

Airman Certification Standards – General

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The following subject order reflects logical grouping and structural clarity and is not intended to prescribe instructional sequence or curriculum design.

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14.	K.	Inspection and Troubleshooting Concepts and Techniques

^ Note: Recommended order of ACS subjects to support pedagogical sequencing.

*Note: New coding options will be presented with the final draft when presented to the FAA.

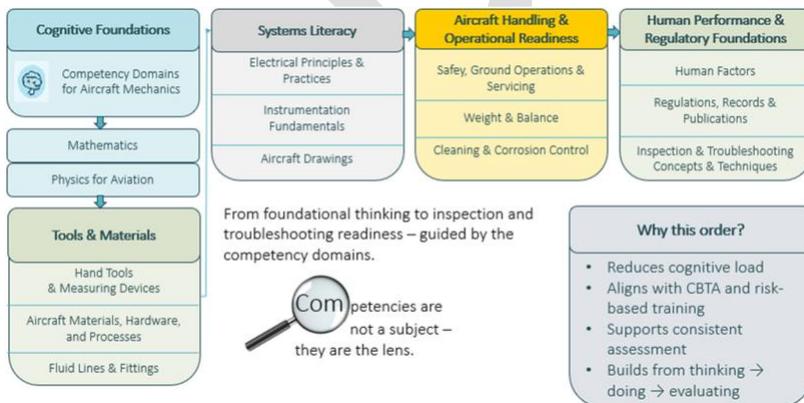
Legend:

Blue = Revised

Green – New

Black – Unchanged

Overarching competency concept for consideration:



Competency Domains for Mechanics	
Competency 1.0	Technical Task Performance: <i>Perform maintenance, inspection, and operational tasks to the required standard using correct methods, tools, and safety precautions.</i>
OB 1.1	Perform maintenance tasks using correct methods, tools, and safety precautions.
OB 1.2	Verify work against approved specifications and tolerances.
OB 1.3	Recognize when approved procedures appear incorrect or unsafe and initiates appropriate escalation or documentation.
OB 1.4	Complete tasks without introducing new discrepancies or hazards.
OB 1.5	Confirm task completion through required checks, tests, or inspections.
Competency 2.0	Use of Approved Data and Procedures: <i>Locate, interpret, and apply current, approved maintenance data and procedures accurately and without deviation.</i>
OB 2.1	Locate the correct procedure or data source without prompting.
OB 2.2	Interpret instructions, cautions, and warnings accurately.
OB 2.3	Apply procedures as written, without unauthorized shortcuts.
OB 2.4	Verify revision status and ensure data currency.
OB 2.5	Identify when additional or alternative approved data is required.
Competency 3.0	Regulatory and Airworthiness Responsibility: <i>Apply regulatory requirements and airworthiness responsibilities to determine the status of an aircraft and document maintenance actions appropriately.</i>
OB 3.1	State whether a discrepancy affects airworthiness and explains why.
OB 3.2	Identify technician privileges, limitations, and required authorizations.
OB 3.3	Complete documentation accurately, legibly, and in accordance with regulations.
OB 3.4	Recognize when a condition requires grounding, deferral, or further inspection.
OB 3.5	Escalate regulatory or airworthiness concerns appropriately.
Competency 4.0	Troubleshooting and Technical Decision-Making: <i>Diagnose malfunctions using logical troubleshooting methods, interpret results, and select appropriate corrective actions or escalation paths.</i>
OB 4.1	Follow a logical troubleshooting sequence based on symptoms and data.
OB 4.2	Select appropriate tests or inspections to isolate faults.
OB 4.3	Interprets test results accurately and identifies likely root causes.
OB 4.4	Choose corrective actions supported by approved data.
OB 4.5	Recognize when troubleshooting must stop due to missing information or authority.
Competency 5.0	Safety and Risk Management in Maintenance: <i>Identify hazards, assess risks, and implement effective controls to maintain a safe maintenance environment.</i>
OB 5.1	Identify hazards associated with the task before beginning work.
OB 5.2	Implement appropriate risk controls (PPE, lockout/tagout, FOD control).
OB 5.3	Adjust actions when new hazards or changing conditions arise.
OB 5.4	Stop work when safety cannot be assured and explain the reason.
OB 5.5	Demonstrate awareness of personal and environmental safety impacts.
Competency 6.0	Human Factors and Situational Awareness: <i>Recognize and manage human performance limitations and operational influences to maintain situational awareness and prevent errors.</i>
OB 6.1	Maintain focus despite distractions or interruptions.
OB 6.2	Recognize signs of fatigue, time pressure, or workload overload.
OB 6.3	Use cross-checks, pauses, or verification steps to prevent error.
OB 6.4	Identify error traps and take steps to mitigate them.

Competency Domains for Mechanics	
OB 6.5	Demonstrate awareness of surroundings, equipment, and personnel.
Competency 7.0	Communication and Coordination: <i>Communicate maintenance information clearly and accurately, both orally and in writing, to ensure continuity of work and operational safety.</i>
OB 7.1	State intentions clearly before beginning a task or step.
OB 7.2	Provide accurate, concise updates during task execution.
OB 7.3	Conduct effective turnovers, including task status and outstanding items.
OB 7.4	Ask clarifying questions when information is incomplete or ambiguous.
OB 7.5	Document actions and findings in a clear, complete, and traceable manner.
Competency 8.0	Task Planning and Work Management: <i>Plan, prioritize, and organize maintenance tasks and resources effectively, adjusting as needed to maintain control of work-in-progress.</i>
OB 8.1	Organize tools, parts, and documentation before beginning work.
OB 8.2	Sequence tasks logically based on dependencies and safety considerations.
OB 8.3	Manage time effectively and adjust priorities when needed.
OB 8.4	Control work in progress to prevent incomplete or unsafe conditions.
OB 8.5	Recognize when task conditions require stopping, reassessing, or escalating.
Competency 9.0	Use of Tools, Equipment, and Digital Systems: <i>Select, operate, and maintain tools, test equipment, and digital systems safely and effectively, recognizing limitations and required controls.</i>
OB 9.1	Select tools and equipment appropriate to the task.
OB 9.2	Perform pre-use checks, including calibration awareness.
OB 9.3	Use tools and equipment safely and within limitations.
OB 9.4	Navigate digital maintenance systems efficiently and accurately.
OB 9.5	Interpret digital data, test outputs, or system indications correctly.
Competency 10.0	Quality, Error Management, and Continuous Improvement: <i>Prevent, detect, and report errors or non-conformities and contribute to corrective actions and continuous improvement efforts.</i>
OB 10.1	Identify errors or non-conformities during task execution.
OB 10.2	Take corrective action or report issues according to procedures.
OB 10.3	Use checklists, job aids, or verification steps to prevent errors.
OB 10.4	Participate in discussions about causes and prevention of errors.
OB 10.5	Demonstrate commitment to accuracy, completeness, and continuous improvement.
Competency 11.0	Professionalism and Ethical Responsibility: <i>Demonstrate integrity, accountability, and ethical judgment in all maintenance activities, upholding the standards of the aviation maintenance profession.</i>
OB 11.1	Approve work only when it has been personally performed, properly supervised, or inspected in accordance with regulatory privileges, and clearly communicates when additional oversight or clarification is required.
OB 11.2	Demonstrate honesty and accountability in all task actions.
OB 11.3	Treat procedures, data, and documentation with respect and diligence.
OB 11.4	Maintain a calm, respectful demeanor in challenging situations.
OB 11.5	Uphold the standards and responsibilities of the maintenance profession.

