AEROSPACE AND FLIGHT TRAINING

AER 110	**Air Navigation**	2	2	3
Prerequisites:	None			
Corequisites:	None			

This course covers the basic elements of air navigation, fundamentals of pilotage and dead reckoning, and the use of a plotter, computer, and aerial charts. Topics include pilotage, dead reckoning, radio navigation, LORAN, Global Positioning Systems, and the use of FAA publications. Upon completion, students should be able to interpret aeronautical charts and apply navigational principles.

AER 111	**Aviation Meteorology**	3	0	3
Prerequisites:	None			
Corequisites:	None			

This course covers the atmosphere, interpretation and measurement of meteorological elements, and the effects of such on aircraft operations and performance. Topics include heat exchanges in the atmosphere; temperature, pressure, stability, clouds, air masses, fronts, and thunderstorms; and the use and interpretation of weather data. Upon completion, students should be able to analyze weather data for flight planning and safe flying.

AER 112	**Aviation Laws & FARs**	2	0	2
Prerequisites:	None			
Corequisites:	None			

This course provides an in-depth study of the state, federal, and international regulations forming the structure of aviation law. Emphasis is placed on Federal Aviation Regulations Parts 61, 91, and 135 with additional emphasis on legal issues in aviation law. Upon completion, students should be able to apply legal principles and interpret federal air regulations.

AER 113	**History of Aviation**	2	0	2
Prerequisites:	None			
Corequisites:	None			

This course provides a historical survey of the efforts of manned-flight. Topics include the development of aircraft, milestones in aviation, noted pioneers, and the socioeconomic impact of flight upon modern civilization. Upon completion, students should be able to demonstrate an understanding of the advancements that aviation has accrued for society and contemporary changes in aviation.

AER 114	**Aviation Management**	3	0	3
Prerequisites:	None			
Corequisites:	None			

This course covers operation of a flight department on a cost-effective basis and analysis of profit and loss statements. Topics include flight operations costs aircraft acquisition analysis and cost comparisons, costs versus revenue, and break-even points. Upon completion, students should be able to calculate cost of flight operations and apply monthly and annual budget analysis.

		Class	Lab	Credit
AER 115	**Flight Simulator**	0	2	1

Prerequisites: None
Corequisites: None

This course covers instrument instruction and training in a FAA-approved flight simulator. Emphasis is placed on approach and navigation procedures including holding and missed approaches. Upon completion, students should be able to plan and execute an IFR flight and smoothly transition to instrument training in the aircraft.

AER 119	**Aircraft Structures**	2	0	2

Prerequisites: None
Corequisites: None

This course introduces aircraft airframes and associated appliances. Emphasis is placed on strength of materials, aircraft standards, type certificate data sheets, basic airframe construction, and weight and balance fundamentals. Upon completion, students should be able to analyze strength of materials data and apply their analysis to semi-monocoque, full-cantilever, and truss-type airframes.

AER 150	**Private Pilot Flt Theory**	2	2	3

Prerequisites: None
Corequisites: None

This course covers the aeronautical knowledge required to meet the Federal Aviation Administration regulations for private pilot certification. Topics include the principles of flight, the flight environment, basic aircraft systems and performance, basic meteorology and weather data interpretation, and FAA regulations. Upon completion, students should be able to demonstrate the competencies required for the FAA written examination for a private pilot certificate.

AER 151	**Flight-Private Pilot**	0	3	1

Prerequisites: None
Corequisites: None

This course provides the hands-on training needed to qualify for a Federal Aviation Administration private pilot certificate. Topics include flight maneuvers (ground procedures, take-offs, climbs, level flight, turns, glides, stalls, slow flight, descents, slips, landings, emergency procedures) and cross-country planning and navigation. Upon completion, students should be able to demonstrate the competencies required for the flight test practical exam for the private pilot certificate.

