



Course Number and Title: AVI 220 Airframe Maintenance AF-Section III

Campus Location:

Georgetown

Effective Date:

2019-51

Prerequisite:

AVI 210 or concurrent

Co-Requisites:

None

Course Credits and Hours:

11.00 credits

7.00 lecture hours/week

13.00 lab hours/week

Course Description:

The Airframe Maintenance AF-Section III of the Aviation Maintenance program introduces students to the fundamentals of aircraft maintenance. The units of study are aircraft fuel systems, communication and navigation systems, instrument systems, cabin atmosphere control systems, ice and rain control systems, fire protection systems, and airframe inspection.

Required Text(s):

Obtain current textbook information by viewing the [campus bookstore - https://www.dtcc.edu/bookstores](https://www.dtcc.edu/bookstores) online or visit a campus bookstore. Check your course schedule for the course number and section.

Additional Materials:

None

Schedule Type:

Classroom Course

Disclaimer:

Attendance is governed by 14 Code of Federal Regulations (CFR) Part 147 and the policies of Delaware Tech as outlined in the college catalog. Federal Aviation Administration (FAA) regulations require that all students must receive a minimum number of hours of instruction, in both classroom and lab, and that all missed time must be made up before the student is allowed to take the FAA written, oral, and practical exams. Any conflict between school policies and FAA regulations in this matter, the FAA regulations shall take precedence. Missed classes and/or make-up work should be coordinated with the instructor either before or immediately after any absence.

Core Course Performance Objectives (CCPOs):

1. Aircraft Fuel Systems: Identify fuel system components, and explain how these components work while demonstrating safe handling procedure as it relates to fuels and maintenance of fuel systems. (CCC 2, 3, 5, 6; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3, 4)
2. Communications and Navigation Systems: Identify the operation of basic semi-conductor devices, rectifiers, amplifiers, oscillator circuits, and commonly used antennas for various radio equipment. (CCC 1, 2, 5, 6; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3)
3. Aircraft Instrument Systems: Identify the operating principles of aircraft instrumentation and the various components associated with air and vacuum operated instruments. (CCC 2, 3, 5, 6; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3, 4)
4. Cabin Atmosphere Control Systems: Identify conditions and problems related to high altitude flight, including oxygen and pressurization systems and aircraft heating and cooling systems. (CCC 1, 2, 5, 6; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3)
5. Ice and Rain Control Systems: Identify the components and principles relating to anti-icing, de-icing, and rain control. (CCC 2, 3, 5; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3)
6. Fire Protection Systems: Identify the various fire extinguishing systems and fire protection system components, including extinguishing, smoke detection, and toxic gas detection systems. (CCC 2, 5, 6; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3, 4)
7. Airframe Inspection: Identify Federal Aviation Regulations (FAR) requirements for various types of airworthiness inspections while creating an inspection checklist using the appropriate approved data. (CCC 1, 2, 5; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

Measurable Performance Objectives (MPOs):

Upon completion of this course, the student will:

