. Index numbers. 2 lectures and 2 hours of laboratory per week. Prerequisite: MA-100.

MS-313 PERSONNEL MANAGEMENT**3 Credits**

An introduction to the methods and viewpoints of modern personnel administration. Case studies are selected to develop logical thinking in actual situations.

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 function will be emphasized. Prerequisite: MS-301.

MS-410 FINANCE**3 Credits**

The finance function, financial analysis and control, financial planning, short-term and intermediate term financing, long-term financing and financial strategies.

MS-412 MANAGEMENT INFORMATION SYSTEMS **3 Credits**

Current techniques for Management Data Acquisition and Presentation are investigated. Included are other operations analysis tools. Electronic Data processing Systems and Programs will be reviewed. Prerequisite: MS-312.

MS-413 PSYCHOLOGY OF MANAGEMENT**3 Credits**

A basic course about human problems within the supervisory and management ranks. An introduction to individuals, pairs, and different sized groups in organizations. Prerequisite: SS-205 and MS-313.

MS-420 INDUSTRIAL MANAGEMENT**3 Credits**

An intensive study of management functions and organizations peculiar to industrial organizations. The interfaces and responsibilities of Project, Functional, and Administrative functions will be investigated. Particular attention will be paid to Industrial Engineering, Quality Assurance, and Manufacturing Management functions. Prerequisite: EC-320.

**MS-430 APPLICATIONS OF MANAGEMENT
SCIENCE**

3 Credits

Case problems in determining business policy, instituting policy and appraising the results. The viewpoint is that of top and middle management. Prerequisite: MS-301 and MS-401.

DEPARTMENT OF PHYSICAL EDUCATION

PE-101, 102, 201, and 202

No Credit

Orientation in health and physical education activities. An introduction to seasonal, major, minor and recreational sports. An attempt to develop physical fitness and an appreciation for physical activity. Required of all candidates for academic degrees. Meets two hours per week. No academic credit.

DEPARTMENT OF PHYSICAL SCIENCES

PS-101 PHYSICAL SCIENCE I

3 Credits

A study of the scientific method and its discoveries. Applications of science to problems of astronomy, chemistry and physics.

PS-102 PHYSICAL SCIENCE II

3 Credits

Application of the scientific method to problems in physics, geology, meteorology and cosmology.

PS-105 CHEMISTRY I WITH LABORATORY

4 Credits

Fundamental principles of chemistry, basic atomic theory, valence, the chemical bond, oxidation number, symbols, formulas, equations and nomenclature. Chemical calculations, rates of reaction. Acids, bases and salts. Oxygen and hydrogen. The periodic system. Conservation of mass and energy.

PS-106 CHEMISTRY II WITH LABORATORY

3 Credits

Equilibrium and kinetics. Metals and non-metals. The halogens, sulfur, nitrogen, and their compounds. Iron, copper and aluminum, nuclear chemistry. Prerequisite: PS-105.

**PS-201 PHYSICS I, MECHANICS AND HEAT
WITH LABORATORY**

5 Credits

Vector and scalar quantities. Newton's laws of motion and gravitation. Friction. Work. Energy. Power. Torque and rotational motion. Momentum. Curvilinear Motion. Elastic properties of matter. Fluids

at rest and in motion. Properties of gases. Heat. 4 lectures per week and one 3-hour laboratory per week. Corequisite: PS-105.

PS-202 PHYSICS II, SOUND, ELECTRICITY AND LIGHT WITH LABORATORY 5 Credits

Wave motion, sound waves, acoustics. Fundamental laws of electricity and magnetism. Electrostatic and electromagnetic field theory. Induced electromagnetic forces. Power. Capacitance. Electrical instruments. Nature of light, index of refraction, refraction by lenses, reflection from mirrors, diffraction, and interference. 3 lectures per week and one 3-hour laboratory per week. Prerequisite: PS-201.

PS-303 MODERN PHYSICS 3 Credits

A survey course in modern concepts in physics. The nucleus and atomic structure. Fundamentals of wave mechanics. Basic relativity. Mossbauer effect. Parity and fundamental particles. High energy physics, cryogenics and superconductivity. Fundamentals of electronics. Microwave Optics. Stimulated emission, lasers.

PS-307 APPLIED PHYSICAL CHEMISTRY 3 Credits

Chemical equilibria, kinetics, phase rule, chemical thermodynamics, kinetic theory of gases, thermochemistry, high temperature gas reactions, photochemistry, basic statistical mechanics.

PS-450 SPECIAL TOPICS 3 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.

