AVIATION (AVN)

AVN 101 Aviation Foundations (3)
This course introduces students to the aviation industry as a global system. Topics include the historical development of aviation; regulatory and organizational structures; commercial, general, military, and emerging sectors; and career pathways within the industry. Emphasis is placed on understanding aviation as an interconnected system shaped by technological innovation, economic forces, and regulatory frameworks.

AVN 105 Private Pilot Ground (1)
Prerequisite(s): Commercial Aviation concentration only.
Corequisite(s): AVN 151.
This course provides the foundational aeronautical knowledge required for students pursuing a degree in aviation and preparing for the FAA Private Pilot Certificate. Emphasis is placed on aerodynamics, aircraft systems, flight instruments, weather theory, airspace, navigation, regulations, aeromedical factors, and risk management. Students develop the decision-making skills and technical understanding necessary for safe flight operations and professional pilot development.

AVN 110 Aviation Human Factors (3)
Prerequisite(s): AVN 101.
This course examines the role of human factors in aviation safety, performance, and operational effectiveness. Students explore human physiological and cognitive capabilities and limitations, theories of human error and accident causation, ergonomic design principles, communication and teamwork strategies, and the influence of organizational culture on safety. Emphasis is placed on applying human factors concepts to real-world aviation scenarios to enhance safety and system performance.

AVN 151 Private Pilot Flight Lab I (1)
Prerequisite(s): Commercial Aviation concentration only.
Corequisite(s): AVN 105.
This course introduces students to fundamental flight skills and aircraft operation. Emphasis is placed on preflight procedures, aircraft control, airport operations, basic maneuvers, takeoffs and landings, and the development of safe flying habits. Students begin building aeronautical decision-making skills and situational awareness while progressing toward first solo flight. This course supports the knowledge gained in Private Pilot Ground School and prepares students for supervised solo operations.

AVN 152 Private Pilot Flight Lab II (1)
Prerequisite(s): Commercial Aviation concentration only; AVN 101, AVN 105, and AVN 151.
This course builds on foundational flight skills and advances students toward Private Pilot certification. Emphasis is placed on solo flight operations, cross-country navigation, performance maneuvers, emergency procedures, and risk management. Students develop proficiency in flight planning, navigation, and real-world decision-making while demonstrating increasing independence and professionalism.

AVN 201 Instrument Pilot Gound (1)
Prerequisite(s): AVN 152.
Corequisite(s): AVN 251.
This course provides the aeronautical knowledge required for students pursuing the FAA Instrument Rating. Emphasis is placed on instrument flight rules (IFR) operations, navigation systems, instrument procedures, weather analysis, flight planning, regulations, and risk management. Students develop the knowledge and decision-making skills necessary to safely operate aircraft in instrument meteorological conditions (IMC) and the National Airspace System. The course supports professional pilot development by fostering precision, situational awareness, and sound aeronautical judgment.

AVN 205 Airspace Management (3)
Prerequisite(s): AVN 110.
This course provides a comprehensive examination of airspace structure, organization, and management within the national and international aviation system. Topics include airspace classification, flight rules, air traffic control procedures and separation standards, navigation and surveillance systems, and the roles of regulatory agencies and international organizations. Students will apply concepts of airspace design and control to analyze operational scenarios and promote safety and efficiency in the air traffic environment.

AVN 251 Instrument Pilot Flight Lab (1)
Prerequisite(s): AVN 152.
Corequisite(s): AVN 201.
This course introduces students to fundamental instrument flight skills required for operating an aircraft solely by reference to instruments. Emphasis is placed on instrument scan techniques, aircraft control under simulated instrument conditions, basic attitude instrument flying, radio navigation, holding procedures, and partial-panel operations. Students develop situational awareness and aeronautical decision-making skills necessary for safe IFR operations while integrating knowledge from Instrument Ground Practicum.

AVN 301 Commercial Pilot Ground (2)
Prerequisite(s): AVN 251.
Corequisite(s): AVN 351.
This course provides advanced aeronautical knowledge required for students pursuing the FAA Commercial Pilot Certificate. Emphasis is placed on complex aircraft operations, advanced aerodynamics, aircraft performance, high-altitude operations, regulations, weather analysis, navigation, and professional pilot responsibilities. Students develop the technical knowledge, risk management skills, and aeronautical decision-making abilities necessary for safe and efficient commercial flight operations and career readiness in the aviation industry.

