Instructional Framework

Aircraft Mechanics

47.0600.50

This Instructional Framework identifies, explains, and expands the content of the standards/measurement criteria, and, as well, guides the development of multiple-choice items for the Technical Skills Assessment. This document corresponds with the Technical Standards updated in June 2024.

Domain 1: Basic Electricity **Instructional Time: 25 - 30%**	
STANDARD 1.0 PERFORM ELECTRICAL MAINTENANCE AND REPAIR	
1.1 Calculate and measure electrical power	• Ohm's Law formula • Watt's Law • Kirchhoff's Law for voltage and current
1.2 Measure voltage, current, resistance, and continuity	• Multimeter connection • Multimeter reading • Troubleshooting
1.3 Determine the relationship of voltage, current, and resistance in electrical circuits	• Series circuits • Parallel circuits • Series - parallel circuits • Ohm's Law calculations
1.4 Read and interpret aircraft electrical circuit diagrams, including solid-state devices and logic functions	• Electrical diagram types • Electrical symbols • Read and interpret electrical diagrams • Logic gates

Domain 2: Regulatory **Instructional Time: 25 - 30%**	
STANDARD 3.0 WEIGH AND BALANCE AIRCRAFT	
3.1 Perform weight and balance calculations, weigh aircraft, and record data	• Datum, arm, and moment • Preparation for weighing • Tare, ballast, and residual fuel/oil

	• Type Certificate Data Sheet (TCDS) • Adverse center of gravity (CG) and loading conditions • Mean Aerodynamic Chord (MAC) • Item/weight/arm/moment calculations • Complete weight and balance records
STANDARD 8.0 PREPARE AIRCRAFT MAINTENANCE FORMS AND RECORDS, INTERPRET PUBLICATIONS AND REGULATIONS	
8.1 Write descriptions of work performed using typical aircraft maintenance records	• Federal Aviation Regulations (FAR) 43.9 and 43.11 • Mechanics certificate types • Aircraft maintenance specifications
8.2 Complete required maintenance forms, records, and inspection reports	• Maintenance log • FAA 337 major repair or alteration • Minor/major repair • Minor/major alteration • Federal Aviation Regulations (FAR) 43, 65, 91, and 121
8.3 Apply information from maintenance publications	• Aircraft maintenance specifications • AC 43.13-1B • FAA approved/acceptable data • Airworthiness directives • Manufacturer's service bulletins • Advisory circulars
8.4 Determine whether a given repair or alteration is major or minor	• Federal Aviation Regulations (FAR) 43 Appendix A and B
8.5 Explain the difference between "approved data" and "acceptable data"	• FAA approved/acceptable data
STANDARD 10.0 IMPLEMENT INSPECTION CONCEPTS AND TECHNIQUES	
10.1 Identify and select nondestructive testing processes	• Dye penetrant • Radiograph • Eddy current • Magnetic particle • Ultrasonic
10.2 Inspect aircraft for compliance with an Airworthiness Directive	• Airworthiness Directives (AD) • Inspection processes • Alternate method of compliance (AMOC) • Locate Federal Aviation Regulations regarding AD

10.3 Perform a tap test on a composite component	• Hammer • Coin • Ultrasonic • Locate and understand procedures

Domain 3: Basic Processes **Instructional Time: 25 - 30%**	
STANDARD 4.0 MAINTAIN AND REPAIR FLUID LINES AND FITTINGS	
4.1 Fabricate and install rigid fluid lines	• Measure, cut, bend, and flare • Read measurements and formulas • Identify correct type of tubing • Inspect tubing • Fitting selection • Pressure testing • Proper torquing procedures
4.2 Fabricate and install flexible fluid lines	• Measure and cut • Read measurements and formulas • Identify correct type of hose • Inspect hose • Lay line • Fitting selection • Pressure testing • Proper torquing procedures
4.3 Fabricate a flareless-fitting-tube connection	• Proper sleeve selection • Proper procedures • Inspect completed fitting
STANDARD 5.0 INSPECT AND IDENTIFY AIRCRAFT MATERIALS AND PROCESSES	
5.1 Fabricate a cable assembly using a swaged-end fitting	• Go/no go gauge • Fabricating cables • Tool selection and usage • Locate and identify fabrication procedure
5.2 Identify aircraft hardware and materials	• AN, NAS, MS standards • Manufacturer markings • SAE material code

