

Aeronautical Science (ASCI)

ASCI 101 Aeronautical Science Student Success Seminar 1 Credit (1,0)

Development of personal, interpersonal, intellectual, social skills for success in flight-related degree programs; time management; study skills; goal clarification; coping strategies for challenges unique to flight-related studies.

Corequisites: ASCI 121

Course Offered at: Daytona Beach

ASCI 120 Principles of Aeronautical Science 3 Credits (3,0)

Broad-based aviation orientation for non-Aeronautical Science degree programs; historical developments in aviation; theory of flight; airport operations; aircraft systems and performance; air navigation; basic meteorology; air traffic principles; flight physiology; aviation regulations, safety. Not available to Aeronautical Science students or students with FAA pilot certificates.

Course Offered at: Daytona Beach, Prescott

ASCI 121 Private Pilot Operations 6 Credits (6,0)

Aeronautical knowledge for Private Pilot certification with Airplane Single Engine Land rating; regulations, safety, pre-solo operations, cross-country planning, airspace, chart use, communications, weather, performance, weight and balance, aerodynamics, decision-making.

Daytona Beach Corequisites: ASCI 101 or UNIV 101

Prescott Corequisites: ASCI 101 or UNIV 101

Course Offered at: Daytona Beach, Prescott

ASCI 121L Airman Knowledge Test Preparation 1 Credit (0,1)

Aeronautical knowledge testing preparation for FAA certification/ratings; exposure to AKT software, testing procedures.

Daytona Beach Corequisites: ASCI 101 or UNIV 101

Prescott Corequisites: ASCI 101 or UNIV 101

Worldwide Corequisites: ASCI 121W (not required for sUAS minor students)

Course Offered at: Worldwide

ASCI 121W Private Pilot Operations 5 Credits (5,0)

Aeronautical knowledge for Private Pilot certification with Airplane Single Engine Land rating; regulations, safety, pre-solo operations, cross-country planning, airspace, chart use, communications, weather, performance, weight and balance, aerodynamics, decision-making.

Worldwide Corequisites: ASCI 121L (not required for sUAS minor students)

Course Offered at: Worldwide, Asia

ASCI 137 Aviation English 3 Credits (3,0)

Aviation terms and concepts for non-native English speakers; pronunciation of critical phraseology; extensive practice with radio communications in routine and non-routine situations.

Course Offered at: Prescott

ASCI 185 Introduction to Flight 3 Credits (3,0)

This course examines the basics of aerodynamics, aircraft performance, VFR cross-country navigation techniques, weather reports and forecasts, Federal Aviation Regulations, elements of resource management, and safe flying practices.

Course Offered at: Worldwide, Asia

ASCI 199 Special Topics in Aeronautical Science 1-6 Credit (1-6,0)

Individual, independent or directed studies of selected topics in aeronautical science.

Course Offered at: Daytona Beach, Prescott, Worldwide

ASCI 202 Introduction to Aeronautical Science 3 Credits (3,0)

Aviation topics appropriate to Aeronautical Science programs; aviation profession, science of flight, safety, security, human factors; aviation resources; aviation environment; meteorology.

Course Offered at: Worldwide, Asia

ASCI 207 Introduction to Aviation Research Methods 3 Credits (3,0)

Methodology and data analysis in aviation/aerospace research; defining research problems, hypothesis; qualitative and quantitative methods; literature reviews; methodology design; outcome evaluation; analysis and communication of results; statistical terminology, computations, reporting.

Prerequisites: COMM 221 or COMM 222 and MATH 112 or STAT 222

Course Offered at: Prescott

ASCI 214 Aviation Networks and Cybersecurity 3 Credits (3,0)

Develop understanding of current state of Urban Air Mobility (UAM) and Advanced Air Mobility (AAM) systems, including underpinning technologies. Identify, assess, and mitigate cybersecurity threats to UAM/AAM; ensure secure and reliable application of technologies that provide for safe National Airspace System integration and operation.

Course Offered at: Daytona Beach

ASCI 216 Sustainable Practices for Aviation Applications 3 Credits (3,0)

Intersection between aviation and environmental sustainability. Advances in aircraft technology, operational efficiency, environmental regulation, sustainable aviation fuels and power sources, and environmental stewardship. Sustainable aviation practices shaping the future of aviation; strategies for achieving environmental and operational balance.

