

# AERONAUTICS (AERN)

## AERN 12500 SURVEY OF AERONAUTICS 3 Credit Hours

This course provides an overview of the air transportation industry and gives students a broad overview of career requirements and opportunities in several fields to include professional piloting, air traffic control and aviation management. Student will gain historical perspective while learning about emerging trends.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## AERN 15000 INTRODUCTION TO AERONAUTICS 3 Credit Hours

Introduction to aeronautical and aerospace technology, including historical development, underlying science and technical applications. The past, present and future social, economic, technical and political impact of aviation are also explored.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## AERN 15250 FAA ORIENTATION 3 Credit Hours

Introduction to the Federal Aviation Administration with particular emphasis on its role and impact on air traffic management and the National Airspace System (NAS). Course addresses the unique aspects and requirements of federal employment, as well as federal regulations affecting flight operations and the FAA's associated supporting agencies.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## AERN 15740 ELEMENTS OF FLIGHT THEORY 5 Credit Hours

Basic instruction in all areas which gives the student aeronautical knowledge required for a private pilot certificate.

**Corequisite:** AERN 15741.

**Schedule Type:** Lecture

**Contact Hours:** 5 lecture

**Grade Mode:** Standard Letter-IP

## AERN 15741 PRIVATE PILOT FLIGHT 5 Credit Hours

Flight course designed to fulfill FAA requirements for private pilot certificate. With special approval, this course may be repeated only once. Student is required to spend a minimum of 2 hours each day, five days a week, at the airport, until course requirements have been attained. When not flying, the student goes through personalized ground instruction. Minimum FAA flight time requirements towards the private pilot certificate is 48 hours. Actual flight training may exceed 48 hours. Special course fees apply. Please visit [www.kent.edu](http://www.kent.edu). Students must obtain Student Pilot Certificate and have and maintain valid medical and TSA approval prior to starting course.

**Prerequisite:** Must be a Professional Pilot concentration within the Aeronautics major.

**Corequisite:** AERN 15740 and MATH 11010.

**Schedule Type:** Flight Training

**Contact Hours:** 9 other

**Grade Mode:** Standard Letter-IP

## AERN 15745 NON-PILOT ELEMENTS OF FLIGHT THEORY 3 Credit Hours

Basic instruction in areas to include: Federal Regulations, navigation, communication, airspace, weather, basic aerodynamics, and aero-medical factors which give the student a foundation in aeronautics. This course does not satisfy the Federal Aviation Regulation requirement for endorsement to take the Airman Knowledge Exam for a private pilot nor does it satisfy the Aircraft Dispatch minor.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## AERN 22500 INTRODUCTION TO AVIATION MAINTENANCE MANAGEMENT 2 Credit Hours

Introduction to the day-to-day concepts used by an aviation maintenance manager. Course provides an overview of the different aspects that go into managing human resources and overseeing the safe, legal and efficient inspection, repair and return to service of aircraft when working at a private maintenance repair organization (MRO), an airline, or a fixed-base operator (FBO). On a more practical level, course reviews leadership/management styles and challenge students to identify what type of manager they want to become.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

## AERN 25100 INTRODUCTION TO AVIATION MANAGEMENT 3 Credit Hours

Introduction to the day-to-day concepts of Airline, Airport, and other businesses pertaining to the aviation industry.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## AERN 25250 ELEMENTS OF AVIATION WEATHER 3 Credit Hours

Aviation weather provides a comprehensive look at the Earth's atmosphere, general patterns and specific phenomena, and a focus on weather as related to flight.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## AERN 25251 WEATHER INFORMATION SYSTEMS 3 Credit Hours

Introduction to various weather sensing equipment and the systems that deliver weather information to various users. An in-depth look at the National Weather Service, NOAA, NASA, FAA and commercially available weather information systems.

**Prerequisite:** AERN 25250 or GEOG 31062.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 25252 THUNDERSTORMS AND SEVERE WEATHER 3 Credit Hours**

Analysis and forecast of thunderstorm and severe convective weather activity development and movement. Analysis of atmospheric information and clouds, radar, computer models, and charts. A study of mid-latitude cyclones and some focused study on tropical depressions, hurricanes, tornadoes, dust and sand storms. Study includes geographic effects and cyclone life cycles. Provides an in-depth look at the development of severe weather products for aviation such as AIRMET, SIGMET and Convective SIGMET.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 25350 FUNDAMENTALS OF AIR TRAFFIC CONTROL 2 Credit Hours**

Introduction to the National Airspace System (NAS) and the orders, manuals, and procedures associated with the purposes and directives of the air traffic control environment. Introduces and discusses those areas of required knowledge of the AT-Basics needed to become an Air Traffic Controller. These topics include the principles of flight, the FARs, navigation, aviation weather and other ATC related areas.

**Prerequisite:** Aeronautics major.

**Corequisite:** AERN 25351.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 25351 FUNDAMENTALS OF AIR TRAFFIC CONTROL LABORATORY 1 Credit Hour**

Introductory laboratory course on air traffic management and the National Airspace System, the orders, manuals and procedures associated with the purposes and directives of the air traffic control environment. To include purposes and responsibilities of the ATC system.

**Prerequisite:** Aeronautics major.

**Corequisite:** AERN 25350.

**Schedule Type:** Laboratory

**Contact Hours:** 2 lab

**Grade Mode:** Standard Letter

**AERN 25743 COMMERCIAL PILOT FLIGHT I 2 Credit Hours**

Advanced flight course providing flight instruction for the commercial pilot. Primary emphasis is on cockpit resource management, advanced navigational practices and basic instrument instruction. With special approval, this course may be repeated only once. Student is required to spend a minimum of two hours daily, four days a week, at the airport until all course requirements have been attained. When not flying, the student goes through personalized ground instruction. Special course fees apply. Please visit [www.kent.edu/cae](http://www.kent.edu/cae) for a list of fees.

**Prerequisite:** A minimum C grade in both AERN 15740 and AERN 15741; and minimum 2.500 overall GPA; and must be in the Professional Pilot concentration in the Aeronautics major.

**Corequisite:** AERN 25250 and MATH 11010.

**Schedule Type:** Flight Training

**Contact Hours:** 2 other

**Grade Mode:** Standard Letter-IP

**AERN 25800 INTRODUCTION TO UNMANNED AIRCRAFT SYSTEMS 3 Credit Hours**

An overview of unmanned aircraft systems. Course topics include the history, development, and evolution of unmanned aircraft; current and forecast trends and issues; capabilities and performance of unmanned aircraft; UAS applications; regulations governing unmanned aircraft systems; unmanned aircraft flight operations; and opportunities and career paths in unmanned aircraft systems.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 30000 PROFESSIONAL DEVELOPMENT IN AERONAUTICS 1 Credit Hour**

The course will build upon the lessons learned in Professional Development in Aeronautics I by providing direct opportunities for interviewing and networking with professionals working in the aeronautics industry. Students will continue preparation for a career in the aeronautics industry by revising and implementing their career plan and goals.

