

Southern Arkansas University Tech Aviation Maintenance Program



A Guide Prepared for Prospective Aviation Maintenance Students

Aviation Program Advisor

870-574-4717

www.sautech.edu/programs-degrees/aviation



Introduction to the SAU Tech Aviation Maintenance Program

The SAU Tech Aviation Maintenance Program was the first program in the state of Arkansas to be certificated by the Federal Aviation Administration (FAA) for aviation maintenance training. The program has two locations-Camden Municipal Airport & Texarkana, Arkansas Airport SAU Tech Aviation Maintenance students enjoy a tradition of low student to instructor ratios, affordable tuition, quality education, and excellent job placement for over 35 years.

Do you like the sounds of a high performance engine running, maybe even the scream of a jet engine. Do you like disassembling things, putting them back together, and then seeing them work like they were meant to work? Do you like working with your hands AND your mind? If you answered yes to any of the previous questions, then you may find great rewards in a career as an Aviation Maintenance Technician (AMT).

AMT's are in demand worldwide. Employment opportunities exist locally and as far as your imagination will take you. SAU Tech has been producing skilled AMT graduates since 1970. Our graduates are all over the globe in a wide variety of jobs including work in manufacturing, inspection, maintenance, and repair of all types of aircraft, but that's not all. Many graduates have gone on to work in other non-aviation fields, using the skills they learned in SAU Tech's Aviation Maintenance Program.

From the first semester of training, students begin acquiring skills such as blueprint reading, precision measurements, corrosion control, electrical troubleshooting, and record keeping. Later training includes fabrication and repair of sheet metal and composite structures; weld inspection, instrumentation, control systems, and hydraulic systems. Powerplant training includes reciprocating and turbine engines as well as the many subsystems of each such as starters, generators, fuel controls, lubrication systems, exhaust systems, etc. ALL these skills are applicable to a very wide variety of industries from again, local, to anywhere your imagination takes you.

Entry-level pay varies considerably with whom you work for and where you are located. Most of the better jobs in aviation maintenance in the immediate area (Shreveport, Little Rock, Hot Springs, Greenville, TX, Memphis, etc.) have great benefits to go along with good pay. Experience naturally pays more with major airlines and cargo haulers (FedEx, UPS) paying higher per hour wages and some providing flight benefits. Corporate aviation including business size jets and turbo prop aircraft also pay very well.

Completing your training with SAU Tech and earning your FAA Airframe and Powerplant Certificate will open up more opportunity than you can imagine, and secure your future in employment. Feel free to check into our program by contacting either campus for a visit and firsthand look at the equipment and the training offered.

Aviation Classes

Typically, SAU Tech Camden begins a new class of aviation students each fall semester (August). Classes usually start at 8:00 am and finish at 3:20 pm, Monday through Thursday, and finish at 11:50 am on Friday. Each semester is 16 weeks long and shop or lab work accounts for the majority of the training throughout the year. The program is four semesters long for a total of 21 months from start to finish. The training includes 1922 total hours of instruction and attendance is critical and any time missed must be documented and made-up according to FAA regulations.

All students start in what is called the General Curriculum for their first semester. The General Curriculum includes several interesting subjects such as aerodynamics, precision measurements, corrosion control, weight and balance, basic electricity, ground operations (taxiing aircraft), and basic servicing. The second semester and half of the third comprise the Airframe Curriculum. Here the students learn the ins and outs of maintenance and repair of airframe structures, hydraulic and pneumatic systems, instrument systems, control systems, electrical systems, wheels and brakes, fire protection and extinguishing, painting, communication and navigation systems, ice and rain control systems, and airframe inspection.

The last half of the third semester and the fourth semester entails the Powerplant Curriculum. Here the students learn the theory and operation of both reciprocating (piston) and turbine (jet) engines. Training includes maintenance and repair of fuel, electrical, induction, exhaust, and reverser systems of both types of engines as well. A unit on aircraft propellers and powerplant inspection rounds out completion of this phase of training.

