

# AVIATION (AV)

## AV 101 Introduction to Aviation (3 Credits)

This course introduces the student to the Federal Aviation Regulations/ Aeronautical Information Manual (FAR/AIM). Designed to build an understanding of the pilot credentials required for a career in aviation and help students explore various career options. A variety of employment opportunities are investigated, including commercial, business, corporate, military and general aviation-related business. Emphasis will be given to careers in operations and flight technology. Airplane and helicopter pilot careers will be emphasized.

## AV 104 Introduction to Aircraft Systems (4 Credits)

Introduces the student to the training aircraft that are used in general aviation, and will look in detail at those aircraft used in this program. Aircraft in current use for training by industry will be studied and emphasis placed on basic aircraft systems operations, including emergencies. Applicable Federal Aviation Regulations, including the use of Minimum Equipment Lists, will be studied.

## AV 108 Aviation Meteorology (5 Credits)

A survey course in atmospheric science that covers weather basics and atmospheric circulations. Included is a systematic development of the following: the atmosphere, energy and temperature, wind, atmospheric moisture, horizontal and vertical pressure patterns, clouds, atmospheric circulation, stability, air masses, fronts, fog, icing, thunderstorms, jet streams and turbulence. Students will study surface weather observations, routine weather reports and forecasts, surface maps and constant pressure maps.

## AV 110 Private Pilot - Airplane (5 Credits)

**Recommended preparation:** MTH 060 or higher or minimum placement Math Level 10.

Provides initial ground instruction in aeronautical skills and knowledge for the FAA Private Pilot certificate. Involves an introduction to fundamentals of flight, aerodynamics, flight operations, airspace, weather and weather products, flight planning, decision-making, human factors, human factors in aviation, and crew resource management. Comprehensive course that prepares student for the FAA Private Pilot airman knowledge written exam.

## AV 112 Technically Advanced Aircraft (3 Credits)

**Prerequisites with concurrency:** AV 210 or AV 215.

Covers principles and operation of technologically advanced avionics systems in modern aircraft. Provides classroom discussion and hands-on training in programming and using electronic flight instruments, navigation radios, information systems, and technology safety/risk management.

## AV 115 Private Pilot-Helicopter (5 Credits)

**Recommended preparation:** MTH 060 or higher or minimum placement Math Level 10.

Covers fundamentals of flight, flight operations, aviation weather, performance, navigation, aircraft systems, aeronautical publications, FAA regulations, flight planning, radio procedures, meteorology and human factors. Comprehensive course that prepares student for the FAA Private Pilot airman knowledge exam.

## AV 116 Airplane Fundamentals (3 Credits)

Covers the fundamentals of airplane flight, flight operations, airplane performance, navigation, airplane systems, aeronautical publications, airplane flight maneuvers, flight planning, radio procedures, meteorology, and human factors.

## AV 117 Helicopter Fundamentals (3 Credits)

**Recommended preparation:** MTH 060 or higher or minimum placement Math Level 10.

This course covers fundamentals of helicopter flight, flight operations, helicopter performance, navigation, helicopter systems, aeronautical publications, helicopter flight maneuvers, flight planning, radio procedures, meteorology, and human factors.

## AV 150 Aerodynamics (4 Credits)

**Recommended preparation:** MTH 102 (or one course from the foundational requirements math list) or minimum placement Math Level 14.

An in-depth study of aerodynamics, beginning with a brief history of the development of flight and flight theory. The physics of lift, drag, weight and thrust are related to airfoil and aircraft design and operational characteristics. Aircraft stability and control are related to aircraft performance and safety. Students will demonstrate their knowledge of aerodynamics through projects in which they predict aircraft performance.

## AV 199 Selected Topics: Aviation (1-8 Credits)

This course is in development.

## AV 200 Aviation Law (3 Credits)

This course offers an introductory analysis of legal concepts related to the aviation industry, including aircraft operations, airports, fixed based operators (FBOs), contracts, insurance and liability, regulatory statutes, and case law. The historical development of aviation law in the United States is included.

## AV 201 Airport Management (3 Credits)

This course is a study of the development of airports and the functions and responsibilities of airport management. This course provides an historical background and studies the roles of various governmental agencies in the management and regulation of airports.

