

Course Descriptions:

GENERAL

AMT 1110 – Aviation Fundamentals

Explore the fundamentals of aviation maintenance in this course designed for future industry professionals. Study the application of physics as applied to aircraft operations, and gain a thorough grasp of fundamental principles such as work, power, force, and motion, alongside the practical application of Bernoulli and Newton's laws. Acquire hands-on skills in ground operations, including fueling, towing, jacking, and conducting aircraft ground runs, while mastering the interpretation of aircraft drawings and graphs. This course provides the essential knowledge and skills for a career in aviation maintenance.

AMT 1120 – Basic Electricity

In this aviation maintenance course, students will immerse themselves in the comprehensive study of electricity, electronics, and mathematics, crucial for the aviation industry. The curriculum is designed to provide an in-depth understanding of both alternating current (AC) and direct current (DC) systems, covering theoretical concepts, laws, and practical applications. Students will learn about capacitance, inductance, and the relationships between voltage, resistance, current, and power, alongside gaining proficiency in using electrical measuring tools. They will also engage in circuit design, motor and battery operations, and the inspection and maintenance of electrical systems. Emphasizing mathematical precision, the course will guide students through essential operations such as ratios, percentages, algebra, geometry, and trigonometry, ensuring they are equipped with the knowledge to perform accurate calculations critical for aircraft airworthiness and safety in flight operations. The course aims to cultivate a heightened awareness of the risks associated with electrical work and the importance of meticulous maintenance and troubleshooting practices.

AMT 1130 – Aircraft Materials

In this course, students will learn aircraft materials, hardware, mechanical processes, fluid lines and fittings. Knowledge and skill will be achieved related to torque wrench usage, aircraft hardware and tool identification and usage, hardware installation security, inspection principles and techniques, use of personal protection equipment, fabrication, inspection, repair, and replacement of hydraulic/pneumatic rigid and non-rigid lines. The student will also understand the risks associated with improper tool maintenance and usage, inspection techniques, and hydraulic/pneumatic systems line fabrication.

AMT 1140 – Publications and Regulations:

In this course, students will delve into the critical study of aviation publications, regulations, required documents, and airworthiness as outlined by Federal Aviation Regulations. They will gain an understanding of the risks associated with improper documentation, the impact of corrosion factors, and the proper use of cleaning chemicals. Additionally, the course will cover the importance of accurate inspection techniques, correct interpretation of technical data, and the analysis of non-destructive test results. Students will also learn to assess the performance capabilities of aviation maintenance technicians under a variety of physical, emotional, and environmental conditions, ensuring comprehensive knowledge for maintaining the highest standards of safety and compliance in the aviation industry. Lastly, the student will undergo a rigorous review of the General curriculum subject areas found in the current FAA Mechanic Airmen Certification Standards.

AIRFRAME

AMT 1210 – Aircraft Structures

This course offers a comprehensive exploration into the world of aviation maintenance, focusing on the formation and fabrication of metal structures, as well as the utilization of wood, fabric, and composite materials in aircraft design. Students will learn the properties of aircraft metals and the skills needed for fabricating repairs while also understanding the importance of adhering to design requirements to avoid risks associated with improper design and fabrication. The course also covers the techniques and procedures for painting, inspecting, assessing, and repairing structures made of alternative materials, emphasizing the significance of proper construction and assembly to prevent aging and deterioration. By the end of the course, students will be well-versed in the diverse materials and methods used in maintaining and repairing airframes, ensuring their reliability and serviceability in the aviation industry.

AMT 1220 – Aircraft Electrical Systems

This course provides an extensive overview of aircraft electrical systems and fire detection and suppression systems, essential for aviation maintenance. Students will learn about aircraft electrical power generation, lighting systems, wiring, and termination methods, with a focus on both small and large aircraft electrical systems. The curriculum includes in-depth knowledge of DC and AC electrical systems, covering sources, distribution, utilization, control, and monitoring. Practical skills in troubleshooting, inspection, and maintenance will be emphasized, ensuring students can apply their knowledge with a high level of proficiency. Additionally, the course addresses the importance of proper documentation, procedures, and operations to mitigate risks. Students will also become adept at understanding and maintaining airframe fire detection and suppression systems, learning common troubleshooting procedures and maintenance practices to ensure the safety and reliability of aircraft operations.

AMT 1230 – Aircraft Systems I

This course provides a thorough grounding in aviation maintenance, focusing on instrument systems and aircraft systems that cater to occupant physiological needs. Students will study the operation, performance, navigation, and communication aspects of powerplant instrument systems, learning about their functions, displays, and interpretation, with coverage of both analog and electronic systems. Practical skills in troubleshooting and maintenance will be honed, alongside an understanding of the risks involved in instrument installation, calibration, serviceability, and operation, all critical for flight safety. Additionally, the course addresses systems essential for occupant comfort and safety, including heating, cooling, pressurization, oxygen, hydration, and waste disposal, as well as rain and ice control systems. Students will learn the theory of operation, design, function, operating parameters, and troubleshooting of these systems, while also being made aware of the risks associated with oxygen handling, waste management, and pressurization operations, ensuring a comprehensive education in maintaining aircraft safety and airworthiness.

