

INSTITUTE FOR AIR SCIENCE

Baylor Institute for Air Science offers a four-year undergraduate program developed specifically for students who wish to pursue careers in aviation. Each Aviation Sciences major will receive a Bachelor of Science in Aviation Sciences degree in one of three concentrations. Those students who select the Professional Pilot - Airplane concentration will have flying qualifications to the Commercial Pilot level (including an instrument rating), along with a Certified Flight Instructor (CFI) license and then their choice of Certified Flight Instructor (CFI-I) license or multiengine rating. Students choosing the Professional Pilot - Helicopter concentration will achieve the Commercial Pilot level (including an instrument rating) along with Certified Flight Instructor and Certified Flight Instructor-Instrument Ratings as well as Night-Vision Goggle Training. Students may only enter the Aircraft Dispatch concentration upon departmental approval and must obtain their FAA Dispatch Certification externally.

The Aviation Administration major is for students intending to pursue a career in the business aspect of the aviation industry. Through a well-rounded curriculum of aviation, business, and management courses, students will have a basic foundation that can be applied to aviation businesses.

- Aviation Sciences, B.S.A. (<https://catalog.baylor.edu/undergraduate/college-arts-sciences/academic-departments/institute-air-science/aviation-sciences-bs/>)
 - Aviation Sciences (Aircraft Dispatch), B.S.A. (<https://catalog.baylor.edu/undergraduate/college-arts-sciences/academic-departments/institute-air-science/aviation-sciences-bs/aviation-sciences-aircraft-dispatch-concentration-b-s/>)
 - Aviation Sciences (Professional Pilot - Airplane), B.S.A. (<https://catalog.baylor.edu/undergraduate/college-arts-sciences/academic-departments/institute-air-science/aviation-sciences-bs/aviation-sciences-professional-pilot-airplane-concentration-b-s/>)
 - Aviation Sciences (Professional Pilot - Helicopter), B.S.A. (<https://catalog.baylor.edu/undergraduate/college-arts-sciences/academic-departments/institute-air-science/aviation-sciences-bs/aviation-sciences-professional-pilot-helicopter-concentration-b-s/>)
- Aviation Administration, B.S.A. (<https://catalog.baylor.edu/undergraduate/college-arts-sciences/academic-departments/institute-air-science/aviation-administration-bs/>)

Aviation Management (AVIM)

AVIM 1470 Fundamentals of Air Traffic Control (4)

The course will introduce the student to the Air Traffic Control to include a brief story of Air Traffic Control, an introduction to the Federal Aviation Administration, an introduction to the FAAO/JO 710.65, terms of reference, general control, flight progress strips, radio and interphone communications, route and NAVAID description, weather information, altimeter settings, and automatic terminal information service procedures.

Aviation Sciences (AVS)

AVS 1300 Introduction to Aviation (3)

Pre-requisite(s): Aviation Sciences (AVS) or Aviation Administration (AVA) majors, secondary majors, and minors only

A survey of aviation with special attention to the history and impact of aviation on society as well as its technological progress.

AVS 1301 Air Navigation (3)

Pre-requisite(s): Aviation Sciences (AVS) or Aviation Administration (AVA) majors and secondary majors only

Instruction in Visual Flight rules navigation in the National Airspace System. Topics include sectional charts, flight computers, plotters, and navigation logs and publications. Qualifies as part of a program leading to Federal Aviation Administration Private Pilot certification.

AVS 1302 Private Pilot Ground School (3)

Co-requisite(s): AVS 1301, AVS 1313

Pre-requisite(s): Aviation Sciences (AVS) or Aviation Administration (AVA) majors only

Basic ground school for the Federal Aviation Administration Private Pilot Certificate, providing the student with the necessary aeronautical knowledge that can be used for private pilot certification. Topics include principles of flight, radio procedures, weather, navigation, aerodynamics, and Federal Aviation Administration regulations.

