# 9/19/2022

# brcc keystone logo

Baton Rouge Community College

*Academic Affairs Master Syllabus*

Date Approved: 6 October 2022

Term and Year of Implementation: Fall 2022

**Course Title:** Aircraft Systems

**BRCC Course Rubric:** AMTA 1244

**Previous Course Rubric**:

**Lecture Hours per week-Lab Hours per week-Credit Hours**: 1-9-4

**Per semester: Lecture Hours-Lab Hours-Instructional Contact Hours**: 15-135-150

**Louisiana Common Course Number:**

**CIP Code:** 47.0607

**Course Description:** Introduces students to Airframe Inspection, Landing Gear Systems, Hydraulic and Pneumatic Systems, Aircraft Fuel Systems, Airframe Fire Protection Systems, and Water and Waste Systems. This course covers Airframe Curriculum Subjects from the Federal Aviation Administration’s 2021 Airman Certification Standards. This course requires a lab fee and a student fee.

**Prerequisites:**  AMTA 1216 and AMTA 1224

**Co-requisites:** AMTA 1236

**Suggested Enrollment Cap:** 25

**Learning Outcomes.** *Upon successful completion of this course, the students will be able to:*

1. Demonstrate required knowledge, risk management, and skills competencies for Airframe Inspection, Airframe Curriculum Subject D in the Federal Aviation Administration’s 2021 Airman Certification Standards.

2. Demonstrate required knowledge, risk management, and skills competencies for Landing Gear Systems, Airframe Curriculum Subject E in the Federal Aviation Administration’s 2021 Airman Certification Standards.

3. Demonstrate required knowledge, risk management, and skills competencies for Hydraulic and Pneumatic Systems, Airframe Curriculum Subject F in the Federal Aviation Administration’s 2021 Airman Certification Standards.

4. Demonstrate required knowledge, risk management, and skills competencies for Aircraft Fuel Systems, Airframe Curriculum Subject J in the Federal Aviation Administration’s 2021 Airman Certification Standards.

5. Demonstrate required knowledge, risk management, and skills competencies for Airframe Fire Protection Systems, Airframe Curriculum Subject M in the Federal Aviation Administration’s 2021 Airman Certification Standards.

6. Demonstrate required knowledge, risk management, and skills competencies for Water and Waste Systems, Airframe Curriculum Subject O in the Federal Aviation Administration’s 2021 Airman Certification Standards.

**Assessment Measures.** Assessment of all learning outcomes will be measured using the following methods:

1. Department-designed quizzes and tests.

2. Projects that must be completed with a grade of 70% or better.

3. Students must complete a minimum of 140 contact hours.

**Information to be included on the Instructor’s Course Syllabi:**

* ***Disability Statement*:** Baton Rouge Community College seeks to meet the needs of its students in many ways. See the Office of Disability Services to receive suggestions for disability statements that should be included in each syllabus.
* ***Grading:*** The College grading policy should be included in the course syllabus. Any special practices should also go here. This should include the instructor’s and/or the department’s policy for make-up work. For example in a speech course, “Speeches not given on due date will receive no grade higher than a sixty” or “Make-up work will not be accepted after the last day of class”.
* ***Attendance Policy*:** Include the overall attendance policy of the college. Instructors may want to add additional information in individual syllabi to meet the needs of their courses.
* ***General Policies*:** Instructors’ policy on the use of things such as beepers and cell phones and/or hand held programmable calculators should be covered in this section.
* ***Cheating and Plagiarism*:** This must be included in all syllabi and should include the penalties for incidents in a given class. Students should have a clear idea of what constitutes cheating in a given course.
* ***Safety Concerns:*** In some courses, this may be a major issue. For example, “No student will be allowed in the lab without safety glasses”. General statements such as, “Items that may be harmful to one’s self or others should not be brought to class”.
* ***Library/ Learning Resources:*** Since the development of the total person is part of our mission, assignments in the library and/or the Learning Resources Center should be included to assist students in enhancing skills and in using resources. Students should be encouraged to use the library for reading enjoyment as part of lifelong learning.

**Expanded Course Outline:**

I. Airframe Inspection

A. Knowledge

AM.II.D.K1, Inspection requirements under 14 CFR Part 91.