	• Interpret symbols • Diameter and length measurements • Alloys • Material stress • Heat treatment
5.3 Perform precision measurements	• Proper calibration • Vernier scale • Decimal place • Dial gauge • Runout • Part preparation
5.4 Inspect and check welds	• Identify hot and cold welds • Identify speed of welds • Inspect for proper welds/defects
5.5 Install safety wire	• Twists per inch • Proper procedures
STANDARD 7.0 PERFORM AIRCRAFT CLEANING AND CORROSION CONTROL	
7.1 Identify and select aircraft cleaning materials	• Approved cleaning agents • Aircraft maintenance specifications • Aluminum cleaning agents • Caustic cleaning agents • Chemical removal of oil and grease • Mechanical removal of oil and grease • Safety Data Sheet (SDS) • Personal Protective Equipment (PPE)
7.2 Identify types of aircraft corrosion	• Direct chemical corrosion • Electrochemical corrosion • Corrosion prone areas • Environmental factors • Stresses • Oxides
7.3 Identify corrosion removal techniques	• Chemical removal of corrosion • Mechanical removal of corrosion • Metallic structures • Non-metallic structures

7.4 Identify corrosion treatment techniques	• Protective coating to a metallic material • Protective coating or treatment to a non-metallic material • Post wash treatments • Aircraft maintenance specifications • AC 43-13.1B
7.5 Prepare metal and composite surface for painting	• Processes of corrosion treatment • Pretreat surface for painting • Paint preparation

Domain 4: Basic Principles **Instructional Time: 5 - 10%**	
STANDARD 2.0 PREPARE AIRCRAFT DRAWINGS	
2.1 Identify aircraft drawings and symbols and interpret system schematics	• Understanding of line types and their definitions • Understanding drawing symbols and legend identification • Identifying items within a title block
2.2 Draw sketches of repairs and alterations	• Understanding the chronological steps in creating a sketch • Understanding line types and uses
2.3 Interpret graphs and charts in order to maintain and repair systems	• Understanding steps to reading charts and graphs
STANDARD 9.0 APPLY PHYSICS TO AVIATION	
9.1 Convert temperature units	• Celsius to Fahrenheit • Fahrenheit to Celsius
9.2 Calculate force, area, pressure in a specific application	• Lift calculation • Formulas
9.3 Use and understand the principles of theory of flight	• Lift, thrust, weight, and drag • Bernoulli's Principle • Density altitude • Temperature, and/or pressure, and/or humidity
9.4 Calculate horsepower	• Formula
9.5 Identify changes in pressure and velocity as a fluid passes through a venturi	• Bernoulli’s Principle • Boyle’s Law

Domain 5: Basic Operations **Instructional Time: 5 - 10%**	
STANDARD 6.0 PERFORM GROUND OPERATION AND SERVICES	
6.1 Identify types of fires and fire extinguishers	• Fire types and classes • Fire extinguisher types • Fire extinguisher selection • Fire extinguisher use
6.2 Identify safety practices in aircraft fueling and handling	• Electrical grounding of equipment • Types of fuel • Fuel contamination • Fuel additives • Fuel caps/placards • Single point connection • Fuel control panels • Fuel spills • Re-fueling and De-fueling • Fueling equipment • Fuel sample inspection
6.3 Identify aircraft ground movement procedures	• Air Traffic Control (ATC) • Airport ground control • Starting a reciprocating engine aircraft • Starting a turbine engine aircraft • Taxiing • Towing • Runways • Taxiways
6.4 Identify procedures for securing aircraft in a variety of conditions	• Adverse weather conditions and hazards • Aircraft tie downs • Aircraft chocks • Control locks • Engine covers • Pitot static covers