Course Offered at: Daytona Beach

ASCI 221 Instrument Pilot Operations 3 Credits (3,0)

Aeronautical knowledge for Instrument Airplane rating addition to Private Pilot certificate; instrument flying regulations, safety, operations, navigation systems, chart use, weather, flight planning, decision-making, crew resource management.

Daytona Beach Prerequisites: ASCI 121

Prescott Prerequisites: ASCI 121 and (FACR 121D or FA 121) for AS Majors or students in Flight Minor

Worldwide Prerequisites: ASCI 121W

Course Offered at: Daytona Beach, Prescott, Worldwide

ASCI 225 Introduction to Flight Physiology 3 Credits (3,0)

Fundamental concepts and topics of flight physiology; basic anatomical systems; physiological effects on the human body; vision, hearing, atmospheric effects, physical stressors, physiological challenges to flight operations including disorientation, hypoxia, decompression, impairment, incapacitation.

Course Offered at: Worldwide

ASCI 246 Basic Navigation 3 Credits (3,0)

Navigation fundamentals for Aeronautical Science students; aircraft instruments and systems theory, performance, navigation theory, electronic navigation systems, precision flight control principles, navigation information sources, planning procedures, special problems in navigation, flight planning.

Course Offered at: Prescott

ASCI 254 Aviation Legislation 3 Credits (3,0)

Evolution of federal civil aviation regulations in the U.S.; regulatory responses to industry problems, safety legislation, airport development, funding, international aviation legislation.

Course Offered at: Daytona Beach, Prescott, Worldwide, Asia

ASCI 257 Flight Physiology 3 Credits (3,0)

Aero-medical information; causes, symptoms, prevention, treatment of the effects of the flight environment on the human body; to include the effects of altitude, spatial disorientation, vision, self-imposed stresses and psychological factors affecting pilot performance.

Daytona Beach Prerequisites: ASCI 120 or ASCI 121

Prescott Prerequisites: ASCI 120 or ASCI 121

Course Offered at: Daytona Beach, Prescott, Worldwide

ASCI 299 Special Topics in Aeronautical Science 1-6 Credit (1-6,0)

Individual, independent or directed studies of selected topics in aeronautical science.

Course Offered at: Daytona Beach, Prescott, Worldwide

ASCI 301 Introduction to Air Traffic Control 3 Credits (3,0)

Operating environment of air traffic control; overview of governing authorities, regulations, publications, manuals, maps, charts; ATC procedures, future air traffic control systems; major authorities include FAA, ICAO, Eurocontrol, and others.

Course Offered at: Worldwide, Asia

ASCI 303 Tower and Radar for Air Traffic Control and Management 3 Credits (3,0)

Basic ATC procedures for tower terminal operations and terminal radar facilities; duties and responsibilities of terminal radar air traffic controllers; understanding of the ATC system, including control tower equipment, operating positions, airspace, traffic patterns, phraseology, aircraft taxi instructions, emergency handling.

Course Offered at: Worldwide, Asia

ASCI 309 Aerodynamics 3 Credits (3,0)

Exploration of incompressible flow, airfoil theory, wing theory; stall speed, drag, performance criteria, configuration changes, high and low speed conditions, special flight conditions, compressible flow.

Daytona Beach Prerequisites: (PHYS 113 or PHYS 150 or PHYS 161), and MATH 112 or MATH 241

Prescott Prerequisites: (PHYS 113 or PHYS 150 or PHYS 161), and MATH 112 or MATH 241

Worldwide Prerequisites: MATH 112 or MATH 142 or MATH 143

Course Offered at: Daytona Beach, Prescott, Worldwide, Asia

ASCI 310 Aircraft Performance 3 Credits (3,0)

Aerodynamic performance of aircraft with reciprocating, turboprop, or jet turbine engines; stability, control, weight and balance, operating data.

Prerequisites: ASCI 309

Course Offered at: Daytona Beach, Prescott

ASCI 311 Aircraft Engines - Turbine 3 Credits (3,0)

Fundamentals, theory, and operations of aircraft turbine engines; engine designs, components, future trends, technologies.

Prerequisites: (PHYS 113 or PHYS 150 or PHYS 161) and (MATH 112 or MATH 241)

Course Offered at: Daytona Beach, Prescott

ASCI 312 Ethics in Aviation Environment 3 Credits (3,0)

Decision-making and business practice based on legal, ethical, moral, statutory fundamentals; legal restraints, professional rules, confidentiality, conflict of interest, ethical issues in aviation professions. Emphasis on decision-making process for aviation and business professionals.