## AV 204 Advanced Aircraft Systems (4 Credits)

**Recommended preparation:** AV 104.

Encompasses a detailed study of aircraft systems and structures and enables the student to progress into heavier, more complex single and multi-engine aircraft. Aircraft in current use by industry will be studied with an emphasis placed on operations, including emergencies. Applicable FAR and Minimum Equipment Lists, will be studied.

## AV 210 Instrument - Airplane (5 Credits)

**Prerequisites:** AV 110 (or Private Pilot Certificate).

The instrument rating ground school prepares students for the FAA Instrument airman knowledge test and an FAA Instrument Rating. Includes an in-depth study of basic attitude instrument flying, IFR navigation systems and procedures, aircraft flight instruments, aviation weather, applicable FARs and the instrument charts required for IFR flight.

## AV 215 Instrument Helicopter (5 Credits)

**Prerequisites:** AV 115 (or Private Pilot Certificate).

The instrument rating ground school for helicopter prepares students for the FAA Instrument knowledge test and an FAA Instrument Rating. Includes an in-depth study of aircraft flight instruments, basic attitude instrument flying, IFR navigation systems and procedures, aviation weather, applicable FARs, and the instrument charts required for IFR flight.

#### **AV 220 Commercial Pilot-Airplane (4 Credits)**

**Prerequisites:** AV 110 (or Private Pilot Certificate).

Provides ground instruction of aeronautical skills and knowledge applicable to the FAA Commercial Pilot Certification portion of the Professional Pilot training syllabus. Covers night flight, aviation physiology, advanced aerodynamics, aircraft performance, weight and balance, complex and multi-engine aircraft operations, advanced airplane systems, commercial operations, and FAA Regulations for commercial pilots and noncommercial flight operations with emphasis on human factors, crew resource management, and decision making.

#### **AV 222A Private Pilot I Airplane Flight Lab (1 Credit)**

**Prerequisites:** Instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

**Prerequisites with concurrency:** AV 110.

Introduces fundamental flight skills and the practical application of aviation weather, performance, navigation, Federal Aviation Administration (FAA) regulations, flight planning, radio procedures, and human factors. Includes compliance with FAA flight hour and certification requirements.

#### **AV 222B Private Pilot II Airplane Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 110, AV 222A (or FAA Private Pilot Certification), and Instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Develops fundamental flight skills and the practical application of aviation weather, performance, navigation, Federal Aviation Administration (FAA) regulations, flight planning, radio procedures, and human factors. Includes compliance with FAA flight hour and certification requirements.

#### **AV 222C Private Pilot III Airplane Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 110, AV 222A, AV 222B (or FAA Private Pilot Certification), and Instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Assesses fundamental flight skills and the practical application of aviation weather, performance, navigation, Federal Aviation Administration (FAA) regulations, flight planning, radio procedures, and human factors. Includes compliance with FAA flight hour and certification requirements.

#### **AV 222D Instrument Pilot I Airplane Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 110 (or Private Pilot Certificate), AV 222A, AV 222B, AV 222C, and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Introduces the fundamental skills of instrument flight, including basic attitude instrument flying, procedures, navigation systems, and instrument flight rules. Includes compliance with Federal Aviation Administration flight hour and certification requirements.

#### **AV 222E Instrument Pilot II Airplane Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 110 (or Private Pilot Certificate), AV 222A, AV 222B, AV 222C, and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Develops and assesses the fundamental skills of instrument flight, including basic attitude instrument flying, procedures, navigation systems, and instrument flight rules. Includes compliance with Federal Aviation Administration flight hour and certification requirements.

#### **AV 222F Commercial Pilot I Airplane Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 110 (or Private Pilot Certificate), AV 222A, AV 222B, AV 222C, AV 210 (or Instrument Pilot Certificate), AV 222D, AV 222E and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Develops commercial flight skills, including night flight, aviation physiology, advanced aerodynamics, aircraft performance, weight and balance, complex aircraft operations, advanced airplane systems, commercial operations and Federal Aviation Administration (FAA) regulations for commercial pilots and noncommercial flight operations. Includes compliance with FAA flight hour and certification requirements.

