

COURSE OUTLINE

DEPARTMENT: Aviation Maintenance Technology

CURRICULUM: General

COURSE TITLE: Basic Science for Aviation

COURSE NUMBER: AMT 111

TYPE OF COURSE: Occupational Preparatory

COURSE LENGTH: 1 quarter

CREDIT HOURS: 17

CLASS SIZE: 35 maximum for classroom lecture
25 maximum for laboratory

COURSE DESCRIPTION: AMT 111 introduces the student to the diversified field of Aviation Maintenance by providing a firm foundation for maintenance on both small and large aircraft. The course covers aircraft terminology, nomenclature, basic physics, aircraft drawing, and interpretation of diagrams as they pertain to everyday shop problems.

Additional topics include specifications and properties of modern aircraft materials, fabrication and their use, hardware, fittings, corrosion control, cleaning, proper use of tools, precision instruments required for maintenance and overhaul practices, and aircraft systems, components, ground handling and servicing procedures of aircraft, Federal Aviation Regulations, maintenance records, publications, weight and balance control and other basic information are also covered.

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Course Objectives: Upon completion of all lecture sessions and lab assignments, the student learns and are able to:

1. Properly use various shop and hand tools in a safe manner.
2. Use basic physics principles in the performance of aircraft maintenance.
3. Perform research in Federal documents and Manufacture's technical documents.
4. Describe various aircraft materials and manufacturing processes
5. Correctly use examples of maintenance forms and documents
6. Handle and prepare aircraft for maintenance and weighing operations.

STUDENT LEARNING

OUTCOMES ADDRESSED:

1. Information Literacy – Access information from various technical manuals and specifications.
2. Computation – Use basic math skills to compute aircraft weight and balance.
3. Human Relations – Use interactive skills to work in groups.

PREREQUISITES: High School Completion/GED or equivalent

REQUIRED TEXT: Refer to Textbook list in student information packet.

COURSE SUBJECTS:

- I. Orientation
- II. Safety Practices
- III. Shop Area Maintenance
- IV. Basic Aircraft and Subassemblies
- V. Federal Aviation Regulations
- VI. Basic Physics
- VII. Maintenance Forms and Records
- VIII. Aircraft Drawings
- IX. Materials & Processes/Cleaning and Corrosion Control
- X. Weight and Balance
- XI. Mechanic Privileges and Limitations
- XII. Ground Operation and Servicing

Lecture time for the program will be as much as 1/2 but not less than 1/4 of the total hours. Laboratory/shop time will be as much as 3/4 but not less than 1/2 of the total hours. Total course hours are 265.

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Course Outline:

I. Orientation

- A. Introduction to Aviation and supporting technologies
- B. School and shop procedures

II. Safety Practices

III. Shop Area Maintenance

IV. Basic Aircraft and Subassemblies

- A. Principles of A/C structures
- B. Principles of basic aerodynamics and theory of flight

V. Federal Aviation Regulations

- A. Part 21
- B. Part 39
- C. Part 43
- D. Part 65
- E. Part 91

VI. Basic Physics

- A. Matter
- B. Weight and Mass
- C. Energy
- D. Work and Power
- E. Force and Motion
- F. Vectors
- G. Stress and Strain
- H. Heat and Temperature
- I. Pressure
- J. Gas Laws
- K. Fluid Mechanics
- L. Vibration and Sound
- M. Light

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VII. Maintenance Forms and Records

- A. Required Maintenance Records
- B. Maintenance Record Entries
- C. Inspection Entries
- D. Major Repair and Alteration Form 337
- E. Malfunction or Defect Report
- F. Inspection Reminder

VIII. Aircraft Drawings

- A. Drawing Types
- B. Views
- C. Practices
- D. Charts

IX. Materials & Processes/Cleaning & Corrosion Control

- A. Metals
- B. Nonmetal Materials
- C. Metal Heat Treatment
- D. Nondestructive Inspection
- E. Aircraft Hardware
- F. Measuring Devices

X. Weight and Balance

- A. Theory
- B. Documentation
- C. Weighing the Aircraft
- D. Locating Center of Gravity
- E. Single-engine Aircraft Weight and Balance Computations
- F. Twin-engine Airplane Weight and Balance Computations
- G. Adverse-loaded CG checks
- H. Center of Gravity Change After Repair or Alteration
- I. Determination of Needed Ballast
- J. Large Aircraft Weight and Balance Computations
- K. Weight and Balance Computations with an Electronic Computer

XI. Mechanic Privileges and Limitations

- A. Maintenance Classifications
- B. Classification of Maintenance Airman

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XII. Ground Operation and Servicing

- A. Fire Protection
- B. Safety in the Shop and on the Flight Line
- C. Aviation Fuels
- D. Aircraft Fueling
- E. Aircraft Movement
- F. Aircraft Tie-down
- G. Jacking and Hoisting
- H. Icing Protection
- I. Engine Operation