**Prerequisite:** Junior standing.

**Schedule Type:** Seminar

**Contact Hours:** 1 lecture

**Grade Mode:** Standard Letter

**AERN 32100 ADVANCED AIRCRAFT COMPOSITE TECHNOLOGY 2 Credit Hours**

As the changes and improvements in technology progress in aircraft manufacturing, composites are becoming commonplace on airframes of all sizes and varieties. This course provides a more in-depth look at composites than what an airframe and powerplant mechanic receives in their initial training. Students study the theory behind aircraft composites and composite inspection and repair with a focus on latest updates in composite technology. Students are able to observe how composites are used practically in the aviation industry and investigate the most recent advances in composite technology.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 32200 AVIONICS MAINTENANCE FOR GLASS COCKPITS 2 Credit Hours**

Advanced avionics utilizing computers and screens, "glass cockpits," has become standard on most new aircraft including smaller general aviation (GA) aircraft. Course focuses on the different maintenance and troubleshooting aspects of working with these systems, with a specific focus on those systems installed on smaller GA aircraft.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 32300 INSPECTION AUTHORIZATION I 2 Credit Hours**

Course prepares students by instructing them in the knowledge and subject areas necessary to pass the inspection authorization exam. Inspection authorization is issued to students by the FAA to airframe and powerplant mechanics after they have completed experience requirements and passed the exam. To register for the course, students must meet the FAA eligibility requirements to sit the IA exam and receive the authorization.

**Prerequisite:** Special approval.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 32400 AVIATION COMMUNICATIONS 2 Credit Hours**

When it comes to communications between pilots, dispatchers, managers and aviation maintenance technicians, there can be many different terms and abbreviations that cause confusion and miscommunications. This course outlines common terms and abbreviations used in the different aviation departments and addresses how to avoid common pitfalls in communication between maintenance personnel, pilots, dispatchers and upper management. Additionally, students are introduced to techniques for interaction to foster a positive work and safety culture within their organizations.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 35001 AIRCRAFT FABRICATION 3 Credit Hours**

The study and laboratory practice of government approved procedures used in the fabrication, repair and testing of certificated aircraft.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35020 AIRCRAFT PROPULSION SYSTEMS 3 Credit Hours**

A study of basic reciprocating and gas turbine engine theory. Course investigates powerplant construction, component function, including propeller and fuel systems, ancillary systems that support aircraft propulsive systems and performance characteristics.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35021 RADAR SATELLITE WEATHER INFORMATION 3 Credit Hours**

A study of satellite and radar imagery. A focus on both passive and active remote sensing systems. Student develops an understanding of the properties of meteorological radar sensing, signal propagation and estimating precipitation. Provides an in-depth look at radar and satellite products and their application to aircrew operations. Emphasis is placed on real-time identification of weather phenomena affecting a flight in progress.

**Prerequisite:** AERN 25250 or GEOG 31062.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35022 WEATHER STRATEGY FOR AIRCREWS 3 Credit Hours**

Flying strategies for various weather conditions to include low ceilings and visibility, turbulence, cold weather, thunderstorms, and wind shear. An exploration of basic and advanced weather theory and how to get the best use of FAA and commercially available forecast products and briefing services. Course takes a condition-by-condition look at various hazardous weather phenomena.

**Prerequisite:** AERN 25250 or GEOG 31062.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35030 INTRODUCTION TO CORPORATE AVIATION 3 Credit Hours**

Introduces students to the business and corporate sectors of commercial aviation. Examines business and corporate aviation from the joint perspectives of operations and maintenance management as well as flight operations.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35031 AIR TRANSPORTATION INDUSTRY REGULATIONS 3 Credit Hours**

This course will examine the functions of the regulatory agencies in the aviation industry. The evolution of Administrative Regulation, Federal Aviation Regulation and the rule making process.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35040 AIRCRAFT SYSTEMS I 3 Credit Hours**

In-depth study of various aircraft systems including electrical systems, environmental control systems, and fuel systems as applied to aircraft.

**Prerequisite:** PHY 13012.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35150 AIRCRAFT STRUCTURES 3 Credit Hours**

Aircraft structural design investigations dealing with theory and applications in aviation.

**Prerequisite:** PHY 13001.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 3 other

**Grade Mode:** Standard Letter

**AERN 35250 UNMANNED AIRCRAFT SYSTEMS LAW AND REGULATIONS 2 Credit Hours**

This course introduces students to the changing and dynamic area of UAS laws and regulations. Students will study the Constitutional, statutory and regulatory sources of law. Students will study the Congressional and regulatory development of UAS laws. Students will learn how the regulatory process, advanced proposals of rulemaking and notice of proposed rule making operates. Students will also study pertinent case law regarding Constitutional, criminal, privacy issues, tort and products liability issues. Finally, students will learn and understand how to legally operate a UAS in the National Airspace System in an always changing legal and technology environment.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 35339 FIXED BASE OPERATOR OPERATIONS 3 Credit Hours**

A study of general aviation operations and the role of Fixed Base Operators in the National Aviation System; management functions; marketing; profit; cash flow; financing; human resources; organization; administration; management information systems; operations; maintenance; safety; liability; physical facilities; and the future of general aviation.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35340 AIRPORT MANAGEMENT 3 Credit Hours**

Introduction to the many functions that are involved in the operation and management of an airport. Includes an analysis of the development of the airport-airway system, airport legislation, airport planning and airport operations.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35341 AIR TRANSPORTATION SYSTEMS 3 Credit Hours**

Descriptive course in airline operations as seen from the air carrier's business perspective. Emphasis is on business practices and techniques unique to aviation.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35342 TERMINAL OPERATIONS I 2 Credit Hours**

Intermediate level terminal operations course. Emphasis on tower operations at the clearance delivery, ground control, and local control positions. Topics covered will include, but not be limited to phraseology, procedures, LOAs and weather.

**Prerequisite:** AERN 25350 and AERN 25351; and AERN 15740 or AERN 15745; and Aeronautics major.

**Corequisite:** AERN 35345.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 35343 EN ROUTE I 3 Credit Hours**

Introduction to en route operations of air traffic control. Focus on the non-RADAR foundations of en route operations. Topics covered include, but are not limited to phraseology, maps, LOAs, rules and procedures in a non-RADAR environment.