Prerequisites: Junior Standing

Course Offered at: Daytona Beach, Prescott

ASCI 316 Safety Principles of Aircraft Energy Management 3 Credits (3,0)

Managing the airplane as an energy system; fundamental physics, well-tested applications; human performance process; piloting knowledge, rules, skills for safe flight.

Prerequisites: PHYS 113

Course Offered at: Daytona Beach, Prescott

ASCI 321 Commercial Pilot Operations 4 Credits (4,0)

Aeronautical knowledge for Commercial Pilot certification; Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) environments, high altitude, night, winter, mountain flying; regulations, safety, weather, aerodynamics, weight and balance, performance, systems, navigation, decision-making.

Daytona Beach Prerequisites: ASCI 221 and FA 221 or FACR 221C

Prescott Prerequisites: ASCI 221 and FA 221 or FACR 221C

Course Offered at: Daytona Beach, Prescott

ASCI 321W Commercial Pilot Operations 3 Credits (3,0)

Aeronautical knowledge for Commercial Pilot certification; Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) environments, high altitude, night, winter, mountain flying; regulations, safety, weather, aerodynamics, weight and balance, performance, systems, navigation, decision-making.

Worldwide Prerequisites: ASCI 121W

Course Offered at: Worldwide

ASCI 326 Rotorcraft 3 Credits (3,0)

Development of rotorcraft operations; military and civilian design, manufacturing, materials, systems, configurations; management, maintenance perspectives; rotorcraft operations, airworthiness regulations, airspace, facilities, environmental considerations.

Course Offered at: Worldwide, Asia

ASCI 332 Dispatch Aircraft Performance 3 Credits (3,0)

Aerodynamic performance of jet turbine-powered aircraft; air carrier Dispatch Release development, interpretation; aerodynamics, turbine engine operation, performance curves, weight and balance, operational efficiency. Not a substitute for ASCI 310 in Aeronautical Science degree.

Prerequisites: ASCI 221 and MATH 111

Course Offered at: Daytona Beach

ASCI 350 Domestic and International Navigation 3 Credits (3,0)

FAR Part 121 regulations for domestic and international flights; ICAO, JAA, FAA requirements; Ops SPECS for domestic, transoceanic flights; high-altitude airspace navigation; NAT HLA, RVSM airspace, dispatch procedures, ETOPS, ETP, driftdown, track messages; international METARs, TAFs, oceanic contingencies, communication systems.

Prerequisites: ASCI 221 and FA 121 or FACR 121H

Corequisites: ASCI 310

Course Offered at: Daytona Beach, Prescott

ASCI 356 Aircraft Systems and Components 3 Credits (3,0)

Comprehensive study of aircraft systems and components; electrical, hydraulic, fuel, propeller, auxiliary systems; theory of operation, calculations, related Federal Aviation Regulations. Not available for students with AMS systems course credit.

Prerequisites: (PHYS 113 or PHYS 150 or PHYS 161) and (MATH 112 or MATH 241)

Course Offered at: Daytona Beach, Prescott

ASCI 359 Aviation Stress Management 3 Credits (3,0)

Understanding stress on the human condition; personal stress responses; practical tools, concepts, techniques to manage stress; stress management for aviation professionals, addressing complexity of tasks, job demands, stress reduction tools.

Course Offered at: Prescott

ASCI 359L Aviation Stress Management Laboratory 1 Credit (0,1)

Supports ASCI 359 objectives; development of stress management techniques, stress reduction tools; practical application, routine establishment, stress resiliency.

Course Offered at: Prescott

ASCI 378 Helicopter Flight Environments 3 Credits (3,0)

Helicopter operations in varying environmental conditions; adverse weather, day/night environments; principles of flight near Earth, hazards, helicopter flight in mountains, snow, desert, overwater operations; visual references for low-level flight in hazardous conditions.

Prerequisites: ASCI 326

Course Offered at: Worldwide, Asia

ASCI 380 Pilot Career Planning and Interviewing Techniques 1 Credit (1,0)

Short-term and long-term career goals; job search portfolio; resumes, letters of application; interviewing skills; simulated interviews, correspondence with companies, evaluation of letters, resumes, interviews.

Prerequisites: Junior Standing

Course Offered at: Daytona Beach, Prescott

ASCI 384 European Aviation Appreciation 3 Credits (3,0)

European contributions to aviation and aerospace; past and present achievements; visits to European aviation museums, airshows; influence of European culture on aviation history. Offered with ERAU Study-Abroad program.

