Course Number and Title: AVI 120 Airframe Maintenance AF-Section I

Campus Location:
Georgetown

Effective Date:
2019-51

Prerequisite:
AVI 110 and MAT 112, SSC 100 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 I of the Aviation Maintenance program introduces students to the fundamentals of aircraft maintenance. The units of study are ground operation and servicing, welding, aircraft non-metallic structures, aircraft sheetmetal structures, and wood structures, coverings, and finishes.

Required Text(s):
Obtain current textbook information by viewing the campus bookstore - 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. Ground Operation and Servicing: Perform ground servicing tasks as required by servicing specifications for a given aircraft, demonstrate safety procedure while working with and around moving aircraft, and the use of standard hand signals to direct aircraft movement. (CCC 1, 2, 3, 4; AFC PGC 1, 2; AVI PGC 1, 2)
2. Welding: Demonstrate basic principles of welding, brazing, and soldering as well as identify equipment associated with these types of welding processes, along with identifying various common repair schemes or welding steel tubing. (CCC 2, 6; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3, 4)
3. Aircraft Non-Metallic Structures: Demonstrate the methods of construction, testing and repair of fiberglass, advance composites, and transparent plastic materials. (CCC 2, 6; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3, 4)
4. Aircraft Sheetmetal Structures: Identify various types of standard and special fasteners, types of repairs and the appropriate tools, and perform various types of sheetmetal repairs to airworthiness standards. (CCC 2, 3, 5, 6; AFC PGC 1, 2, 3; AVI PGC 1, 2, 3, 4)
5. Wood Structures, Coverings, and Finishes: Demonstrate the basic methods of application, construction, testing and repair of wooden materials, and adhesives used in aircraft construction as well as types of fabrics and materials used in aircraft coverings and proper application of various types of aircraft finishes. (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. Ground Operation and Servicing: Perform ground servicing tasks as required by servicing specifications for a given aircraft, demonstrate safety procedure while working with and around moving aircraft, and the use of standard hand signals to direct aircraft movement.
    1. Demonstrate safety procedures and practices related to working in a shop environment, flight line, and aircraft servicing.
    2. Obtain and follow the appropriate checklists for a given aircraft for servicing and engine run-up.
    3. Inspect and service aircraft tires, as needed.
    4. Prepare aircraft for run-up and function checks.
    5. Start engine equipped with either a float type carburetor or fuel injection.
    6. Secure an aircraft after engine run-up.
    7. Demonstrate the proper knots and tie-down procedures when securing an aircraft with conventional landing gear arrangement.
    8. Demonstrate the use of non-verbal communication methods such as standard hand signals.
    9. Identify various types of aviation fuels, their octane ratings, and types of contaminates.
2. Welding: Demonstrate basic principles of welding, brazing, and soldering, as well as identify equipment associated with these types of welding processes, along with identifying various common repair schemes for welding steel tubing.
    1. Identify the processes of welding, advance welding, and repair and gas welding.
    2. Fabricate a Lab, Butt, and a 90 degree joint weld using an oxy-acetylene or arc welder.
    3. Fabricate solder joints.
3. Aircraft Non-Metallic Structures: Demonstrate the methods of construction, testing and repair of fiberglass, advance composites, and transparent plastic materials.
    1. Select, install, and remove special fasteners in composite structures.
    2. Identify various types of composite structures and transparent plastics.
    3. Fabricate a composite airfoil using foam or honeycomb material and layer it with fiberglass, in accordance with “Combo Kit”.
    4. Sand and protect surface material, and perform tap test for defect detection.
    5. Clean, polish, and remove scratches from aircraft windows.
    6. Properly inspect door seals for deterioration and leaking.
    7. Remove, inspect, clean and reinstall seats, seatbelts, and interior components from aircraft.
4. Aircraft Sheetmetal Structures: Identify various types of standard and special fasteners, types of repairs and the appropriate tools, and perform various types of sheetmetal repairs to airworthiness standards.
    1. Identify various types of metallic aircraft construction.
    2. Identify various types of sheetmetal tools and fabrication methods.
    3. Identify types of aircraft inspections and repair of metallic aircraft structures.
    4. Select various sizes of drill bits, and accurately drill a predetermined hole pattern.
    5. Install various types of rivets, universal, flush, or countersink type rivets in accordance with a predetermined pattern.
    6. Fabricate a sheetmetal repair in accordance with Advisory Circular 43.13-1B, Sec. 4-59, Fig. 4-16.
    7. Identify various types of blind fasteners and the use of appropriate tooling.
    8. Properly install a flush mounted patch repair.
    9. Fabricate pulley brackets in accordance with approved data.
5. Wood Structures, Coverings and Finishes: Demonstrate the basic methods of application, construction, testing and repair of wooden materials, and adhesives used in aircraft construction, as well as types of fabrics and materials used in aircraft coverings and proper application of various types of aircraft finishes.
    1. Identify various types of wood materials used in aircraft structures.
    2. Identify various types of adhesives used in aircraft wooden structures.
    3. Identify types of repairs relating to wood structures and demonstrate proper technique in performing repairs.
    4. Identify various types of coverings and materials used in aircraft construction.
    5. Demonstrate proper application of fabric covering and repair on aircraft structures.
    6. Demonstrate proper safety procedures when applying aircraft coverings.
    7. Identify various types of finishes used on aircraft structures.
    8. Demonstrate proper methods of preparing and applying various types of aircraft finishes.
    9. Demonstrate proper safety procedures when preparing and applying aircraft finishes.

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 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):
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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.

AVICERAFC

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 web page or visit the campus Advising Center.