



Course Number and Title: AVI 210 Airframe Maintenance AF-Section II

Campus Location:

Georgetown

Effective Date:

2019-51

Prerequisite:

AVI 120 and ELC 102

Co-Requisites:

None

Course Credits and Hours:

12.00 credits

8.00 lecture hours/week

12.00 lab hours/week

Course Description:

The Airframe Maintenance AF-Section II of the Aviation Maintenance program introduces students to the fundamentals of aircraft maintenance. The units of study are assembly and rigging, position and warning systems, aircraft electrical systems, hydraulic and pneumatic power systems, and aircraft landing gear systems.

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. Assembling and Rigging: Identify various types of aircraft structures, including types of fuselage, wing, and flight control construction and how they operate, including primary and secondary control surfaces as well as understanding atmospheric composition and the aerodynamic forces on fixed wing and rotary wing aircraft, stability, and control, including the effect of high speed aerodynamics. (CCC 2, 3, 5, 6; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3, 4)
2. Position and Warning Systems: Identify components relating to anti-skid braking and control systems as well as explain the operations and maintenance of both anti-skid and control, and indicating and warning systems. (CCC 2, 3, 5; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3, 4)
3. Aircraft Electrical Systems: Demonstrate the operation and maintenance of both direct current (DC) and alternating current (AC) electrical systems used on large and small aircraft while explaining the operation of generating and starting systems.(CCC 5, 6; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3, 4)
4. Hydraulic and Pneumatic Power Systems: Identify types of hydraulic and pneumatic components and the operation and maintenance of both systems. (CCC 2, 5; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3, 4)
5. Aircraft Landing Gear Systems: Identify landing gear and braking system types and their operation and maintenance. (CCC 2, 5, 6; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3, 4)

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. Assembling and Rigging: Identify various types of aircraft structures, including types of fuselage, wing, and flight control construction and how they operate, including primary and secondary control surfaces as well as understanding atmospheric composition and the aerodynamic forces on fixed wing and rotary wing aircraft, stability, and control, including the effects of high speed aerodynamics.
 1. Identify types of aircraft design and construction.
 2. Demonstrate the appropriate methods of aircraft assembly and alignment.
 3. Identify the fundamentals of rotary-wing aircraft.
 4. Identify the three axis of an aircraft and the motion around these axis.
 5. Identify the various aerodynamic forces which contribute or to effect flight.
 6. Identify and explain the center of pressure and center of lift and how these relate to flight.
 7. Demonstrate the proper method of rigging an aircraft.
 8. Install and remove components from aircraft.
 9. Balance, rig, and inspect primary and secondary control surfaces and cables.
2. Position and Warning Systems: Identify components relating to anti-skid braking and control systems as well as explain the operations and maintenance of both anti-skid and control, and indicating and warning systems.
 1. Identify components of aircraft anti-skid systems.
 2. Identify various types of indicating and warning systems and their functions.
 3. Describe, using aircraft schematics, how an angle of attack, stall detection, and landing gear micro switch system works.
 4. Identify the appropriate indication for a given condition, relating to landing gear, flap, and angle of attack position.
 5. Troubleshoot aircraft anti-skid, indicating, and warning system problems.
3. Aircraft Electrical Systems: Demonstrate the operation and maintenance of both direct current (DC) and alternating current (AC) electrical systems used on large and small aircraft while explaining the operation of generating and starting systems.
 1. Identify airborne sources of electrical power, and explain how each of these devices work.
 2. Identify various types of aircraft circuits.
 3. Identify various types of electrical components, their functions, and how they relate to a given circuit.
 4. Demonstrate the proper installation and maintenance practices for aircraft wiring.
 5. Demonstrate the proper inspection, operation, and replacement procedures for lamps, light assemblies, including cockpit and instrumentation lighting.
 6. Demonstrate inspection practices for wires and wire bundles, including condition of wire insulation, electrical connectors, condition of mounting brackets, and compliance with proper routing requirements.
4. Hydraulic and Pneumatic Power Systems: Identify types of hydraulic and pneumatic components and the operation and maintenance of both systems.
 1. Identify the principles of hydraulic power.
 2. Identify hydraulic system components.
 3. Identify types of hydraulic power systems.
 4. Describe the characteristics of each type of fluid.
 5. Determine the appropriate type of seal to be used in a hydraulic component.
 6. Inspect and service a hydraulic system with the appropriate type of fluid.
 7. Identify types of pneumatic systems.
 8. Identify pneumatic system components.
 9. Remove, inspect, and replace hydraulic and pneumatic filters.
 10. Demonstrate the proper safety procedures when working with aircraft hydraulic systems.
5. Aircraft Landing Gear Systems: Identify landing gear and braking system types and their operation and maintenance.
 1. Identify various types of landing gears systems and how each operates, including cockpit indication components.
 2. Identify landing gear components of each type of landing gear assembly.
 3. Demonstrate the appropriate method of cleaning, inspection, and maintenance of landing gear systems.
 4. Demonstrate proper safety procedures when working with aircraft landing gear and braking systems.
 5. Identify various types of aircraft braking systems.
 6. Identify brake system components.
 7. Demonstrate the appropriate method for cleaning, inspection, and maintenance of aircraft braking systems.
 8. Identify types of aircraft tires and the care and maintenance of each.
 9. Demonstrate the appropriate method of replacing an aircraft wheel and brake assembly.
 10. Demonstrate the appropriate method for disassembly and reassembly of a tire and rim assembly while following proper safety procedures.

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.

AVICERAF

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.