# 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:** Turbine Engine Overhaul

**BRCC Course Rubric:** AMTP 1144

**Previous Course Rubric**: AMTP 104

**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:** 47.0608

**Course Description:** Introduces students to Turbine Engines, Engine Lubrication Systems, and Turbine Engine Air Systems. This course covers Powerplant Curriculum Subjects from the Federal Aviation Administration’s 2021 Airman Certification Standards. This course requires a lab fee.

**Prerequisites:**  AMTP 1116 and AMTP 1126

**Co-requisites:** AMTP 1134

**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 Turbine Engines, Powerplant Curriculum Subject B in the Federal Aviation Administration’s 2021 Airman Certification Standards.

2. Demonstrate required knowledge, risk management, and skills competencies for Engine Lubrication Systems, Powerplant Curriculum Subject G in the Federal Aviation Administration’s 2021 Airman Certification Standards.

3. Demonstrate required knowledge, risk management, and skills competencies for Turbine Engine Air Systems, Powerplant Curriculum Subject K 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 150 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. Turbine Engines

A. Knowledge

AM.III.B.K1, Turbine engine operating principles/theory of operation.

AM.III.B.K2, Types of turbine engines.

AM.III.B.K3, Turbine engine construction and internal components.

AM.III.B.K4, Turbine engine performance and monitoring.

AM.III.B.K5, Turbine engine troubleshooting, maintenance, and inspection procedures.

AM.III.B.K6, Procedures required after the installation of a turbine engine.

AM.III.B.K7, Causes for turbine engine performance loss.

AM.III.B.K8, Bleed air systems.

AM.III.B.K9, Storage and preservation.

AM.III.B.K10, Auxiliary power unit(s).

AM.III.B.K11, Turbine engine adjustment and testing.

B. Risk Management

AM.III.B.R1, Operation of a turbine engine.

AM.III.B.R2, Performing maintenance on a turbine engine.

AM.III.B.R3, Actions in the event of a turbine engine fire.

AM.III.B.R4, Foreign object damage.

C. Skills

AM.III.B.S1, Identify different turbine compressors.

AM.III.B.S2, Identify different types of turbine engine blades.

AM.III.B.S3, Identify components of turbine engines.

AM.III.B.S4, Map airflow direction and pressure changes in turbine engines.

AM.III.B.S5, Remove and install a fuel nozzle in a turbine engine.

AM.III.B.S6, Inspect a combustion liner.

AM.III.B.S7, Locate the procedures for the adjustment of a fuel control unit.

AM.III.B.S8, Perform turbine engine inlet guide vane and compressor blade inspection.

AM.III.B.S9, Locate the installation or removal procedures for a turbine engine.

AM.III.B.S10, Locate and explain the procedure for trimming a turbine engine.

AM.III.B.S11, Identify damaged turbine engine blades.

AM.III.B.S12, Identify causes for turbine engine performance loss.

AM.III.B.S13, Inspect the first two stages of a turbine fan or compressor for foreign object damage.

II. Engine Lubrication Systems

A. Knowledge

AM.III.G.K1, Types, grades, and uses of engine oil.

AM.III.G.K2, Lubrication system operation and components.

AM.III.G.K3, Wet-sump system.

AM.III.G.K4, Dry-sump system.

AM.III.G.K5, Chip detectors.

AM.III.G.K6, Lubrication system maintenance, inspection, servicing, and analysis.

AM.III.G.K7, Excessive aircraft engine oil consumption.

B. Risk Management

AM.III.G.R1, Use or mixing of engine oils.

AM.III.G.R2, Following other than manufacturer’s recommendations regarding the use of engine lubricants.

AM.III.G.R3, Handling, storage, and disposal of used lubricating oil.

C. Skills

AM.III.G.S1, Inspect an oil cooler or oil lines.

AM.III.G.S2, Determine the correct type of oil for a specific engine.

AM.III.G.S3, Identify turbine engine oil filter bypass indicator.

AM.III.G.S4, Determine approved oils for different climatic temperatures.

AM.III.G.S5, Locate procedures for obtaining oil samples.

AM.III.G.S6, Inspect an oil filter or screen.

AM.III.G.S7, Perform oil pressure adjustment.

AM.III.G.S8, Identify oil system components.

AM.III.G.S9, Replace an oil system component.

AM.III.G.S10, Identify oil system flow.

AM.III.G.S11, Troubleshoot an engine oil pressure malfunction.

AM.III.G.S12, Troubleshoot an engine oil temperature system.

AM.III.G.S13, Identify types of metal found in an oil filter.

AM.III.G.S14, Remove and inspect an engine chip detector.

III. Turbine Engine Air Systems

A. Knowledge

AM.III.K.K1, Air cooling system theory, components, and operation.

AM.III.K.K2, Turbine engine cowling air flow.

AM.III.K.K3, Turbine engine internal cooling.

AM.III.K.K4, Turbine engine baffle and seal installation.

AM.III.K.K5, Turbine engine insulation blankets and shrouds.

AM.III.K.K6, Turbine engine induction system theory, components, and operation.

AM.III.K.K7, Turbine engine bleed air system theory, components, and operation.

AM.III.K.K8, Turbine engine anti-ice system.

B. Risk Management

AM.III.K.R1, Maintenance on compressor bleed air systems.

AM.III.K.R2, Ground operation of aircraft engines following other than manufacturer's instructions.

C. Skills

AM.III.K.S1, Perform an induction and cooling system inspection.

AM.III.K.S2, Identify location of turbine engine insulation blankets.

AM.III.K.S3, Identify turbine engine cooling air flow.

AM.III.K.S4, Inspect turbine engine cooling ducting (rigid or flexible) or baffle seals.

AM.III.K.S5, Inspect a turbine engine air intake anti-ice system.

AM.III.K.S6, Identify turbine engine ice and rain protection system components.

AM.III.K.S7, Inspect a particle separator.

AM.III.K.S8, Inspect/check a bleed air system.