**Prerequisite:** AERN 25250, AERN 25251, AERN 35342 and AERN 35345; and Aeronautics major.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35345 TERMINAL OPERATIONS I LABORATORY 1 Credit Hour**

Application of terminal air traffic control operating principles explored in AERN 35342 Terminal Operations I.

**Prerequisite:** AERN 25350 and AERN 25351; and AERN 15740 or AERN 15745; and Aeronautics major.

**Corequisite:** AERN 35342.

**Schedule Type:** Laboratory

**Contact Hours:** 2 lab

**Grade Mode:** Standard Letter

**AERN 35644 INSTRUMENT FLIGHT THEORY 3 Credit Hours**

Course instruction on Instrument Flight to include, navigation facilities (both ground and aircraft), weather theory and weather specific to instrument meteorological conditions, weather charts and sources, cross-country flight planning for IFR, FAA regulations specific to IFR flight, Charts for Instrument Flight, Aircraft Performance, Decision Making, Aircraft Systems and Instruments related to IFR Flight, and Instrument Flight techniques and procedures. This course meets the requirements for endorsement to take the FAA Airman Knowledge Exam for an Instrument Rating and satisfies the requirements of the Training Course Outline approved by the FAA.

**Prerequisite:** AERN 15740 and AERN 25250; and Aeronautics major.

**Corequisite:** AERN 35645.

**Schedule Type:** Flight Training

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35645 INSTRUMENT PILOT FLIGHT 2 Credit Hours**

Comprehensive flight course for the professional pilot candidate to meet the requirements of the FAA instrument rating. This course may be repeated only once. Student is required to spend a minimum of two hours daily, five days a week, at the airport until all course requirements have been attained. When not flying, the student goes through personalized ground instruction. Special course fees apply. Please visit [www.kent.edu](http://www.kent.edu) for a list of fees.

**Prerequisite:** Minimum C grade in AERN 25743; and minimum 2.500 overall GPA; and must be in the Professional Pilot concentration in the Aeronautics major.

**Corequisite:** AERN 35644.

**Schedule Type:** Flight Training

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter-IP

**AERN 35647 COMMERCIAL PILOT FLIGHT II 2 Credit Hours**

Comprehensive flight course for the professional pilot candidate once. Student is required to spend a minimum of two hours each day, four days a week, at the airport until course requirements have been attained. Special course fees may apply. When not flying, the student goes through personalized ground instruction. Special course fees apply. Please visit [www.kent.edu](http://www.kent.edu) for a list of fees.

**Prerequisite:** Minimum C grade in AERN 35644; and AERN 35645; and minimum 2.500 overall GPA; and must be in the Professional Pilot concentration in the Aeronautics major.

**Corequisite:** AERN 35746.

**Schedule Type:** Flight Training

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter-IP

**AERN 35650 NON-PILOT INSTRUMENT FLIGHT THEORY 3 Credit Hours**

Course instruction for instrument flight to include: navigation facilities and equipment (both ground and aircraft), general weather theory and weather related to instrument meteorological conditions, weather charts and sources, FAA regulations pertinent to the conduct of instrument flight, aeronautical charts for instrument flight and techniques and procedures unique to the conduct of instrument flight. This course does not satisfy the Federal Aviation Regulation requirement for endorsement to take the Airman Knowledge Exam for an Instrument Rating nor does it satisfy the Aircraft Dispatch minor.

**Prerequisite:** AERN 15740 or AERN 15745; and AERN 25250.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35746 COMMERCIAL PILOT THEORY 2 Credit Hours**

Comprehensive instruction covering all areas necessary to exercise the privileges of a commercial pilot.

**Prerequisite:** AERN 35644.

**Corequisite:** AERN 35647.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 35747 COMMERCIAL PILOT FLIGHT III 2 Credit Hours**

Comprehensive flight course for the professional pilot candidate to meet the requirements of the FAA commercial pilot certificate. With special permission, this course may be repeated only once. Student is required to spend up to two hours daily, four days a week, at the airport until the course requirements been attained. When not flying, the student goes through personalized ground instruction. Special course fees apply. Please visit [www.kent.edu](http://www.kent.edu) for a list of fees.

**Prerequisite:** Minimum C grade in AERN 35647; and minimum 2.500 overall GPA; and must be in the Professional Pilot concentration in the Aeronautics major.

**Schedule Type:** Flight Training

**Contact Hours:** 2 other

**Grade Mode:** Standard Letter-IP

**AERN 35749 COMMERCIAL PILOT HELICOPTER FLIGHT 3 Credit Hours**

(Repeatable for credit) Flight course designed to fulfill FAA requirements for the Commercial Pilot Helicopter certificate. This course may only be repeatable twice. Student is required to spend 1.5 hours each day, five days a week, at the airport, until the FAA minimum requirements are attained. When not flying, the student goes through personalized ground instruction with an assigned flight instructor. Minimum FAA flight time requirements towards the Commercial Pilot Helicopter Flight Certificate is 150 hours. Actual flight training may exceed 150 hours.

**Prerequisite:** AERN 15742 or AERN 15743; and minimum 2.500 overall GPA; and must be in the Professional Pilot concentration in the Aeronautics major.

**Corequisite:** AERN 35746.

**Schedule Type:** Flight Training

**Contact Hours:** 5.5 other

**Grade Mode:** Standard Letter-IP

**AERN 35810 UNMANNED AIRCRAFT SYSTEMS 3 Credit Hours**

Provides an understanding of the theory of operation, architecture, and performance characteristics of various airborne-onboard systems and subsystems utilized in unmanned aerial vehicles. Also includes examination of aircraft materials, structural components, and configuration.

**Prerequisite:** AERN 25800.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35830 UNMANNED AIRCRAFT SYSTEMS SENSING AND SENSOR SYSTEMS 3 Credit Hours**

An in-depth study of sensors and remote sensing systems used to support Unmanned Aircraft operations. Course emphasizes the theory, technical characteristics, capabilities, and operational use of various sensors and sensing systems. Course also investigates sensor data generation and sensing system image interpretation and analysis.

**Prerequisite:** AERN 25800.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35840 UNMANNED AIRCRAFT SYSTEMS COMMAND, CONTROL AND COMMUNICATIONS 3 Credit Hours**

Explores the technological and operational aspects of ground-based and airborne command, control, and communications systems used in unmanned aircraft systems. Topics include UAV sense-and-avoid systems, data link systems, voice communications systems, telemetry systems, navigation systems, and manual and automatic flight control systems.

