

COURSE OUTLINE

COURSE: Internship on Airplane Maintenance

PROGRAM: 280.CO Aircraft Maintenance Technology

DISCIPLINE: 280 Aeronautics

WEIGHTING: Theory: 0 Practical work: 4 Personal study: 1

Instructor(s)	Office	☎ extension	✉ email or web site
Vincent Grenon	C-186	4623	vincent.grenon@college-em.qc.ca

OFFICE HOURS

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Morning					
Afternoon					

Coordinator(s)	Office	☎ extension	✉ email or web site
Pierre Ménard	C-160	4207	pierre.menard@college-em.qc.ca
Gérard Leblanc	C-160	4531	gerard.leblanc@college-em.qc.ca

CONTEXT OF THIS COURSE IN THE PROGRAM

This course is offered during the sixth session of the program.

By the end of this course, students will have developed the following objectives:

- find the necessary information from the entire technical library that is available in order to carry out maintenance on an aircraft
- demonstrate an understanding of the texts and procedures of the manuals in question
- check the operating parameters of an electrical, mechanical or hydraulic component according to the standards of the manufacturers;
- evaluate a component to determine its aeronautical condition in compliance with the manufacturer's strict standards
- perform maintenance and inspections on electrical, hydraulic or mechanical and structural systems according to a predetermined maintenance schedule recommended by the manufacturer
- analyze the aerodynamic and dynamic behavior of an aircraft and its rotary components according to strict rules of operation and safety

Students must keep this course outline for the duration of their studies as it will be useful for the comprehensive assessment at the end of the program.

MINISTRY OBJECTIVE(S) AND COMPETENCIES)

026E Perform activities related to airplane maintenance.

TEACHING AND LEARNING STRATEGIES

The work is carried out in teams of two participants. The activities will take place alternately depending on the availability of the aircraft. Each week, students carry out their internship while seeing to the proper operation and safety around them.

COURSE PLAN

026E Perform activities related to airplane maintenance.

1) Gathering Necessary Information

Learning Objective	Activities/Weeks
1.1 Accurately identify the Transport Canada maintenance standards that applies to airplanes.	2, 3, 5, 6, 7, 8, 9, 10, 11
1.2 Accurately identify the manufacturer's specifications that relate to the airplane maintenance to be performed.	All
1.3 Summarize the specific facts in the history and documentation of the airplane that is to be maintained.	4, 6

2) Planning Work

Learning Objective	Activities/Weeks
2.1 Establish in detail the relevance and type of intervention to be performed based on: <ul style="list-style-type: none"> • the history (logbook) of the airplane to be maintained • technical documentation 	4, 5, 6, 8
2.2 Identify the steps to carry out the maintenance work.	All
2.3 Identify the necessary equipment to perform the operation and check availability of the equipment.	2, 3, 5, 6, 7, 8, 9, 10, 11
2.4 Respect the limits of the intervention and responsibilities as an aviation maintenance engineer (AME).	2, 3, 5, 6, 7, 8, 9, 10, 11

3) Proceeding with the Maintenance Activities

Learning Objective	Activities/Weeks
3.1 Follow and respect the applicable standards and specifications.	All
3.2 Apply health and safety rules.	All
3.3 Operate airplane systems.	6, 12, 13
3.4 Use equipment and tools appropriately.	All
3.5 Use of appropriate maintenance procedures.	All
3.6 Evaluate the service condition of components and systems.	6, 12, 13
3.7 Check condition and operation of the components and systems.	6, 12, 13
3.8 Record defects, checks and inspections in writing or using aircraft maintenance software.	All

4) Performing activities related to weight and balance

Learning Objectives	Activities/Weeks
4.1 This activity will be perform during 280-6B4-EM	-----

5) Performing Activities Related to Changing Defective Components

Learning Objective	Activities/Weeks
5.1 Follow and respect standards and specifications.	All
5.2 Apply health and safety rules.	All
5.3 Operate the airplane systems.	6, 13
5.4 Use equipment and tools appropriately.	All
5.5 Use of appropriate maintenance procedures.	All
5.6 Evaluate the service condition of the components and of the systems.	6, 13,
5.7 Check the condition and operation of the components and the systems.	6, 13,
5.8 Record defects, checks and inspections in writing or using aircraft maintenance software.	All