[1] Subject H. Mathematics	
Competency	<i>Perform accurate mathematical reasoning by applying appropriate operations, conversions, and verification techniques to support safe, compliant, and reliable aircraft maintenance decisions.</i>
Knowledge	Knowledge Learning Objectives:
.....	Basic Mathematical Operations
AM.I.H.K.13.	Perform basic mathematical operations with whole numbers, fractions, decimals, and percentages used in aircraft maintenance.
.....	Convert between fractions, decimals, and percentages and simplify fractional values used in maintenance calculations.
.....	Ratios, Proportions & Algebra
AM.I.H.K.4.	Solve ratio problems used in aircraft maintenance and system operation.
AM.I.H.K.5.	Solve proportion and percentage problems relevant to aircraft maintenance tasks.
AM.I.H.K.6.	Apply basic algebraic operations to maintenance related formulas and calculations.
.....	Numeral Systems & Conversions
.....	Convert between numeral systems (binary, decimal, octal, hexadecimal) and apply place value concepts to maintenance related calculations.
AM.I.H.K.7.	Convert between metric and conventional units and explain when metric units are required in aircraft maintenance.
.....	Engineering Notation & Rounding
AM.I.H.K.8.	Perform conversions and basic operations using engineering notation for maintenance related values.
AM.I.H.K.9.	Explain how rounding affects tolerance limits, measurement accuracy, and compliance with manufacturer specifications.
.....	Geometry and Trigonometry
AM.I.H.K.1.	Calculate dimensions, areas, and volumes of common geometric shapes used in aircraft structures.
.....	Apply trigonometric functions and the Pythagorean Theorem to solve right triangle problems relevant to aircraft measurements.
Risk Management	The applicant demonstrates the ability to identify, assess, and mitigate risks associated with:
AM.I.H.R.1.	Inaccurate calculations, including errors involving positive and negative integers, that affect safety critical measurements.
AM.I.H.R.3.	Improper numerical rounding.
.....	Failure to verify the reasonableness of calculated values.
Skills	The applicant demonstrates the ability to:
	No Skill elements are defined for this subject. All required competencies are demonstrated through system-specific Skill elements in other ACS areas.

[2] Subject J. Physics for Aviation	
Competency	<i>Apply fundamental physical principles to interpret aircraft behavior, analyze performance factors, and support safe, accurate, and compliant maintenance decisions.</i>
Knowledge	Knowledge Learning Objectives:
AM.I.J.K.1.	Describe matter and its fundamental characteristics.
.....	Explain potential and kinetic energy and apply formulas to calculate their values in aviation applications.
AM.I.J.K.2.	Apply formulas for work, power, force, torque, and friction in aviation related scenarios.
AM.I.J.K.3.	Apply mechanical advantage concepts for simple machines to solve aviation related problems.
AM.I.J.K.4.	Explain how pressure, temperature, and volume relate using the gas laws.
AM.I.J.K.5.	Explain Bernoulli’s Principle and its relationship to pressure, temperature, and airflow in aviation.
AM.I.J.K.6.	Explain Newton’s Laws of Motion and their application to aircraft operation and maintenance.
AM.I.J.K.8.	Describe the theory of flight as it applies to aircraft construction, flight controls, and aerodynamic devices.
.....	Describe high-speed aerodynamic concepts, including compressibility effects, shock waves, and impacts on stability.
AM.I.J.K.9.	Explain the standard atmosphere and factors affecting atmospheric conditions, including density altitude and pressure altitude.
Risk Management	The applicant demonstrates the ability to identify, assess, and mitigate risks associated with:
AM.I.J.R.1.	Incorrect recognition of aircraft or engine-performance changes caused by density-altitude conditions.
AM.I.J.R.2.	Adverse aerodynamic effects from improper repairs or alterations to flight surfaces.
AM.I.J.R.3.	Incorrect interpretation or application of performance- or test-data indications.
AM.I.J.R.4.	Incorrect use or conversion of units of measure.
Skills	The applicant demonstrates the ability to:
	No Skill elements are defined for this subject. All required competencies are demonstrated through system-specific Skill elements in other ACS areas.

[3] Subject NEW. Hand Tools and Measuring Devices	
Competency	<i>Select, use, and care for hand tools and precision measuring devices by applying correct safety practices, calibration awareness, and inspection techniques to ensure accurate measurement, proper tool condition, and safe maintenance performance.</i>
Knowledge	Knowledge Learning Objectives:
.....	Describe the functions, proper use, care, maintenance, and safety precautions associated with hand tools.
.....	Describe the functions, proper use, care, maintenance, and safety precautions for powered tools.
AM.I.K.K.1.	Explain the functions, proper use, care, maintenance, and safety precautions for layout and measuring tools, including precision instruments.
.....	Explain calibration concepts, including calibration intervals, traceability, and the importance of maintaining calibration currency for precision tools and equipment.
.....	Apply torque tool techniques that ensure accurate torque application, accounting for tool setup, configuration factors that affect applied torque, calibration status, and reading accuracy.
Risk Management	The applicant demonstrates the ability to identify, assess, and mitigate risks associated with:
AM.I.K.R.2.	Incorrect use of precision measuring instruments.
AM.I.K.R.3.	Incorrect calibration status or failure to maintain calibration schedules for precision measuring devices and equipment.
.....	Improper selection, condition, or use of hand tools or cutting tools that may cause injury or component damage.
.....	Improper use, setup, or calibration status of torque measuring tools.
Skills	The applicant demonstrates the ability to:
AM.I.K.S.1.	Use a vernier caliper to measure a part and compare the measurement to the specified tolerance in manufacturer data to determine acceptability.
AM.I.K.S.2.	Use a micrometer to measure a part and compare the measurement to the specified tolerance in manufacturer data to determine acceptability.
.....	Determine the currency of calibration for a given tool.
.....	Use a torque measuring tool to apply a specified torque value in accordance with tool setup, calibration status, and manufacturer instructions.

[4] Subject E. Aircraft Materials, Hardware, and Processes	
Competencies:	<p>Suspected Unapproved Parts (SUP) <i>Recognize suspected unapproved parts (SUP) by identifying indicators, understanding associated safety risks, and applying required reporting and documentation practices to prevent installation of unapproved or unairworthy components.</i></p> <p>Aircraft Materials <i>Identify and select aircraft materials for maintenance and repair by applying knowledge of properties, compatibility, markings, and environmental limitations to ensure suitable and airworthy material use.</i></p> <p>Aircraft Hardware <i>Identify, inspect, and install aircraft hardware and control system hardware by using correct selection, torque, safetying, and geometry principles to ensure proper function, secure installation, and airworthy configuration.</i></p> <p>Aircraft Material Processes <i>Describe how aircraft manufacturing and material treatment processes affect material properties and apply this knowledge to determine suitability, limitations, and correct use in maintenance and repair.</i></p>
Knowledge	Knowledge Learning Objectives:
	Suspected Unapproved Parts
.....	Explain suspected unapproved parts (SUP), including their definition, common indicators, regulatory requirements, and associated safety risks.
.....	Aircraft Materials
AM.I.E.K.1.	Differentiate aircraft materials based on properties, strengths, limitations, and applications.
AM.I.E.K.9.	Analyze material suitability and compatibility.
AM.I.E.K.11.	Interpret manufacturer information and markings to identify aircraft materials and determine appropriate use.
.....	Aircraft Hardware
AM.I.E.K.4.	Interpret manufacturer specifications, markings, and documentation to identify aircraft hardware and determine correct application.
.....	Evaluate hardware suitability based on material, strength, effectivity, and substitution guidelines.
.....	Analyze hardware compatibility issues, including risks associated with dissimilar metals, nonmetallic materials, and environmental exposure.
AM.I.E.K.5.	Explain safetying methods and their functional purpose in accordance with manufacturer requirements.
AM.I.E.K.10.	Identify special fasteners and determine their appropriate use and installation considerations.
AM.II.I.S.9.	Explain the function and selection considerations for shock mounts and vibration isolation hardware.