**Prerequisite:** AERN 35644 or AERN 35650; and AERN 35810.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 35892 SMALL UNMANNED AIRCRAFT SYSTEMS FLIGHT PRACTICUM (ELR) 2 Credit Hours**

Small Unmanned Aircraft Systems Operations Flight Practicum. Student is required to spend a minimum of 15 hours during the semester flying a small unmanned aircraft system. When not flying, the student goes through personalized ground instruction. Special emphasis will be placed on the regulatory requirements of sUAS operations, applied weather theory, mission planning and emergency procedures. Students must obtain FAA Part 107 Unmanned Aircraft System Certification prior to starting this course.

**Prerequisite:** AERN 25800.

**Schedule Type:** Flight Training, Practical Experience

**Contact Hours:** 1 lecture, 3 other

**Grade Mode:** Standard Letter-IP

**Attributes:** Experiential Learning Requirement

**AERN 42000 HUMAN FACTORS IN AVIATION MAINTENANCE 2 Credit Hours**

There are many different human factors at play when technicians are engaged in aviation maintenance, as well as when overseeing others doing this work. Using the PEAR model (people, environment, actions, resources), students in the course study the different aspects of human factors in relation to aviation maintenance, and address how these can affect an aviation maintenance manager.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 42799 STRATEGIC AVIATION MAINTENANCE MANAGEMENT CAPSTONE (ELR) (WIC) 2 Credit Hours**

Capstone course is designed to address evolving issues and challenges in aviation maintenance management. Students will discriminate between effective and ineffective aircraft maintenance programs while working on teams to construct a preliminary plan to establish and run an efficient, reliable and safe aircraft maintenance program of their own.

**Prerequisite:** Senior standing.

**Schedule Type:** Lecture, Project or Capstone

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**Attributes:** Experiential Learning Requirement, Writing Intensive Course

**AERN 45001 INITIAL DISPATCH I 2 Credit Hours**

Part I of III preliminary courses required for students not currently enrolled at Kent State University. Provided in order to meet Federal Aviation Regulation requirements under Part 65 for training to become an Aircraft Dispatcher. This course may be necessary as preliminary training to enroll in AERN 45010 and 45020 Aircraft Dispatch I and II respectively. Successful completion of Dispatch I and II results in authorization to take the FAA written and practical exams for the Aircraft Dispatcher certificate. Need for the course depends on previous coursework or FAA certificates completed.

**Prerequisite:** Special approval.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 45002 INITIAL DISPATCH II 2 Credit Hours**

Part II of III preliminary courses required for students not currently enrolled at Kent State University to enroll in Aircraft Dispatch I or Aircraft Dispatch II. This course is a continuation of training required by Part 65 of the Federal Aviation Regulations to earn an Aircraft Dispatcher Certificate. It may be required in order to meet the registration requirements for AERN 45010 and 45020, Aircraft Dispatch I and II of which successful completion results in authorization to take the FAA written and practical exams for the Aircraft Dispatcher Certificate. Need for the course depends on previous coursework or FAA certificates completed.

**Prerequisite:** Special approval.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 45003 INITIAL DISPATCH III 2 Credit Hours**

Part III of III preliminary courses required for students not currently enrolled at Kent State University to enroll in Aircraft Dispatch I or Aircraft Dispatch II. This course is the final course to complete preliminary training required by Part 65 of the Federal Aviation Regulations to earn an Aircraft Dispatcher Certificate. It may be required in order to meet the registration requirements for AERN 45010 and 45020, Aircraft Dispatch I and II respectively, of which successful completion results in authorization to take the FAA written and practical exams for the Aircraft Dispatcher Certificate. Need for the course depends on previous coursework or FAA certificates completed.

**Prerequisite:** Special approval.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 45010 AIRCRAFT DISPATCH I 3 Credit Hours**

This is the first of two courses required to qualify for the FAA Aircraft Dispatcher Airman Knowledge Test and the associated FAA Practical Exam for issuance of an Aircraft Dispatcher License. Topics include weather theory and weather services, regulations, aircraft systems, dispatch operations, decision making, human error, situational awareness, communications and aeronautical charts. Students must be 21 yrs of age or turn 21 during the semester taken. Special course fees apply. Prerequisite: AERN 35644 or AERN 35650; and special approval

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 45020 AIRCRAFT DISPATCH II 3 Credit Hours**

Second of two courses designated for the practical application of previously acquired knowledge necessary to perform aircraft dispatcher functions. Topics as applied to dispatch functions include briefing techniques, weather analysis and flight planning, aircraft systems, resource management, decision making, and cargo carrying. Completion required to earn a Graduation Certificate required by FAR Part 65 to qualify for a practical exam. An instructor endorsement to take the FAA aircraft dispatcher practical test is also required and is issued separately and solely at the discretion of the course instructor. Special course fees may apply. Please visit [www.kent.edu/caest/flight-technology](http://www.kent.edu/caest/flight-technology) and click on the Flight Course Fees link for more information. The student must be aged 21 or turn 21 during the semester taken.

**Prerequisite:** AERN 45010.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 45025 DISPATCH LABORATORY 1 Credit Hour**

Practical Aircraft Dispatch application and preparation for the ADX written, oral and practical exam.

**Prerequisite:** AERN 45010.

**Corequisite:** AERN 45020.

**Schedule Type:** Laboratory

**Contact Hours:** 2 lab

**Grade Mode:** Standard Letter

**AERN 45030 AIRCRAFT SYSTEMS II 3 Credit Hours**

Continuation of AERN 35040. An in-depth study of various aircraft systems including auxiliary systems, undercarriage, hydraulics, flight controls, instruments, and integrated systems as applied to aircraft.

**Prerequisite:** AERN 35040.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 45040 LABOR RELATIONS IN THE AVIATION INDUSTRY 3 Credit Hours**

Legislation governing labor relations in the private sector of the United States Economy consist of two separate and distinct pieces of legislation: the Railway Labor Act and the National Labor Relations Act. This course focuses on the examination of air transport labor relations in the context of these key laws. As the student of aviation management comes in contact with both Acts though this course, the student will learn similarities and differences of each and their resultant impact. The student will actively apply this knowledge in a mock labor relations negotiation.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 45099 AERONAUTICAL STUDIES CAPSTONE (ELR) 3 Credit Hours**

(Repeatable for credit) An in-depth study of the student's area of focus within aeronautical studies, culminating to a senior level project. At the discretion of the aeronautics faculty, students may substitute another capstone course for this course. Students must pass this capstone with a grade of C (2.000) or better in order to graduate.