Course Offered at: Daytona Beach, Prescott

ASCI 387 Crew Resource Management 3 Credits (3,0)

Organizational behavior, interpersonal skills, behavioral dynamics in professional flight crews; CRM concepts in communication, problem solving, group dynamics, workload management, situational awareness; analysis of aircraft incidents, accidents, CRM training, FAA regulations.

Prerequisites: PSYC 101 or PSYC 222

Course Offered at: Daytona Beach, Prescott

ASCI 388 Helicopter Flight Planning 3 Credits (3,0)

Federal Aviation Regulations related to helicopter flight planning, navigation; regulatory, operational considerations for remote operations, low-level flight, cargo planning, navigation procedures.

Prerequisites: ASCI 326

Course Offered at: Worldwide, Asia

ASCI 399 Special Topics in Aeronautical Science 1-6 Credit (1-6,0)

Individual, independent or directed studies of selected topics in aeronautical science.

Course Offered at: Daytona Beach, Prescott, Worldwide

ASCI 402 Airline Operations 3 Credits (3,0)

Major air carrier organizational structure; operations department relationships with marketing, maintenance, safety; corporate issues, FAR Part 121 regulations, market structure, certification, mergers, international topics; flight operations employment policies, operating specifications, types of services, training, decision-making, communications.

Prerequisites: Junior standing or Instructor Consent

Course Offered at: Daytona Beach, Prescott

ASCI 404 Applications in Aviation and Aerospace Law 3 Credits (3,0)

Aviation and aerospace law development; regulatory functions, rights and liabilities of industry professionals; case histories, international agreements, criminal statutes; legal aspects of uncrewed systems, space commercialization.

Course Offered at: Worldwide, Asia

ASCI 405 Aviation Law 3 Credits (3,0)

U.S. Constitution, federal, state, local statutes; case law, common law, civil law including tort, product liability, contract, property, labor laws; criminal law, airman/operator rights and liabilities, international aviation laws.

Prerequisites: Junior Standing

Course Offered at: Daytona Beach, Prescott

ASCI 406 Airborne Law Enforcement 3 Credits (3,0)

Impacts of airborne law enforcement on the criminal justice system; historical and contemporary organizational issues; operational management and safety; terrorism prevention and response; aviation and civil/criminal laws affecting airborne operations; pilot and crew responsibilities; aircraft selection; emerging technologies in airborne law enforcement.

Course Offered at: Worldwide

ASCI 407 Air Traffic Management 3 Credits (3,0)

Air traffic flow management; concepts, technologies for current and future air traffic systems; system analysis, traffic flow efficiency, global air navigation plan, governance restrictions, ATM systems, environmental impacts, interactions among ICAO Member States.

Course Offered at: Worldwide, Asia

ASCI 408 Flight Safety 3 Credits (3,0)

Attitude and philosophy for accident prevention; safety and security procedures; human factors; accident investigation and prevention programs; analysis of accident chains; NTSB studies.

Prerequisites: ASCI 321 or Senior standing

Course Offered at: Daytona Beach, Prescott

ASCI 410 Airline Dispatch Operations 3 Credits (3,0)

FARs, navigation systems, manual flight planning, emergency procedures, operating manuals, aircraft systems, human factors, dispatching applications.

Daytona Beach Prerequisites: (ASCI 310 or ASCI 332) and (ASCI 321 or ASCI 350)

Daytona Beach Corequisites: WEAX 301 and ATMG 202

Prescott Prerequisites: ATMG 202, ASCI 221, ASCI 309, ASCI 310, ASCI 350, WEAX 201 and WEAX 301

Course Offered at: Daytona Beach, Prescott

ASCI 411 Jet Transport Systems 3 Credits (3,0)

Jet transport systems, air carrier aircraft systems; air carrier procedures from crew member perspective.

Prerequisites: ASCI 356 or Instructor Consent

Course Offered at: Daytona Beach, Prescott

ASCI 412 Corporate and Business Aviation 3 Credits (3,0)

Operation of corporate flight departments; management mobility, aircraft/equipment evaluation, maintenance, flight operations, administration, fiscal considerations.

Prerequisites: Junior Standing

Course Offered at: Daytona Beach, Prescott, Worldwide

ASCI 413 Human Factors in Air Traffic Management 3 Credits (3,0)

Air traffic controller as major human causative agent in accidents; psychological, physiological factors increasing accident probability; human limitations, error mitigation strategies.