AM.II.D.K2, Maintenance recordkeeping requirements under 14 CFR Part 43.

AM.II.D.K3, Requirements for complying with ADs.

AM.II.D.K4, Identification of life-limited parts and their replacement interval.

AM.II.D.K5, Special inspections.

AM.II.D.K6, Use of FAA-approved data.

AM.II.D.K7, Compliance with service letters, service bulletins, instructions for continued airworthiness, or ADs.

AM.II.D.K8, CFRs applicable to inspection and airworthiness.

AM.II.D.K9, Corrosion types and identification.

B. Risk Management

AM.II.D.R1, Interpretation of inspection instructions, which can lead to over or under maintenance being performed.

AM.II.D.R2, Visual inspection and where to apply it.

AM.II.D.R3, Performing radiographic inspections.

AM.II.D.R4, Selection and use of checklists and other maintenance publications.

AM.II.D.R5, Maintenance record documentation.

C. Skills

AM.II.D.S1, Perform an airframe inspection, including a records check.

AM.II.D.S2, Perform a portion of a 100-hour inspection in accordance with part 43.

AM.II.D.S3, Enter results of a 100-hour inspection in a maintenance record.

AM.II.D.S4, Determine compliance with a specific AD.

AM.II.D.S5, Provide a checklist for conducting a 100-hour inspection.

AM.II.D.S6, Determine if any additional inspections are required during a particular 100-hour inspection; i.e., 300-hour filter replacement.

AM.II.D.S7, Inspect seat and seatbelt, including TSO markings.

II. Landing Gear Systems

A. Knowledge

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

AM.II.E.K7, Brake assembly servicing and inspection.

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

AM.II.E.K9, Wheel, brake, and tire construction.

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.K12, Brake actuating systems.

AM.II.E.K13, Alternative landing gear systems (e.g., skis, floats).

B. Risk Management

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

AM.II.E.R2, Use of aircraft jacks.

AM.II.E.R3. High pressure fluids and gasses.

AM.II.E.R4, Storage and handling of hydraulic fluids.

AM.II.E.R5, High-pressure strut or system disassembly.

AM.II.E.R6, Operation of retractable landing gear systems around personnel.

C. Skills

AM.II.E.S1, Inspect and service landing gear.

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.S5, Jack aircraft.

AM.II.E.S6, Troubleshoot a landing gear retraction check.

AM.II.E.S7, Inspect wheels, brakes, bearings, and tires.

AM.II.E.S8, Remove and replace brake lining(s).

AM.II.E.S9, Service landing gear and/oil shock strut.

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.S13, Inspect a tire for defects.

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

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 adjustment.

AM.II.E.S20, Replace master brake cylinder packing seals.

AM.II.E.S21, Troubleshoot aircraft steering 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.

AM.II.E.S26, Remove, install, and adjust a landing gear down-lock switch.

AM.II.E.S27, Inspect a brake for serviceability.

AM.II.E.S28, Troubleshoot nose-wheel shimmy.

AM.II.E.S29, Inspect tube landing gear for damage.

III. Hydraulic and Pneumatic Systems

A. Knowledge

AM.II.F.K1, Hydraulic system components and fluids.

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.K8, Types of hydraulic/pneumatic seals and/or fluid/seal compatibility.

AM.II.F.K9, Hoses lines and fittings.

AM.II.F.K10, Pressure regulators, restrictors, and valves.

AM.II.F.K11, Filter maintenance procedures.

B. Risk Management

AM.II.F.R1, Relieving system pressure prior to system servicing or disassembly.

AM.II.F.R2, High pressure gasses and fluids.

AM.II.F.R3, Storage and handling of hydraulic fluids.

AM.II.F.R4, Cross-contamination of hydraulic fluids.

AM.II.F.R5, Incompatibility between hydraulic seals and hydraulic fluids.

C. Skills

AM.II.F.S1, Identify different types of hydraulic 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.

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.

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.

IV. Aircraft Fuel Systems

A. Knowledge

AM.II.J.K1, Fuel system types.

AM.II.J.K2, Fuel system components, including filters and selector valves.

AM.II.J.K3, Aircraft fuel tanks/cells.