AMT 1240 – Aircraft Systems II

This course is designed to provide students with a comprehensive understanding of aviation maintenance, focusing on the mechanical and safety aspects of aircraft operation. Students will learn about the intricacies of shock absorbing equipment, brakes, wheel and tire assemblies, retraction mechanisms, controls, warning devices, landing gear components, flaps, and flight control surfaces. They will develop skills in operation, servicing, inspection, troubleshooting, and repairs of these systems. Additionally, the course will cover the installation and maintenance of fluid lines and fittings, as well as the inspection, service, and repair of aircraft fuel systems and their components. Emphasizing safety, students will also learn about the risks associated with hydraulic components, hydraulic fluids, jacking, improper fuel usage, fuel handling, labeling, and the potential explosion hazards, ensuring they are well-prepared to follow strict maintenance procedures and uphold the highest standards of aircraft safety.

AMT 1250 – Airframe Inspections

In this course, students will develop an understanding of fixed-wing and rotorcraft flight control systems, components, operation, and maintenance. The student will learn aircraft inspection processes related to airworthiness. The student will also understand risks related to inadequate inspection and aircraft unairworthy condition. Lastly, the student will undergo a rigorous review of the Airframe curriculum subject areas found in the current FAA Mechanic Airmen Certification Standards.

POWERPLANT

AMT 2110 – Turbine Engine Maintenance

In this course, students will engage in a detailed study of aircraft turbine engines, encompassing the theory, design, and operational principles. They will learn the critical aspects of turbine engine maintenance, including inspection, repair, and troubleshooting techniques. The course will provide hands-on experience with the removal, installation, rigging, and operational testing of turbine engines, as well as the identification and inspection of turbine engine air systems. Students will also understand the significance of airflow through an engine, from entry to exhaust, and the importance of maintaining proper airflow for engine efficiency. Additionally, the course covers aviation maintenance procedures and the use of specialized tools for installing fluid lines and fittings. Students will acquire the skills necessary to inspect, service, troubleshoot, and repair engine fuel systems and their components. Emphasizing safety, the curriculum will address the risks associated with turbine engine maintenance, including fire occurrence, foreign object damage/debris, and the overall operation of the engine, preparing students to ensure the highest standards of aircraft operation and safety.

AMT 2120 – Powerplant Systems

This course offers a comprehensive look into aviation maintenance with a focus on engine ignition systems and fire safety. Students will learn about reciprocating and turbine engine ignition, electrical induction, magnetos, starters, generators, and instrument indications. They will also become familiar with the risks associated with ignition system electrical hazards, including propeller safety, battery safety, and the consequences of improper instrument readings. Additionally, the course covers engine fire detection and suppression systems, engine instrumentation, and monitoring systems. Students will gain practical knowledge and skills in troubleshooting procedures and maintenance practices essential for ensuring the safe and efficient operation of aircraft engines.

AMT 2130 – Reciprocating Engine Maintenance

In this comprehensive course, students will delve into the intricacies of horizontally opposed reciprocating aircraft engines, gaining insights into the theory of operation, engine construction features, and the critical maintenance practices required for overhaul and troubleshooting. Emphasis will be placed on the significance of airflow through an engine, from entry to exhaust, and its role in the effective cooling of reciprocating engines. Through hands-on experience, students will develop a robust understanding of aviation maintenance procedures and master the use of specialized tools for installing fluid lines and fittings. The curriculum is designed to equip students with the knowledge and skills necessary to meticulously inspect, service, troubleshoot, and repair engine fuel systems, along with their associated components and subsystems. Additionally, the course will address the potential risks associated with improper fuel usage, handling, and labeling, as well as the implications of fuel quantity indications and fuel flow under various operational conditions, including the hazards of fuel-related explosions.

AMT 2140 – Powerplant Inspection

In this advanced aviation mechanics course, students will hone inspection skills in compliance with Federal Aviation Regulations. They will become proficient in utilizing maintenance forms, records, publications, and technical data, along with inspection equipment and aids, and understand the risks associated with improper recordkeeping and non-compliance with regulations. The course will cover proper procedures for returning aircraft to service, including thorough inspection of engines and related systems. Additionally, the course will address the risks associated with unairworthy aircraft. Students will learn the principles of operation for propellers, governing systems, and ice control, as well as acquire skills in propeller inspection, lubrication, service, repair, removal, and installation. Students will also explore engine instrumentation and monitoring systems, gaining knowledge and skills for common troubleshooting procedures and maintenance practices. The curriculum includes the study of reciprocating engine lubrication systems, focusing on the identification and repair of system components, ensuring a comprehensive understanding of the intricacies of aircraft maintenance and safety.