The Aviation Maintenance program is designed to provide up-to-date, intensive training for this very rewarding occupational field. Completion of this college program, certified by the Federal Aviation Administration (FAA) under Title 14 CFR Part 147, meets the training and experience requirements of the FAA for airframe and/or powerplant certificate ratings. Completion of the general curriculum qualifies the student for an **Aviation General Certificate of Proficiency**. Further successful completion of the airframe and/or powerplant courses satisfies FAA requirements of training and experience prior to testing for either or both of these ratings. Completion also qualifies students for the **Technical Certificate for Airframe and or Powerplant**. Students will be awarded certificates of completion upon reaching the airframe and/or powerplant training milestones.

Aviation Maintenance Technology Degree Plan
Associate of Applied Science Degree

Though not required for FAA certification, SAU Tech does offer an Associate of Applied Science (A.A.S.) degree in this field. In order to qualify for the A.A.S. degree students must complete the prescribed program of general, airframe, and powerplant sections, plus the additional general education requirements.

Aviation Maintenance Technology
Degree Plan

General Curriculum	Credit Hours
AM1003 Fundamentals of Math and Physics	3
AM1703 Basic Electricity	3
AM1803 Aircraft Science	3
AM1503 Aircraft Standards I	3
AM1603 Aircraft Standards II	3
Airframe Curriculum	
AM2203 Aircraft Fabric & Finish	3
AM2106 Aircraft Sheet Metal	6
AM2105 Aircraft Electricity	5
AM2204 Aircraft Environment	4
AM2206 Aircraft Fluid Power	6
AM2205 Aircraft Inspection, Assembly, and Rig	5
Powerplant Curriculum	
AM2108 Reciprocating Engines	8
AM2208 Turbine Engines	8
AM2305 Powerplant Electrical & Ignition System	5
AM2302 Propellers	2
AM2403 Powerplant Systems II	3
AM2405 Powerplant Systems I	5
Total Hours Required for FAA Certification:	75
Additional requirements for associate degree:	
CO1103 Composition I	3
CO__3 Communications Arts	3
CS__3 Computer Science	3
MA1033 Intermediate Algebra <u>OR</u>	3
MA1053 College Algebra <u>OR</u>	
MA1233 Mathematics for Technology	
SO__3 Social Sciences	3
Total Hours Required for AAS Degree:	90

Course Descriptions

AM1003. Fundamentals of Math and Physics. This course provides practical applications of aviation maintenance involving the use of mathematics, physics, and drawing. The mathematics applications include fundamental algebraic operations and solving questions of ratio, proportion, area, and volume. Physics studies include principles of simple machines, aircraft structures, and aerodynamics. Aircraft drawing covers interpretation of charts, graphs, schematics, and drawings, as well as how to sketch repairs as required by the FAA.

AM1503. Aircraft Standards I. Students weigh aircraft, determine center of gravity, and calculate changes in weight and balance. Proper cleaning and corrosion control are vital to the life of an aircraft. Students are taught proper methods of cleaning, corrosion control, and precautions. This course also provides training for inspection and fabrication of both rigid and flexible fluid lines and fittings.

AM1603. Aircraft Standards II. Here the student is taught aircraft ground operations such as moving or taxiing aircraft and routine service procedures. The course also provides information concerning aircraft maintenance publications, maintenance forms and records, and privileges and limitations of aviation maintenance technicians.

AM1703. Basic Electricity. In this study students are shown methods of calculation and measuring inductance, capacitance, and electrical power. Measurements and relationships of voltage, current, and resistance are also shown, as well as an in-depth study of lead acid and nicad aircraft batteries. Interpretation of electrical circuit diagrams is given with practical aircraft electrical circuit applications.

AM1803. Aircraft Science. This course contains an overview of non-destructive testing methods such as ultrasonic, magnetic particle, eddy current, and dye penetrant methods. Identification and selection of proper aircraft hardware and materials is covered, as well as hands on performance of precision measurements.

AM2105. Aircraft Electricity. This is a study of electrical equipment installations, circuitry, motors, actuators and lighting with component inspection, maintenance, and testing in lab.

AM2106. Aircraft Sheet Metal. This course focuses on the formation and repair of sheet metal. The course will cover bend allowance calculations and special techniques used in sheet metal work. Students will be given training in construction of sheet metal structures from plans and acceptable methods of repairs.

