



**NIDA CORPORATION  
COMPUTER ASSISTED INSTRUCTION**

**LESSON AND OBJECTIVE LISTING**

**Master Course Listing  
Aviation**

**2019-03-25**

Representative



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**OBJECTIVE LISTING - Master Course Listing**

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## OBJECTIVE LISTING - Master Course Listing

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CARDS/KITS

### **MOD 51 - INTRODUCTION TO AVIATION MAINTENANCE TECHNOLOGY**

- 7121-114-190 Introduction to Aviation Technology ..... ---
- Identify the types of careers that support the aviation industry.
  - Describe a brief history of aviation maintenance.
  - Describe the certification process of the Aviation Maintenance Technician.
  - Describe the certification process of the Avionics Technician.
- 7121-114-250 General Aircraft Principles ..... ---
- Describe the major sections of a typical aircraft.
  - Define and describe the physics principles that affect thrust, drag, lift, and gravity.
  - Define and describe the three axes of flight.
  - Define and describe the primary flight controls of an aircraft.
  - Define and describe the secondary flight controls of an aircraft.
  - Define and describe the auxiliary flight controls of an aircraft.
- 7121-114-310 Aircraft Structures ..... ---
- Describe the types of materials used in aircraft construction.
  - Describe the advantages and disadvantages of using metals in aircraft construction.
  - Describe the advantages and disadvantages of using composites in aircraft construction.
  - Describe fuselage shapes and construction, and their effect on aircraft flight.
  - Describe wing shapes and construction, and their effect on aircraft flight.
  - Describe tail shapes and construction, and their effect on aircraft flight.
- 7121-114-370 Aircraft Power Plants ..... ---
- Describe the principles and operation of internal combustion engines.
  - Describe the principles and operation of jet propulsion engines.
  - Understand the fundamentals of propellers.
- 7121-114-490 FOE (Foreign Object Elimination) ..... ---
- Define terminology and acronyms associated with FOD.
  - Identify the types of FOD.
  - Describe the potential damage or harm to aircraft and humans by foreign objects found in the aviation community.
  - Identify good housekeeping practices to reduce and eliminate FOD.
  - Define control methods for eliminating FOD in the hangar and ramp areas.
  - Describe the methods of protecting parts from FOD.
  - Define the components of an FOE (Foreign Object Elimination) program.
  - Describe the process followed when tools or material are missing during aircraft maintenance.
  - Detail a brief history of Nida Corporation.
  - Describe the various aviation technical training programs that Nida offers.
- 7121-114-920 Introduction to Aviation Maintenance Technology Post-Test (Theory) ..... ---

### **MOD 52 - AIRCRAFT PUBLICATIONS**

- 7121-126-130 Aircraft Regulatory Publications ..... FAR/AMT, Book
- Identify the FAR Parts that apply to the Airframe and Power Plant Technician.
  - Identify the FAR Part titles that apply to the Airframe and Power Plant Technician.
  - Define selected Part 1 abbreviations.
  - Describe the purpose of FAA Regulatory Publications.
  - Identify the correct publication to locate aircraft maintenance requirements.

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### **MOD 52 - AIRCRAFT PUBLICATIONS (cont.)**

- 7121-126-190 Aircraft Drawings . . . . . ---
- Identify types of aircraft drawings.
  - Understand symbols, markings, and lines on aircraft drawings.
  - Describe the ways information is presented in an aircraft drawing.
  - Prepare drawing in accordance with instructor provided specifications.
- 7121-126-250 Aircraft Technical Publications . . . . . ---
- Identify technical information using the Air Transport Association Specification 100 (ATA Spec 100) numbering system.
  - Describe the purpose and identify the information in the Aircraft Maintenance, Overhaul, Structural Repair, Service, and Component manuals.
  - Identify the purpose of Service Bulletins and describe their use.
  - Describe the purpose of the Illustrated Parts Catalog/Breakdown Manual.
  - Identify the layout, structure, and sections of the Illustrated Parts Catalog/Breakdown Manual.
  - Utilizing aircraft technical publications, identify the proper procedures for given tasks.
  - Utilizing an aircraft IPC/IPB, locate information on assemblies, subassemblies, and parts.
- 7121-126-920 Aircraft Publications Post-Test (Theory) . . . . . ---