6) Performing Activities Related to Parking and Towing an Airplane

Learning Objective	Activities/Weeks
6.1 Follow and respect standards and procedures.	All
6.2 Apply health and safety rules.	All
6.3 Use equipment and tools appropriately.	All
6.4 Demonstrate control of work processes related to ground handling of an airplane.	2,4,6,7

7) Storing and Cleaning the Workplace

Learning Objective	Activities/Weeks
7.1 Store equipment and clean work area.	All
7.2 Handle equipment safely.	All

List of Activities

ACTIVITY PERIODS: **Week 1**

Learning Objective: Familiarize yourself with the course outlines as well as safety measures around aircraft operations.

Content: Structure of the course, schedule of activities, safety, video presentation (the influence of human factors in maintaining aircraft and « *don't get sucked in* »).

ACTIVITY PERIODS: **Weeks 2 to 15**

Activity 1: **Bleed the Brakes**

Learning Objective:

- Bleed brakes under pressure
- Check braking capacity
- Complete relevant documentation for the work that was done

Activity 2: **Operation Test of Aerodynamic Brakes on a Falcon 20**

Learning Objective:

- Perform operation test of aerodynamic brakes according to the manufacturer's manual.

Activity 3: **Servicing of an Accumulator**

Learning Objectives:

- Put an accumulator into service as per the manufacturer's recommendations.
- Check the quality of the work.
- Perform a functional test.

Activity 4: **Performance Flight**

Learning Objectives:

- Do a "pre-flight" inspection
- Become aware of the influence of the quality of maintenance on the safety and performance of the airplane.
- Apply safety concepts on the ground.
- Check the proper operation of various airplane systems and engine parameters.
- Complete the questionnaire related to performance flight.

Activity 5: **Calibrating the Compass on an Airplane**

Learning Objectives:

- Perform compass compensation following standard techniques.
- Complete documentation relevant to the work that was done.

Activity 6: **Towing an Airplane**

Learning Objectives:

- Tow a plane according to the manufacturer's procedures.
- Use proper signals.

- Activity 7:**
Learning Objectives:
- Run-Up on a Turboprop**
- Prepare the aircraft and equipment for the run-up.
 - Apply the signals and safety rules used during the run-up and taxiing.
 - Check various engine parameters according to the manufacturer's data.
- Activity 8:**
Learning Objectives:
- Warning Light “engine low fuel pressure” of the Falcon 20**
- Detect failure
 - Locate components
 - Analysis wiring diagram
 - Resolve failure.
- Activity 9:**
Learning Objectives:
- Changing the Piper Aztec Carburetor**
- Remove the old carburetor.
 - Follow-up documentation
 - Reinstall new carburetor
 - Adjust the throttle.
- Activities 10 to 13:**
Learning Objectives:
- Maintenance Internship on an Available Airplane**
- Conduct maintenance work (inspect, locate, modify).
 - Troubleshoot (mechanical, hydraulic and electrical problems)
 - Complete relevant documentation for the work that was done.
- Activity 14:**
Learning Objectives:
- Practical Exam**
- Students must apply a rigging procedure or a servicing procedure of an aircraft component.
- Activity 15:**
Learning Objectives:
- Theory Exam**
- Review of practical exam.
 - Theory exam on Activities 1 to 9.

Note: Free activities could replace any other planned activities.

SYNTHESIS OF SUMMATIVE EVALUATION METHODS

Description of Evaluation Activity	Context	Learning Objective(s)	Due Date (approximate date assignment due or exam given)	Weighting (%)
Synthesis evaluation of the program				
Activities 1 to 13 in rotation depending of the aircraft availability. (In accordance with the evaluation criteria presented by the instructor.)	Work in team but individual evaluation.	all	Evaluate during each activity.	40%
Practical Exam. Perform and follow maintenance procedure on an aircraft.	Individual, between 50 minutes and 90 minutes depending of the activity.	all	14 th week	30%
<ol style="list-style-type: none"> 1. Find the pertinent information concerning the maintenance task and organize the intervention in accordance with the standards of airworthiness. 2. Verify the parameters of different systems operation. 3. Evaluate aeronautical components. 4. Rectify discrepancies. 5. Inspect and return to service the aircraft in accordance with the manufacturer recommendations. 6. Record maintenance activities in the appropriate technical records. 				

