



Alabama
Department of
Postsecondary Education

Representing Alabama's Public Two-Year College System

AMT 114
Airframe Systems III
Plan of Instruction

Effective Date: 2022

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AMT114 Airframe Systems III

135 Hours Theory 45 Laboratory 90

COURSE DESCRIPTION: This course introduces the theory of operation of various hydraulic and pneumatic components and systems, landing gear systems, and various position and warning systems. Emphasis is on testing, inspecting, and troubleshooting, and servicing hydraulic and pneumatic systems components, wheel and brake systems, and position and warning systems. Upon completion, students should be able to inspect, troubleshoot, and repair hydraulic and pneumatic power systems, aircraft wheels and tires, aircraft landing gear systems, anti-skid and electrical braking systems, and position and warning systems. 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.

PREREQUISITE COURSES (applicable if entire course is taught in a career/technical education degree or non-degree program)

Determined by college unless stated otherwise.

CO-REQUISITE COURSES (applicable if entire course is taught in a career/technical education degree or non-degree program)

Determined by college unless stated otherwise.

INDUSTRY COMPETENCIES

AM.II.E Landing Gear Systems

AM.II.E.K1– 13 Knowledge of Landing Gear Systems

AM.II.E.R1– 6 Ability to identify, assess, and mitigate risks associated with Landing Gear Systems

AM.II.E.S1– 29 Ability to perform maintenance on Landing Gear Systems

AM.II.F Hydraulic and Pneumatic Systems

- AM.II.F.K1–11 Knowledge of Hydraulic and Pneumatic Systems
- AM.II.F.R1– 5 Ability to identify, assess, and mitigate risks associated with Hydraulic and Pneumatic Systems
- AM.II.F.R1–16 Ability to perform maintenance on Hydraulic and Pneumatic Systems

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 problems and exercises encountered in class.

COURSE CONTENT OUTLINE FAA AUTHORITY 147

AM.II.F Hydraulic and Pneumatic Systems

- AM.II.F.K1 Hydraulic system components and fluids.
- AM.II.F.K8 Types of hydraulic/pneumatic seals and fluid/seal compatibility.
- AM.II.F.K9 Hoses, lines, and fittings.
- AM.II.F.R3 Storage and handling of hydraulic fluids.
- AM.II.F.R4 Cross-contamination of hydraulic fluids.
- AM.II.F.R5 Compatibility between hydraulic seals and hydraulic fluids.
- AM.II.F.S1 Identify different types of hydraulic fluids.
- AM.II.F.S15 Locate and explain hydraulic fluid servicing instructions and identify/select fluid for a given aircraft.
- AM.II.F.S16 Locate installation procedures for a seal, backup ring, or gasket.

114 AM.II.F Practical 1

AMT114 Exam 1

- AM.II.F.K2 Hydraulic system operation.
- AM.II.F.K3 Hydraulic system servicing requirements.
- AM.II.F.K4 Hydraulic system inspection, check, servicing, and troubleshooting.
- AM.II.F.K5 Pneumatic system types and components.
- AM.II.F.K6 Pneumatic system servicing requirements.
- AM.II.F.K7 Servicing, function, and operation of accumulators.
- AM.II.F.K10 Pressure regulators, restrictors, and valves.
- AM.II.F.K11 Filter maintenance procedures.
- AM.II.F.R1 Relieving system pressure prior to system servicing or Disassembly.
- AM.II.F.R2 High pressure gases and fluids.
- AM.II.F.S2 Identify different packing seals.
- AM.II.F.S3 Install seals and backup rings in a hydraulic component.
- AM.II.F.S4 Remove and install a selector valve.
- AM.II.F.S5 Check a pressure regulator and adjust as necessary.
- AM.II.F.S6 Remove, clean, inspect, and install a hydraulic system filter.
- AM.II.F.S7 Service a hydraulic system accumulator.
- AM.II.F.S8 Service a hydraulic system reservoir.