[4] Subject E. Aircraft Materials, Hardware, and Processes	
AM.I.D.K.5.	Apply torque installation principles to aircraft hardware, including correct torque values, sequences, fastener loading effects, torque verification, and consequences of improper torque on hardware integrity.
AM.I.D.K.6.	Apply torque seal or witness marking methods to verify hardware security and detect loosening or movement.
.....	Control System Hardware
AM.II.C.K.1.	Explain control cable construction, function, inspection criteria, maintenance considerations, and regulatory requirements.
AM.II.C.K.3.	Interpret manufacturer data to determine correct connectors and inspection considerations.
AM.II.C.K.4.	Describe cable guides and stops, including function and installation considerations.
AM.II.C.K.6.	Analyze push-pull tube characteristics, installation considerations, and system integration.
AM.II.C.K.7.	Analyze torque tube characteristics, installation considerations, and system integration.
AM.II.C.K.8.	Evaluate bellcrank condition and function using manufacturer data to determine correct operation and inspection requirements.
.....	Aircraft Material Processes
AM.I.E.K.2.	Explain heat treatment processes and their effects on material properties and suitability.
.....	Analyze metalworking processes to determine their impact on material characteristics and appropriate use.
	<i>Welding</i>
AM.I.E.K.13.	Identify common welding defects.
AM.I.E.K.12.	Describe the characteristics of acceptable welds.
Risk Management	The applicant demonstrates the ability to identify, assess, and mitigate risks associated with:
.....	Improper selection or identification of materials or hardware.
.....	Improper installation or securing of hardware.
.....	Material or hardware incompatibility.
AM.I.E.R.2.	Improper torque application affecting hardware preload, clamping force, or fastener integrity.
AM.I.E.R.3.	Used or damaged hardware.
.....	Use of unapproved or non-airworthy parts (SUP).
AM.I.E.R.5.	Poor or improper safety-wiring.
Skills	The applicant demonstrates the ability to:
.....	Aircraft Materials
AM.I.E.S.10.	Select the correct aluminum alloy for a structural repair.
AM.I.E.S.12.	Determine suitability of materials for a given aircraft repair.
.....	Determine compatibility of two materials for a given aircraft repair.
.....	Aircraft Hardware
AM.I.E.S.1.	Install safety wire on nuts, bolts, or turnbuckles.
AM.I.E.S.2.	Torque given aircraft hardware per documentation.
AM.I.E.S.5.	Select and install aircraft bolts.
AM.I.E.S.8.	Identify aircraft control cable components.

[4] Subject E. Aircraft Materials, Hardware, and Processes	
AM.I.E.S.11.	Identify rivets by their physical characteristics.
.....	Aircraft Material Processes
AM.I.E.S.4.	Identify aircraft materials based on manufacturer’s markings.
.....	Identify aircraft hardware based on manufacturer’s markings.
AM.I.E.S.13.	Distinguish between heat-treated and non-heat-treated aluminum alloys, based on manufacturer's markings.
AM.I.E.S.3.	Conduct a basic visual inspection of a welded aircraft component to verify structural integrity.
	Perform a liquid penetrant inspection on a metallic component using approved materials and procedures.

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[5] Subject D: Fluid Lines and Fittings	
Competency	<i>Fabricate, install, and inspect aircraft fluid lines and fittings by applying correct material selection, sizing, routing, and inspection practices to ensure proper system configuration and prevent leaks, failures, and mis-routing.</i>
Knowledge	Knowledge Learning Objectives:
AM.I.D.K.1.	Describe materials, applications, identification methods, sizing conventions, and fittings used in rigid fluid line tubing.
AM.I.D.K.2.	Describe materials, applications, identification methods, sizing conventions, and fittings used in flexible hose assemblies.
AM.I.D.K.3.	Apply rigid line fabrication and installation requirements, including bend radius, flare types, alignment, testing, and inspection considerations.
AM.I.D.K.4.	Apply flexible hose fabrication and installation requirements, including routing, twist prevention, clamp spacing, testing, and inspection considerations.
	Identify fluid lines, pneumatic lines, and fittings based on markings, color codes, and configuration.
Risk Management	The applicant demonstrates the ability to identify, assess, and mitigate risks associated with:
AM.I.D.R.1.	Improper system configuration and installation of fluid lines.
AM.I.D.R.3.	Improper handling, identification, or material compatibility with hazardous fluids.
AM.I.D.R.4.	High-pressure fluid system hazards, including line rupture and fitting failure.
AM.I.D.R.5.	Twisted or improperly routed hoses.
AM.I.D.R.6.	Loose fittings or hoses that have shifted out of position.
Skills	The applicant demonstrates the ability to:
AM.I.D.S.1.	Fabricate a rigid line with a flare and a bend.
AM.I.D.S.7.	Fabricate a flexible hose.
AM.I.D.S.8.	Fabricate a flareless-fitting tube connection used in hydraulic or low-pressure pneumatic systems.
AM.I.D.S.2.	Install an aircraft rigid line.
AM.I.D.S.3.	Install an aircraft flexible hose.
AM.I.D.S.4.	Perform a rigid line or flexible hose inspection.

[6] Subject A. Electrical Principles and Practices	
Competencies	<p><i>Demonstrates the ability to understand aircraft electrical principles by explaining how electrical quantities, circuit laws, components, and AC/DC behaviors influence circuit operation, system performance, and safe maintenance decisions.</i></p> <p><i>Perform electrical measurements and basic troubleshooting by using approved tools, safety practices, schematic interpretation, and component testing methods to verify circuit status, identify faults, and ensure safe, airworthy electrical operation.</i></p> <p><i>Demonstrates the ability to understand aircraft battery types, characteristics, hazards, and servicing considerations to ensure safe handling, testing, and maintenance of aircraft electrical power sources.</i></p>
Knowledge	Knowledge Learning Objectives:
	Basic Circuit Theory and Laws
AM.I.A.K.1.	Explain voltage, current, resistance, power, and electron flow versus conventional current flow, and relate these quantities to circuit behavior.
AM.I.A.K.2.	Explain magnetic fields and their relationship to current flow.
	Explain electromagnetic induction and its role in aircraft electrical systems.
	Explain the principles of AC and DC power generation.
AM.I.A.K.7.a	Apply Ohm’s and Watt’s Laws to calculate electrical values and evaluate circuit performance.
AM.I.A.K.7.b	Apply Kirchhoff’s Voltage and Current Laws to analyze multi-load circuits.
AM.I.A.K.13.	Analyze series, parallel, and series-parallel circuits to determine resistance, current paths, and voltage drops.
	AC/DC Fundamentals
.....	Compare AC and DC electrical systems in terms of operation, applications, and safety considerations.
AM.I.A.K.5.	Interpret AC waveform characteristics, including amplitude, frequency, and phase relationships.
AM.I.A.K.11.a	Explain inductive and capacitive reactance and the influence of reactive components on AC circuit impedance.
	Electrical Components
.....	Identify resistors and their function in aircraft electrical circuits.
AM.I.A.K.4.	Explain the operating principles and functions of inductors in AC and DC circuits.
AM.I.A.K.3.	Explain the operating principles and functions of capacitors in AC and DC circuits.
AM.I.A.K.21.	Describe the function and use of common solid-state components, including diodes, Zener diodes, SCRs, and transistors in aircraft electrical circuits.
	Describe rectification components and their schematic symbols.
AM.I.A.K.16.	Describe transformer construction, types, operating principles, and uses in AC circuits
	Digital Electronic Fundamentals

[6] Subject A. Electrical Principles and Practices	
AM.I.A.K.23.	Interpret digital numbering systems and their role in electronic data representation.
AM.I.A.K.22.	Explain digital logic conventions, truth tables, and logic gate functions used in aircraft electronic systems.
Electrical Measurement Tools and Techniques	
AM.I.A.K.8.	Use electrical measurement tools, including multimeters, ammeters, ohmmeters, megohmmeter, and voltmeters to safely measure voltage, current, resistance, and continuity.
AM.I.A.K.17.	Demonstrate continuity testing and fault detection using multimeters and continuity testers.
AM.II.K.K.16.	Verify electrical system parameters and identify deviations using approved measurement procedures.
....	Explain the operating principles of basic electromagnetic sensors used in aircraft systems.
.....	Explain the purpose and basic operation of oscilloscopes for observing AC waveforms
Circuit Protection, Switching, Relays, and ESD	
.....	Identify circuit protection devices and explain their operating principles.
.....	Explain derating requirements and factors affecting device selection.
.....	Apply safety practices for working with energized and de-energized circuits when replacing or inspecting protection devices.
	Explain the principles of electrostatic discharge (ESD), including how static charge is generated, how it transfers, and its effects on electrical and electronic components.
AM.I.A.K.24.	Explain ESD hazards and their effects on sensitive components.
.....	Apply ESD control procedures, including grounding, wrist straps, and handling precautions.
AM.I.A.K.18.	Explain the operating principles of relays and solenoids used in aircraft electrical systems.
	Differentiate between relays and solenoids and describe their respective functions within aircraft electrical systems.
.....	Identify switch types and contact configurations used in aircraft electrical systems.
.....	Interpret switch and relay symbols and contact logic in wiring diagrams.
.....	Schematic & Wiring Diagram Interpretation
.....	Interpret aircraft wiring diagrams, symbols, and routing conventions to support troubleshooting.
.....	Identify component locations and interconnections using wiring diagrams and system schematics.
Aircraft Battery Fundamentals & Safety	
AM.I.A.K.15.	Identify aircraft battery types, operating principles, and key characteristics.
.....	Apply safety procedures for handling, testing, and disposing of aircraft batteries.
.....	Determine the state of charge of an aircraft battery.