AM2108. Reciprocating Engines. This is a very intensive study of design, construction, theory of operation, overhaul, and maintenance of the reciprocating engine. A very large amount of “hands on” training provides students with knowledge and skills needed for returning aircraft to service after inspection, service, and repair of this very common type of engine and the instrument systems associated with it.

AM2203. Aircraft Fabric & Finish. The course will provide the students with training in airframe material inspections, corrosion removal and protection, and the inspection and application of finishing materials including touch-up, trim, and letters. This course is heavily weighted with hands on experience.

AM2204. Aircraft Environment. Air-conditioning, cabin pressurization, and de-icing systems are a few of the systems that are covered in this course. These systems govern the conditions and environment under which the aircraft operate, contributing to the safety of flight. These systems must be given the attention that this course provides.

AM2205. Inspection and Assembly. This course is designed to provide the student with both theoretical and practical experience in assembling aircraft structures and components. This includes both primary and secondary flight control surfaces. Students will be trained to confirm structural alignment conformity and perform airworthiness inspections in accordance with approved technical data.

AM2206. Aircraft Fluid Power. This course encompasses hydraulic and pneumatic fluid power systems. Fluid pumps from simple vane pumps through variable displacement high-pressure piston pumps will be disassembled, studied, and assembled in accordance with manufacturer's service manuals. System components such as valves, regulators, and actuators will be studied in this course. Retractable landing gear systems operation and service are also taught in this course.

AM-2208. Turbine Engines. This course is critical to a thorough understanding of various types of gas turbine engines, including the turbojet, turboprop, turbo shaft, and turbofan engines. Students study design, construction, theory, overhaul, inspection and maintenance as related to this engine and the associated instrument systems, which are popular to corporate and commercial categories of airplanes and helicopters.

AM2302. Propellers. Fixed pitch and constant speed propellers will be studied in this course. The student will gain experience working with governing systems for propellers. A portion of this course will be dedicated to the operation of rotor heads on rotor wing aircraft.

AM2305. Powerplant Electrical & Ignition Systems. The electrical power portion of this course will cover starters, generators, alternators, electrical circuits and regulators that pertain to them. The student will learn to operate and troubleshoot these vital components on test equipment used in industry today. The ignition system portion of this course will include an in-depth study of magnetos. The student will disassemble, inspect, repair, time, and assemble aircraft magnetos to industry standards.

AM2403. Powerplant Systems II. This course fills the need for detailed training as related to the lubrication, cooling and fire protection systems used with both the reciprocating and gas turbine engines. Training includes not only the mechanical aspects of the systems, but the specific lubricants and chemicals involved as well.

AM2405. Powerplant Systems I. Herein the students gain useful skills and knowledge of inspection, service, and maintenance of various auxiliary systems that are vital to the support and operation of the reciprocating or turbine engine. These subsystems include the engine exhaust and reverser systems, as well as the induction, fuel metering, and supercharger systems.

Paying for Your Training

Many scholarship opportunities are available to students wishing to further their education. As a general rule, always check with the college you plan to attend for any “special” scholarships that may only be available to students of that college and or students in the local area. The following links maybe valuable in helping you find scholarships that may be applicable to the aviation maintenance training available through SAU Tech. The first step is to apply for the Federal Pell Grant (FAFSA) and then if you are an Arkansas resident, go to ADHE and apply for scholarships there.

Scholarships are also available to SAU Tech Aviation Maintenance students by the Arkansas Department of Aeronautics through SAU Tech. Applications are available upon request. This particular scholarship may also be used to defray costs of FAA testing upon completion of your training with SAU Tech. SAU Tech’s Financial Aid staff can provide you with assistance in locating grants, loans and other options for paying for your education. You can contact them at 870-574-4511.

<http://scholarships.adhe.edu/>

<https://fafsa.ed.gov/index.htm>

<http://www.avscholars.com/>

<http://flighttraining.aopa.org/learntofly/financing/scholarships.cfm>

<http://www.landings.com/landings/pages/schl/colleges-scholarships.html>

FAA Certification

Upon successful completion of training with SAU Tech, students are eligible to take the FAA tests for Airframe and or Powerplant. This test, like other programs, is not part of the SAU Tech tests, and is taken at a different location.