**DEPARTMENTS OF
SHOP SCIENCE AND AIRCRAFT SYSTEMS,
AIRFRAME ASSEMBLY & REPAIR, AND
ELECTRICITY AND ELECTRONICS**

SL-11 BASIC SCIENCE AND WELDING

Basic training in the responsibility of a mechanic. Reading and understanding Federal Air Regulation. Review of high school mathematics, physics and drafting for the aviation mechanic. Introduction to aircraft, its major components, aircraft terms and Theory of Flight; woodwork, dope and fabric, requirements relative to quality of material and method of repairs; gas welding, brazing, silver soldering; use of electric and inert gas welding equipment.

SL-12 POWERPLANT SCIENCE AND SYSTEMS

Theory of engines and principles of operation; four-stroke cycle principle, cam rings, pistons, piston rings, cylinders, lubrication of Radial and opposed engines, float carburetors, pressure carburetors, direct injection fuel systems and jet propulsion theory.

SL-13 AIRCRAFT SYSTEMS

Methods of repair or replacement of aircraft components; functions of pumps, pressure regulators, selector valves, actuators, relief valves, bypass valves, power brakes, steering devices and anti-skid controls, fuel systems and fuel management, cabin pressurization, heating, air conditioning, wing deicing, oxygen, anti-icing, fire detection, and flight instrument systems.

SL-14 ELECTRICAL LABORATORY

Fundamentals of Aircraft Electricity, both Direct and Alternating Current. Use of Ohm's Law and Impedance formulas. Theory of Capacitance and Induction as applied to Aircraft. Theory and maintenance of AC and DC motors, generators, alternators, and motor controls, Installation of Batteries, Airframe wiring, conduit, junction boxes, relays, circuit protectors, switches, radio's and associated components in accordance with current FAA regulations, trouble shooting aircraft electrical components and associated systems.

SL-15 THRUST AND PROPULSION LAB.

Theory of propeller operation; design and functions of propeller systems; propeller maintenance procedures. Turbine engines, principles of operation, ram-jets, pulse-jets, rockets, turbo-jet, turbofan and turbo-prop. Maintenance, overhaul, inspection and test.

SL-16 ENGINE OVERHAUL AND MAINTENANCE

The complete disassembly and overhaul of engines and accessories, including applicable repair and inspection procedure. Powerplant operation, trouble shooting and test-run-in procedures. The use of technical publication, and details of record processes.

SL-17 AIRCRAFT STRUCTURES AND REPAIR

Training and knowledge needed to overhaul and maintain modern aircraft; basic skills in the use of hand and power operated metal cutting tools; aluminum and aluminum alloys and their fabrication; heat treating, cold work and riveting; repair and overhaul of live aircraft; new aircraft structures and manufacturing techniques.

SL-18 AIRCRAFT ASSEMBLY, WEIGHT AND BALANCE

Final assembly of aircraft; rigging and adjustment; weight and balance; weighing aircraft; inspection and inspection procedures; servicing, ground handling, pre-flight checks, and final written test covering all subjects.



DEPARTMENT OF SOCIAL SCIENCES

SS-101 WORLD HISTORY

3 Credits

Designed primarily as a survey of the development and evolution of Western civilization from 1660 to the present. Emphasis is placed on contemporary civilization and culture.

SS-201 AMERICAN HISTORY

3 Credits

(1865 to the present). Reconstruction; the age of big business; the U. S. as a world power; World Wars I and II. The great depression and its aftermath. Studied in an interpretative survey.

SS-203 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-205 PSYCHOLOGY 2 Credits

A thorough discussion of adjustment and understanding, emphasizing their importance to the engineer. The study probes the fields of frustration responses, defense mechanisms, psychoses, and neuroses, etc., relating them to personnel problems in industry.

SS-301 AMERICAN NATIONAL GOVERNMENT 3 Credits

Basic issues of American democracy, constitutional principles and the executive, legislative, and judicial branches of government.

SS-404 PHILOSOPHY 3 Credits

An integrated study of man and the concepts of this culture, including views about himself, society, philosophy and the arts.

SS-406 CONTEMPORARY LATIN AMERICA 3 Credits

A survey of the common denominators of Latin American History with detailed application of these elements to the evolution of contemporary Latin America.

SS-407 CURRENT HISTORY 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-408 AMERICAN FOREIGN POLICY 3 Credits

A survey of the origins of the basic elements of American Foreign Policy. A summary review of the major issues in American Diplomatic History since 1860.



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listed in this Interim Bulletin are
subject to change without notice.*

