



**Alabama
Department of
Postsecondary Education**

Representing Alabama’s Public Two-Year College System

**AMT 104
Technical Preparation
Plan of Instruction**

Effective Date: 2022 Version Number: Base Document

AMT104 Technical Preparation 135 Hours Theory 45 Laboratory 90

COURSE DESCRIPTION

This course introduces basic information necessary for entering students in aviation maintenance technology. Emphasis is placed on math and physics, and Federal Aviation Administration (FAA) and manufacturers’ technical and legal publications. Upon completion, students should be able to make basic computations, apply principles of physics, compute weight and balance, use maintenance forms and records, state mechanic’s privileges and limitations and interpret maintenance publications.

This is a CORE course.

CONTACT/CREDIT HOURS (applicable if entire course is taught in a career/technical education degree or non-degree program)

Theory Contact/Credit Hours	3/3 hours	45 hours (1:1)
Lab Contact/Credit Hours	6/2 hours	90 hours (3:1)
Total Contact/Credit Hours	9/5 hours	135/5 hours

NOTE: Colleges may schedule lab hours as manipulative (3:1) or experimental (2:1). Adjustments in contact hours must be made accordingly.

INDUSTRY COMPETENCIES

Subject H, Mathematics:

- AM.I.H.K1 - 13 Knowledge of mathematics as it relates to aviation
- AM.I.H.R1 - 3 Ability to identify, assess, and mitigate risks associated with associated with mathematics in aviation
- AM.I.H.S1 - 8 Ability to Demonstrate SKILLS associated with mathematics in aviation

Subject J, Physics for Aviation

- AM.I.J.K1 - 13 Knowledge of physics in aviation
- AM.I.J.R1 - 4 Ability to identify, assess, and mitigate risks associated with associated with physics in aviation
- AM.I.J.S1 - 8 Ability to Demonstrate SKILLS associated with physics in aviation

Subject I, Regulations, Maintenance Forms, Records and Publications

- AM.I.I.K1 - 23 Knowledge of Regulations, Maintenance Forms, Records and Publications in aircraft maintenance
- AM.I.I.R1 - 5 Ability to identify, assess, and mitigate risks associated with associated with Regulations, Maintenance Forms, Records and Publications in aircraft maintenance
- AM.I.I.S1 - 18 Ability to Demonstrate SKILLS associated with Regulations, Maintenance Forms, Records and Publications in aircraft maintenance

Subject L, Human Factors

- AM.I.L.K1 – 11 Knowledge of Human Factors in Aviation
- AM.I.L.R1 – 3 Ability to identify, assess, and mitigate risks associated with associated with Human Factors in Aviation
- AM.I.L.S1 – 3 Ability to Demonstrate SKILLS associated with Human Factors in Aviation

COURSE OBJECTIVES

The cognitive objective of this course is for each student to comprehend foundational knowledge needed to perform stated entry-level industry competencies. The performance objective of this course is for each student to apply foundational knowledge and risk management to technical problems and exercises encountered in class.

COURSE CONTENT OUTLINE FAA AUTHORITY 147

SAFETY INSTRUCTION

- General
- Fire Drills
- Severe Weather
- Shop Safety
- Flight Line Safety

SUBJECT H. MATHEMATICS

- AM.I.H.K4 Ratio problems, including examples of where or how they may be used in relation to aircraft maintenance or system(s) operation.
- AM.I.H.K5 Proportion and percentage problems, including examples of where or how they may be used in relation to aircraft maintenance or system(s) operation.
- AM.I.H.K9 Rounding numbers.
- AM.I.H.K13 Basic mathematical functions (addition, subtraction, multiplication, division).
- AM.I.H.R3 Rounding off calculations.
- AM.I.H.S5 Convert between fractional and decimal numbers.
- AM.I.H.S6 Compare two numerical values using ratios.

104 AM.I.H Practical 1

- AM.I.H.K6 Algebraic operations, including examples of where or how they may be used in relation to aircraft maintenance.
- AM.I.H.K8 Scientific (exponential) notation, decimal notation, fractional notation, binary notation, and conversion between these various forms of numeric notation.
- AM.I.H.K10 Powers and special powers.

- AM.I.H.K12 Use of positive and negative integers in mathematical operations.
 AM.I.H.R1 Precedence of operators when solving an algebraic equation.
 AM.I.H.R2 Use of both positive and negative integers in mathematical operations.
 AM.I.H.S1 Determine the square root of given numbers.