[6] Subject A. Electrical Principles and Practices	
.....	Explain hazards associated with aircraft batteries, including chemical, thermal, and electrical risks.
AM.I.A.K.27.	Identify the components and operating principles of basic AC and DC motors
.....	Explain how AC frequency influences motor operation.
Basic Circuit Troubleshooting	
.....	Explain common electrical faults (opens, shorts, intermittents) and their symptoms.
AM.II.K.K.13.	Verify electrical system parameters and identify deviations using acceptable measurement procedures.
.....	Apply systematic troubleshooting procedures to isolate electrical faults using acceptable data.
.....	Verify circuit status and ensure safe conditions before performing troubleshooting steps.
Load Analysis and Component Evaluation	
.....	Explain electrical load concepts and their impact on circuit and component performance.
.....	Evaluate component performance and circuit loading using acceptable data and measurement results.
Risk Management	The applicant demonstrates the ability to identify, assess, and mitigate risks associated with:
AM.I.K.R.5.	Damage to aircraft components or test equipment from improper measurement or test procedures.
AM.III.F.R.3.	Electrical shock or arc hazards associated with energized circuits.
AM.I.A.R.2.	Chemical, thermal, or electrical hazards associated with battery systems.
.....	Incorrect interpretation of electrical quantities, relationships, or circuit behavior
.....	Incorrect assumptions about AC/DC characteristics, waveform behavior, or reactive effects.
.....	Incorrect understanding of component or device function, including solid-state and digital logic elements.
.....	Incorrect interpretation of measurement results, wiring diagrams, or circuit status.
.....	Incorrect fault isolation or load evaluation.
Skills	The applicant demonstrates the ability to:
Circuit Fundamentals and Measurements	
.....	Analyze electrical circuits using Ohm’s and Kirchhoff’s Laws.
AM.I.A.S.2.	Calculate voltage, current, resistance, and power in DC and AC circuits.
AM.I.A.S.11.	Measure voltage, current, resistance, and voltage drop using appropriate tools.
.....	Identify and test resistors, capacitors, inductors, and transformers.
AM.I.A.S.5.	Test relays, switches, fuses, and circuit breakers for proper function.
Solid-State Devices & ESD	
.....	Identify and perform basic tests on solid-state components.
Basic Circuit Troubleshooting	
AM.II.K.S.18.	Verify conductor integrity using continuity and resistance tests.

[6] Subject A. Electrical Principles and Practices	
AM.I.A.S.10.	Identify an open or short circuit.
AM.III.F.S.12.	Troubleshoot basic electrical faults using schematics and multimeters.
Schematic Interpretation	
AM.I.A.S.7.	Interpret aircraft electrical circuit diagrams, and symbols, including solid state devices and logic functions.
AM.II.K.S.4.	Trace system voltage paths on a schematic for a specified operating condition.
Load Analysis & Component Verification	
AM.II.K.S.9.	Evaluate electrical load and component performance using approved data.
AM.II.K.S.12.	Measure and verify component resistance.

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[7] Subject NEW. Aircraft Instrumentation Fundamentals	
Competencies	Demonstrates the ability to understand aircraft instrumentation systems by explaining how instruments sense, process, and display information and how maintenance practices, environmental factors, and configuration controls affect accuracy, reliability, and airworthy performance.
Knowledge	Knowledge Learning Objectives:
.....	Principles of Instrumentation
AM.II.H.K.4.	Describe the physical principles used in aircraft instruments, including pressure, temperature, position, gyroscopic, magnetic, and electrical.
.....	Explain how sensing mechanisms convert physical inputs into indications.
AM.II.H.K.20.	Identify common sources of instrument error and limitations.
.....	Basic Sensing Mechanisms
.....	Explain how mechanical pressure sensing elements (e.g., Bourdon tubes, bellows, diaphragms) convert pressure into movement for aircraft indications.
.....	Explain how thermocouples, resistance temperature detectors (RTD), and resistance-type sensors generate and transmit data for aircraft indication systems.
.....	Identify how synchros, potentiometers, and transducers support position, pressure, and movement indications in aircraft systems.
.....	Instrument Display Fundamentals
.....	Explain the differences between mechanical, analog, cathode ray tubes (CRT) and digital displays.
.....	Describe the basic purpose and structure of electronic flight displays.
.....	Instrument Power Fundamentals
.....	Describe vacuum, pneumatic, and electrical power sources used for instruments.
.....	Explain how power source failures affect general instrument operation.
.....	Care, Handling & Environmental Factors
.....	Explain proper handling practices for mechanical and electrostatic sensitive instruments.
.....	Identify environmental factors, including temperature, vibration, moisture, and contamination that affect instrument reliability.
.....	Describe safe practices for cleaning, storage, and transport.
.....	Maintenance and Inspection
.....	Describe general inspection requirements for aircraft instruments.
.....	Explain the purpose of calibration, leak checks, and functional checks.
.....	Identify common failure signatures and troubleshooting indicators.
.....	Describe documentation and regulatory requirements for instrument maintenance.
.....	Software, Firmware & Configuration Awareness
.....	Explain how software and firmware version control affect avionics configuration, system compatibility, and maintenance accuracy.
.....	Identify the concepts of effectivity and configuration management.
.....	Describe how built-in test equipment (BITE) and self-test functions support aircraft indication and system health monitoring.

[7] Subject NEW. Aircraft Instrumentation Fundamentals	
.....	Instrument Range Markings
.....	Explain the regulatory basis and purpose of instrument range markings.
.....	Identify instrument color-coding conventions, their regulatory basis, and their operational meaning.
.....	Describe inspection requirements for verifying correct range markings.
Risk Management	<i>The applicant demonstrates the ability to identify, assess, and mitigate risks associated with:</i>
.....	Misinterpreting instrument indications or limitations.
.....	Improper handling of sensitive instruments.
.....	Incorrect interpretation of sensing mechanisms or power source issues.
.....	Environmental or contamination related instrument degradation.
.....	Inaccurate or incomplete maintenance, calibration, or documentation.
.....	Software and firmware configuration errors.
Skills	<i>The applicant demonstrates the ability to:</i>
	No Skill elements are defined for this subject. All required competencies are demonstrated through system-specific Skill elements in other ACS areas.