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AER 152	**Fundamentals of Flight**	3	2	4

Prerequisites: None
Corequisites: None

This course covers fundamental aeronautical knowledge of piloting aircraft. Topics include the principles of flight, basic aircraft systems and performance, basic meteorology, pilotage and dead reckoning, radio navigation, and FAA regulations. Upon completion, students should be able to interpret aeronautical charts and apply navigational principles and understand basic aviation concepts.

		Class	Lab	Credit
AER 160	**Instrument Flight Theory**	2	2	3
Prerequisites:	None			
Corequisites:	None			

This course covers the required aeronautical knowledge of the Federal Aviation Administration Regulation Instrument Ground School. Topics include a study of instruments, systems, instrument flight charts, instrument flight planning, approach procedures, and the IFR regulations. Upon completion, students should be able to demonstrate the competencies required to complete the FAA written examination for an instrument rating.

AER 161	**Flight-Instrument Pilot**	0	6	2
Prerequisites:	AER 151			
Corequisites:	None			

This course covers instruction and training in instrument flight planning including IFR navigation, VOR, ILS, ADF, and compliance with ATC procedures. Emphasis is placed on approach and navigation procedures, including holding and missed approaches, and development of skill in executing en route and approach procedures. Upon completion, students should be able to plan and execute an IFR flight and demonstrate competencies required for the FAA instrument pilot flight exam.

AER 170	**Commercial Flight Theory**	3	0	3
Prerequisites:	None			
Corequisites:	None			

This course covers advanced aircraft control, cross-country operations, and other topics required for the FAA commercial pilot written exam. Emphasis is placed on the principles of aircraft performance and operation, take-off performance, cruise performance, descent and landing performance, and weight and balance computations. Upon completion, students should be able to demonstrate commercial pilot skills and competence in the materials required for the FAA written commercial pilot examination.

AER 171	**Flight-Commercial Pilot**	0	6	3
Prerequisites:	AER 161			
Corequisites:	None			

This course provides the hands-on training needed to qualify for a Federal Aviation Administration commercial pilot certificate. Topics include flight instruction in advanced precision maneuvers, maximum performance take-off and landings, emergency procedures, operation of complex aircraft, aircraft performance, and range and fuel planning. Upon completion, students should be able to demonstrate competence in the areas of the flight test practical exam for the commercial pilot certificate.

AER 210	**Flight Dynamics**	3	0	3
Prerequisites:	None			
Corequisites:	None			

This course covers basic and advanced principles of aerodynamic phenomena and fluid flow. Topics include airflow phenomena; lift/weight/thrust/drag; aircraft configuration characteristics, stability, and control; subsonic, transonic, and supersonic flight; critical Mach numbers; and the V-g Diagram. Upon completion, students should be able to explain the elements of applied aerodynamics and aeronautical engineering which relate directly to the problems of flight operations.

		Class	Lab	Credit
AER 211	**Air Traffic Control**	2	0	2
Prerequisites:	None			
Corequisites:	None			

This course provides a detailed analysis of all aspects of air traffic control. Emphasis is placed on an in-depth analysis of air traffic control, including utilization of the air traffic environment based on the pilot's and controller's perspective. Upon completion, students should be able to operate an aircraft within the national airspace system under FAA air traffic control.

AER 212	**Air Transport Pilot**	3	0	3
Prerequisites:	AER 160 and AER 170			
Corequisites:	None			

This course provides advanced study for the professional pilot. Topics include an in-depth study of B-727/737 weight and balance, high altitude weather, Part 121 FARs, and performance considerations of large aircraft. Upon completion, students should be able to calculate weight and balance of large aircraft, determine performance data, and apply high altitude weather principles.

AER 213	**Avionics**	2	0	2
Prerequisites:	None			
Corequisites:	None			

This course covers standard navigational and communications equipment and theory. Emphasis is placed on aviation radio spectrum, VHF omnirange, ILS, ADF, transponders, weather radar, flight directors, and autopilots. Upon completion, students should be able to utilize VOR, ADF, ILS, GPS, flight directors, HSI's, and autopilots in the flight environment.