**Prerequisite:** Senior standing.

**Schedule Type:** Senior Project/Honors Thesis

**Contact Hours:** 3 other

**Grade Mode:** Standard Letter-IP

**Attributes:** Experiential Learning Requirement

**AERN 45100 AIRPORT OPERATIONS 3 Credit Hours**

This course focuses on the daily functions of Airport Operations. Students receive hands-on training in performing daily inspections at the Kent State Airport to evaluate and keep track of airfield discrepancies. Students will use a database to address the Airport Certification Manual and FAR Part 139 criteria.

**Prerequisite:** AERN 35340.

**Schedule Type:** Lecture, Project or Capstone

**Contact Hours:** 2 lecture, 1 other

**Grade Mode:** Standard Letter

**AERN 45130 PHYSIOLOGY AND HUMAN FACTORS OF FLIGHT 3 Credit Hours**

A study of the interaction of the human body with flight and those human factors that affect flight operations.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 45135 AVIATION SAFETY THEORY 3 Credit Hours**

(Slashed with AERN 55135) An in-depth study of aviation human safety theories and the basics of risk and safety management.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 45150 APPLIED FLIGHT DYNAMICS I 3 Credit Hours**

(Slashed with AERN 55150) An applied aircraft flight dynamics course that demonstrates aircraft, engine and propeller performance with the overall flight performance and stability of the typical subsonic airplane. Emphasis is placed on the aerodynamics of flight.

**Prerequisite:** PHY 13001 or PHY 23101.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 45200 STRATEGIC AVIATION MANAGEMENT (ELR) 3 Credit Hours**

Serves as the capstone course for the aviation management area of concentration in aeronautics. As such, it is designed to address evolving issues and challenges in aviation management with a particular emphasis on airlines and airports through an application of previously mastered aviation management courses. Students must pass the course with a minimum grade of "C" (2.000).

**Prerequisite:** AERN 45100; and senior standing.

**Schedule Type:** Lecture, Project or Capstone

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter-IP

**Attributes:** Experiential Learning Requirement

**AERN 45250 AVIATION LAW 3 Credit Hours**

Involves a study of the origins of Western jurisprudence, common law and aviation law as an integral part of law in the U.S. Also introduces international aviation law by lateral agreement as well as U.S. Constitutional law and its amendments as they relate to the structure and process of aviation law. Criminal and civil law as they relate to civil aviation are also addressed. Case studies are included.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 45255 LEGAL ANALYSIS OF AVIATION AND ENGINEERING DISASTERS 2 Credit Hours**

This course examines legal issues of mass torts in the specific arena of aviation and engineering products liability, negligence and personal injury law. Special focus will be on class action law suits that give rise to mass tort litigation. Emphasis will be on strict product liability, design defect, manufacturing defect, negligence, defenses to negligence and the claims that have given rise to mass tort litigation in U.S. and International Jurisprudence. The Federal Torts Claims Act (FTCA) will be examined in the context of aviation and aerospace engineering.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 45320 TERMINAL OPERATIONS II 2 Credit Hours**

Advanced terminal course that focuses on the TRACON environment. Emphasis in vectoring and sequencing for approach at the primary airport. Topics covered will include, but not be limited to phraseology, maps, LOAs, and airspace.

**Prerequisite:** AERN 35342 and AERN 35345; and Aeronautics major.

**Corequisite:** AERN 45321.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 45321 TERMINAL OPERATIONS II LABORATORY 1 Credit Hour**

Application of terminal air traffic control operating principles explored in AERN 45320 Terminal Operations II.

**Prerequisite:** AERN 35342 and AERN 35345; and Aeronautics major.

**Corequisite:** AERN 45320.

**Schedule Type:** Laboratory

**Contact Hours:** 2 lab

**Grade Mode:** Standard Letter

**AERN 45340 AIRCRAFT MAINTENANCE 3 Credit Hours**

Fundamentals of aircraft maintenance and resolving maintenance problems on the flight line.

**Prerequisite:** Aeronautics major; and Senior standing; and special approval.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 3 other

**Grade Mode:** Standard Letter

**AERN 45343 EN ROUTE II 2 Credit Hours**

Advanced en route course that focuses on low altitude, en route operations. Some time is spent on high altitude and special operations as well. Topics covered include, but not limited to phraseology, procedures, LOAs and maps.

**Prerequisite:** AERN 45320 and AERN 45321; and Aeronautics major.

**Corequisite:** AERN 45344.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 45344 EN ROUTE II LABORATORY 1 Credit Hour**

Application of en route air traffic control operating principles explored in AERN 45343 En Route II.

**Prerequisite:** Aeronautics major.

**Corequisite:** AERN 45343.

**Schedule Type:** Laboratory

**Contact Hours:** 2 lab

**Grade Mode:** Standard Letter

**AERN 45349 SYSTEMS MAINTENANCE AND RELIABILITY 5 Credit Hours**

Combines theories of systems and operations with practical experience to meet FAA standards for an airframe and powerplant license (300 hours shop experience).

**Prerequisite:** AERN 45340.

**Schedule Type:** Lecture

**Contact Hours:** 5 lecture

**Grade Mode:** Standard Letter

**AERN 45360 PROFESSIONAL DEVELOPMENT IN AERONAUTICS III 1 Credit Hour**

Seminar on selected topics relating to problems, issues and conditions of employment within aviation.

**Prerequisite:** AERN 30000; and senior standing.

**Schedule Type:** Lecture

**Contact Hours:** 1 lecture

**Grade Mode:** Standard Letter

**AERN 45399 AIR TRAFFIC CONTROL CAPSTONE (ELR) 1 Credit Hour**

The culminating experience for the Air Traffic Control program of study. Students will work in groups to research and present a possible solution to a current event in the world of aviation and air traffic control.