#### **AV 222G Commercial Pilot II Airplane Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 110, AV 222A, AV 222B, AV 222C, (or Private Pilot Certificate), AV 210, AV 222D, AV 222E (or Instrument Pilot Certificate), AV 222F and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Assesses commercial flight skills, including night flight, aviation physiology, advanced aerodynamics, aircraft performance, weight and balance, complex aircraft operations, advanced airplane systems, commercial operations and Federal Aviation Administration (FAA) regulations for commercial pilots and noncommercial flight operations. Includes compliance with FAA flight hour and certification requirements.

#### **AV 222H Commercial Multi Engine Pilot Airplane Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 110, AV 222A, AV 222B, AV 222C (or Private Pilot Certificate), AV 210, AV 222D, AV 222E (or Instrument Certificate), AV 220, AV 222F, AV 222G (or Commercial Pilot Certificate), AV 250, AV 222I, AV 222J (or Certified Flight Instructor/Instrument Instructor Pilot Certificates) and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Introduces fundamentals of multi-engine flight. Emphasizes engine failure, multi-engine aerodynamics, minimum controllable airspeed, propeller feathering, V-speeds, and flight planning, decision-making, human factors, and crew resource management. Includes compliance with Federal Aviation Administration flight hour and certification requirements.

#### **AV 222I Certified Flight Instructor I Airplane Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 110, AV 222A, AV 222B, AV 222C (or Private Pilot Certificate), AV 210, AV 222D, AV 222E (or Instrument Certificate), AV 220, AV 222F, AV 222G (or Commercial Pilot Certificate), and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Develops and assesses instructional techniques of ground and flight training, analysis of maneuvers, aircraft performance, and federal aviation regulations applicable to flight instructors. Includes compliance with Federal Aviation Administration flight hour and certification requirements.

#### **AV 222J Certified Flight Instructor II Airplane Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 110, AV 222A, AV 222B, AV 222C (or Private Pilot Certificate), AV 210, AV 222D, AV 222E (or Instrument Certificate), AV 220, AV 222F, AV 222G (or Commercial Pilot Certificate), AV 222I and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Develops and assesses instructional techniques of instrument ground and flight training, analysis of maneuvers, aircraft performance and federal aviation regulations applicable to instrument flight instructors. Includes compliance with Federal Aviation Administration flight hour and certification requirements.

**AV 222K Multi Engine Instructor Pilot Airplane Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 110, AV 222A, AV 222B, AV 222C (or Private Pilot Certificate), AV 210, AV 222D, AV 222E (or Instrument Certificate), AV 220, AV 222F, AV 222G (or Commercial Pilot Certificate), AV 250, AV 222I, AV 222J (or Certified Flight Instructor/Instrument Instructor Pilot Certificates), AV 222H, and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Develops and assesses multi engine flight skills. Emphasizes engine failure, multi-engine aerodynamics, minimum controllable airspeed, propeller feathering, V-speeds, and flight planning, decision-making, human factors and crew resource management. Includes compliance with Federal Aviation Administration flight hour and certification requirements.

**AV 225 Commercial Pilot-Helicopter (4 Credits)**

**Prerequisites:** AV 115 (or Private Pilot Certificate).

Reviews the principles of flight, aircraft systems, pertinent federal aviation regulations and airman publications and service in order to prepare the student for the FAA Commercial Helicopter Pilot airman knowledge exam.

**AV 227A Private Pilot I Helicopter Flight Lab (1 Credit)**

**Prerequisites:** Instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Introduces fundamentals flight skills and the practical application of aviation weather, performance, navigation, Federal Aviation Administration (FAA) regulations, flight planning, radio procedures, and human factors. Includes compliance with FAA flight hour and certification requirements.

**AV 227B Private Pilot II Helicopter Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 115, AV 222A (or FAA Private Pilot Certification), and Instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Develops fundamental flight skills, and the practical application of aviation weather, performance, navigation, Federal Aviation Administration (FAA) regulations, flight planning, radio procedures, and human factors. Includes compliance with FAA flight hour and certification requirements.

