

**COURSE OUTLINE**

**Course:** 15555 AVIATION MAINTENANCE PROCESSES

**Total Course Hours:** 270.00

**CBEDS Title:** AVIATION MAINTENANCE PROCESSES

**CBEDS #:** 1555

**Job Title(s):**

Aviation Maintenance Technician, Aircraft Mechanic, Theme Park Technician, Plant Maintenance Technician

**Prerequisites:**

None

**Course Description:**

Students will obtain information necessary to pass the written and oral FAA general examination portion of the airframe or powerplant technician's license in the areas of aircraft materials, hardware, corrosion control, aircraft manufacturing processes, inspection techniques, blueprint reading, aircraft servicing and regulations. Integrated throughout the course are Academic and CTE standards, which include safety, communication, technology, ethics, career planning and other employability skills.

Hours	
Class	OJT

**Occupational Competencies**

1-7 on the Course Outline are generic to all BVROP courses and include the BVROP Student Outcomes

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| 3.00  |  | <p><b>1 <u>ORIENTATION</u></b></p> <ul style="list-style-type: none"> <li>A Identifies and discusses course objectives and competencies.</li> <li>B Discusses ROP Student Outcomes.</li> <li>C Explains class attendance and behavior objectives.</li> </ul>  |
| 3.00  |  | <p><b>2 <u>HEALTH, SAFETY AND ENVIRONMENTAL MANAGEMENT</u></b></p> <ul style="list-style-type: none"> <li>A Describes accident procedure.</li> <li>B Demonstrates appropriate safety practices (e.g. bending, lifting, etc.).</li> <li>C Demonstrates knowledge of classroom procedures and drills (e.g. earthquake, fire and emergency).</li> </ul>  |
| 3.00  |  | <p><b>3 <u>ETHICS AND LEGAL RESPONSIBILITIES</u></b></p> <ul style="list-style-type: none"> <li>A Defines sexual harassment and discusses tactics for handling harassment situations.</li> <li>B Applies appropriate workplace behavior and standards.</li> </ul>   |
| 3.00  |  | <p><b>4 <u>LEADERSHIP AND TEAMWORK</u></b></p> <ul style="list-style-type: none"> <li>A Describes the characteristics and benefits of teamwork and leadership.</li> <li>B Demonstrates ability to make appropriate decisions.</li> <li>C Works well with others and gives/takes constructive criticism.</li> </ul>  |
| 15.00 |  | <p><b>5 <u>CAREER PLANNING</u></b></p> <ul style="list-style-type: none"> <li>A Prepares a finished, professional portfolio showing the best work that has been completed during the class.</li> <li>B Locates job opportunities through the use of want-ads and placement agencies.</li> <li>C Visits at least one facility related to area of training and observes jobs performed.</li> <li>D Completes a job application correctly.</li> <li>E Prepares for and critiques a simulated employment interview.</li> <li>F Discusses employee benefits and rights as related to the specific occupational job area including gender equity and equal opportunity.</li> <li>G Identifies acceptable procedures to leave a job.</li> <li>H Applies for a scholarship.</li> <li>I Completes a professional resume.</li> <li>J Demonstrates appropriate personal grooming and dress.</li> </ul> |

Hours	
Class	OJT

3.00	
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**6 COMMUNICATION**

- A Uses effective workplace conversation.
- B Reads and interprets written information and directions.
- C Practices various forms of written communication appropriate to the occupation.