**Prerequisite:** AERN 45343 and AERN 45344; and aeronautics major.

**Schedule Type:** Project or Capstone

**Contact Hours:** 1 lecture

**Grade Mode:** Standard Letter

**Attributes:** Experiential Learning Requirement

**AERN 45400 AVIATION MAINTENANCE LAW AND REGULATIONS 2 Credit Hours**

This course introduces students to the history, development of case law, statutory law and regulatory law of aviation maintenance. Special emphasis will be placed on the Federal Aviation Regulations and how they influence the Airframe and Power Plant Mechanic. Students will learn how the regulatory process works, the certification of mechanics works, and how to effectively read and interpret FAA regulations.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 45499 AIR TRAFFIC CONTROL CAPSTONE LABORATORY (ELR) 2 Credit Hours**

The culminating experience for the Air Traffic Control program of study. Students participate in realistic simulations where students take the roles within all three areas of ATC (Tower, TRACON, and ARTCC). These scenarios often involve multiple domains simultaneously where students must work together to successfully finish, simulating a normal day for many controllers. Pre/corequisites: AERN 45399

**Prerequisite:** AERN 45343 and AERN 45344; and aeronautics major.

**Schedule Type:** Laboratory, Project or Capstone

**Contact Hours:** 4 lab

**Grade Mode:** Standard Letter

**Attributes:** Experiential Learning Requirement

**AERN 45648 THEORY OF FLIGHT INSTRUCTION (ELR) 3 Credit Hours**

Detailed fundamentals of teaching flight and ground instruction and the analysis of flight techniques, in order to meet requirements of FAR's part 61.185(a).

**Prerequisite:** AERN 35040, AERN 35746, AERN 35747 and AERN 45150.

**Corequisite:** AERN 45649.

**Schedule Type:** Flight Training

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**Attributes:** Experiential Learning Requirement

**AERN 45649 FLIGHT INSTRUCTOR/AIRPLANES 2 Credit Hours**

(Repeatable for credit) Flight course with emphasis on instructing techniques in aircraft from right seat. Includes student evaluation techniques to meet Federal Aviation Regulation for certified flight instructor. With special approval, this course may be repeated only once. Student is required to spend a minimum of two hours daily, five days a week, at the airport until course requirements have been attained. When not flying, the student goes through personalized ground instruction. Special course fees apply. Please visit [www.kent.edu](http://www.kent.edu) for a list of fees.

**Prerequisite:** AERN 35747; and minimum C grade in AERN 35746; and must be in the Professional Pilot concentration in the Aeronautics major.

**Corequisite:** AERN 45648.

**Schedule Type:** Flight Training

**Contact Hours:** 9 other

**Grade Mode:** Standard Letter-IP

**AERN 45651 FLIGHT INSTRUCTOR-INSTRUMENTS 2 Credit Hours**

(Repeatable for credit) Flight course with emphasis on flight instructing techniques involved with instrument flight and air traffic control procedures. With special approval this course may be repeated only once. Student is required to spend a minimum of two hours daily, three days a week, at the airport until course requirements have been met. When not flying, the student goes through personalized ground instruction. Special course fees apply. Please visit [www.kent.edu](http://www.kent.edu) for more information.

**Prerequisite:** AERN 45649; and AERN 45648 with a minimum C grade; and minimum 2.500 overall GPA; and must be in the Professional Pilot concentration in the Aeronautics major.

**Schedule Type:** Flight Training

**Contact Hours:** 2 lecture, 9 other

**Grade Mode:** Standard Letter-IP

**AERN 45653 MULTI-ENGINE PILOT FLIGHT 1 Credit Hour**

(Repeatable for credit) Course provides the required ground and flight instruction necessary to qualify students for the multi-engine rating from the FAA. With special approval this course may be repeated only once. Student is required to spend a minimum of two hours daily, three days a week, at the airport until course requirements have been attained. When not flying, the student goes through personalized ground instruction. Special course fees apply. Please visit [www.kent.edu](http://www.kent.edu) for more information.

**Prerequisite:** AERN 35747; and minimum 2.500 overall GPA; and must be in the Professional Pilot concentration in the Aeronautics major.

**Schedule Type:** Flight Training

**Contact Hours:** 1 lecture, 9 other

**Grade Mode:** Standard Letter-IP



**AERN 45655 ADVANCED MULTI-ENGINE PILOT FLIGHT 1 Credit Hour**  
Ground flight instruction for proficiency and required hours in preparation for multi-engine instruction. Special course fees may apply. Please visit [www.kent.edu/caest/flight-technology](http://www.kent.edu/caest/flight-technology) and click on the Flight Course Fees link for more information.

**Prerequisite:** AERN 45653; and minimum 2.500 overall GPA; and must be in the Professional Pilot concentration in the Aeronautics major.

**Schedule Type:** Flight Training

**Contact Hours:** 9 other

**Grade Mode:** Standard Letter-IP

**AERN 45657 MULTI-ENGINE FLIGHT INSTRUCTOR 1 Credit Hour**  
(Repeatable for credit) Course provides the necessary ground and flight instruction to professionally qualify students for the multi-engine instructor rating by the FAA. This course may be repeated only twice. Student is required to spend two hours daily, three days a week, at the airport. When not flying, the student goes through personalized ground instruction with the flight instructor. Special course fees may apply. Please visit [www.kent.edu/caest/flight-technology](http://www.kent.edu/caest/flight-technology) and click on the Flight Course Fees link for more information.

**Prerequisite:** AERN 45649 and AERN 45655; and minimum 2.500 overall GPA; and must be in the Professional Pilot concentration in the Aeronautics major.

**Schedule Type:** Flight Training

**Contact Hours:** 9 other

**Grade Mode:** Standard Letter-IP

**AERN 45659 UPSET RECOVERY TRAINING 1 Credit Hour**  
Consisting of both ground school and hands-on flight components, this upset training course prepares pilots for emergency situations they may encounter that cannot properly be replicated in a typical GA aircraft. Extensive piston driven and swept wing jet aerodynamic characteristics, accident analysis and recovery profile. Special course fees may apply. Please visit [www.kent.edu/caest/flight-technology](http://www.kent.edu/caest/flight-technology) and click on the Flight Course Fees link for more information.

**Prerequisite:** AERN 15741; and minimum 2.500 overall GPA; and must be in the Professional Pilot concentration in the Aeronautics major.

**Schedule Type:** Flight Training

**Contact Hours:** 9 other

**Grade Mode:** Standard Letter

**AERN 45710 TURBINE ENGINE THEORY AND OPERATION 2 Credit Hours**

An in-depth study of the theory, operation and performance of turbine turboprop engines and associated systems.

**Prerequisite:** AERN 35020.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 45720 CREW RESOURCE MANAGEMENT 2 Credit Hours**

In-depth study of the common principles of aviation crew resource management and human factors as utilized by air transport flight crews. Course presents crew/cockpit resource management (CRM), aeronautical decision making (ADM) and human factors theory and practice.