114 AM.II.F Practical 2

- AM.II.F.S9 Remove, install, and perform an operational check of a hydraulic pump.
- AM.II.F.S10 Locate procedures for checking pneumatic/bleed air overheat warning systems.
- AM.II.F.S11 Purge air from a hydraulic system.
- AM.II.F.S12 Remove and install a system pressure relief valve.
- AM.II.F.S13 Inspect a hydraulic or pneumatic system for leaks.
- AM.II.F.S14 Troubleshoot a hydraulic or pneumatic system for leaks.

114 AM.II.F Practical 3

AMT114 Exam 2

AM.II.E Landing Gear Systems

- AM.II.E.K1 Fixed and retractable landing gear systems.
- AM.II.E.K2 Fixed and retractable landing gear components.
- AM.II.E.K3 Landing gear strut servicing/lubrication.
- AM.II.E.K4 Inspection of bungee and spring steel landing gear systems.
- AM.II.E.K5 Steering systems.
- AM.II.E.K13 Alternative landing gear systems (e.g., skis, floats).
- AM.II.E.R2 Use of aircraft jacks.
- AM.II.E.R3 High pressure fluids and gases.
- AM.II.E.R5 High pressure strut or system disassembly.
- AM.II.E.R6 Operation of retractable landing gear systems around personnel.
- AM.II.E.S1 Inspect and service landing gear.
- AM.II.E.S5 Jack aircraft.
- AM.II.E.S6 Troubleshoot a landing gear retraction check.
- AM.II.E.S9 Service landing gear air/oil shock strut.
- AM.II.E.S15 Replace air/oil shock strut air valve.
- AM.II.E.S16 Troubleshoot an air/oil shock strut.
- AM.II.E.S17 Service a nose-wheel shimmy damper.
- AM.II.E.S18 Inspect nose-wheel steering system for proper adjustment.
- AM.II.E.S19 Locate and explain the process for checking landing gear alignment
- AM.II.E.S21 Troubleshoot aircraft steering system.
- AM.II.E.S28 Troubleshoot nose-wheel shimmy.
- AM.II.E.S29 Inspect tube landing gear for damage.

114 AM.II.E Practical 1

- AM.II.E.K7 Brake assembly servicing and inspection.
- AM.II.E.K9 Wheel, brake, and tire construction.
- AM.II.E.K12 Brake actuating systems.
- AM.II.E.R4 Storage and handling of hydraulic fluids.
- AM.II.E.S7 Inspect wheels, brakes, bearings, and tires.
- AM.II.E.S8 Remove and replace brake lining(s).
- AM.II.E.S10 Bleed air from a hydraulic brake system.
- AM.II.E.S11 Troubleshoot hydraulic brake systems.
- AM.II.E.S12 Remove, inspect, and install a wheel brake assembly.
- AM.II.E.S20 Replace master brake cylinder packing seals.
- AM.II.E.S26 Remove, install, and adjust a landing gear down-lock switch.
- AM.II.E.S27 Inspect a brake for serviceability.

114 AM.II.E Practical 2

AM.II.E.K10 Tire storage, care, and servicing.

AM.II.E.K11 Landing gear and tire and wheel safety and inspection.

AM.II.E.R1 Landing gear and tire and wheel practices/precautions.

AM.II.E.S13 Inspect a tire for defects.

AM.II.E.S14 Locate tire storage practices.

114 AM.II.E Practical 3

AMT114 Exam 3

AM.II.E.K6 Landing gear position and warning system inspection, check, and servicing.

AM.II.E.K8 Anti-skid system components and operation.

AM.II.E.S2 Inspect, check, and service an anti-skid system.

AM.II.E.S3 Locate and explain procedures for checking operation of an anti-skid warning system.

AM.II.E.S4 Locate and explain troubleshooting procedures for an anti-skid system.

AM.II.E.S22 Identify landing gear position and warning system components.

AM.II.E.S23 Troubleshoot landing gear position and warning systems.

AM.II.E.S24 Inspect and repair landing gear position indicating system.

AM.II.E.S25 Adjust the operation of a landing gear warning system.

114 AM.II.E Practical 4

AMT114 Exam 4

AMT114 Final Examination