The FAA tests consist of a written, oral, and practical portion for Airframe and Powerplant. Written tests may be administered by an authorized testing facility such as Henderson State University. Upon successful passing of the applicable written tests, the student is eligible to take the oral and practical portions. The oral and practical are given by an FAA Designated Mechanic Examiner. The oral test is simply a question and answer portion where the examiner probes the mind of the applicant to see exactly what sort of critical information he or she has stored away. The practical test includes hands on activities where the student is provided with the applicable technical data, tools, and aircraft or component to accomplish a particular task.

The total cost for FAA testing varies from \$500 to \$700 dependent upon where and with whom you take your tests. The FAA’s Airframe and Powerplant Certificates, once obtained, does not expire. The A&P Certificate is a credential that opens up opportunities for securing your future. You become a very small percentage of persons authorized to perform maintenance on aircraft and join an elite group of technicians in this field.

Employment Opportunities

SAU Tech Aviation graduates are in greater demand than ever. The college receives calls on a regular basis from employers in need of our graduates. Maintenance and repair facilities across the region offer competitive wages and benefits not obtainable by many other occupations. Nearby aviation maintenance facilities such as Continental Express (Express Jet) of Shreveport, and L-3 Integrated Systems of Greenville, TX offer our students preferential hiring upon graduation. Other opportunities exist in non-aviation fields that students should be aware of. The skill sets obtained in the training enables students to actively compete for jobs in industrial/plant maintenance, millwrights, sheet metal fabrication, electrical repairmen, elevator repair, amusement park maintenance, NASCAR, and heavy equipment to name a few.

Following is a list of FAA certified aviation repair stations in Arkansas to provide an example of where some of the immediate area job opportunities in aviation maintenance are located.

FAA Designator Repair Station Name / Address

EJ4R	AIRMOTIVE INC PO BOX 540 CLINTON CLINTON, AR 72031
YW1R	AMERICAN FUEL CELL AND COATED FAB CO PO BOX 887 MAGNOLIA, AR 71753
YM1R	ARKANSAS AERONAUTICS ACCESSORIES INC WEST MEMPHIS MUNICIPL WEST MEMPHIS, AR 72301
A4U3	AUDIO INTERNATIONAL INC DASSAULT FALCON JET CORP LITTLE ROCK, AR 72203
A4UR	AUDIO INTERNATIONAL INC 7300 INDUSTRY DRIVE NORTH LITTLE ROCK, AR 72117
OJ42	BAKER ELECTRONICS INC 1025 HARRINGTON, HANGAR 11 LITTLE ROCK, AR 72202
HBKR	CENTRAL FLYING SERVICE INC 1501 BOND STREET LITTLE ROCK, AR 72202
J8TR	CENTRAL JET GROUP INC 12TH & CALHOUN LITTLE ROCK, AR 72202
R7QR	CUSTOM AIRCRAFT CABINETS INC 10015 FIRESTONE LANE NORTH LITTLE ROCK, AR 72118
HN2R	D AND T SERVICES INC 2127 PRY SOCK ROAD BENTON, AR 72015

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D8QR DASSAULT FALCON JET CORPORATION SERVICE CENTER
3801 EAST 10TH STREET
LITTLE ROCK, AR 72202-3366