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[8] Subject B. Aircraft Drawings	
Competency	<i>Interpret aircraft drawings and technical documentation by applying correct use of symbols, dimensions, effectivity, and revision information to support accurate maintenance, inspection, and conformity decisions.</i>
Knowledge	Knowledge Learning Objectives:
AM.I.B.K.1.	Explain the purpose and function of aircraft drawings in maintenance, inspection, and conformity determination.
.....	Describe the care, use, and limitations of drawings, drafting tools, and digital viewing systems.
.....	Describe types of aircraft drawings and their typical uses.
.....	Interpret drawing standards, notes, revisions, zones, and bill of materials information used in aircraft documentation.
.....	Explain common methods of illustration used in aircraft drawings.
.....	Interpret line types used in aircraft drawings.
.....	Interpret symbols used in aircraft drawings, schematics, and system diagrams.
.....	Interpret dimensions, tolerances, scales, and graphical data presented in aircraft drawings, graphs, and charts.
AM.I.B.K.2.	Explain how drawings, blueprints, schematics, STCs, and approved data are used to verify conformity to type design.
AM.I.B.K.3.	Explain how drawings and schematics support inspection of aircraft systems and components.
.....	Determine the applicability and current revision status of drawings for a specific aircraft model and serial number.
Risk Management	The applicant demonstrates the ability to identify, assess, and mitigate risks associated with:
AM.I.B.R.1.	Incorrect interpretation of dimensional tolerances or scale information.
AM.I.B.R.2.	Incorrect interpretation of repair- or alteration-specification requirements.
AM.I.B.R.3.	Use of drawings or schematics that are not applicable to the aircraft model or serial number.
AM.I.B.R.4.	Use of outdated, superseded, or improperly revised drawings.
.....	Incorrect interpretation of symbols, line types, or illustration methods.
Skills	The applicant demonstrates the ability to:
	<i>No Skill elements are defined for this subject. All required competencies are demonstrated through system-specific Skill elements in other ACS areas.</i>

[9] Subject C. Weight and Balance	
Competency	<i>Apply weight and balance principles by determining aircraft weight, center of gravity, and required corrections using approved data, safe practices, and regulatory standards to ensure stability, controllability, and structural integrity.</i>
Knowledge	Knowledge Learning Objectives:
AM.I.C.K.1.	Define standard weight and balance terminology.
AM.I.C.K.2.	Describe the purpose of weight and balance and factors that influence it.
AM.I.C.K.3.	Perform aircraft weighing procedures using approved methods and safety practices.
AM.I.C.K.4.	Calculate arms, moments, moment indexes, and CG.
AM.I.C.K.5.	Interpret weight and CG limits for allowable loading conditions.
AM.I.C.K.6.	Explain the significance of CG in aircraft stability, controllability, and performance.
AM.I.C.K.7.	Compute forward and aft CG positions for adverse loaded conditions.
AM.I.C.K.8.	Determine empty weight and Empty Weight Center of Gravity (EWCG) configuration.
AM.I.C.K.9.	Calculate required ballast to bring CG within limits.
AM.I.C.K.10.	Perform aircraft lifting (jacking) procedures using proper equipment and safety practices.
Risk Management	The applicant demonstrates the ability to identify, assess, and mitigate risks associated with:
AM.I.C.R.1.	Improper aircraft lifting or jacking practices.
AM.I.C.R.2.	Unsafe aircraft weighing procedures.
AM.I.C.R.3.	Improper scale setup, use, or calibration.
AM.I.C.R.4.	CG out of limits aerodynamic and handling effects.
AM.I.C.R.5.	Excess-weight aerodynamic and structural effects.
Skills	The applicant demonstrates the ability to:
AM.I.C.S.1.	Perform aircraft weighing procedures using manufacturer instructions.
AM.I.C.S.3.	Calculate the required ballast and placement to bring the aircraft's CG within limits.
AM.I.C.S.5.	Perform weight and balance calculations for a given aircraft, including empty weight, CG, and changes after equipment installation or removal.
AM.I.C.S.17.	Complete a maintenance record entry documenting a weight and balance change.

[10] Subject F. Safety, Ground Operations and Servicing	
Competencies	<p><i>Demonstrates safe behavior in shop, hangar, and flight line environments by recognizing hazards, maintaining situational awareness, and applying required protective measures to prevent injury, damage, or procedural non-compliance.</i></p> <p><i>Demonstrates safe and compliant aircraft ground operations by coordinating movement, equipment, and personnel while applying standard procedures to prevent hazards and ensure operational integrity.</i></p> <p><i>Demonstrates safe and accurate aircraft servicing by applying correct procedures, verifying conditions, and managing hazards to ensure proper fuel, fluid, oxygen, power, and material handling operations.</i></p>
Knowledge	Knowledge Learning Objectives:
.....	Safety
.....	Explain safety practices and procedures applicable to shop, hangar, and flight line environments.
.....	Describe procedural non-compliance (Failure to Fall Procedures) and its impact on operational safety and regulatory compliance.
AM.I.F.K.6.	Explain fire safety concepts, including fire classifications and the selection, use, and inspection of fire extinguishers used in aviation environments.
AM.I.F.K.15.	Describe hazardous materials, Safety Data Sheets (SDS), and Personal Protective Equipment (PPE) requirements.
AM.I.F.K.16.	Explain foreign object damage (FOD) and foreign object debris (FOD), including definitions, impacts, common sources, and prevention practices.
.....	Explain lockout/tagout procedures used to isolate hazardous energy sources during ground operations or maintenance.
.....	Ground Operations
AM.I.F.K.1.	Apply aircraft towing concepts, including towing equipment, team coordination, and standard/emergency procedures.
AM.I.F.K.2.	Apply aircraft securing procedures, including tiedown, chocking, and post-shutdown securing practices.
.....	Explain standard aircraft hand signals for day and night operations.
AM.I.F.K.4.	Explain airport operating area safety, including hazards associated with operating engines.
.....	Apply safety precautions and positioning concepts for ground support equipment (GSE).
AM.I.F.K.5.	Explain engine starting concepts for reciprocating, turboprop, turboprop engines, and APUs, including checklist usage and recognition of abnormal starts.
.....	Describe emergency exit and egress systems, including basic operations and precautions.
.....	Servicing
AM.I.F.K.3.	Explain aircraft fueling and defueling procedures, including damage protection and personal and environmental safety.
AM.I.F.K.9.	Describe aviation gasoline (AVGAS) and jet fuels, including types, physical characteristics, and identification methods.

[10] Subject F. Safety, Ground Operations and Servicing	
AM.I.F.K.11.	Explain fuel selection requirements and contamination inspection practices.
.....	Apply fuel contamination identification concepts during inspection.
AM.I.F.K.10.	Explain fuel additives, including types, purpose, application, and impact on fuel system performance.
AM.I.F.K.7.	Explain fluid checking and servicing requirements for oil, hydraulic, and pneumatic systems, including contamination prevention and safety.
AM.I.F.K.13.	Describe material-handling practices for aircraft maintenance chemicals and consumables, including management, transportation, storage, and use.
AM.I.F.K.14.	Explain parts protection practices to prevent damage, contamination, or undue stress during maintenance and servicing.
.....	Describe aircraft shoring procedures used to support structures during repairs, modifications, or load redistribution.
Risk Management	The applicant demonstrates the ability to identify, assess, and mitigate risks associated with:
	Safety
.....	Foreign object debris (FOD) hazards and loss of situational awareness.
.....	Improper or incomplete lockout/tagout of hazardous energy sources.
	Ground Operations
AM.I.F.R.2.	Aircraft-towing hazards from improper preparation, communication, or equipment use.
AM.I.F.R.6.	Engine-starting hazards from checklist noncompliance, improper aircraft positioning, abnormal engine indications, or fire-ignition conditions.
AM.I.F.R.10.	Ground-movement hazards involving personnel-clearance zones, operating engines, GSE positioning, or procedural noncompliance.
	Servicing
AM.I.F.R.2.	Incorrect connection or operation of external power equipment.
AM.I.F.R.3.	Fueling and defueling hazards, including improper grounding or equipment use, misfuelling, or servicing with contaminated fuel.
.....	Incorrect or unsafe aircraft shoring practices.
Skills	The applicant demonstrates the ability to:
	Ground Operations
AM.I.F.S.3.	Prepare an aircraft for towing.
AM.I.F.S.4.	Direct aircraft movement using appropriate hand signals.
AM.I.F.S.11.	Tie-down an aircraft.
	Servicing
AM.I.F.S.2.	Connect external power to a given aircraft.
AM.I.F.S.5.	Inspect an aircraft fuel system for water or foreign object debris (FOD) contamination.
AM.I.F.S.7.	Select an approved fuel for a given aircraft.
AM.I.F.S.8.	Prepare an aircraft for fueling.
AM.I.F.S.9.	Follow a checklist to start up or shut down an aircraft reciprocating or turbine engine or auxiliary power unit (APU).