**AV 227C Private Pilot III Helicopter Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 115, AV 227A, AV 227B (or Private Pilot Helicopter Certificate), and Instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Assesses fundamental flight skills and the practical application of aviation weather, performance, navigation, Federal Aviation Administration (FAA) regulations, flight planning, radio procedures, and human factors. Includes compliance with FAA flight hour and certification requirements.

**AV 227D Instrument Pilot I Helicopter Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 115, AV 227A, AV 227B, AV 227C (or Private Pilot Certificate), and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Introduces the fundamental skills of instrument flight, including basic attitude instrument flying, procedures, navigation systems, and instrument flight rules. Includes compliance with Federal Aviation Administration flight hour and certification requirements.

**AV 227E Instrument Pilot II Helicopter Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 115, AV 227A, AV 227B, AV 227C, (or Private Pilot Certificate), AV 227D, and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Develops and assesses the fundamental skills of instrument flight, including basic attitude instrument flying, procedures, navigation systems, and instrument flight rules. Includes compliance with Federal Aviation Administration flight hour and certification requirements.

**AV 227F Commercial Pilot I Helicopter Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 115, AV 227A, AV 227B, AV 227C (or Private Pilot Certificate), AV 215, AV 227D, AV 227E, AV 227N (or Instrument Pilot Certificate), AV 225, and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Develops commercial flight skills, including night flight, aviation physiology, advanced aerodynamics, aircraft performance, weight and balance, and regulations for commercial pilots and commercial flight operations. Includes compliance with Federal Aviation Administration flight hour and certification requirements.

**AV 227G Commercial Pilot II Helicopter Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 115, AV 227A, AV 227B, AV 227C (or Private Pilot Certificate), AV 215, AV 227D, AV 227E, AV 227F, AV 227N (or Instrument Pilot Certificate), AV 225, and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Assesses commercial flight skills, including night flight, aviation physiology, advanced aerodynamics, aircraft performance, weight and balance, and regulations for commercial pilots and commercial flight operations. Includes compliance with Federal Aviation Administration flight hour and certification requirements.

**AV 227H Commercial Pilot III Helicopter Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 115, AV 227A, AV 227B, AV 227C (or Private Pilot Certificate), AV 215, AV 227D, AV 227E, AV 227N (or Instrument Pilot Certificate), AV 225, AV 227F, AV 227G, and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Assesses commercial flight skills, including night flight, aviation physiology, advanced aerodynamics, aircraft performance, weight and balance, and Federal Aviation Administration (FAA) regulations for commercial pilots and commercial flight operations. Introduces turbine helicopter systems, and commercial operations. Includes compliance with FAA flight hour and certification requirements.

**AV 227I Certified Flight Instructor I Helicopter Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 115, AV 227A, AV 227B, AV 227C (or Private Pilot Certificate), AV 215, AV 227D, AV 227E, AV 227N (or Instrument Pilot Certificate), AV 225, AV 227F, AV 227G, AV 227H (or Commercial Pilot Certificate), AV 255, and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Develops and assesses instructional techniques of ground and flight training, analysis of maneuvers, aircraft performance, and federal aviation regulations applicable to flight instructors. Includes compliance with Federal Aviation Administration flight hour and certification requirements.

**AV 227J Certified Flight Instructor II Helicopter Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 115, AV 227A, AV 227B, AV 227C (or Private Pilot Certificate), AV 215, AV 227D, AV 227E, AV 227N (or Instrument Pilot Certificate), AV 225, AV 227F, 227G, AV 227H (or Commercial Pilot Certificate), AV 255, AV 227I, and instructor approval based on proof of valid Second Class (or higher) Medical Certificate. Develops and assesses instructional techniques of instrument ground and flight training, analysis of maneuvers, aircraft performance, and federal aviation regulations applicable to instrument flight instructors. Includes compliance with Federal Aviation Administration flight hour and certification requirements.

**AV 227N Instrument Pilot III Helicopter Flight Lab (1 Credit)**

**Prerequisites with concurrency:** AV 115, AV 227A, AV 227B, AV 227C (or Private Pilot Certificate), AV 215, AV 227D, AV 227E, and instructor approval based on proof of valid Second Class (or higher) Medical Certificate.