5.00	
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**7 STUDENT OUTCOMES**

- A Demonstrates Occupational Specific, Communication and Critical Thinking Skills
- B Demonstrates Responsible Work Ethics
- C Demonstrates Career/Employment Literacy
- D Demonstrates Effective Use of Technology

30.00	
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**8 AIRCRAFT DRAWINGS**

- A Identifies and differentiates between the different types of aircraft drawings and explain how each is used
- B Describes the information contained in the title blocks and bill of material
- C Explains the purpose of each of the identifying numbers typically found on drawings
- D Defines the station numbering system, including where stations are references from and how they are numbered. Locates a point on an aircraft by reference to zone and station.
- E Describes the various "sectioned" drawings and their purpose
- F Locates features on a part from a multi-view drawing
- G Determines the shape and size of an object from a drawing
- H Draw sketches of complex parts, including all information required to accurately reproduce the part
- I Draw a sketch of an alteration or repair
- J Defines the term, "tolerances. Calculates the largest and smallest dimensions of a part using the tolerances given on a drawing
- K Explains how parts and holes are dimensioned
- L Identifies the major types of lines and line weight used on drawings
- M Uses a blueprint to identify/specify hardware, parts, assemblies and installations
- N Extracts data from charts and graphs typically used in aircraft maintenance

15.00	
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**9 FLUID LINES AND FITTINGS**

- A Select hose material and fittings for a specific application
- B Fabricates and proof-tests typical aircraft fluid lines
- C Installs typical aircraft fluid lines
- D Describes precautions in fabricating and assembling aircraft fluid lines

Hours	
Class	OJT

80.00	
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**10 MATERIAL AND PROCESSES**

- A** Describes typical non-destructive testing methods and their uses
- B** Performs dye penetrant, eddy current, ultrasonic and magnetic particle inspections
- C** Describes the principles of heat treatment including how the internal structure of metal is changed
- D** Differentiates between the heat treatment of typical ferrous and non-ferrous metals
- E** Explains how the results of heat treating can be determined by measuring hardness
- F** Describes typical hardness testing methods and equipment
- G** Describes the various types of aircraft hardware and identification systems
- H** Differentiates between threaded fasteners
- I** Explains how to identify aircraft bolts by markings
- J** Differentiates between non-self-locking and the various types of self-locking nuts
- K** Describes typical aircraft washers and their applications
- L** Identifies the three common types of aircraft screws and describes their applications
- M** Identifies turnlock fasteners and describes their use
- N** Differentiates between aircraft cables by number of strands and number of wires
- O** Identifies cable fittings and their applications
- P** Identifies and describes the application of miscellaneous aircraft hardware including push-pull tubes, taper pins, flathead pins, cotter pins, and roll-pins
- Q** Identifies and describes the applications for typical ferrous and non-ferrous metals
- R** Identifies and describes the applications of non-metallic aircraft materials
- S** Visually inspects welds for penetration, bead width, bead uniformity, appearance, burnthrough, gas pockets, porosity, and inclusions
- T** Measures parts, using scales, surface plates, micrometers, height gauges, various gauges and calipers
- U** Explains calibration requirements and verifies calibration of precision measuring instruments

Hours	
Class	OJT

20.00	<b>11 <u>GROUND OPERATION AND SERVICING</u></b>
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- A** Starts a reciprocating engine aircraft, following preflight and starting procedures
- B** Describes the procedures and safety requirements for starting turboprop and turbojet engines
- C** Explains the requirements for, and operation of, ground power units and other ground support equipment
- D** Identifies safety hazards associated with starting aircraft engines (Ground Operate)
- E** Identifies safety precautions and hazards associated with taxiing aircraft
- F** Taxies in aircraft complying with ATC and safety requirements. Maintains communication with ATC
- G** Interprets standard airport taxiway markings and signs and recognizes standard FAA hand taxi signals
- H** Explains the need for caution when taxiing aircraft in high wind conditions. Locates the procedures for taxiing in high wind conditions in the POH for both a low wing and a high wing aircraft (Service).
- I** Identifies the safety hazards and precautions associated with fueling aircraft
- J** Explains how to determine the correct fuel for a specific aircraft, the importance of servicing an aircraft with the correct fuel, and the consequences of not using the correct fuel
- K** Describes how fuel can become contaminated by water, and the problems water contamination can cause
- L** Describes fuel contaminants, other than water, in terms of how they occur, how they are detected, and how they can be avoided
- M** Checks aircraft fuel for water and other contamination, using the procedure found in the POH
- N** Describes the requirements for fire extinguishers when fueling aircraft and differentiates between fueling methods for given aircraft
- O** Checks a reciprocating aircraft engine for oil level using the procedure and specification found in the POH or other reference. Describes the procedures checking engine oil in other types of aircraft.
- P** Identifies the correct viscosity of oil for a specified aircraft engine using the POH or other reference
- Q** Explains the procedure for cleaning up and disposing of spilled oil
- R** Checks aircraft tires for inflation and condition
- S** Describes the procedure for servicing aircraft oxygen systems
- T** Identifies safety hazards and precautions associated with servicing aircraft oxygen systems (Secure)
- U** Explains the requirements and procedures for wheel chocks and tie-downs
- V** Differentiates between methods of securing heavy aircraft, light aircraft, and helicopters
- W** Describes the precautions required to prevent damage to aircraft from wind
- X** Differentiates between types of aviation gas in terms of octane/performance level, lead content, and color
- Y** Describes the differences and application of common turbine engine fuels
- Z** Differentiates between gasoline and turbine engine fuel by sight and smell