AVN 310 Aircraft Maintenance (3)
Prerequisite(s): AVN 205, Junior standing.
This course provides a comprehensive introduction to aircraft maintenance principles, practices, and regulatory requirements. Topics include scheduled and unscheduled maintenance, inspection techniques, troubleshooting and repair methods, maintenance documentation and recordkeeping, safety and quality control practices, and the roles and responsibilities of maintenance personnel. Emphasis is placed on understanding regulatory standards and applying maintenance principles to ensure airworthiness and operational safety.

AVN 311 Aircraft Systems and Management (3)
Prerequisite(s): AVN 205, Junior standing.
This course provides a comprehensive study of aircraft systems and their operational and management implications. Topics include airframe structures; propulsion systems; electrical, hydraulic, pneumatic, fuel, and environmental systems; avionics and automated flight control systems; and system integration. Emphasis is placed on system functionality, interrelationships, reliability, troubleshooting concepts, and maintenance management considerations to ensure airworthiness and operational efficiency.

AVN 320 Airline Operations and Management (3)
Prerequisite(s): AVN 205, Junior standing.
This course provides an in-depth study of airline operations and management within the global aviation industry. Topics include airline business models, flight operations and crew scheduling, route/network planning, revenue management, customer experience and service strategies, airport and ground operations coordination, and regulatory and safety considerations. Students will explore how operational decisions influence financial performance, customer satisfaction, and competitive positioning.

AVN 330 Aviation Law (3)
Prerequisite(s): AVN 205, Junior standing.
This course examines the legal framework governing the aviation industry at the national and international levels. Topics include statutory and regulatory authority; administrative law and enforcement; aviation tort liability; accident investigation; international aviation agreements; and emerging legal issues affecting aviation operations.

AVN 340 Aerodynamics of Flight (3)
Prerequisite(s): AVN 205, Junior standing, Commercial Aviation concentration only.
This course provides a detailed study of aerodynamic principles and their application to aircraft performance and flight operations. Topics include forces acting on an aircraft, airfoil and wing design, lift and drag characteristics, stability and control, and the effects of atmospheric conditions on performance. Students will apply aerodynamic theory to analyze flight performance, optimize aircraft handling, and evaluate design and operational decisions.

AVN 351 Commercial Pilot Flight Lab I (1)
Prerequisite(s): AVN 251.
Corequisite(s): AVN 301.
This course introduces students to advanced aircraft control and precision flying techniques required for commercial operations. Emphasis is placed on complex aircraft familiarization (as applicable), chandelles, lazy eights, steep spirals, and eights on pylons. Students refine aircraft control, coordination, and situational awareness while developing the professionalism expected of commercial pilots.

AVN 352 Commercial Pilot Flight Lab II (1)
Prerequisite(s): AVN 351.
This course builds proficiency in complex and technically advanced aircraft operations. Emphasis is placed on complex aircraft systems or Technically Advanced Aircraft Systems (TAA) (retractable gear, constant-speed propellers), performance takeoffs and landings, and advanced emergency procedures. Students develop precision, system management skills, and risk awareness required for commercial pilot privileges.

AVN 353 Commercial Pilot Flight Lab III (1)
Prerequisite(s): AVN 352.
This course emphasizes cross-country operations, commercial-level navigation, and real-world flight scenarios. Students refine flight planning, fuel management, weather evaluation, and aeronautical decision-making while operating in diverse airspace and environmental conditions.

AVN 400 Certified Flight Instructor Ground (3)
Prerequisite(s): AVN 353.
Corequisite(s): AVN 450.
This course provides the advanced aeronautical knowledge and instructional techniques required for the Certified Flight Instructor (CFI) certificate. Emphasis is placed on the development of teaching proficiency in aeronautical subjects, including lesson planning, instructional delivery, and evaluation of student performance. Students integrate knowledge from prior training while applying instructional methods to teach flight maneuvers, regulations, and aviation concepts. The course prepares students to effectively instruct in both ground and flight environments while promoting safety, professionalism, and sound aeronautical judgment.