1. Aircraft Fuel Systems: Identify fuel system components, and explain how these components work while demonstrating safe handling procedure as it relates to fuels and maintenance fuel systems.
 1. Determine the various types of aviation fuels and fuel systems.
 2. Identify various components of both jet and non-jet fuel systems.
 3. Explain various types of fuel indicating systems and how these systems work.
 4. Demonstrate fuel system inspection, repair, and maintenance.
 5. Demonstrate the appropriate methods for defueling and refueling an aircraft, including proper safety procedures.
2. Communications and Navigation Systems: Identify the operation of basic semi-conductor devices, rectifiers, amplifiers, oscillator circuits, and commonly used antennas for various radio equipment.
 1. Apply the various principles relating to instrument systems.
 2. Identify instrument systems installation and maintenance practices.
 3. Operate, inspect, and troubleshoot an electronic communication and navigation device.
 4. Operate, inspect, and troubleshoot an autopilot, servo, and approach coupling systems.
3. Aircraft Instrument Systems: Identify the operating principles of aircraft instrumentation and the various components associated with air and vacuum operated instruments.
 1. Explain the principles related to aircraft instrumentation.
 2. Identifying type and function of various instruments, including gyros and pitot-static systems.
 3. Demonstrate instrument system checks, installation, and maintenance.
 4. Demonstrate procedures for removal, handling, documenting, and installation of instruments.
 5. Interpret the appropriate Federal Aviation Regulations (FAR)'s relating to aircraft instrumentation.
4. Cabin Atmosphere Control Systems: Identify conditions and problems related to high altitude flight, including oxygen and pressurization systems and aircraft heating and cooling systems.
 1. Explain the limits of human physiology as it relates to high altitude flight, and define the conditions of hypoxia and carbon monoxide poisoning.
 2. Identify various oxygen and pressurization systems, and explain how these systems function.
 3. Indicate the components of various oxygen and pressurization systems, including cockpit control devices.
 4. Apply the appropriate maintenance practices for both an oxygen and pressurization system.
 5. Identify and demonstrate the proper safety practices when working with oxygen systems.
 6. Explain the principles of operation as they relate to both aircraft heating and cooling systems.
 7. Identify components relating to heating systems and the proper inspection, repair, and maintenance practices.
 8. Identify components relating to cooling systems and the proper inspection, repair, and maintenance practices.
 9. Perform the proper servicing practices for an aircraft cooling system.
5. Ice and Rain Control Systems: Identify the components and principles relating to anti-icing, de-icing, and rain control.
 1. Evaluate the effects of icing on aircraft.
 2. Explain types of construction of various anti-ice and de-ice systems.
 3. Identify type of ice detection systems, including visual, electronic, and optical ice detectors.
 4. Demonstrate the use of contaminant/fluid integrity measuring systems.
 5. Perform appropriate inspection, repair, and maintenance of anti-ice and de-ice systems.
 6. Explain the proper practices for ground de-icing and removal of ice/snow, frost, and snow.
 7. Evaluate types of anti-ice and rain removal devices and methods for windshields, and demonstrate proper maintenance practices for each.
6. Fire Protection Systems: Identify the various fire extinguishing systems and fire protection system components, including extinguishing, smoke detection, and toxic gas detection systems.
 1. Identify various classes of fires and fire zones.
 2. Define the principles of fire-detection systems.
 3. Explain various types of fire protection and overheat systems.
 4. Identify types of extinguishing agents, including carbon dioxide and halogenated hydrocarbons.
 5. Demonstrate the use of fire protection and suppression systems.
 6. Perform proper inspection, repair, and maintenance practices for each type of fire and overheat detection systems.
 7. Identify various types of smoke and toxic gas detection systems.
 8. Perform proper inspection, repair, and maintenance practices for each type of smoke and toxic gas detection systems.
7. Airframe Inspection: Identify Federal Aviation Regulations (FAR) requirements for various types of airworthiness inspections while creating an inspection checklist using the appropriate approved data.
 1. Perform a pre-flight inspection on a designated aircraft.
 2. Interpret various types of FAR Part 91 required inspections.
 3. Define *annual inspection*, *100-hour inspection*, *progressive inspection*, types of inspections for large and turbine powered multi-engine aircraft, and conformity inspections.
 4. Define types of inspections for FAR Part 121 air carrier inspections and Part 135 air charter inspections.
 5. Explain special inspections and conditional inspections.

Evaluation Criteria/Policies:

Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	-	100	=	A
83	-	91	=	B
75	-	82	=	C
0	-	74	=	F

Students should refer to the [Student Handbook - https://www.dtcc.edu/handbook](https://www.dtcc.edu/handbook) for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

Core Curriculum Competencies (CCCs are the competencies every graduate will develop):

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):**AVIAASAVI**

1. Demonstrate professionalism and adherence to safety and environmental procedures and regulations in the workplace.
2. Adhere to and apply appropriate FAA regulation and industry publications.
3. Explain and apply the principles of aircraft inspection, repair, and maintenance.
4. Explain and apply the principles of powerplant.

AVICERAFI

1. Demonstrate professionalism and adherence to safety and environmental procedures and regulation in the workplace.
2. Adhere to and apply appropriate FAA regulation and industry publications.
3. Explain and apply the principles of aircraft inspection, repair, and maintenance.

Disabilities Support Statement:

The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the [disabilities services - https://www.dtcc.edu/disabilitysupport](https://www.dtcc.edu/disabilitysupport) web page or visit the campus Advising Center.