**Prerequisite:** AERN 45130.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 45721 CREW RESOURCE MANAGEMENT LABORATORY 1 Credit Hour**

Flight simulator-based laboratory that includes flight simulator experiences that integrate crew resource management (CRM) and line-oriented flight training (LOFT) in a multicrew environment. Special course fees may apply. Please visit [www.kent.edu/caest/flight-technology](http://www.kent.edu/caest/flight-technology) and click on the Flight Course Fees link for more information.

**Prerequisite:** AERN 45130.

**Pre/corequisite:** AERN 45720.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 1 other

**Grade Mode:** Standard Letter-IP

**AERN 45730 APPLIED TRANSPORT CATEGORY AIRCRAFT SYSTEMS 3 Credit Hours**

Course examines various systems in use on air transport aircraft. The course emphasis is on the principles, operation and limitations of complex, integrated systems found in modern aircraft.

**Prerequisite:** AERN 35020.

**Corequisite:** AERN 45030.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 45740 FLIGHT MANAGEMENT SYSTEMS 3 Credit Hours**

Course examines various advanced avionics systems used on air transport type aircraft. The course emphasis is on the principles, operation and limitations of integrated avionics related to the "glass cockpit" found on modern aircraft.

**Prerequisite:** AERN 45030 and AERN 45350.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 3 other

**Grade Mode:** Standard Letter

**AERN 45750 AEROSPACE MEDICINE 2 Credit Hours**

This course examines the medical and legal issues of regulating the presence of humankind in aviation. Special emphasis will be given to the medical conditions that human life encounters when exposed to machines and different environments including atmospheric and non-atmospheric flight. Students will study the history, physiology and environment, clinical issues, operational issues, legal issues and future issues of aerospace medicine.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 45791 AVIATION SECURITY AND POLICY SEMINAR (WIC) 3 Credit Hours**

(Slashed with AERN 55791) Examines policies, practices, procedures and regulatory provisions developed to create and enhance security in civil aviation with a special emphasis on airlines, airports, airspace and agencies responsible for civil aviation security.

**Prerequisite:** AERN 45250.

**Schedule Type:** Seminar

**Contact Hours:** 3 other

**Grade Mode:** Standard Letter

**Attributes:** Writing Intensive Course

**AERN 45800 UNMANNED AIRCRAFT SYSTEMS FLIGHT OPERATIONS THEORY 4 Credit Hours**

Classroom instruction to provide the general information and knowledge necessary to prepare students to pilot and operate unmanned aircraft. Emphasis is placed on the acquisition of knowledge required to engage in UAS flight operations, specifically focused on piloting UAVs and managing UAV sensors. This course provides students with the background knowledge required to begin flight training and to perform real-time mission management operations for high performance unmanned aircraft systems.

**Prerequisite:** AERN 25350; and AERN 25351; and AERN 35644 or AERN 35650; and AERN 35830; and AERN 35840; and AERN 45150.

**Schedule Type:** Lecture

**Contact Hours:** 4 lecture

**Grade Mode:** Standard Letter

**AERN 45892 UNMANNED AIRCRAFT SYSTEMS FLIGHT PRACTICUM (ELR) 2 Credit Hours**

Unmanned Aircraft Systems Operations Flight Practicum. Student is required to spend a minimum of 15 hours during the semester flying an unmanned aircraft system. When not operating an unmanned system, the student goes through personalized ground instruction. Special emphasis will be placed on flying commercial UAS, fixed wing platforms and other commercial platforms. Students will deepen their knowledge of regulatory requirements of UAS operations, applied weather theory, mission planning and emergency procedures. Students must obtain FAA Part 107 Unmanned Aircraft System Certification prior to starting this course. Flight Fees apply.

**Prerequisite:** AERN 25800 and AERN 35815.

**Schedule Type:** Flight Training, Practical Experience

**Contact Hours:** 1 lecture, 3 other

**Grade Mode:** Standard Letter-IP

**Attributes:** Experiential Learning Requirement

**AERN 45900 AEROELASTICITY 3 Credit Hours**

Review of beam analysis. Structural dynamics of one-dimensional systems. Analysis of static aeroelastic phenomena, unsteady aerodynamics and flutter. Equations of motion for complete aeroelastic systems; solution techniques.

**Prerequisite:** AERN 35150 and ENGR 33111.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 55135 AVIATION SAFETY THEORY 3 Credit Hours**

(Slashed with AERN 45135) An in-depth study of aviation human safety theories and the basics of risk and safety management.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 55150 APPLIED FLIGHT DYNAMICS I 3 Credit Hours**

(Slashed with AERN 45150) An applied aircraft flight dynamics course that demonstrates aircraft, engine and propeller performance with the overall flight performance and stability of the typical subsonic airplane. Emphasis is placed on the aerodynamics of flight.

**Prerequisite:** AERN 15000; and MATH 11012 or MATH 12002; and PHY 13001 and PHY 13002 (or PHY 23101 and PHY 23102); and graduate standing.

**Schedule Type:** Combined Lecture and Lab

**Contact Hours:** 3 other

**Grade Mode:** Standard Letter

**AERN 55791 AVIATION SECURITY AND POLICY SEMINAR 3 Credit Hours**

(Repeatable for credit) (Slashed with AERN 45791) Examines policies, practices, procedures and regulatory provisions developed to create and enhance security in civil aviation with a special emphasis on airlines, airports, airspace and agencies responsible for civil aviation security.

**Prerequisite:** Graduate standing.

**Schedule Type:** Seminar

**Contact Hours:** 3 other

**Grade Mode:** Standard Letter

**AERN 65091 SEMINAR IN EMERGING ISSUES IN AVIATION LOGISTICS 2 Credit Hours**

Guided by issues set forth by the International Air Cargo Association the Cargo Airlines Association, this variable content seminar will provide an interactive, dynamic and in-depth discussion on topics of immediate concern for the air freight industry.

**Prerequisite:** AERN 65100; and graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 65092 PRACTICUM IN AERONAUTICS 1 Credit Hour**

(Repeatable for credit) Up to 6 total credit hours of practicum to gain experience in the aerospace or aviation industry managing various aspects of logistics. Logistic projects related to systems analysis, product or vehicle movement, legal and ethical issues, economic issues, international needs, safety, human resources and managerial assessment, or other aspects of managing logistics as approved are the focus of the course.