AVS 1303 Instrument Rating Ground School (3)

Pre-requisite(s): AVS 1302

Ground school providing the necessary aeronautical knowledge required to successfully complete the Federal Aviation Administration (FAA) Instrument Rating written exam. Topics include basic radio instrument and navigation fundamentals, navigation systems, navigation instruments, charts used for instrument flight and Federal Aviation Administration regulations pertaining to instrument flight.

AVS 1313 Introduction to Meteorology (3)

Pre-requisite(s): Aviation Sciences (AVS) or Aviation Administration (AVA) majors, secondary majors, and minors only

Basic atmospheric structure and processes, clouds and precipitation, atmospheric pressure and winds, weather chart analysis, thunderstorms and hurricanes, weather observations and forecasting.

AVS 1331 Private Pilot Flight (3)

Pre-requisite(s): Aviation Sciences (AVS) or Aviation Administration (AVA) majors, secondary majors, and minors only

Dual flight instruction and solo flight time necessary to qualify for the FAA Private Pilot Certificate.

AVS 1332 Instrument Rating Flight (3)

Co-requisite(s): AVS 1303

Pre-requisite(s): AVS 1331

Dual flight instruction and solo flight time necessary to qualify for the FAA Instrument Rating.

AVS 1361 Private Pilot Helicopter Flight (3)

Co-requisite(s): AVS 1301, AVS 1302, AVS 1313

Pre-requisite(s): Departmental approval required

Flight training in preparation for the FAA Private Pilot Helicopter license.

AVS 2151 Multi-Engine Flight (1)

Pre-requisite(s): A grade of C or better in AVS 2239 or AIRP 2239

Prepares the student for the FAA multi-engine rating.

AVS 2236 CFI-A Flight (2)

Co-requisite(s): AVS 2349

Pre-requisite(s): A grade of C or better in AVS 2239 or AIRP 2239

Flight training in preparation for the FAA Certified Flight Instructor - Airplane (CFI-A) license.

AVS 2304 Commercial Pilot Ground School (3)

Pre-requisite(s): AVS 1303

Necessary aeronautical knowledge required to successfully complete the Federal Aviation Administration (FAA) Commercial Pilot written exam.

AVS 2333 Commercial Flight I (3)

Pre-requisite(s): AVS 1332

The first of two courses that combine to prepare a student for FAA Commercial Pilot certification. Focuses on cross-country procedures and commercial maneuvers and includes both solo and dual flight training.

AVS 2334 Commercial Flight II (3)

Co-requisite(s):

Pre-requisite(s): AVS 2333

Continues to prepare a student for FAA Commercial Pilot certification. Focuses on cross-country procedures and commercial maneuver and includes both solo and dual flight training.

AVS 2349 Certified Flight Instructor Ground School (3)

Pre-requisite(s): A grade of "C" or better in AVS 2337 or AIRP 2337

Ground school providing the necessary aeronautical knowledge to successfully complete the Federal Aviation Administration (FAA) Certified Flight Instructor and the Fundamentals of Instruction written exams.

AVS 2362 Instrument/Commercial I Helicopter Flight (3)

Co-requisite(s): AVS 1303

Pre-requisite(s): A grade of C or better in AVS 1361

The first of two (2) flight training courses in preparation for the FAA Commercial Pilot Helicopter License with Instrument Rating.

AVS 2363 Instrument/Commercial II Helicopter Flight (3)

Co-requisite(s): AVS 2304

Pre-requisite(s): AVS 2362

The second of two (2) flight training courses in preparation for the FAA Commercial Pilot Helicopter License with Instrument Rating.

AVS 3235 Multi-Engine Flight (2)

Pre-requisite(s): AVS 2334

Required flight training, fundamental knowledge, and a consistent flight schedule for earning the Multi-Engine rating. Includes preparation for FAA Multi-Engine Rating practical test.

AVS 3236 Certified Flight Instructor - Airplane Flight (2)

Co-requisite(s): AVS 3305

Pre-requisite(s): AVS 2334

Required flight training, fundamental knowledge, and comprehensive preparation for the FAA CFI-A practical test.