104 AM.I.H Practical 2

- AM.I.H.K1 Areas of various geometrical shapes.
 AM.I.H.K2 Volumes of various geometrical shapes.
 AM.I.H.K3 Definitions, descriptions and use of geometrical terms, including but not limited to any of the following: *polygon*, *pi*, *diameter*, *radius*, and *hypotenuse*.
 AM.I.H.K7 Conditions or areas in which metric conversion may be necessary.
 AM.I.H.K11 Measurement systems.
 AM.I.H.S2 Compute the volume of a cylinder.
 AM.I.H.S3 Compute the area of a wing.
 AM.I.H.S4 Calculate the volume of a shape, such as a baggage compartment or fuel tank.
 AM.I.H.S7 Compute compression ratio.
 AM.I.H.S8 Compute the torque value when converting from inch-pounds to foot-pounds or from foot-pounds to inch-pounds.

104 AM.I.H Practical 3**AMT104 Exam 1****SUBJECT J. PHYSICS FOR AVIATION**

- AM.I.J.K1 Matter and energy.
 AM.I.J.K4 Heat and pressure AM.I.J.K9 Standard atmosphere and factors affecting atmospheric conditions.
 AM.I.J.R1 Changes in aircraft and engine performance due to density altitude.
 AM.I.J.S2 Determine density altitude.
 AM.I.J.S3 Determine pressure altitude.

104 AM.I.J Practical 1

- AM.I.J.K2 Work, power, force, and motion.
 AM.I.J.K3 Simple machines and mechanics .
 AM.I.J.K6 Newton's Law of Motion.
 AM.I.J.S5 Demonstrate the mechanical advantage of various types of levers.
 AM.I.J.S6 Design an inclined plane on paper, indicating the mechanical advantage.
 AM.I.J.S8 Calculate horsepower.

104 AM.I.J Practical 2

- AM.I.J.K5 Bernoulli's Principle.
 AM.I.J.K7 Gas law and fluid mechanics.
 AM.I.J.K12 Relationship between temperature, density, weight, and volume.
 AM.I.J.K13 Force, area, or pressure in a specific application.
 AM.I.J.R4 Use of related units of measure (e.g., Celsius vs. Fahrenheit).
 AM.I.J.S1 Convert temperature units (e.g., from Celsius to Fahrenheit).
 AM.I.J.S4 Calculate force, area, or pressure in a specific application.
 AM.I.J.S7 Identify changes in pressure and velocity as a fluid passes through a venturi.

104 AM.I.J Practical 3

- AM.I.J.K8 Theory of flight (aerodynamics).
- AM.I.J.K10 Primary and secondary aircraft flight controls.
- AM.I.J.K11 Additional aerodynamic devices, including vortex generators, wing fences, and stall strips.
- AM.I.J.R2 Effect a repair can have on a flight surface.
- AM.I.J.R3 Use of performance/testing data.

104 AM.I.J Practical 4**AMT104 Exam 2****SUBJECT I. REGULATIONS, MAINTENANCE FORMS, RECORDS, AND PUBLICATIONS****FAR Introduction and Part 21.**

- AM.I.I.K8 The regulatory framework, including general subject matter of the parts of 14 CFR relevant to aircraft maintenance and mechanics.

FAR 65

- AM.I.I.K1 Privileges and limitations of a mechanic certificate.
- AM.I.I.K2 Recent experience requirements and how to re-establish once lost.
- AM.I.I.K23 Mechanic address change notification procedures.

FAR 39 / TCDS

- AM.I.I.K9 Agency publications and guidance materials, including aircraft specifications, TCDSs, advisory circulars (AC), and airworthiness directives (AD).
- AM.I.I.K10 Alternative methods of ADs compliance.
- AM.I.I.K12 FAA databases and resources available, including TCDSs and supplemental type certificates.
- AM.I.I.S4 Complete an aircraft maintenance record entry for the compliance of a reoccurring AD for a specific airframe, aircraft engine, appliance, or propeller.
- AM.I.I.S5 Compare an equipment list for an aircraft to equipment installed.
- AM.I.I.S6 Locate applicable FAA aircraft specifications and FAA TCDS for an aircraft or component.
- AM.I.I.S8 Determine applicability of an AD.
- AM.I.I.S11 Locate supplemental type certificates applicable to a specific aircraft.
- AM.I.I.S14 Determine maximum allowable weight of a specific aircraft.