### **MOD 53 - LINE MAINTENANCE**

- 7121-130-130 Flight Line Safety . . . . . ---
- Describe the personal protection required when working on an aircraft flight line.
  - Describe and identify flight line ground support equipment.
  - Demonstrate the procedures and safety precautions on an aircraft flight line.
  - Identify the danger zones associated with aircraft movement and operations.
- 7121-130-190 Flight Line Fire Protection . . . . . ---
- Define the elements of fire.
  - Understand fire classifications.
  - Identify the correct fire extinguishing agent for a given fire classification.
  - Identify and describe the fire-prone areas and fire fighting areas on an aircraft.
  - Describe the duties of an aircraft fireguard.
  - Understand how to use a portable fire extinguisher.
- 7121-130-250 Aircraft Ground Operations . . . . . ---
- Understand how aircraft ground operations are performed.
  - Explain the proper procedures for towing and taxiing an aircraft.
  - Identify the types of aircraft tie-down equipment.
  - Identify the proper tie-down method for various weather conditions.
  - Describe the procedures for de-icing an aircraft.
- 7121-130-920 Line Maintenance Post-Test (Theory) . . . . . ---

### **MOD 54 - AIRCRAFT WIRING**

- 7121-314-700 Aircraft Wires and Connectors . . . . . ---
- Identify the common types of wire and cable and their uses.
  - Identify each element of a wire identification number.
  - Describe the purpose of wire bundle lacing, spot tying, grommets, Adel clamps, and wrapping.
  - Identify the types and purpose of aircraft wiring splices, terminal lugs, and connectors.

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### **MOD 54 - AIRCRAFT WIRING (cont.)**

- 7121-314-700 Aircraft Wires and Connectors (cont.)
- Identify the types of tools utilized in maintaining aircraft wiring connections.
- 7121-314-730 Aircraft Wire Repair and Troubleshooting ..... 746, 747, 748
- Identify parts of a wire harness assembly.
  - Understand how a wire harness assembly is constructed using screw-on and twist and lock connectors.
  - Identify tools required to build a wire and connector harness assembly that has screw-on and twist and lock connectors.
  - Understand how wire and harness assembly tools are used.
  - Build and install a simple aircraft wiring system.
  - Analyze a simple aircraft wiring system.
  - Identify faults in a wire and connector assembly.
  - Repair a fault in a wire and connector assembly.
  - Modify the simple aircraft wiring system according to a sample FAA Airworthiness Directive and Manufacturer's Service Bulletin.
  - Remove the wiring and connectors from the Cockpit Wiring circuit card.
  - Disassemble the wiring harness on the Aircraft Wiring circuit card.
  - Remove the wire harness from the Bulkhead Harness circuit card.
  - Restore circuit card soldered wire connections, plugs, and jacks to reusable conditions.
- 7121-314-920 Aircraft Wiring Post-Test (Theory) ..... ---

### **MOD 55 - AIRCRAFT POWER**

- 7121-318-130 Introduction to Aircraft Systems Troubleshooting ..... 739, 740, 741, 742
- Describe the types of aircraft systems and their purpose.
  - Describe the steps in a typical troubleshooting process.
  - Use the basic troubleshooting process to identify probable faults in a generic operational circuit card system.
- 7121-318-190 Aircraft Batteries ..... ---
- Explain the theory of chemical batteries.
  - Identify types and construction of aircraft batteries.
  - Identify battery shop safety features and precautions when servicing various types of batteries.
  - Explain the process of servicing a lead-acid battery.
  - Explain the process of servicing a nickel-cadmium battery.
  - Service an aircraft battery in accordance with published procedures.
- 7121-318-250 Aircraft DC Generation Systems ..... 180, 734, 735, 736
- Identify the types of DC generation devices.
  - Describe the operation of a DC generator, DC alternator, turbine engine starter-generator, converter, and transformer rectifier.
  - Describe the purpose and operation of current limiters, DC regulators, reverse current relays (RCRs), generator control units (GCUs), and alternator control units (ACUs).
  - Identify common problems encountered in a DC generation system and their typical fixes.
  - Describe the operation of a twin-engine alternator system.
  - Describe the purpose and operation of alternator load balancing.
  - Balance an alternator paralleling system.

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### **MOD 55 - AIRCRAFT POWER (cont.)**

- 7121-318-310 Aircraft AC Generation Systems ..... ---
- Identify the types of AC generation devices.
  - Describe the operation of an AC generator/inverter.
  - Describe the operation of an AC generation system.
  - Identify common inspection and maintenance practices of an AC generation system.
  - Given AC generation fault scenarios, use a schematic to identify the probable cause.
- 7121-318-370 Basic Aircraft Power Distribution Systems ..... 734, 735
- Describe the operation of a basic power distribution system.
  - Identify the basic requirements for a power distribution system.
  - Identify the various components of basic power distribution systems.
  - Observe the operation of a basic power distribution system.
  - Observe faults in a basic power distribution system.
- 7121-318-430 Multi-Engine Aircraft Power Distribution Systems ..... 735, 736
- Describe the operation of a split-bus power distribution system.
  - Identify the components of a split-bus power distribution system.
  - Describe the operation of a parallel bus power distribution system.
  - Identify the components of a parallel bus power distribution system.
  - Observe the operation of a split-bus distribution system.
  - Identify faults in a basic split-bus distribution system.
- 7121-318-920 Aircraft Power Post-Test (Theory) ..... ---