70%

Technical records	Individual, according to a simulation	Apply knowledge of aircraft maintenance regulations.	Three samples during the session will be evaluate	10%
Inspection, research and a written exam on all concepts acquired during the internship.	Individual	See activities 1 to 14	15 th week	20%

30%

TOTAL: 100%

REQUIREMENTS TO PASS THE COURSE

(1) Passing Mark

The passing mark for this course is 60%.

(2) Attendance for Summative Evaluations

Attendance at summative evaluation activities is mandatory.

(3) Submitting Assignments

Assignments must be submitted by the date, place and time determined by the instructor. Any assignment submitted after the due date will be penalized 10% per day for each day it is late up to a week. After one week, the assignment will receive a zero (0).

(4) Presentation of Written Work

Students must follow the standards adopted by the College for written work (*Normes de présentation matérielle des travaux écrits*). These can be found in the documentation centre on the College web site (<http://ww2.college-em.qc.ca/biblio/normes.pdf>) under the heading **Aides à la recherché**.

CLASS PARTICIPATION EXPECTATIONS

SAFETY MEASURES IN THE HANGARS

1. Smoking is prohibited
2. Sitting on benches or machines is prohibited
3. Safety shoes must be worn at all times (sandals are prohibited)
4. Machines must not be used without authorization for the instructor.
5. Caps or hairnets must be worn for long hair when working with the machinery.
6. Ties must be removed or tucked inside the shirt when working with machinery
7. Sleeves with wide cuffs or fringe must not be worn when working near machinery.
8. Safety glasses must be worn when working on the machinery.
9. The machinery and benches must be cleaned after use.
10. The workshop must be cleaned after each course.
11. The bending machine may only be used by authorized personnel
12. No aluminum or non-ferrous material on the grinders.
13. Suitcases, briefcases and towels are prohibited.
14. No one may circulate in the hangar unless authorized
15. No visitors are allowed without authorization.
16. Watches, rings, bracelets or any jewelry must be removed BEFORE the class.
17. Do not perform any maintenance operation or use any tools or devices that you have not been briefed on or that you do not feel safe to operate. Ask instructions to your teacher or a technician if unsure.

REQUIRED MATERIAL

Course notes, (the number will be provided by the instructor during the first course).

MEDIAGRAPHY

Acceptable Methods, Techniques and Practices : V. 1 : Aircraft Inspection and Repair, AC43.13-1A, V.2 : Aircraft Alterations AC 43.13-2A, 2 volumes, Federal Aviation Administration, Department of Transportation, Us Government Printing Office, Washington DC, 1977.

Maintenance manuels and manufacturer parts.

Microfiches.

INSTITUTIONAL POLICIES AND REGULATIONS

All students enrolled at Collège Édouard-Montpetit must become familiar with and comply with the institutional policies and regulations. In particular, these policies address learning evaluations, maintaining admission status, French language policies, maintaining a violence-free and harassment-free environment, and procedures regarding student complaints. The French titles for the policies are: *Politique institutionnelle d'évaluation des apprentissages, les conditions particulières concernant le maintien de l'admission d'un étudiant, la Politique de valorisation de la langue française, la Politique pour un milieu d'études et de travail exempt de harcèlement et de violence, les procédures et règles concernant le traitement des plaintes étudiantes.*

The full text of these policies and regulations is accessible on the College web site at the following address: www.college-em.qc.ca. If there is a disparity between shortened versions of the text and the full text, the full text will be applied and will be considered the official version for legal purposes.

OTHER DEPARTMENTAL REGULATIONS

Students are encouraged to consult the website for the specific regulations for this course:
www.college-em.qc.ca/ena/preenvol/reglements

NOTE: This Course Outline is a translation of the *Plan de cours* for 280-624-EM: *Stage en maintenance d'avions*. If there is a discrepancy, then the original French version will be considered the official version for legal purposes.