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 Administration, B.S.A. (https://catalog.baylor.edu/undergraduate/college-arts-sciences/academic-departments/institute-air-science/aviation-administration-bs/)
  - Aviation Science Minor (https://catalog.baylor.edu/undergraduate/college-arts-sciences/academic-departments/institute-air-science/aviation-science-minor/)

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 2326 CFI-A Flight (2)
Co-require(s): AVS 2349
Pre-require(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-require(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-require(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)
Pre-require(s):
Pre-require(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-require(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)
Pre-require(s): AVS 1303
Pre-require(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)
Pre-require(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-require(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)
Pre-require(s): A grade of C or better in AVS 3464
Flight training in preparation for the FAA Certified Flight Instructor
Instrument license.

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-require(s): AVS 3311
Methods for assessing risk and predicting error generation potentials,
illustrated through accident and incident case studies.

AVS 3315 Advanced Aviation Meteorology (3)
Pre-require(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-require(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)
Pre-require(s): AVS 3305
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-require(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-require(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-require(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-require(s): A grade of C or better in AVS 3464
Flight training in preparation for the FAA Certified Flight Instructor
Instrument Helicopter license.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVS 4266</td>
<td>NVG Helicopter Flight</td>
<td>2</td>
<td>A grade of C or better in AVS 4265</td>
<td>Flight training in preparation for the FAA Helicopter Night Vision Goggle (NVG) logbook endorsement.</td>
</tr>
<tr>
<td>AVS 4305</td>
<td>Special Topics in Aviation</td>
<td>3</td>
<td>Upper-level standing or consent of instructor</td>
<td>Study of advanced topics in aviation. This course may be repeated once under a different topic.</td>
</tr>
<tr>
<td>AVS 4306</td>
<td>Instructor - Instrument Ground School</td>
<td>3</td>
<td>AVS 3305</td>
<td>Ground school providing the necessary aeronautical knowledge to successfully complete the Federal Aviation Administration (FAA) Certified Flight Instructor - Instrument written exam.</td>
</tr>
<tr>
<td>AVS 4314</td>
<td>Advanced Aircraft Systems</td>
<td>3</td>
<td></td>
<td>Study of large transport aircraft: turbine engines, pressurization, electrical, hydraulic, and fire protection systems. Emphasis on high altitude aerodynamics and performance.</td>
</tr>
<tr>
<td>AVS 4315</td>
<td>Aerodynamics</td>
<td>3</td>
<td>Upper-level standing and Aviation Sciences majors only</td>
<td>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.</td>
</tr>
<tr>
<td>AVS 4317</td>
<td>Aerospace Propulsion Systems</td>
<td>3</td>
<td></td>
<td>Current aerospace power plants, engines, and associated aircraft systems with an emphasis on power plants encountered during flight and ground training.</td>
</tr>
<tr>
<td>AVS 4318</td>
<td>Avionics System Design</td>
<td>3</td>
<td>ELC 4318</td>
<td>Cross-listed as ELC 4318. See ELC 4318 for course information.</td>
</tr>
<tr>
<td>AVS 4321</td>
<td>Energy Economics</td>
<td>3</td>
<td>ENV 4321</td>
<td>Cross-listed as ENV 4321. See ENV 4321 for course information.</td>
</tr>
<tr>
<td>AVS 4323</td>
<td>The Environment and Economic Analysis</td>
<td>3</td>
<td>ECO 4323</td>
<td>Cross-listed as ECO 4323, ENV 4323. See ENV 4323 for course information.</td>
</tr>
<tr>
<td>AVS 4343</td>
<td>Human Aspects of Unmanned Aircraft Systems</td>
<td>3</td>
<td>AVS 3341</td>
<td>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.</td>
</tr>
<tr>
<td>AVS 4344</td>
<td>Safety Management of Unmanned Aircraft Systems</td>
<td>3</td>
<td>AVS 3342</td>
<td>Focus on the four pillars of a safety management system to include safety policy, safety risk management, safety assurance, and safety promotion.</td>
</tr>
<tr>
<td>AVS 4375</td>
<td>Crew Resource Management (CRM) in Aviation</td>
<td>3</td>
<td></td>
<td>Cognitive processing theory, organizational behavior, interpersonal relationship skills, and other critical behavioral dynamics of professional flight crews.</td>
</tr>
<tr>
<td>AVS 4376</td>
<td>Aviation Management</td>
<td>3</td>
<td></td>
<td>Application of management concepts to the problems involved in airport operations, national air traffic control and air transportation systems.</td>
</tr>
<tr>
<td>AVS 4377</td>
<td>Airport Management</td>
<td>3</td>
<td>Upper-level standing</td>
<td>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.</td>
</tr>
<tr>
<td>AVS 4386</td>
<td>Remote Sensing</td>
<td>3</td>
<td></td>
<td>Cross-listed as BIO 4386, ENV 4386, GEO 4386. See GEO 4386 for course information.</td>
</tr>
<tr>
<td>AVS 4390</td>
<td>Internship in Aviation</td>
<td>3</td>
<td>Upper-level standing and consent of instructor</td>
<td>Supervised work within the aviation industry corresponding with the student’s major and career goals.</td>
</tr>
<tr>
<td>AVS 4395</td>
<td>CFI Practicum - I</td>
<td>3</td>
<td>Departmental approval required</td>
<td>Aviation capstone course that synthesizes and integrates previous learning to facilitate the students’ transition to the professional world.</td>
</tr>
<tr>
<td>AVS 4396</td>
<td>CFI Practicum - II</td>
<td>3</td>
<td>AVS 4395</td>
<td>Aviation capstone course that continues integrating previous dual flight instruction while further honing flight skills and professionalism for transition to the professional world.</td>
</tr>
<tr>
<td>AVS 4485</td>
<td>Introduction to Geographic Information Systems</td>
<td>4</td>
<td></td>
<td>Cross-listed as ENV 4384, ENV 4485, GEO 4485. See GEO 4485 for course information.</td>
</tr>
<tr>
<td>AVS 4487</td>
<td>Advanced GIS Analysis</td>
<td>4</td>
<td></td>
<td>Cross-listed as AVS 4387, ENV 4487, GEO 4487. See ENV 4487 for course information.</td>
</tr>
<tr>
<td>AVS 4V9R</td>
<td>Research</td>
<td>3</td>
<td>Consent of the instructor</td>
<td>Undergraduate research undertaken with the supervision of a faculty member. May be taken for a maximum of 6 hours.</td>
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</tbody>
</table>