

# AMT A184: AVIONICS INSTALLATIONS AND TROUBLESHOOTING

Item	Value
Curriculum Committee Approval Date	12/08/2021
Top Code	095040 - Aircraft Electronics (Avionics)
Units	4 Total Units
Hours	108 Total Hours (Lecture Hours 54; Lab Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S)

## Course Description

A course in aircraft radio navigational and communication systems. Bench test, installation and ramp test of transmitter and receiver systems and their operating principles. Systems include VHF Comm, VOR, ILS, and Transponder. Students are required to bring hand tools. ADVISORY: AMT A182. Transfer Credit: CSU.

## Course Level Student Learning Outcome(s)

1. Install an aircraft avionics system as per manufacturers and FAA guidelines
2. Perform avionics system performance tests as per manufacturers and FAA guidelines.
3. Diagnose a failed avionic system component.
4. Complete all required maintenance records.

## Course Objectives

- 1. Explain the operation of series and parallel circuits as applied to Ohms law.
- 2. Demonstrate a knowledge and use of a multimeter.
- 3. Demonstrate a knowledge of wiring, crimping, and soldering.
- 4. Modify avionics system schematic to accommodate upgrades.
- 5. Perform avionics systems tests to manufacturer's specifications.
- 6. Analyze faults in avionics circuits.
- 7. Describe operation of VOR systems.
- 8. Install an aircraft communication system.
- 9. Install aircraft transponder systems.
- 10. Demonstrate knowledge of auto pilot systems.
- 11. Demonstrate knowledge of GPS systems.
- 12. Synthesize aircraft schematic with test data to diagnose electrical faults.
- 13. Complete aircraft weight and balance calculations and complete form 337.

## Lecture Content

Review of Basic Concepts Ohm's law Series circuits Fault diagnosis Open Short Coaxial cable/continuity Parallel circuits Fault diagnosis Open Short VHF Comm Operation Microphones Headphones Audio panel Installation Antennas Coax connectors Ramp test Multimeter VOR Operation System components Block diagram Ramp test Installation Fault diagnosis in line replaceable unit Coaxial cable testing Connectors and wiring installation and repair Operational test ILS Glideslope Operation System components Block diagram Installation Ramp test Marker beacon Operation System components Block diagram Installation Ramp test Autopilot, Flight Director System components System operation EICAS/EFIS/EHSI System components System operation ATCRBS Transponder Operation Mode A, C, S TCAS System components Block diagram Squawk code, altitude encode Installation Ramp test Inertial Reference Navigation Ring laser gyro System components System operation Global Position Satellite System System components System operation Electrical Connectors and Troubleshooting Electrical Wiring

## Lab Content

Students will 1. Install an aircraft communication system. 2. Install aircraft transponder systems. 3. Perform avionics systems tests to manufacturer's specifications. 4. Analyze faults in avionics circuits. 5. Modify avionics system schematic to accommodate upgrades. 4. Synthesize aircraft schematic with test data to diagnose electrical faults. 5. Complete aircraft weight and balance calculations and complete form 337.

## Method(s) of Instruction

- Lecture (02)
- Lab (04)

## Reading Assignments

textbook reading assignments

## Writing Assignments

n/a

## Out-of-class Assignments

reading assignments

## Demonstration of Critical Thinking

Discussions: Students will answer the instructor's reinforcement questions during each lecture period.

## Required Writing, Problem Solving, Skills Demonstration

Practical Evaluations: Each week, the students will build and take data from specified circuits. Student performance will be monitored and supplemented as necessary. Written Examinations: Three written examinations (multiple choice and essay type), will be used to test the students' mastery of the material. Laboratory Examination: The students will be evaluated on their performance on an assigned midterm laboratory project.

## Textbooks Resources

1. Required Federal Aviation Administration. AC 43.13-1b2b, 2009 ed. Govt Printing Office, 2009 Rationale: - 2. Required Eismin, Thomas R. . Aircraft Electricity and Electronics, ed. New York: McGraw Hill, Inc., 2013 Rationale: -