**Prerequisite:** Graduate standing; and special approval.

**Schedule Type:** Practical Experience

**Contact Hours:** 3 other

**Grade Mode:** Standard Letter-IP

**AERN 65095 SPECIAL TOPICS IN AERONAUTICS 1-4 Credit Hours**

(Repeatable for a maximum of 15 credit hours) Study of special topics that focus on subjects and issues in aeronautics.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 1-4 lecture

**Grade Mode:** Standard Letter

**AERN 65100 LOGISTICAL STRATEGIES IN AVIATION MANAGEMENT 2 Credit Hours**

This course presents the business of aviation logistics and its role in the global supply chain by examining different product sectors using air freight. By means of both domestic and international example, it then details some of the challenges facing the air cargo industry today and presents possible management options for their resolution.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 65150 LEGAL AND REGULATORY ISSUES FOR AIR CARGO MANAGEMENT 2 Credit Hours**

With a focus on both the domestic and global marketplace, this course provides in-depth coverage of the regulatory bodies and the protocols and procedures that govern the air cargo industry.

**Prerequisite:** AERN 65100; and graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 65199 THESIS I 2-6 Credit Hours**

Thesis students must register for a minimum of 6 hours, 2 to 6 hours in a single semester distributed over several semesters if desired.

**Prerequisite:** Graduate standing; and special approval.

**Schedule Type:** Masters Thesis

**Contact Hours:** 2-6 other

**Grade Mode:** Satisfactory/Unsatisfactory-IP

**AERN 65200 AVIATION ECONOMICS AND FISCAL MANAGEMENT 2 Credit Hours**

Using examples from across key industries that make up the aviation sector, this course examines profit strategies employed by cargo-carrying airlines, all-cargo carriers, airports, ground transportation providers, and others with an aim of highlighting their role in and their impact on the business of air freight.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 65201 AVIATION INDUSTRY CONTRACT MANAGEMENT 2 Credit Hours**

The course provides students with practical experience in the realm of aviation contracts.

**Prerequisite:** MIS 64041; and graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 65230 MODELING AND FORECASTING FOR AVIATION LOGISTICS PLANNING 2 Credit Hours**

This course presents topics and techniques necessary to understand and develop an aviation logistics model such that an accurate and effective aviation demand forecast can be made.

**Prerequisite:** AERN 65100 and AERN 65200; and graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 65235 HUMAN ERROR ANALYSIS IN AVIATION 2 Credit Hours**

Provides an in-depth look at human error and its implications in the realm of safety using examples from the aviation industry. Includes a basic overview of human error, discussion on the models available to examine error, provides knowledge on how to classify and provide recommendations of intervention strategies. A focus will be on the SHELL Model, the Human Factors Analysis and Classification System, and the 5M model. This course will use real examples of accidents and incidents for students to apply these strategies.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 65240 AVIATION SAFETY MANAGEMENT SYSTEMS 2 Credit Hours**

An in-depth study of the concepts and principles of aviation safety management and aviation Safety Management Systems (SMS). Provides a fundamental knowledge of SMS safety policy, safety risk management, safety assurance, and safety promotion. Also includes a thorough analysis of the design, implementation, and management of Safety Management Systems and its incorporation into various aviation sectors.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 65250 APPLIED HUMAN FACTORS ENGINEERING 3 Credit Hours**

Survey of human factors engineering and ergonomics, emphasizing the human-centered approach to systems, product, workplace, and machine design. Discussions will include human factors research and design methodologies, human factors fundamentals (e.g., sensation and perception, information processing, anthropometry) and applications of human factors for the design of workplace and environment.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 65270 HUMAN FACTORS IN SYSTEMS DESIGN 3 Credit Hours**

Human factors input into operator-system design, development, testing, and evaluation. Emphasis on the systems approach to human-machine-interface, with discussion and application of specific methodologies and analytical techniques. Highly focus on design of display and control systems.

**Prerequisite:** Graduate standing.

**Pre/corequisite:** AERN 65250.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 65280 HUMAN INFORMATION PROCESSING 3 Credit Hours**

An examination of human information reception, information processing, and skilled performance capabilities and limitations in human-machine systems with an emphasis on models and techniques including psychophysics, signal detection theory, information theory, and decision-making theory.

**Prerequisite:** AERN 65250; and graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**AERN 65299 THESIS II 2 Credit Hours**

Thesis students must continue registration each semester until all degree requirements are met.

**Prerequisite:** AERN 65199; and graduate standing.

**Schedule Type:** Masters Thesis

**Contact Hours:** 2 other

**Grade Mode:** Satisfactory/Unsatisfactory-IP

**AERN 65300 AIRLINE TRANSPORTATION OPERATIONS 2 Credit Hours**

This course provides a managerial approach that highlights the importance of airline transportation. Students examine the framework for airline transportation from a micro and macro perspective. The focus is on operations management that is specialized or unique to the airline industry including regulation and public policy, as they overview operations, service and cost structure.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 65301 AIR CARGO SECURITY 2 Credit Hours**

This course examines Post 9-11 legislation put in place with respect to air cargo security and details unique challenges facing the industry today with an eye toward management of those challenges for future growth.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 65400 WEATHER FOR AVIATION LOGISTICS PLANNING 2****Credit Hours**

Introduction to weather concepts as related to aviation operations management. This course focuses on the effect of various phenomena on airport, airline, and small aircraft feeder operations. The emphasis is on understanding conditions that produce various phenomena, use of available weather products to determine conditions and hazardous conditions and their likely impact on aviation operations. An understanding of regulations relative to weather operations and aircraft capabilities will be gained. Regional weather is discussed.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 2 lecture

**Grade Mode:** Standard Letter

**AERN 65496 INDIVIDUAL INVESTIGATION IN AERONAUTICS 1-4****Credit Hours**

(Repeatable for a maximum of 9 credit hours) Individual investigation of various aeronautics-related topics.

**Prerequisite:** Graduate standing and special approval.

**Schedule Type:** Individual Investigation

**Contact Hours:** 1-4 other

**Grade Mode:** Standard Letter-IP

**AERN 65499 CAPSTONE IN AERONAUTICS 2 Credit Hours**

(Repeatable for credit) Culminating experience that requires completion of either a comprehensive project at a workplace through employment or internship or a comprehensive research paper from an investigation. The goal is for students to demonstrate competence in aviation management and logistics. Possibilities include empirical research, case studies, theoretical or applied projects or projects for identified clients. Student are evaluated on the use of knowledge and skills gained from other courses taken in their program.

**Prerequisite:** AERN 65091 and AERN 65100 and AERN 65150 and AERN 65200 and ENGR 60001 and ENGR 60003 and ENGR 60078 and MIS 64005 and MIS 64041 and MIS 64042; and graduate standing.

**Schedule Type:** Project or Capstone

**Contact Hours:** 2 other

**Grade Mode:** Standard Letter