[11] Subject G. Cleaning and Corrosion Control	
Competencies	<p><i>Perform safe and effective aircraft cleaning by selecting appropriate materials, applying correct procedures, and managing chemical and environmental hazards.</i></p> <p><i>Demonstrates the ability to identify, assess, and treat aircraft corrosion by applying correct inspection, removal, and protection practices to maintain structural integrity and prevent deterioration.</i></p>
Knowledge	Knowledge Learning Objectives:
.....	Aircraft Cleaning
AM.I.G.K.1.	Explain aircraft cleaning methods and their applications.
AM.I.G.K.11.	Describe aircraft cleaners, including identification, selection, application techniques, and safety practices.
.....	Corrosion and Corrosion Control
AM.I.G.K.2.	Explain corrosion theories and causes.
AM.I.G.K.3.	Describe corrosion types and forms.
AM.I.G.K.4.	Identify corrosion prone areas in aircraft.
AM.I.G.K.5.	Explain corrosion preventive maintenance practices.
AM.I.G.K.6.	Describe corrosion inspection methods and tools, with emphasis on corrosion prone areas.
AM.I.G.K.7.	Explain corrosion removal and treatment procedures.
AM.I.G.K.8.	Describe corrosion preventive compounds, including selection, application techniques, and safety practices.
AM.I.G.K.14.	Explain protective materials such as conversion coatings, primers, and topcoats, including their use, application procedures, and safety precautions.
Risk Management	The applicant demonstrates the ability to identify, assess, and mitigate risks associated with:
AM.I.G.R.1.	Health hazards from exposure to cleaning agents, solvents, paints, finishing materials, or related processes.
AM.I.G.R.2.	Improper or inadequate ventilation during cleaning, corrosion removal, or coating application.
AM.I.G.R.3.	Misidentification or incorrect selection of materials, cleaners, or corrosion-prevention compounds.
AM.I.G.R.4.	Failure to follow Safety Data Sheet (SDS) instructions, including improper use of Personal Protective Equipment (PPE).
AM.I.G.R.5.	Fire-ignition hazards when working with flammable chemicals during cleaning or corrosion-control operations.
AM.I.G.R.6.	Improper disposal of chemicals, waste materials, or contaminated rags.
Skills	The applicant demonstrates the ability to:
.....	Aircraft Cleaning
	Apply aircraft cleaning materials in accordance with manufacturer data.
	Interpret Safety Data Sheet (SDS) information to identify hazards associated with aircraft cleaning and finishing materials.
	Corrosion and Corrosion Control
AM.I.G.S.2.	Apply corrosion prevention compounds in accordance with manufacturer data.

AM.I.G.S.5.	Inspect an aircraft compartment for corrosion.
AM.I.G.S.13.	Apply etch solution and conversion coating.

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[12] Subject L. Human Factors	
Competencies	<i>Recognize, mitigate, and manage human factors that influence aviation maintenance performance, using established models, procedures, and safety practices to prevent errors and ensure airworthiness.</i>
Knowledge	Knowledge Learning Objectives:
.....	Introduction to Human Factors
.....	Describe the role of human factors in aviation maintenance and its impact on safety and airworthiness.
.....	Identify common maintenance-related human errors and their consequences, using real incident and accident examples.
.....	Explain why human factors training is required by regulators and industry, and how it supports workforce readiness.
.....	Safety Culture & Organizational Factors
AM.I.L.K.1.	Describe characteristics of a positive safety culture and “just culture” in an aviation maintenance organization.
.....	Explain how organizational pressures, production goals, and labor-management relations influence maintenance performance and safety outcomes.
.....	Describe how informal norms and “the way we do things here” can either support or undermine safety.
.....	Explain how leadership, supervision, and management behaviors shape organizational attitudes toward safety and error reporting.
.....	Human Error
.....	Differentiate between slips, lapses, mistakes, and violations in maintenance tasks.
.....	Explain active vs. latent failures using models such as PEAR, SHEL, and Reason’s Swiss Cheese.
AM.I.L.K.10.	Identify error provoking conditions and common maintenance error pathways in aviation maintenance.
.....	Describe the purpose and principles of error investigation tools (e.g., MEDA) and how they support organizational learning.
.....	Define human reliability in the maintenance context and explain why systems must be designed with human fallibility in mind.
.....	Human Performance & Limitations
.....	Describe how human sensory, cognitive, and physical limitations (vision, hearing, perception, attention, memory) affect maintenance tasks
.....	Explain how circadian rhythm, fatigue, and shift work influence alertness, judgment, and error likelihood.
.....	Identify signs and effects of stress on performance, including physical, psychological, and physiological stressors.
.....	Explain how workload management (task prioritization, pacing, and breaks) affects performance and error risk.
.....	Describe how motivation, fitness/health, nutrition, and physical conditioning influence maintenance performance.
.....	Explain the impact of alcohol, medications, and drugs on human performance and regulatory fitness for duty.

[12] Subject L. Human Factors	
.....	Describe how repetitive tasks and familiarity can lead to complacency and reduced vigilance.
.....	Describe how confined spaces, awkward postures, and physically demanding work affect performance and safety.
.....	Environment
.....	Identify environmental stressors such as noise, fumes, poor illumination, extreme temperatures, motion, and vibration, and describe their effects on performance.
.....	Explain how time pressure, deadlines, and workload demand influence decision making and risk taking in maintenance tasks.
.....	Describe how shift work patterns and lack of manpower affect fatigue, stress, and maintenance quality
.....	Explain how working on complex systems and in hazardous work areas (e.g., heights, confined spaces, energized systems) influences task planning and error potential.
.....	Identify common sources of distractions and interruptions in the maintenance environment and describe strategies to manage or recover from them.
.....	Procedures, Information, Tools, and Practices
.....	Describe the importance of accurate logging and recording of work, including clear documentation of completed and outstanding tasks.
.....	Explain how mismatches between written procedures and actual practice (including unsafe norms and shortcuts) can contribute to maintenance errors.
.....	Describe how the accessibility, clarity, and accuracy of technical documentation (e.g., manuals, job cards, IPCs) influence maintenance performance.
.....	Explain the concept of critical maintenance tasks and describe common error capturing methods (e.g., independent inspections, duplicate inspections, FOD checks, tool control).
.....	Describe how maintenance tasks, procedures, and environments can be designed or adapted to make correct actions easier and incorrect actions harder.
.....	Communication
.....	Describe effective communication practices during shift turnover, including the transfer of work status, open discrepancies, and critical cautions.
.....	Explain the importance of clear, complete, and timely dissemination of maintenance information among technicians, supervisors, and flight crews.
.....	Identify barriers to communication, including language differences, cultural expectations, authority gradients, and interpersonal conflict, and describe strategies to overcome them.
.....	Teamwork
.....	Describe roles and responsibilities of individuals within a maintenance team, including technicians, inspectors, and supervisors.

[12] Subject L. Human Factors	
.....	Explain how leadership and supervision styles (e.g., authoritarian, participatory) affect team performance, communication, and safety.
.....	Describe how teams make decisions in maintenance operations and identify behaviors that support effective decision making (e.g., speaking up, crosschecking, seeking help).
.....	Identify behaviors that support coordination, mutual monitoring, and backup within a maintenance team.
.....	Professionalism & Integrity
.....	Explain the importance of maintaining currency and adhering to approved procedures.
.....	Identify behaviors that provoke errors, including shortcuts, complacency, and normalization of deviance.
.....	Describe assertive communication techniques for identifying unsafe conditions.
.....	Safety Reporting and Error Management Systems
.....	Describe the purpose and typical components of an organizational human factors or safety program (e.g., HF training, SMS, reporting systems, investigation processes).
.....	Explain the role of voluntary and mandatory reporting systems in identifying and managing human factors issues in maintenance.
.....	Describe the difference between a just culture approach and a purely punitive disciplinary policy, and how each affects reporting and safety.
AM.I.L.K.3.	Explain how error investigations are used to identify contributing factors and implement corrective actions in maintenance operations.
.....	Describe how feedback from reports and investigations is communicated back to technicians and used to improve procedures, training, and resources.
Risk Management	<i>The applicant demonstrates the ability to identify, assess, and mitigate risks associated with:</i>
.....	Failure to recognize human limitations.
.....	Failure to identify error provoking conditions.
.....	Inadequate communication or coordination.
.....	Normalization of deviance and unsafe norms.
.....	Underreporting or ineffective error management.
Skills	<i>The applicant demonstrates the ability to:</i>
	No Skill elements are defined for this subject. All required competencies are demonstrated through system-specific Skill elements in other ACS areas.