20.00	<b>12 <u>CLEANING AND CORROSION CONTROL</u></b>
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- A** Identifies materials to be removed
- B** Selects cleaning material(s) for removal of grease, oil, dirt, preservatives, and aircraft paint
- C** Identifies precautions to be followed when cleaning aircraft
- D** Identifies proper products used to clean aircraft surface for stripping
- E** Determines areas to be protected from aircraft stripper and apply protective material
- F** Applies and removes aircraft stripper following complying with all safety requirements listed on the MSDS
- G** Identifies types of corrosion by sight
- H** Selects methods of removal for the material and type of corrosion
- I** Selects proper technique to remove corrosion and treat ferrous and non-ferrous materials

19.00	<b>13 <u>MATHEMATICS</u></b>
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- A** Extracts roots and raises numbers to a given power
- B** Determines areas and volumes of various geometrical shapes
- C** Solves ratio, proportions, and percentage problems
- D** Performs algebraic operations involving addition, subtraction, multiplication and division of positive and negative numbers
- E** Manipulates algebraic formulas to solve for unknown
- F** Applies algebraic formulas to practical aviation maintenance applications such as weight and balance, Ohm's Law and hydraulics

Hours	
Class	OJT

10.00	
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**14 BASIC PHYSICS**

- A** Uses the principles of basic physics to explain aircraft operation and stability
- B** Uses and understands the principles of sound, fluid and heat dynamics, basic aerodynamics, aircraft structures and theory of flight

36.00	
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**15 MAINTENANCE FORMS, RECORDS AND PUBLICATIONS**

- A** Write descriptions of work performed including aircraft discrepancies and corrective actions using typical aircraft maintenance records
- B** Identifies maintenance forms and describes their applications and requirements
- C** Writes maintenance statements for required inspections using maintenance forms, records and inspection reports
- D** Describes aircraft flight control, operation and theory of flight
- E** Identifies different maintenance publications and explains the use of each
- F** Selects publications required for specific maintenance operations
- G** Evaluates published information and determines if it applies to a specific aircraft and maintenance operation
- H** Identifies different maintenance publications and explains the use of each
- I** Selects publications required for specific maintenance operations
- J** Evaluates published information and determines if it applies to a specific aircraft and maintenance operation
- K** Recognizes and interprets aircraft acronyms and terminology

5.00	
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**16 MECHANIC PRIVILEGES AND LIMITATIONS**

- A** Differentiates between tasks which mechanics can and cannot do according to part 66 of the Federal Aviation Regulations (FAR's)
- B** Distinguishes repairs and alterations as major or minor, according to part 43, Appendix A, of the FAR's
- C** Identifies tasks that require an Inspection Authorization

**Additional Course Information**

This course articulates with Chaffey College.

**TOTAL HOURS**

Class	OJT	Course
270.00	0.00	270.00