### **MOD 56 - AIRCRAFT AIRFRAME SYSTEMS**

- 7121-514-190 Aircraft Lighting Systems ..... 749, 750, 751, 752
- Identify the types of light bulbs used on aircraft.
  - Given a list of light bulb characteristics, identify the correct bulb for a given condition.
  - Describe the configuration, purpose, and operation of typical aircraft interior and emergency lighting system circuits.
  - Describe exterior navigation lighting locations and configuration.
  - Identify typical exterior lighting used for landing, taxiing, and safety.
  - Observe and troubleshoot an incandescent lighting circuit.
  - Observe and troubleshoot a strobe lighting system.
  - Observe and troubleshoot malfunctions in interior lighting and emergency exit systems.
- 7121-514-250 Aircraft Ice and Rain Protection Systems ..... ---
- Describe the dangers of aircraft icing.
  - Describe the types and operation of aircraft ice detection systems.
  - Identify the components and function of the pitot-static ice protection system.
  - Identify the types and operation of aircraft anti-ice systems.
  - Identify the types and operation of aircraft de-icing systems.
  - Describe the types and purpose of the aircraft windshield wiper/washer systems.
  - Understand the operation of the aircraft windshield wiper/washer systems.
  - Understand maintenance precautions for the windshield wiper/washer systems.
- 7121-514-310 Environmental Control Systems ..... 731, 732, 733(E)
- Describe a typical pneumatic system.
  - Describe a typical air conditioning system.
  - Describe a typical pressure control system.
  - Observe the operation of a typical thermostat and trim valve in an air conditioning system.



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### **MOD 56 - AIRCRAFT AIRFRAME SYSTEMS (cont.)**

- 7121-514-310 Environmental Control Systems (cont.)
  - Isolate a fault in a typical thermostat and trim valve of an air conditioning system.
- 7121-514-370 Landing Gear Systems ..... 743, 744, 745
  - Identify the components associated with a landing gear shock strut assembly.
  - Describe the function of each landing gear component.
  - Describe the operation of the landing gear shock strut.
  - Describe the flow through the landing gear hydraulic system.
  - Describe the function of the landing gear electrical system.
  - Identify typical landing gear hydraulic and electrical malfunctions.
  - Observe the normal operation of a typical landing gear system.
  - Troubleshoot and isolate the cause of landing gear system faults.
- 7121-514-430 Aircraft Braking Systems ..... ---
  - Define the types of wheel assemblies.
  - Identify the key components of an aircraft wheel assembly.
  - Identify the parts of an aircraft tire and describe their purpose.
  - Describe the safety precautions associated with aircraft wheel assemblies.
  - Describe tire inspection and maintenance processes.
  - Define the distinguishing properties of expander tube, independent, power boost brake, and power control brake systems.
  - Identify the components of expander tube, independent, power boost brake, and power control brake systems.
  - Describe the safety precautions associated with brake systems.
  - Describe the brake system inspection and maintenance process.
  - Describe the purpose of the Anti-Skid System.
  - Given a list of anti-skid components, identify and describe the function of each component.
  - Given a schematic of a generic anti-skid system, describe the corrective action for various system malfunctions.
- 7121-514-490 Fire Warning and Extinguishing Systems ..... 738
  - Identify different types of fire warning systems.
  - Explain the basic operation of each type of system.
  - Describe the different types of fire extinguishing agents.
  - Explain the basic operation of the fire extinguishing system.
  - Identify a normal operating fire warning system.
  - Identify a faulty operating fire warning system.
- 7121-514-550 Aircraft Fuel Systems ..... ---
  - Describe the characteristics and properties of aviation fuels.
  - Identify the effects of fuel contamination.
  - Describe the gravity type fuel system.
  - Describe the pump type fuel system.
  - Describe the operational characteristics of the fuel system components.
  - Describe the operation of a carburetor.
  - Describe the operation of fuel injection.
- 7121-518-190 Aircraft Ignition Systems ..... ---
  - Identify the types of ignition systems.
  - Describe the principles of spark discharge and coil ignition systems.
  - Describe the types of magneto ignition systems.
  - Describe the principles of gas turbine ignition systems.