AVS 3304 Fundamentals of Instruction (FOI) Ground School (3)

Co-requisite(s): AVS 2334

Pre-requisite(s): AVS majors only and AVS 2304

Equips soon-to-be Federal Aviation Administration (FAA) Certified Flight Instructors (CFIs) with knowledge of pedagogy for teaching aeronautical knowledge and skills. The course culminates with the student successfully completing the Federal Aviation Administration (FAA) Fundamentals of Instructing Knowledge Exam.

AVS 3305 Flight Instructor Ground School (3)

Pre-requisite(s): AVS 2304

Advanced ground school, providing students with preparation for the Federal Aviation Administration Certified Flight Instructor Certificate.

AVS 3310 Aviation Law (3)

A history of the development of aviation law as well as a study of its present status. Topics include state and federal regulations, tort law, contract law, FAA regulations, aircraft ownership, airport businesses, and the effect of other laws on aviation.

AVS 3311 Aircraft Accident Investigation and Prevention (3)

A comprehensive overview of the procedures and methods used and the skills required to investigate an aircraft accident with emphasis placed on accident prevention.

AVS 3312 Aviation Safety (3)

Pre-requisite(s): AVS 3311

Methods for assessing risk and predicting error generation potentials, illustrated through accident and incident case studies.

AVS 3315 Aviation Meteorology (3)

Pre-requisite(s): Aviation Sciences (AVS) or Aviation Administration (AVA) majors, secondary majors, and minors only

Discussion of physical processes in the atmosphere which affect aviation including thunderstorms, wind, icing, turbulence, ceiling, and visibility. Includes development and application of aviation weather products.

AVS 3320 Flight Crew Career Development (3)

Pre-requisite(s): AVS 2334

Examination of pilot qualifications required by airline, corporate, and military hiring entities.

AVS 3341 UAS Foundations (3)

Analysis of the capabilities and limitations of UAS technology including both hardware and software inclusions along with an examination of the concerns facing UAS integration into the National Airspace.

AVS 3342 Applications of Unmanned Aircraft Systems (3)

Applications of UAS technology for commercial, scientific, and governmental purposes with respect to physical and regulatory limitations. Discussion of professionalism and ethics as they apply to remote pilots.

AVS 3350 Space Weather (3)

The discovery, basic processes, and the health, technology, and societal impacts of space weather.

AVS 3364 CFI Helicopter Flight (3)

Co-requisite(s): AVS 3305

Pre-requisite(s): AVS 2363

Flight training in preparation for the FAA Certified Flight Instructor Helicopter license.

AVS 3370 Aviation Leadership (3)

A study of leadership topics such as leadership theory, teamwork, conflict management, supervision, and motivation with an emphasis on application within the aviation industry.

AVS 3V9R Research (3)

Pre-requisite(s): Consent of the instructor

Undergraduate research undertaken with the supervision of a faculty member. May be taken for a maximum of 6 hours.

AVS 4237 Certified Flight instructor - Instrument Flight (2)

Pre-requisite(s): AVS 3236

Flight training, fundamental knowledge, and a consistent flight schedule required for earning the CFI-I certification rating. Includes preparation for the FAA CFI-I practical test.

AVS 4238 Multi Engine Instructor Flight (2)

Pre-requisite(s): AVS 3235 and AVS 4237

Flight training, fundamental knowledge, and a consistent flight schedule required for earning the Multi-Engine Instructor Certification. Includes preparation for the FAA Multi-Engine Instructor license practical test.

AVS 4265 CFI-I Helicopter Flight (2)

Pre-requisite(s): A grade of C or better in AVS 3464

Flight training in preparation for the FAA Certified Flight Instructor Instrument Helicopter license.

AVS 4266 NVG Helicopter Flight (2)

Pre-requisite(s): A grade of C or better in AVS 4265

Flight training in preparation for the FAA Helicopter Night Vision Goggle (NVG) logbook endorsement.

AVS 4305 Special Topics in Aviation (3)

Pre-requisite(s): Upper-level standing or consent of instructor

Study of advanced topics in aviation. This course may be repeated once under a different topic.