AM.II.J.K4, Fuel flow.

AM.II.J.K5, Fuel transfer, fueling, and defueling.

AM.II.J.K6, Fuel jettisoning/dump systems.

AM.II.J.K7, Characteristics of fuel types.

AM.II.J.K8, Fuel system maintenance and inspection.

AM.II.J.K9, Fuel quantity indication.

B. Risk Management

AM.II.J.R1, Fuel system maintenance.

AM.II.J.R2, Fuel system contamination.

AM.II.J.R3, Fuel spills.

AM.II.J.R4, Fuel system maintenance requiring fuel tank entry.

AM.II.J.R5, Defueling aircraft.

C, Skills

AM.II.J.S1, Inspect, check, troubleshoot, or repair a fuel system.

AM.II.J.S2, Inspect a metal, bladder, or integral fuel tank.

AM.II.J.S3, Troubleshoot and repair aircaft fuel system.

AM.II.J.S4, Inspect a fuel selector valve.

AM.II.J.S5, Inspect and check manually-operated fuel valves for proper operation and leaks.

AM.II.J.S6, Troubleshoot a fuel valve problem.

AM.II.J.S7, Drain fuel system sump(s).

AM.II.J.S8 , Service a fuel system strainer.

AM.II.J.S9 , Inspect a fuel quantity indicating system.

AM.II.J.S10, Locate fuel system operating instructions.

AM.II.J.S11, Locate fuel system inspection procedures.

AM.II.J.S12, Locate fuel system crossfeed procedures.

AM.II.J.S13, Locate fuel system required placards.

AM.II.J.S14, Locate fuel system defueling procedures.

AM.II.J.S15, Troubleshoot fuel pressure warning system.

AM.II.J.S16, Locate troubleshooting procedures for fuel temperature systems.

AM.II.J.S17, Remove and/or install a fuel quantity transmitter.

AM.II.J.S18, Troubleshoot fuel quantity indicating system.

V. Airframe Fire Protection Systems

A. Knowledge

AM.II.M.K1, Types of fires and aircraft fire zones.

AM.II.M.K2, Overheat and fire detection and warning systems.

AM.II.M.K3, Overheat and fire detection system maintenance and inspection.

AM.II.M.K4, Smoke and carbon monoxide detection systems.

AM.II.M.K5, Fire extinguishing agents.

AM.II.M.K6, Types of fire extinguishing systems.

AM.II.M.K7, Fire extinguishing system maintenance and inspection requirements.

B. Risk Management

AM.II.M.R1, Maintenance on circuits associated with fire bottle squibs.

AM.II.M.R2, Use of PPEs when working on or testing fire extinguishing systems.

AM.II.M.R3, Fire extinguishing agents.

C. Skills

AM.II.M.S1, Troubleshoot an aircraft fire detection or extinguishing system.

AM.II.M.S2, Determine proper container pressure for an installed fire extinguisher system.

AM.II.M.S3, Identify maintenance procedures for fire detection and/or extinguishing system(s) and system component(s).

AM.II.M.S4, Inspect a smoke and toxic gas detection system.

AM.II.M.S5, Inspect a carbon monoxide detector.

AM.II.M.S6, Locate and explain the procedures for checking a smoke detection system.

AM.II.M.S7, Locate and explain the procedures for inspecting an overheat detection system.

AM.II.M.S8, Inspect fire protection system cylinders and check for hydrostatic test date.

AM.II.M.S9, Inspect fire detection/protection system.

AM.II.M.S10, Perform operational check of fire detection/protection system.

AM.II.M.S11, Inspect fire extinguishing agent bottle discharge cartridge.

AM.II.M.S12, Inspect a continuous-loop type fire detection system.

VI. Water and Waste Systems

A. Knowledge

AM.II.O.K1, Potable water system components and operation.

AM.II.O.K2, Lavatory waste system components and operation.

AM.II.O.K3, Inspection and servicing requirements for water and waste systems.

B. Risk Management

AM.II.O.R1, Servicing lavatory waste systems, including use of safety equipment.

C. Skills

AM.II.O.S1, Locate and explain the procedures for servicing a lavatory waste system.

AM.II.O.S2, Locate and explain the procedures for servicing a potable water system.