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### **MOD 56 - AIRCRAFT AIRFRAME SYSTEMS (cont.)**

7121-518-190 Aircraft Ignition Systems (cont.)

- Describe the principles of operation of ignition systems.
- State the advantages and disadvantages of high and low tension magneto systems.

### **MOD 57 - AIRCRAFT INSTRUMENT SYSTEMS**

7121-714-130 Introduction to Aircraft Instruments . . . . . ---

- Identify the classifications of aircraft instruments.
- Define and describe basic aircraft instruments.
- Describe the various operating principles of aircraft instruments.

7121-714-190 Tachometer, Torque, and Position-Indicating Systems . . . . . ---

- Recognize the operating principles and characteristics of the tachometer and position-indicating systems.
- Recognize the operating principles and characteristics of torque systems.
- Identify the basic procedures used in maintaining aircraft instruments.

7121-714-250 Temperature and Fuel Flow Indicating Systems . . . . . 189, 190

- Identify the types and describe the function of the Exhaust Gas Temperature (EGT), Cylinder Head Temperature (CHT), and Carburetor Air Temperature (CAT) sensing systems instruments.
- Identify the types and describe the function of fuel flow indicating systems instruments.
- Identify the principles of temperature transducers.
- Analyze the operation of solid-state temperature transducers.

7121-714-310 Pressure Sensing and Chip Detection Systems . . . . . 241, 242

- Identify the types and describe the function of pressure sensing and chip detection indicating systems instruments.
- Identify the principles of pressure transducers.
- Analyze the operation of solid-state pressure transducers.

7121-714-370 Aircraft Electronic Flight Instrument Systems . . . . . ---

- Describe the systems and components of the aircraft monitoring and alerting system.
- Describe the different types of aircraft built-in fault and maintenance test equipment.

7121-714-430 Aircraft Master Warning and Annunciator Systems . . . . . 735, 737

- Describe the operation of the master warning and annunciator system.
- Identify annunciator system applications.
- Observe master warning and annunciator system operation.
- Observe normal system operation.
- Identify faulty system operation.

7121-714-920 Aircraft Instrument Systems Post-Test (Theory) . . . . . ---

### **MOD 58 - AIRCRAFT COMMUNICATIONS SYSTEMS**

7121-722-130 Introduction to Aircraft Communications . . . . . ---

- Define a typical communications system.
- Identify the types of radios and their uses.
- Identify and describe aircraft internal communications systems.
- Identify common radio communications failures and describe typical repairs for each failure.
- Identify the letters of the phonetic alphabet.
- Describe the procedures and regulations for transmitting a radio communications check.

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### **MOD 58 - AIRCRAFT COMMUNICATIONS SYSTEMS (cont.)**

- 7121-722-190 Aircraft Communications Systems ..... ---
  - Explore high frequency radio wave propagation.
  - Categorize frequency range applications.
- 7121-722-250 Aircraft Antenna Systems ..... ---
  - Understand antenna characteristics.
  - Explain the propagation of electromagnetic energy in antennas.
  - Identify the correct antenna for associated aircraft COM/NAV system.
  - Describe the general location of each type of aircraft antenna.
- 7121-722-920 Aircraft Communication Systems Post-Test (Theory) ..... ---

### **MOD 59 - AIRCRAFT NAVIGATION SYSTEMS**

- 7121-726-130 Introduction to Aircraft Navigation ..... ---
  - Define the purpose of an air navigation system.
  - Describe the types of air navigation systems.
  - Define the terms associated with air navigation.
  - Plot latitude and longitude positions on an air navigation chart.
  - Identify types of air navigation information display indicators.
  - Describe the purpose of ADI, BDI, HSI, and MFD air navigation indicators.
  - Identify and describe the information displayed by the ADI, BDI, HSI, and MFD air navigation indicator.
- 7121-726-190 Short Range Aircraft Navigation Systems ..... ---
  - Describe the process of “swinging” a magnetic or standby compass.
  - Identify the components of the primary compass system.
  - Describe the operation of a primary compass system.
  - Identify causes of primary compass system errors.
  - Describe the purpose, components, and operation of the NDB, ADF, VOR, DME, TACAN, VORTAC, and RNAV systems.
  - Define the errors associated with using the ADF system for navigation.
  - Describe the system components and operation of the Instrument Landing System (ILS).
  - Describe the purpose, components, and operation of approach and landing navigation systems (Localizer, Glideslope, Marker Beacon).
  - Describe the advantages and general operating principles of the Microwave Landing System (MLS) and Global Navigation Satellite System (GNSS) Landing System (GLS).
- 7121-726-250 Long Range Aircraft Navigation Systems ..... ---
  - Describe the process of Global Positioning System (GPS) navigation.
  - Identify the components of a GPS system and describe their operation.
  - Describe the process of ADS-B navigation.
  - Identify the components of an ADS-B system and describe their purpose.
  - Describe the purpose and operation of the Doppler System.
  - Describe the process of Heading Reference System (HRS) navigation.
  - Identify the components of an HRS system and describe their operation.
  - Describe the process of Inertial Navigation System (INS).
  - Identify the components of an INS system and describe their purpose.
- 7121-726-310 Aircraft Collision Avoidance and Detection Systems ..... ---
  - Describe the process of the aircraft collision avoidance program.
  - Identify the components of the system and describe their operation.