AVS 4306 Instructor - Instrument Ground School (3)

Pre-requisite(s): AVS 3305

Ground school providing the necessary aeronautical knowledge to successfully complete the Federal Aviation Administration (FAA) Certified Flight Instructor - Instrument written exam.

AVS 4314 Advanced Aircraft Systems (3)

Study of large transport aircraft: turbine engines, pressurization, electrical, hydraulic, and fire protection systems. Emphasis on high altitude aerodynamics and performance.

AVS 4315 Aerodynamics (3)

Pre-requisite(s): Upper-level standing and Aviation Sciences majors only
Aircraft types, theory of flight, aerodynamics of the airplane, aircraft performance, effects of atmospheric conditions on performance, theory of aircraft stability and control, effects of flight loads on aircraft structure.

AVS 4317 Aerospace Propulsion Systems (3)

Current aerospace power plants, engines, and associated aircraft systems with an emphasis on power plants encountered during flight and ground training.

AVS 4318 Avionics System Design (3)

Cross-listed as ELC 4318

See ELC 4318 for course information.

AVS 4321 Energy Economics (3)

Cross-listed as ENV 4321

See ECO 4321 for course information.

AVS 4323 The Environment and Economic Analysis (3)

Cross-listed as ECO 4323, ENV 4323

Economic analysis in description, analysis, and policy formulation of environmental problems such as natural resource development, ecology, energy needs, noise, water, and air pollution. Economic tools used will include social welfare analysis, externalities, and benefit cost analysis.

AVS 4343 Human Aspects of Unmanned Aircraft Systems (3)

Pre-requisite(s): AVS 3341

Assessment of the limits and skills employed by professional remote pilots in trapping and mitigating errors, as well as analyzing human error and management skills used to detect and stop errors during the day-to-day execution of remote pilot tasks. Exploration into the concepts of decision-making bias, stress, and methods for safely identifying and mitigating risk while making time critical decisions.

AVS 4344 Safety Management of Unmanned Aircraft Systems (3)

Pre-requisite(s): AVS 3342

Focus on the four pillars of a safety management system to include safety policy, safety risk management, safety assurance, and safety promotion.

AVS 4375 Crew Resource Management (CRM) in Aviation (3)

Cognitive processing theory, organizational behavior, interpersonal relationship skills, and other critical behavioral dynamics of professional flight crews.

AVS 4376 Aviation Management (3)

Application of management concepts to the problems involved in airport operations, national air traffic control and air transportation systems.

AVS 4377 Airport Management (3)

Pre-requisite(s): Upper-level standing

An in-depth overview of the Federal Aviation Regulation Part 139 airport design standard as well as a study of both landside and airside airport business management, utilizing the American Association of Airport Executives' Body of Knowledge modules. Includes a study of the role of the airport in community development.

AVS 4386 Remote Sensing (3)

Cross-listed as BIO 4386, ENV 4386, GEO 4386

See GEO 4386 for course information.

AVS 4390 Internship in Aviation (3)

Pre-requisite(s): Upper-level standing and consent of instructor

Supervised work within the aviation industry corresponding with the student's major and career goals.

AVS 4395 CFI Practicum - I (3)

Pre-requisite(s): Departmental approval required

Aviation capstone course that synthesizes and integrates previous learning to facilitate the students' transition to the professional world.

AVS 4396 CFI Practicum - II (3)

Pre-requisite(s): AVS 4395

Aviation capstone course that continues integrating previous dual flight instruction while further honing flight skills and professionalism for transition to the professional world.

AVS 4485 Introduction to Geographic Information Systems (4)

Cross-listed as ENV 4384, ENV 4485, GEO 4485

See GEO 4485 for course information.

AVS 4487 Advanced GIS Analysis (4)

Cross-listed as AVS 4387, ENV 4487, GEO 4487

See ENV 4487 for course information.

AVS 4V9R Research (3)

Pre-requisite(s): Consent of the instructor

Undergraduate research undertaken with the supervision of a faculty member. May be taken for a maximum of 6 hours.