104 AM.I.I Practical 1 (TCDS)**104 AM.I.I Practical 2 (AD's)****FAR 43 / FAR 91E**

- AM.I.I.K3 Maintenance record entry for approval for return to service after maintenance and alterations.
- AM.I.I.K4 Maintenance record entry for approval for return to service after inspection.
- AM.I.I.K5 The purpose and use of FAA forms (e.g., FAA Forms 337, 8010-4, 8100-2, 8130-3).
- AM.I.I.K6 Maintenance terminology as defined in 14 CFR part 1 (e.g., time in service, maintenance, preventive maintenance, major alteration, major repair, minor alteration, minor repair).
- AM.I.I.K7 Criteria and responsibility for determining whether a repair or alteration is major or minor.
- AM.I.I.K17 FAA-approved airworthiness limitations.
- AM.I.I.R1 Completeness or accuracy of documentation.

- AM.I.I.R3 Complacency during documentation phase of maintenance procedures.
- AM.I.I.R4 Adherence to warnings, cautions, or notes in maintenance and operational manuals.
- AM.I.I.S1 Complete an FAA Form 337 for a major repair or alteration.
- AM.I.I.S2 Examine an FAA Form 337 for accuracy.
- AM.I.I.S7 Complete an aircraft maintenance record entry for return to service.
- AM.I.I.S15 Determine whether a given repair or alteration is major or minor.
- AM.I.I.S16 Determine applicability of approved data for a major repair.
- AM.I.I.S17 Explain the difference between “approved data” (required for major repair/alteration) and “acceptable data” (required for minor repair/alteration).
- AM.I.I.S18 Complete a 100-hour inspection aircraft maintenance record entry.

104 AM.I.I Practical 3 (Maintenance Classification)**104 AM.I.I Practical 4 (Logbook entry)****Maintenance Documents**

- AM.I.I.K11 Manufacturer publications, including maintenance manuals, service bulletins, maintenance alerts, and master minimum equipment lists.
- AM.I.I.K13 Compliance requirements for manufacturer-specified methods, techniques, and practices.
- AM.I.I.K14 Compliance requirements for manufacturer-specified maintenance and inspection intervals.
- AM.I.I.K15 FAA-approved maintenance data, including maintenance manuals and other methods, techniques, and practices acceptable by the administrator.
- AM.I.I.K16 Difference between approved data and acceptable data, and when each is required.
- AM.I.I.K18 Alert, caution, and warning indications; and the basic definition of *warnings*, *cautions*, and *notes* that are used in maintenance and operating manuals.
- AM.I.I.K19 Inoperative equipment.
- AM.I.I.K20 Discrepancy records or placards.
- AM.I.I.K21 Usable on (effectivity) codes in parts manuals.
- AM.I.I.K22 Methods used to establish the serial number effectivity of an item.
- AM.I.I.R5 Determination of component applicability to a given aircraft.
- AM.I.I.S3 Determine an aircraft's inspection status by reviewing the aircraft's maintenance records.
- AM.I.I.S9 Check a Technical Standard Order (TSO) or part manufacturing authorization for the proper markings.
- AM.I.I.S10 Use a manufacturer's illustrated parts catalog to locate a specific part number and applicability.
- AM.I.I.S12 Determine the conformity of aircraft instrument range markings and placarding.
- AM.I.I.S13 Determine approved replacement parts for installation on a given aircraft.

104 AM.I.I Practical 5**AMT104 Exam 3****Subject L. Human Factors**

- AM.I.L.K1 Safety culture and organizational factors.
- AM.I.L.K2 Human error principles.
- AM.I.L.K3 Event investigation.
- AM.I.L.K4 Human performance and limitations.

- AM.I.L.K5 Physical and social environment.
- AM.I.L.K6 Communication/reporting of hazards.
- AM.I.L.K7 Teamwork and leadership.
- AM.I.L.K8 Professionalism and integrity.
- AM.I.L.K9 Shift and task turnover.
- AM.I.L.K10 Conditions/preconditions for unsafe acts.
- AM.I.L.K11 Types of human errors.
- AM.I.L.R1 Selective reporting of hazards.
- AM.I.L.R2 Fatigue management and fitness for duty.
- AM.I.L.R3 Non-invasive, condition-monitoring technologies.
- AM.I.L.S1 File a Malfunction or Defect Report.
- AM.I.L.S2 Brief a shift turnover for continuity of work.
- AM.I.L.S3 Locate information regarding human factors errors.

104 AM.I.L Practical 1

AMT104 Final Examination