AVN 401 Commercial Aviation Safety (3)
Prerequisite(s): AVN 330.
This course provides an advanced examination of aviation safety principles and practices within commercial aviation operations. Topics include safety theory and accident causation models, hazard identification and risk assessment, Safety Management Systems (SMS), safety data analysis, regulatory oversight, safety culture, and accident/incident investigation procedures. Students engage in research-based writing and applied safety analysis to evaluate and improve aviation safety performance.

AVN 402 Multi Engine Ground (2)
Prerequisite(s): AVN 353.
Corequisite(s): AVN 453.
This course provides the aeronautical knowledge required for multi-engine aircraft operations. Emphasis is placed on multi-engine aerodynamics, aircraft systems, performance, limitations, and emergency procedures. Students examine factors affecting engine-out performance, asymmetric thrust, and critical engine considerations while developing the knowledge and decision-making skills necessary for safe and efficient multi-engine flight. Instruction supports professional pilot development through an emphasis on safety, precision, and operational awareness.

AVN 420 Airport Planning and Management (3)
Prerequisite(s): Senior standing.
This course examines the principles and practices of airport planning, design, and management within the national aviation system. Topics include airport master planning and forecasting, airside and landside design standards, operational management, airport finance and funding mechanisms, regulatory compliance, safety and security requirements, environmental considerations, and stakeholder engagement. Emphasis is placed on applying planning methodologies and management strategies to address capacity, sustainability, and community impact challenges.

AVN 440 Propulsion Systems (3)
Prerequisite(s): AVN 340, Commercial Aviation concentration only.
This course provides a comprehensive study of aircraft propulsion systems and their operational and maintenance considerations. Topics include piston, turboprop, and jet engines, propeller theory, thermodynamic and fluid dynamic principles, engine components and performance, fuel systems, troubleshooting, and reliability management. Students will apply propulsion theory to analyze performance, optimize operations, and manage maintenance and safety considerations.

AVN 450 Certified Flight Instructor Flight Lab (1)
Prerequisite(s): AVN 353.
Corequisite(s): AVN 400.
This course provides supervised flight training focused on the development of instructional proficiency in the aircraft. Emphasis is placed on teaching flight maneuvers from the instructor's perspective, including demonstration-performance techniques, error correction, and student evaluation. Students learn to effectively communicate, manage risk, and maintain aircraft control while instructing from the right seat. Training integrates aeronautical knowledge, instructional theory, and practical teaching application in preparation for the FAA Certified Flight Instructor practical test.

AVN 451 Certified Flight Instructor Instrument Flight Lab (1)
Prerequisite(s): AVN 201 and AVN 251.
This course emphasizes cross-country operations, commercial-level navigation, and real-world flight scenarios. Students refine flight planning, fuel management, weather evaluation, and aeronautical decision-making while operating in diverse airspace and environmental conditions.

AVN 453 Multi Engine Pilot Flight Lab (1)
Prerequisite(s): AVN 353.
Corequisite(s): AVN 402.
This course provides supervised flight training in multi-engine aircraft with emphasis on the development of proficiency in normal, abnormal, and emergency operations. Students apply multi-engine aerodynamic principles, aircraft systems knowledge, and performance data in practical flight scenarios. Training focuses on engine-out procedures, asymmetric thrust management, VMC demonstrations, and precision aircraft control. Emphasis is placed on safety, risk management, and professional standards in preparation for the FAA Multi-Engine Add-On practical test.

AVN 460 Air Cargo Operations (3)
Prerequisite(s): Senior standing.
This course provides an in-depth examination of air cargo operations within the global logistics and transportation system. Topics include air cargo industry structure, supply chain integration, cargo handling and warehousing operations, dangerous goods and security regulations, customs and international trade compliance, revenue management, and emerging trends such as e-commerce and sustainability initiatives. Emphasis is placed on the operational, regulatory, and economic factors influencing air cargo management and global trade.

AVN 470 Crew Resource Management (3)
Prerequisite(s): Senior standing; Commercial Aviation concentration only.
This course examines the principles and practices of crew resource management (CRM) to enhance safety, communication, and decision-making in aviation operations. Topics include effective cockpit communication, teamwork, situational awareness, decision-making under pressure, human factors, stress and fatigue management, error prevention, and case study analysis of aviation incidents. Students will apply CRM concepts through simulations, role-playing exercises, and scenario-based problem solving.