[13] Subject I. Regulations, Maintenance Forms, Records, and Publications	
Competency	<p>Demonstrates the ability to interpret and apply aviation maintenance regulations by identifying applicable requirements, determining compliance obligations, and using regulatory resources to support safe and lawful maintenance actions.</p> <p>Demonstrates the ability to exercise mechanic privileges responsibly by applying regulatory limitations, maintaining required currency, and upholding ethical and professional standards in all maintenance activities.</p> <p>Demonstrates the ability to ensure regulatory and procedural compliance by applying required methods, intervals, and data sources to support accurate, lawful, and airworthy maintenance outcomes.</p> <p>Demonstrates the ability to create, interpret, and manage maintenance documentation by completing required forms, preparing accurate record entries, and applying regulatory requirements for return to service, discrepancies, and deferred maintenance.</p> <p>Demonstrates the ability to locate, interpret, and apply regulatory and manufacturer publications by selecting correct data sources, determining applicability, and using approved or acceptable data to support maintenance decisions.</p> <p>Demonstrates the ability to navigate and interpret maintenance manuals and technical publications by applying effectivity, warnings, cautions, and task structures to perform maintenance in accordance with required instructions.</p> <p>Demonstrates the ability to determine component and document effectivity by interpreting configuration data, usable on codes, and serial number applicability to ensure correct parts and procedures are used.</p> <p>Demonstrates the ability to interpret and apply maintenance program requirements by identifying mandatory instructions, airworthiness limitations, and special program elements that support continued airworthiness.</p>
Knowledge	Knowledge Learning Objectives:
	Regulations
AM.I.I.K.6.	Define maintenance terminology in 14 CFR Part 1, including classification of repairs and alterations as major or minor.
AM.I.I.K.8.	Describe the Title 14 CFR regulatory framework applicable to aviation maintenance, including authority, applicability, privileges and limitations, performance rules, records, configuration control, and continued airworthiness obligations.
.....	Explain principles of regulatory compliance and the consequences of enforcement actions.

[13] Subject I. Regulations, Maintenance Forms, Records, and Publications	
.....	Describe the functions of FAA online systems used for airmen certification and administrative tasks.
AM.I.I.K.23.	Explain the process and procedures for submitting a mechanic's address change.
.....	Identify the purpose and use of Dynamic Regulatory System (DRS) and Public ADS-B Performance report (PAPR) as regulatory data sources supporting navigation related topics.
	Mechanic Privileges, Limitations, and Professionalism
AM.I.I.K.1.	Describe the privileges and limitations of a mechanic certificate.
AM.I.I.K.2.	Explain recent experience requirements and outline the process for reestablishing currency once lost.
.....	Define ethical conduct as it applies to aviation maintenance, referencing FAA and federal standards.
.....	Explain the regulatory consequences of falsification, improper documentation, or performing work beyond one's qualifications.
.....	Explain the AMT's professional responsibility to ensure airworthiness, even under operational pressure.
	Compliance
.....	Define the concept of regulatory compliance as it applies to maintenance, including the relationship between regulations, manufacturer instructions, approved data, and operator responsibilities.
AM.I.I.K.13.	Explain compliance requirements for manufacturer specified methods, techniques, and practices.
AM.I.I.K.14.	Explain compliance requirements for manufacturer-specified maintenance and inspection intervals.
.....	Differentiate between required, recommended, and operator adopted intervals and methods.
.....	Describe the mechanic's role in ensuring compliance before approving an aircraft for return to service.
	Maintenance Forms and Records
AM.I.I.K.5.	Identify the purpose and use of FAA forms (e.g., 337, 8010-4, 8100-2, 8130-3).
AM.I.I.K.3.	Explain the required content of maintenance and inspection record entries used to approve an aircraft or component for return to service under 14 CFR §§ 43.9 and 43.11
.....	Explain the required maintenance-record entries when an aircraft or component fails an inspection under 14 CFR §43.11, including the statement of unairworthiness and documentation of discrepancies.
.....	Describe regulatory requirements and limitations for operating with inoperative equipment under 14 CFR §91.213, including required record entries, deactivation, placarding, and conditions under which discrepancies may be deferred.
AM.I.I.K.7.	Describe criteria and responsibilities for determining whether a repair or alteration is major or minor.
AM.I.I.K.19.	Explain regulatory requirements for inoperative equipment.

[13] Subject I. Regulations, Maintenance Forms, Records, and Publications	
AM.I.I.K.20.	Describe regulatory requirements for documenting discrepancies in maintenance and inspection records under 14 CFR §§ 43.9 and 43.11, including required inoperative-equipment placards under 14 CFR § 91.213.
.....	Identify whether an aircraft is subject to a 100-hour inspection and list required record entries, return to service language, authority, and revision.
	Publications and Data Sources
AM.I.I.K.9.	Identify agency publications and guidance materials, including aircraft specifications, TCDSs, ACs, and ADs, and the Master Minimum Equipment List (M MEL).
	Explain the purpose, structure, and applicability of Airworthiness Directives (ADs), including how to determine compliance requirements and document AD compliance in maintenance records.
AM.I.I.K.10.	Explain the purpose and process of obtaining an Alternative Method of Compliance (AMOC) for an AD.
.....	Summarize the purpose and regulatory impact of SFAR 88, including how it resulted in fuel tank system safety assessments, mandatory maintenance instructions, and the creation of Critical Design Configuration Control Limitations (CDCCLs).
.....	Describe the purpose of Critical Design Configuration Control Limitations (CDCCLs) and explain how they function as mandatory configuration control requirements within the Airworthiness Limitations Section (ALS).
AM.I.I.K.11.	Describe manufacturer publications, including AMMs, service bulletins, and maintenance alerts.
AM.I.I.K.15.	Explain FAA acceptable maintenance data, including maintenance manuals and other methods, techniques, and practices acceptable to the Administrator.
AM.I.I.K.16.	Differentiate between approved data and acceptable data and identify when each is required.
	Determine applicability of approved data for a major repair and alteration.
AM.I.I.K.12.	Identify FAA databases and resources, including TCDSs and STCs.
.....	Describe the purpose and structure of Technical Standard Orders (TSOs), including how TSO authorization relates to part eligibility and installation approval.
.....	Identify required markings for TSO and PMA articles and explain how these markings, together with the applicable approval data, support configuration control, part eligibility, and conformity.
	Maintenance Documentation and Interpretation
AM.I.I.K.18.	Explain the purpose of safety critical statements—warnings, cautions, and notes—in maintenance and operating manuals, and how they guide proper maintenance actions and prevent personal injury or equipment damage.
.....	Describe ATA iSpec 2200 (formerly ATA Spec 100) with emphasis on ATA chapter numbering.

