AMT A154: GENERAL WEIGHT & BALANCE, MATH & PHYSICS - FAA

Item	Value
Curriculum Committee Approval Date	12/08/2021
Top Code	095000 - Aeronautical and Aviation Technology
Units	3 Total Units
Hours	63 Total Hours (Lecture Hours 54; Lab Hours 9)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)

Course Description

Theory and practical experience in a variety of aircraft math, physics, and weight and balance calculations, and varied problems. Practical experience in weight and balance of aircraft. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Apply the principles of simple machines, sound, fluid, heat dynamics, basic aerodynamics, aircraft structures, and theory of flight as they pertain to aircraft.
2. Apply technical math skills and demonstrate them in practical applications.
3. Perform, calculate and weigh aircraft using standard aircraft weight and balance techniques.

Course Objectives

- 1. Explain laws of physics as they apply to aircraft.
- 2. Apply technical math skills and demonstrate them in practical applications.
- 3. Locate, interpret and apply weight balance information.
- 4. Explain and identify the three axis of an aircraft.
- 5. Identify and explain the principles of the theory of flight.
- 6. Demonstrate procedures in maintenance manual and perform weight and balance.

Lecture Content

BASIC PHYSICS Use the principles of simple machines; sound, fluid, and heat dynamics; basic aerodynamics; aircraft structures; and theory of flight Relationship of temperature and heat Relationships between pressure, temperature and volume of air mass Factors effecting air pressure on an airfoil Physical factors effecting engine output power Relationship between pressure, area and force The inclined plane, the level and pulley Origin of sound Centrifugal/centripetal force Basic aerodynamics Aircraft structures Theory of flight MATH Extract roots and raise numbers to a given power Recognize and apply formulas involving the power of a number Determine areas and volumes of various geometrical shapes Apply formulas to determine areas and volumes Compute wing area Calculate volume of baggage compartments and fuel tanks Compute piston displacement Solve ratio, proportion, and percentage problems Convert fractional numbers to decimal equivalents Determine ratio and percentage of numbers Computer compression ratio Perform algebraic operations involving addition, subtraction, multiplication and division of positive and negative numbers Add, subtract, multiply and divide positive and negative numbers AIRCRAFT WEIGHT AND BALANCE Weigh aircraft and perform calculations Locate, interpret and apply weight balance information Perform weight and balance on an aircraft using static and electronic scales

Lab Content

Faculty input required.

Method(s) of Instruction

- Lecture (02)
- Lab (04)

Instructional Techniques

1. Detailed multimedia/lectures of each topic covered. 2. Student feedback during each lecture. 3. Detailed illustrative discussion of textbook examples. 4. Concentration on schematic reading and system operation fault diagnosis. 5 Practical troubleshooting. 6. Laboratory exercises pertaining to subjects discussed during which students work individually or in small groups.

Reading Assignments

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Writing Assignments

Student must show proficiency in writing logbook entries using correct punctuation, sentence structure, and readability.

Out-of-class Assignments

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Demonstration of Critical Thinking

Interview, list, multiple choice exams, and short answer.

Required Writing, Problem Solving, Skills Demonstration

Student must show proficiency in writing logbook entries using correct punctuation, sentence structure, and readability.

Textbooks Resources

1. Required Carman, Robert A., and Hal M. Saunders. Mathematics for the Trades, A Guided Approach, 6th ed. Columbus: Prentice Hall, 2001 Rationale: latest 2. Required Jeppesen. AP Technician “GENERAL” Textbook, ed. Englewood: Jeppesen Sanderson, 2000 Rationale: latest 3. Required Jeppesen. AC43.13-1B2A, Acceptable Methods, Techniques, and Practices-Aircraft Inspection and Repair, ed. Superintendent of Documents; U.S. Government Printing Office, 2001 Rationale: latest