YL1R FALCON JET CORP COMPLETION CENTER
P O BOX 967 10TH AND
LITTLE ROCK, AR 72202-9677

XB1D GARRETT AVIATION SERVICES LLC
3223 E 10TH STREET
LITTLE ROCK, AR 72202

GKZR GEARBUCK AVIATION MAINTENANCE COMPLEX
2305 TEXAS ST
BLYTHEVILLE, AR 72315

YX1R GRIFFIN, BRYAN K
P O BOX 1106 CARLISLE
CARLISLE, AR 72024

M6RR MAGNETO E R
2505 SOUTH MAIN STREET
SEARCY, AR 72143

YMUR MAYNARD INC
MAYNARD INC. 7175 SOUTH
FAYETTEVILLE, AR 72704

S9QR MENA AIRCRAFT ENGINES INC
103 AVIATION LANE
MENA, AR 71953

UIWR MID AMERICA AVIONICS AND INSTRUMENTS INC
4600 SMITH FIELD DR.
SILOAM SPRINGS, AR 72761

O31R MID AMERICA PROPELLER INC
400 KILLIAN LAKE ROAD
MOUNTAIN VIEW, AR 72560

M3PR MID-AMERICA PROPELLER INC
2200 AIRPARK ROAD
WYNNE, AR 72396

M7OR MORRILTON AVIATION
571 WINROCK DRIVE
MORRILTON, AR 72110

QNAR NORTHWEST ARKANSAS AVIONICS INC
5404 AIRPORT BLVD
FORT SMITH, AR 72903

QNBR NORTHWEST ARKANSAS AVIONICS INC
104 AIRPORT LANE
MENA, AR 71953

P1WR PRATT AND WHITNEY PSD INC
275 EAST ROBINSON

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SPRINGDALE, AR 72764

P90R PRECISION AEROSPACE TECHNOLOGIES INC
305 RUNWAY ROAD
BATESVILLE, AR 72501

This list provides just a few of the opportunities available to you as an aviation maintenance technician!

Additional Training and Ratings

After an Aviation Maintenance Technician has been working in the field for three years, he or she is eligible to apply to take the Inspector's Authorization (IA) test. The IA privilege allows the technician to perform annual inspections and approve major repairs and alterations on United States registered aircraft. This additional rating is sought after by many employers who need experienced inspectors on staff. Along with the additional responsibilities, comes additional pay as well.

Another rating that is often sought after by employers is obtained through the Federal Communications Commission (FCC). That is the General Radiotelephone Operators License (GROL). Those wishing to maintain and calibrate aircraft communication and navigation radios and radar reporting equipment need this rating. Major airlines and avionics (aviation electronics) shops consider this a very desirable rating for applicants to have. Bachelor's and Master's degrees are also helpful for those wishing to advance their careers to the management level. Henderson State University and others allow the transfer of credits earned at SAU Tech towards further degrees such as the Bachelor of Science in Aviation Maintenance Management.

Many employers will send their employees to specialty colleges for training on the particular aircraft or systems that they are servicing. This specialized training is invaluable to the technician and the employer as safety and efficiency in maintenance is achieved. Certificates of completion of this form of training should be recorded onto one's resume for possible future use when seeking advancement of employment. The A&P Certificate has been referred to as a "ticket to learn." In this ever-changing field, the learning never ends. Recognizing this fact ensures one's place in the workforce.

Recommended Tool List for Students

- Socket Sets
 - ¼” Drive
- Socket set and ratchet
- Socket set-Deep well Extensions:
 - 3”
 - 6”
- Universal-3/8” Drive Socket set & ratchet
- Break over bar
- Socket set deep well
- Speed Handle Extensions
 - 3”
 - 6”
 - 8”
- Universal Combination Wrench set 3/16 through 1”
- Cold chisel
- Drift punches set
- Center punch
- Allen wrench set
- Inspection mirror
- Flashlight
- 10 X magnifying glass
- 6” pocket scale
- Duck bill pliers
- Standard pliers
- Curved Long nose pliers
- Rib-lock pliers (water pump) 10”
- Safety wire pliers
- Snap ring pliers
- Oval head cutters (diagonals cutters “dikes”)
- Screwdrivers
 - Straight set
 - Phillips set
- Hammers
 - Ball Peen hammer
 - Soft face hammer
- Valve core tool
- Combination square (three piece)
- Gap gage
- Overhead valve bent feeler gage
- Aviation snips
 - Left
 - Right
 - Straight
- Hacksaw Files
 - Round
 - Flat
 - Triangle
- Magnet with handle or mechanical fingers
- Safety glasses
- Oxy-acetylene
- Goggles
- Welding gloves
- Hearing protectors
- Pocket knife
- Automatic Center Punch