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### **MOD 59 - AIRCRAFT NAVIGATION SYSTEMS (cont.)**

- 7121-726-310 Aircraft Collision Avoidance and Detection Systems (cont.)
- Describe the process of sensor technology.
  - Identify the different types of sensors used in collision avoidance systems.
- 7121-726-920 Aircraft Navigation Systems [BT] ..... ---

### **MOD 60 - AVIONICS DATA COMMUNICATIONS**

- 5161-118-130 Introduction to Data Communications ..... 265, 266, 284
- Define terminology commonly used in conjunction with data communications systems.
  - Identify systems and instrumentation including fax, modems, and computers that use data communications.
  - Identify basic operating characteristics involved in data communications.
  - Identify the operational characteristics of protocol.
  - Define protocol terminology to include bit, byte, start, parity, stop, baud, and frame.
  - Describe how data communications systems use protocol to transfer data.
  - Describe the relationship of protocol and serial/parallel transmission and reception using the International Standard Organization (ISO) reference model.
  - Examine pulse characteristics like: period, pulse duration, duty cycle, amplitude, rise and fall time, and baseline voltage.
  - Examine the effects of synchronization and a protocol mismatch of transmitter data.
  - Observe serial data communications between sender and receiver.
  - Identify the start bits, data bits, parity bit, and stop bits.
- 5161-118-160 RS-232-C Line Interface ..... 232(2)
- Identify RS-232-C electrical, mechanical, and functional characteristics as they relate to protocol.
  - Identify the RS-232-C schematic pinout.
  - Describe the function of the UART and USART.
  - Measure RS-232-C line interface voltages while data is being transferred.
  - Measure RS-232-C Line interface voltages while data is being received.
  - Isolate malfunctions in an operational RS-232-C communications system.
- 5161-118-190 RS-485 Line Interface ..... 232(2)
- Identify RS-485 electrical characteristics.
  - Describe signal conditioning methods used by RS-485 line driver circuits when transmitting and receiving.
  - Measure RS-485 line interface voltages while data is being transferred.
  - Isolate malfunctions in an operational RS-485 Communication System.
- 5161-118-220 Introduction to Bus Systems ..... 267, 268, 284
- Identify the basic parts of a bus system.
  - Describe the purpose of each part of the bus system.
  - Define terminology used in conjunction with bus system protocol.
  - Describe the operational characteristics of a basic bus system.
  - Describe the operational characteristics of tri-state devices.
  - Measure basic bus system signals.
  - Measure the output of a tri-state device.
- 5161-118-250 IEEE 488 Data Bus ..... ---
- Identify 4 basic operations performed by the 4041 controller.
  - Define program development, instrument control, data processing and display storage.

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**MOD 60 - AVIONICS DATA COMMUNICATIONS (cont.)**

- 5161-118-250 IEEE 488 Data Bus (cont.)
  - Describe and interpret different message formats.
- 5161-118-280 ARINC 429 Data Bus ..... ---
  - Identify basic principles of operation related to the ARINC 429 data bus system specifications.
  - Describe the ARINC 429 Mark 33 Digital Information Transfer System (DITS).
  - Describe and interpret different message formats.
  - Describe and interpret different word formats.
- 5161-118-310 ARINC 629 Data Bus ..... ---
  - Describe the different components associated with the ARINC 629 data bus system.
  - Identify basic principles of operation related to the ARINC 629 data bus system specifications.
  - Describe and interpret different data formats.
  - Describe and interpret different word formats.
- 5161-118-920 Data Communications Post-Test (Theory) ..... ---

## NOTES





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**Nida Corporation**  
**Melbourne, Florida 32904**  
**300 S. John Rodes Blvd**  
**Tel: 321-727-2265 • Fax: 321-727-2655**  
**[www.nida.com](http://www.nida.com)**