Develops and assesses the fundamental skills of instrument flight and flight aided through the use of night vision systems. Includes compliance with Federal Aviation Administration flight hour and certification or endorsement requirements.

**AV 235 Human Factors (4 Credits)**

An introduction to the field of human behavior and characteristics as critical factors in the design and operation of electronic/machine systems. Emphasis is on crew resource management and human factors, including the study of human performance in complex systems with an examination of personality, stress, anxiety, fatigue, communication skills, decision-making, situational awareness, analysis of aviation and accidents, and practical application of human factors and performance to modern aviation.

**AV 245 Advanced Helicopter Operations (4 Credits)**

The course will address advanced helicopter operations in a ground school environment. Students will be introduced to operations of turbine helicopters. The mountain flying phase will provide students with a working knowledge of operations in and around mountainous terrain. The external load phase covers the basic skills of flying with an external longline attached to the aircraft. The night vision goggle (NVG) phase will introduce the student to a new realm of flying safely at night, and will be completed using an Internet based FAA approved Part 141 training syllabus and classroom instruction. Students will also be introduced to the unique aspect of overwater operations. NVG course licensing fee applies. See aviation program director for current course fee.

**AV 246 Aviation Safety (4 Credits)**

A detailed introduction into aspects of aviation safety, intended to promote flight safety in the general aviation and training environment. Topics include risk management, pilot psychology, human factors, accident trends, analysis of accident reports, and safety survival.

**AV 250 Certified Flight Instructor-Airplane (5 Credits)**

**Prerequisites:** AV 210 (or Instrument Rating) and AV 220 (or Commercial Pilot Certificate).

Provides the flight instructor applicant with fundamental concepts and practice for successful flight instruction at the recreational, private and commercial pilot level. Elements include fundamentals of instruction, developing lesson plans for private pilot and commercial pilot syllabus, designing curriculum, creating objective evaluation and grading criteria, and practical application in presenting technical material in an interactive classroom setting. Two FAA airman knowledge tests are required to obtain the CFI certificate, and a third is recommended. See Aviation Program director for current fees.

**AV 255 Certified Flight Instructor-Helicopter (5 Credits)**

**Prerequisites:** AV 215 (or Instrument Pilot Certificate), AV 225 (or Commercial Pilot Certificate and instructor approval based on proof of valid Second Class (or higher) Medical Certificate).

Teaches techniques of flight and ground instruction, analysis of maneuvers, aircraft performance and federal aviation regulations applicable to flight instructors. Practice instructing will be required. Student will prepare for the FAA Fundamentals of Instruction (FOI), CFI Helicopter, and Advanced Ground Instructor (AGI) exams. See Aviation Program director for current fee schedule.

**AV 271 Introduction to Unmanned Aerial Systems (4 Credits)**

**Prerequisites:** instructor approval.

This course introduces students to the history of Unmanned Aerial Systems (UAS) and surveys current UAS platforms, sensors, terminology, challenges to integrating unmanned systems into the national airspace system, operational theory, and the Federal Aviation Administration (FAA) certificate of authorization (COA) process.

**AV 272 Unmanned Aerial Systems (UAS) Operations (5 Credits)**

**Recommended preparation:** AV 271.

Surveys current UAS platforms, sensors, and terminology. Explores integration and application of UAS resources in United States Airspace. Focuses on building and executing simulated operations in a noncombative environment.

**AV 273 Unmanned Aerial Sys Ops Maint (5 Credits)**

**Prerequisites:** AV 272.

**Recommended preparation:** AV 271.

Progression to higher level simulation and mission planning/ execution. Includes a transition from the classroom setting to field operations for actual launches, recoveries, and maintenance of Unmanned Aerial Systems.

**AV 298 Independent Study: Aviation (1-6 Credits)**

**Prerequisites:** Instructor approval required.

**Recommended preparation:** Prior coursework in the discipline.

Individualized, advanced study in aviation to focus on outcomes not addressed in existing courses or of special interest to a student. P/NP grading.

**AV 299 Selected Topics: Aviation (1-8 Credits)**

This course is in development.