Course Offered at: Worldwide, Asia

ASCI 414 Aviation and the Administrative Law Process 3 Credits (3,0)

Administrative law and FAA rulemaking; adjudication, judicial review functions over administrative agencies.

Prerequisites: ASCI 254

Course Offered at: Daytona Beach

ASCI 420 Flight Technique Analysis 3 Credits (3,0)

Application of aerodynamic principles to pilot techniques; procedures for all airplanes and special procedures for large, high-performance, transport aircraft; flight deck resource management.

Prerequisites: ASCI 321 and ASCI 435

Course Offered at: Daytona Beach, Prescott

ASCI 421 Certificated Flight Instructor Ground Course 5 Credits (5,0)

Aeronautical knowledge and instructional foundation for Certificated Flight Instructor (CFI) and Certificated Flight Instructor-Instrument (CFII); Fundamentals of Instruction (FOI); aerodynamics; flight maneuvers; instrument procedures; risk management; cockpit resource management; preparation for applicable FAA knowledge exams.

Prerequisites: FA 321 or FACR 321E

Course Offered at: Daytona Beach, Prescott

ASCI 426 Airport Management in Air Traffic Management 3 Credits (3,0)

Facilities in airport systems, airspace, airfield, terminal, air traffic management systems; operational aspects of air traffic systems, global air navigation system components.

Course Offered at: Worldwide, Asia

ASCI 428 Advanced Helicopter Systems and Functions 3 Credits (3,0)

Advanced helicopter systems; automatic flight control systems, pilot interface mechanisms, power/rotor systems, avionics, environmental systems, structures.

Prerequisites: ASCI 326 and ASCI 388

Course Offered at: Worldwide, Asia

ASCI 434 Airline Operations Command and Control 3 Credits (3,0)

Functions of airline operational command/control center; regulations from FAR Part 61, 91, 117, 119, 121, 135; collaborative decision-making strategies in airline operations.

Prerequisites: ASCI 402 or ASCI 410 or WEAX 410

Course Offered at: Daytona Beach

ASCI 435 Electronic Flight Management Systems 3 Credits (3,0)

Theory and principles of flight with autopilot and FMS; application through simulators; decision-making processes in automated flight.

Prerequisites: ASCI 310 and ASCI 350 and FA 221 or FACR 221F

Course Offered at: Daytona Beach, Prescott

ASCI 438 Advanced Helicopter Operations 3 Credits (3,0)

Specialized commercial helicopter operations; organization, budgeting, airframe selection, mission support, insurance, maintenance, ground operations, safety, regulatory compliance.

Prerequisites: ASCI 326 and ASCI 388 and ASCI 378

Course Offered at: Worldwide, Asia

ASCI 445 Fundamentals of Instructing 3 Credits (3,0)

Fundamentals of instruction for aviation; process of learning, teaching, assessment; FAA regulations, professionalism, safety, instructional risk management.

Prerequisites: PSYC 101 and ASCI 321 or UNSY 322

Course Offered at: Daytona Beach

ASCI 472 Operational Applications in Aeronautical Science 3 Credits (3,0)

Culminating experience for Aeronautical Science degree; real-world application of decision-making, CRM, threat/error management, diversity/inclusion, corporate/airline operations. Senior standing required.

Prerequisites: ASCI 350 and ASCI 387 and COMM 221 and Senior Standing

Course Offered at: Daytona Beach, Prescott

ASCI 480 Applied Aviation Research Methods 3 Credits (3,0)

Capstone for Aeronautical Science/Aeronautics degree; exploration of aviation issues through study/research; application of knowledge, ethical principles, responsible research.

Prerequisites: ASCI 207 and Senior Standing

Course Offered at: Prescott

ASCI 491 Operational Applications in Aeronautics 3 Credits (3,0)

Culminating experience for Aeronautics degree; macro-level review of aviation industry, industry expectations, critical thinking, problem solving, communication skills. Senior standing required.

Daytona Beach Prerequisites: COMM 221 and Senior Standing and BSA major

Worldwide Prerequisites: Senior Standing

Course Offered at: Daytona Beach, Worldwide, Asia

ASCI 499 Special Topics in Aeronautical Science 1-6 Credit (1-6,0)

Individual, independent or directed studies of selected topics in aeronautical science.

Course Offered at: Daytona Beach, Prescott, Worldwide