[13] Subject I. Regulations, Maintenance Forms, Records, and Publications	
.....	Navigate, interpret, and use maintenance manuals (AMM, CMM, FIM, SRM) to select the correct task, apply effectivity, and perform maintenance in compliance with manufacturer instructions.
.....	Navigate electronic maintenance manuals—search functions, hyperlinks, effectivity filters, and task structures—to select and use the correct maintenance procedures.
	Effectivity and Configuration Control
AM.I.I.K.21.	Define effectivity and interpret “usable on” codes in parts manuals.
AM.I.I.K.22.	Identify documents used to establish serial number effectivity of an item.
	Maintenance Programs and Continued Airworthiness Concepts
.....	Explain the purpose and regulatory basis of Airworthiness Limitations (AWLs) contained in the Airworthiness Limitations Section of the Instructions for Continued Airworthiness (ICA).
.....	Describe the purpose and structure of the Instructions for Continued Airworthiness (ICA) and their role in defining mandatory maintenance requirements.
.....	Describe how reliability-based maintenance concepts support continued airworthiness.
.....	Describe how corrosion-related inspection and maintenance requirements are incorporated into maintenance programs and how they support structural integrity and continued airworthiness.
.....	Describe how different types of maintenance programs support continued airworthiness across various operating environments.
Risk Management	<i>The applicant demonstrates the ability to identify, assess, and mitigate risks associated with:</i>
AM.I.I.R.1.	Incomplete or inaccurate documentation.
AM.I.I.R.2.	Misinterpreting or failing to use the System Description Section (SDS) or other foundational sections of a maintenance manual.
AM.I.I.R.3.	Complacency during documentation, including assumptions, shortcuts, or failure to verify data.
AM.I.I.R.4.	Failure to follow published warnings, cautions, or notes in maintenance publications, operational manuals, or other required documentation.
AM.I.I.R.5.	Incorrect determination of component effectivity for a given aircraft or configuration.
AM.II.D.R.4.	Improper selection or use of checklists and maintenance publications, including outdated or incorrect versions.
AM.II.D.R.5.	Inadequate or incomplete maintenance record documentation, including missing required entries or improper return to service statements.
Skills	<i>The applicant demonstrates the ability to:</i>
AM.I.I.S.6.	Locate applicable FAA aircraft specifications and Type Certificate Data Sheets (TCDS) for a given aircraft, engine/APU, or propeller.
AM.I.I.S.11.	Locate supplemental type certificate(s) (STC) applicable to a given aircraft.
AM.I.I.S.1.	Complete an FAA Form 337 for a given major repair or alteration.
AM.I.I.S.4.	Complete a maintenance record entry documenting compliance with a recurring airworthiness directive (AD) for a given airframe, engine, appliance, or propeller.

[13] Subject I. Regulations, Maintenance Forms, Records, and Publications	
AM.I.I.S.7.	Complete an aircraft maintenance record entry for return to service.
AM.I.I.S.8.	Determine the applicability of an Airworthiness Directive (AD) for a given aircraft.
AM.I.I.S.3.	Determine the inspection status of a given aircraft using its maintenance records.
AM.I.I.S.10.	Use a manufacturer's illustrated parts catalog (IPC) to identify a replacement part for a given aircraft.
AM.II.D.S.3.	Enter the results of a 100-hour inspection in a maintenance record.

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[14] Subject K. Inspection and Troubleshooting Concepts and Techniques	
Competencies	<p><i>Demonstrates the ability to interpret and apply inspection requirements by identifying applicable regulations, selecting required publications, evaluating inspection triggers, and determining airworthiness status to support continued airworthiness.</i></p> <p><i>Demonstrates the ability to evaluate inspection findings by selecting appropriate inspection methods, interpreting indications, documenting discrepancies, and determining when escalation, NDT, or engineering review is required.</i></p> <p><i>Demonstrates the ability to apply systematic troubleshooting principles by isolating faults, interpreting technical data, verifying discrepancies, and confirming corrective action while managing human factor influences.</i></p>
Knowledge	Knowledge Learning Objectives:
.....	Inspection Concepts
.....	Explain the purpose and benefits of aircraft inspections, including their role in continued airworthiness, reliability, and early defect detection.
AM.II.D.K.8.	Identify and interpret CFRs applicable to inspection and airworthiness, including Parts 43, 65, 91, 121, 135, and 145.
AM.II.D.K.1.	Describe annual, 100-hour, and progressive inspections under 14 CFR Part 91, including their purpose, structure, and scope.
.....	Explain how inspection programs are organized and how they support continued airworthiness, including the relationship between scheduled inspections, unscheduled inspections, and operator maintenance programs.
AM.II.D.K.4.	Identify life-limited parts and their replacement intervals, including where limits are published and how status is tracked, in accordance with applicable requirements of 14 CFR §§ 21.24, 43.16, 91.403, and 91.417.
AM.II.D.K.5.	Explain the purpose and triggers for special inspections, including hard landings, lightning strikes, turbulence encounters, fire, flood, contamination, and other abnormal events.
.....	Identify publications and data sources required to plan and perform inspections, including AMMs, IPCs, SRMs, wiring diagrams, service information, and manufacturer instructions.
.....	Describe the regulatory requirements for returning an aircraft to service following an inspection.
.....	Inspection Techniques
AM.I.K.K.3.	Describe nondestructive testing (NDT) methods, including visual, penetrant, magnetic particle, eddy current, ultrasonic, radiographic, thermographic, and acoustic techniques.
.....	Explain the advantages, limitations, and appropriate applications of each NDT method.
.....	Describe personnel qualification requirements for NDT, including the purpose and structure of ATA Spec 105.
AM.I.K.K.5.	Identify inspection specific tools and equipment—such as mirrors, borescopes, flashlights, magnifiers, torque tools, and measuring

[14] Subject K. Inspection and Troubleshooting Concepts and Techniques	
	devices—and explain how they support access, defect detection, and evaluation during inspections.
.....	Explain the purpose and process of damage mapping, including documentation conventions and use of manufacturer limits.
.....	Describe tasks that require special inspection or independent verification, including their purpose, safety significance, documentation requirements, and separation-of-functions principles.
.....	Interpret failed inspection entries and deferred discrepancies to determine their impact on airworthiness, inspection requirements, and required corrective or follow-on actions.
.....	Explain critical thinking approaches used in inspection, including tracing symptoms to root causes and determining when additional investigation or NDT is required.
.....	Describe the role of inspection techniques within system specific inspections, including when enhanced methods or disassembly are required.
.....	Troubleshooting Concepts & Techniques
.....	Explain the purpose and principles of systematic troubleshooting, including fault isolation, hypothesis testing, and confirmation of corrective action.
.....	Differentiate between symptoms and root causes and describe how incorrect assumptions can lead to unnecessary maintenance or maintenance-induced failures.
.....	Describe paths of influence within aircraft systems, including how failures in one system can manifest as symptoms in another.
.....	Explain the use of manufacturer troubleshooting resources, including AMM troubleshooting tables, wiring diagrams, schematics, logic trees, and flowcharts.
.....	Explain how aircraft effectivity, configuration changes, and maintenance history awareness support troubleshooting decisions.
.....	Explain the importance of verifying reported discrepancies, including replication of symptoms and environmental or operational factors that influence fault behavior.
.....	Describe common diagnostic tools and techniques, including multimeters, pressure gauges, borescopes, test equipment, and built-in test functions.
.....	Explain human factors that affect troubleshooting, including confirmation bias, time pressure, and assumptions based on prior experience.
.....	Describe methods for confirming corrective action, including operational checks, functional tests, and post maintenance inspections.
.....	Explain how troubleshooting integrates with inspection findings, including when discrepancies require deeper investigation, specialized inspection methods, or technical guidance beyond the mechanic’s authority or available data.

[14] Subject K. Inspection and Troubleshooting Concepts and Techniques	
Risk Management	The applicant demonstrates the ability to identify, assess, and mitigate risks associated with:
	Inspection Concepts
.....	Incomplete, rushed, or improperly documented inspections. that allow latent defects or airworthiness discrepancies to persist.
.....	Using outdated, incorrect, or unapproved technical data.
.....	Failure to recognize conditions requiring special inspections.
.....	Inadequate review of aircraft records, including missed life limited part status, overdue inspections, or incomplete AD compliance.
	Inspection Techniques
AM.I.K.R.4.	Improper selection or application of inspection methods or tools, including misinterpretation of indications or failure to detect critical defects.
.....	Failure to recognize when a discrepancy requires additional evaluation, specialized inspection, or higher-level technical guidance.
.....	Inadequate documentation of discrepancies, including incomplete damage mapping or unclear inspection notes.
.....	Incorrect interpretation of inspection requirements for tasks designated as critical or requiring independent verification under the applicable maintenance program.
.....	Troubleshooting Concepts & Techniques
.....	Incorrect fault isolation, including replacing serviceable components, overlooking root causes, or creating maintenance induced failures.
.....	Misinterpretation of symptoms, including assuming a single cause for multi-system interactions or failing to consider environmental or operational variables.
.....	Incorrect use or interpretation of troubleshooting data, including wiring diagrams, schematics, or AMM troubleshooting procedures.
.....	Failure to verify corrective action.
Skills	The applicant demonstrates the ability to:
	No Skill elements are defined for this subject. All required competencies are demonstrated through system-specific Skill elements in other ACS areas.