

COURSE OUTLINE

- DEPARTMENT: Aviation Maintenance Technology
- CURRICULUM: Aviation Powerplant Technology
- COURSE TITLE: Powerplant Systems and Components
- COURSE NUMBER: AMT 234
- TYPE OF COURSE: Occupational Preparatory
- COURSE LENGTH: 1 quarter
- CREDIT HOURS: 17 credits
- CLASS SIZE: 25 students maximum
- COURSE DESCRIPTION: This course is designed to cover six areas. The first section covers the engine fuel system and fuel metering system, and a study of carburetion and fuel injection. The second section is the ignition system for both reciprocating engines and turbine engines. The third section is turbine engine electrical starting systems. The fourth section of the course is a study of powerplant lubrication systems. The fifth section covers electrical and mechanical indicating systems. The sixth section will cover powerplant ice and rain control systems.
- COURSE OBJECTIVES:
1. The student will learn related safety precautions along with shop safety practices.
 2. The student will learn correct procedures for inspection, overhaul, test of fuel, ignition, electrical starting, lubrication, electrical and mechanical indicating systems and ice and rain control systems.

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PREREQUISITES: Successful completion of AMT 111, 112, and 133 or by permission of Unit Administrator and instructor.

REQUIRED TEXTS: Refer to booklist in the student information packet.

ADDITIONAL
REFERENCES: Texts suggested by instructor

COURSE SUBJECTS:

- I. Engine Fuel Systems
- II. Fuel Metering Systems
- III. Ignition Systems
- IV. Powerplant Lubrication Systems
- V. Electrical and Mechanical Indicating Systems
- VI. Ice and Rain Control Systems

Lecture time for the program **will be** as much as $\frac{1}{2}$ but **not less** than $\frac{1}{4}$ of the total hours.
Laboratory/shop time will be as much as $\frac{3}{4}$ but **not less** than $\frac{1}{2}$ of the total hours. Total contact time available is 265 hours.

I. RECIPROCATING ENGINE FUEL SYSTEMS

- A. Safety Practices
- B. Flammable material handling
- C. Shop practices
- D. Design
- E. Strainers
- F. Lines and fittings
- G. Fuel heaters
- H. Fuel pumps

II. FUEL METERING SYSTEMS

- A. Safety Practices
- B. Carburetion Theory
- C. Venturi principle
- D. Fuel/air mixtures
- E. Safety practices
- F. Carburetor types
- G. Pressure injection
- H. Bendix constant flow fuel system
- I. Continental constant flow fuel system
- J. Anti-detonation injection

III. TURBINE FUEL SYSTEMS

- A. Safety Practices
- B. Fuel control unit types
- C. Functions and characteristics
- D. Compressor inlet temperature
- E. Compressor RPM
- F. Burner pressure
- G. Turbine inlet temperature
- H. Burner blowout
- I. Manifold drain
- J. Fuel pressurization and dump valve
- K. Fuel nozzles
- L. Water injection

IV. RECIPROCATING ENGINE IGNITION SYSTEMS

- A. Safety Practices
- B. High tension
- C. Low tension
- D. Magneto theory and operation
- E. Battery ignition systems
- F. Impulse couplings
- G. Induction vibrators
- H. Boosters
- I. Spark plugs
- J. Engine ignition timing
- K. Ignition harness
- L. Ignition troubleshooting

V. TURBINE ENGINE IGNITION SYSTEMS

- A. Safety practices
- B. Ignition types and characteristics
- C. Exciters
- D. Igniters

VI. TURBINE ENGINE START SYSTEMS

- A. Safety Practices
- B. Electrical
- C. Air-start

VII. POWERPLANT LUBRICATION SYSTEMS

- A. Safety Practices
- B. Sources
- C. Classification
- D. Processes
- E. Properties
- F. Synthetic lubricants
- G. Special lubricants
- H. Types of friction
- I. Federal Aviation Regulations
- J. Powerplant oil system types

VIII. ELECTRICAL AND MECHANICAL INDICATING SYSTEMS

- A. Safety Practices
- B. Fuel
- C. Oil
- D. RPM
- E. Pressure
- F. Temperature

IX. ICE AND RAIN CONTROL

- A. Safety Practices