AER 214	**Air Carrier Operations**	2	0	2
Prerequisites:	None			
Corequisites:	None			

This course introduces air carrier operations as related to the flight crew and dispatcher. Topics include manifests, flight planning format, charts and performance graphs, and performance considerations of large aircraft. Upon completion, students should be able to calculate weight and balance, apply center of gravity changes, and calculate take-off and landing distances using balanced field lengths.

AER 215	**Flight Safety**	3	0	3
Prerequisites:	None			
Corequisites:	None			

This course covers the basic procedures and practices of aircraft accident prevention, accident investigation, and reporting. Topics include a comprehensive review of federal regulations pertinent to aviation safety and analyses of actual aviation accident cases and their causes. Upon completion, students should be able to demonstrate an understanding and respect for specific personal factors such as attitude, motivation, and skill related to flight safety.

		Class	Lab	Credit
AER 216	**Engines & Systems**	2	2	3
Prerequisites:	None			
Corequisites:	None			

This course introduces piston and turbine aircraft engines and associated systems. Topics include aircraft hydraulic, pneumatic, electrical, air conditioning, and pressurization systems along with the theory of engine operations, including power and thrust computations. Upon completion, students should be able to apply principles of engine and systems operation.

AER 217	**Air Transportation**	3	0	3
Prerequisites:	None			
Corequisites:	None			

This course covers the development and present status of the air transportation system. Topics include federal legislation, characteristics and classification of air carriers, development of the air traffic control system, and the organization and function of the FAA. Upon completion, students should be able to relate the knowledge acquired to career development.

AER 218	**Human Factors in Aviation**	2	0	2
Prerequisites:	None			
Corequisites:	None			

This course analyzes interpersonal relationships in the cockpit and related psychological factors that affect pilot performance and efficiency during flight operations. Topics include cockpit management, judgment, aircraft and flight crew coordination and control, physiological factors, responsibility, and decision-making capabilities. Upon completion, students should be able to apply work-proven routines to stress management, crew responsibility, and the team concept in the cockpit.

AER 220	**Airport Management**	2	0	2
Prerequisites:	None			
Corequisites:	None			

This course examines the major functions of airport management and the concepts underlying airport planning and construction. Topics include forecasting volumes and airport size and design, including master planning, location requirements, site selection, runway configuration, zoning laws, and other considerations. Upon completion, students should be able to demonstrate basic airport management skills including an understanding of the socioeconomic effect of airports on the community.

AER 280	**Instructor Pilot Flt Theory**	3	0	3
Prerequisites:	AER 170			
Corequisites:	None			

This course covers flight instruction and the skills and knowledge necessary to work effectively as a flight instructor. Topics include fundamentals of instruction, lesson planning, instructor regulations and endorsements, and related aeronautical knowledge. Upon completion, students should be able to demonstrate competence necessary for the Federal Aviation Administration Fundamentals of Instructing Test and the appropriate instructor written examination.

		Class	Lab	Credit
AER 281	**Flight-CFI**	0	3	1
Prerequisites:	AER 171			
Corequisites:	None			

This course provides experience in preparation for the flight instructor practical test. Emphasis is placed on the ability to transition to right seat flight while teaching performance maneuvers including operation of a complex aircraft. Upon completion, students should be able to demonstrate competence in right seat operation and CFI maneuvers as specified in the FAA Practical Test Standards.

AER 285	**Flight-Multi-Engine**	0	3	1
Prerequisites:	AER 171			
Corequisites:	None			

This course provides the flight training required to obtain a multi-engine rating. Topics include multi-engine safety procedures, single-engine operations and performance, Vmc, instrument approaches (single- and multi-engine), and emergency procedures. Upon completion, students should be able to demonstrate the competencies required for the flight test practical examination for a multi-engine rating.

See the SEL and SEM prefixes for generic Selected Topics and Seminar course descriptions.