

# STRANDS AND STANDARDS

## AVIATION MAINTENANCE 2



### Course Description

A program with a sequence of courses that prepares individuals to inspect, repair, service, and rebuild all airplane parts, including engines, propellers, instruments, airframes, fuel and oil tanks, control cables, and hydraulic units. These courses are designed to meet Federal Aviation Administration (FAA) requirements for licensing as an airframe and power plant mechanic.

<b>Intended Grade Level</b>	9-12
Units of Credit	0.5
Core Code	40.09.00.00.002
Concurrent Enrollment Core Code	N/A
Prerequisite	N/A
Skill Certification Test Number	N/A
Test Weight	N/A
<b>License Area of Concentration</b>	CTE and/or Secondary Education 6-12
<b>Required Endorsement(s)</b>	
Endorsement 1	Aviation-Maintenance
Endorsement 2	N/A
Endorsement 3	N/A

## STRAND 1

**Students will understand basic electrical principles and be able to calculate current, voltage, resistance and identify continuity.**

### Standard 1

Understand Ohm's Law.

### Standard 2

Identify the impacts of the discovery of electricity.

### Standard 3

Understand direct current.

### Standard 4

Understand alternating current.

### Standard 5

Identify electrical measuring instruments.

### Standard 6

Understand circuit analysis and troubleshooting.

### Standard 7

Identify relationship between electrical generators and motors.

## STRAND 2

**Students will understand aircraft ground operations and servicing lecture.**

### Standard 1

Understand and practice shop safety.

### Standard 2

Understand and practice fire protection.

### Standard 3

Understand and practice fire protection.

### Standard 4

Understand tie down procedures.

### Standard 5

Understand, identify points jacking and hoisting.

**Standard 6**

Understand ground movement of aircraft.

**Standard 7**

Identify ground servicing equipment.

**Standard 8**

Identify distinguishing features of aircraft fuels.

**Standard 9**

Understand and practice safe engine starting procedures.

**STRAND 3**

**Students will understand aviation maintenance materials and processes.**

**Standard 1**

Identify specifications and standards.

**Standard 2**

Identify and locate types of hardware. (list)

**Standard 3**

Understand methods of safety.

**Standard 4**

Identify hand tools. (list)

**Standard 5**

Understand metals.

**Standard 6**

Terminology

**Standard 7**

Non-ferrous metals

**Standard 8**

Ferrous metals

**Standard 9**

Understand non-metallic structure materials.

**Standard 10**

Wood

**Standard 11**

Plastics

**Standard 12**

Understand nondestructive inspection.

- Visual inspection
- Liquid penetrant inspection
- Magnetic particle inspection
- Eddy current inspection
- Ultrasonic inspection
- Radiographic inspection

**STRAND 4**

**Students will understand how the laws of physics apply to aviation maintenance.**

**Standard 1**

Conservation of mass/energy.

**Standard 2**

Simple machines work and power.

**Standard 3**

Force and motion.

**Standard 4**

Stress and strain.

**Standard 5**

Heat

**Standard 6**

Pressure

**Standard 7**

Gas laws

**Standard 8**

Fluid mechanics/dynamics

**Standard 9**

Sound and vibration

**Standard 10**

Light

**STRAND 5**

**Students will understand the effects of basic human factors on aviation mechanics.**

**Standard 1**

Introduction

**Standard 2**

Meaning

**Standard 3**

Understand causes and remedies for fatigue and stress.

**Standard 4**

Understand the effects of the human condition and decision making.

**Standard 5**

Human factors and management.

**Standard 6**

Understand human performance limitations.

**Standard 7**

Understand aviation resource management.

**Performance Skills**

Calculate and measure capacitance and inductance. (LEVEL 2)

- Measuring and calculating capacitance and inductance. (LEVEL 2)
- Calculate the measure electrical power. (LEVEL 2)
- Learn the functions and purpose of a multimeter. (LEVEL3)
- Measure voltage, current, resistance, and continuity. (LEVEL 3)
- Measuring voltage, current, resistance, continuity, and leakage. (LEVEL 3)
- Determine relationship of voltage, current, and Ohm's Law resistance in electrical circuits. (LEVEL 3)
  - Troubleshoot a broken electrical circuit.
- Read and interpret electrical circuit diagrams, including solid state devices and logic functions. (LEVEL 3)
  - Reading electrical circuit diagrams, including solid state devices and logic functions. (LEVEL 3)

- Inspect and service batteries. (LEVEL 3)
  - Inspecting and servicing lead-acid batteries. (LEVEL 3)
  - Inspecting and servicing nickel-cadmium batteries. (LEVEL 3)

Start, ground operate, move, service and secure aircraft and identify typical ground operation hazards. (LEVEL 2)

- Service and secure aircraft. (LEVEL 2)
- Identify and select fuel. (LEVEL 2)

Identify and select appropriate nondestructive testing methods. (LEVEL 1)

- Perform dye penetrant, eddy current, ultrasonic, and magnetic particle inspections. (LEVEL 2)
- Perform basic heat-treating processes. (LEVEL 1)
  - Identify effects of heat treatment. (LEVEL 1)
  - Understand heat treatment processes and strain relieving. (LEVEL 2)
- Identify and select aircraft hardware and materials. (LEVEL 3)
  - Identify and select aircraft hardware. (LEVEL 3)
  - Identify aluminum alloys. (LEVEL 3)
  - Identify steel alloys. (LEVEL 3)
  - Identify rivets by physical characteristics. (LEVEL 3)
- Inspect and check welds. (LEVEL 3)
  - Perform inspection of welded assemblies. (LEVEL 3)
- Perform precision measurements. (LEVEL 3)
  - Use precision instruments for measurements. (LEVEL 3)

Use and understand the principles of simple machines; sound fluid, and heat dynamics; basic aerodynamics; aircraft structures; and theory of flight. (LEVEL 2)

- Describe heat transfer applications in aircraft. (LEVEL 2)
- Describe the inclined plane, the lever and the pulley. (LEVEL 2)
- Describe relationship between pressure area and force. (LEVEL 2)
- Identify Cloud types
- Identify Aircraft parts
- Virtual Communication (clear & direct)
- Teamwork (run an airport environment)
- Detail orientation
- Following Checklist
- Use Compass to find direction
- Pressurize
- Vacuum

## Workplace Skills

Students will develop professional and interpersonal skills needed for success in industry. Determine the difference between hard skills and soft skills.

- Hard Skills: Hard skills are specific, teachable abilities that can be defined and measured
- Soft Skills: Personal attributes that enable someone to interact effectively and harmoniously with other people.

Identify soft skills needed in the workplace

- Professionalism
- Respect Legal requirements/expectations
- Good communication skills