

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
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OFFICE HOURS

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Morning					
Afternoon					
Other					

Coordinator(s)	Office	☎ extension	✉ email or web site
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1 CONTEXT OF THIS COURSE WITHIN THE PROGRAM

- This course is in the sixth session of the program and is one of the two courses of the program's synthesis test. This course is co-taught with the Helicopter Maintenance Course, 280-634-EM.
- By the end of this course, students will have developed the following objectives:
 - find the necessary information from the entire technical library and demonstrate an understanding of the procedures required to carry out maintenance on an aircraft.
 - 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.
- **Transport Canada:** This course outline meets the requirements of Training Organisation Certification Manual (MCF) of Transport Canada. The Department applies Transport Canada standard which allows a maximum absence of 5% for the course (theory and laboratory). The department compiles absences of all students enrolled in Aircraft Maintenance (280.C0) according to Transport Canada requirements. The application of Transport Canada policies regarding absences is available on the [Ma réussite à l'ÉNA](#) website under the heading « Privilèges accordés par Transports Canada ».

2 COMPETENCIES OF THE EXIT PROFILE (STUDENT SKILL PROFILES)

- Perform aircraft maintenance.

3 MINISTERIAL OBJECTIVE(S) AND COMPETENCIES

- 026E Perform activities related to airplane maintenance.

4 TERMINAL OBJECTIVE OF THE COURSE (FINAL COURSE OBJECTIVE)

- Demonstrate a methodology and technique of maintenance work around and on aircraft.

5 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 and all around the workplace.

6 COURSE PLAN

a) 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

b) 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

c) 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

Learning Objective	Activities/Weeks
3.8 Record defects, checks and inspections in writing or using maintenance software.	All

d) Performing activities related to weight and balance

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

e) 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

f) 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

g) 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: Document anomalies, checks and inspections in writing, use equipment and tools appropriately, apply maintenance procedures, and apply security measures surrounding operations around aircraft.

Content: Course outlines, 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: **Functional Test of the Flight Spoilers on the Challenger 601**

Learning Objective:

- Perform functional test of the flight spoilers 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: **Performing a Compass Swing 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:

Run-Up on a Turboprop

Learning Objectives:

- 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:

Performing an Electrical snag

Learning Objectives:

- Detect failure
- Locate components
- Analysis wiring diagram
- Resolve failure.

Activity 9:

Changing the Piper Aztec Carburetor

Learning Objectives:

- Remove the old carburetor.
- Follow-up documentation
- Reinstall new carburetor
- Adjust the throttle.

Activities 10 to 12:

Maintenance Internship on an Available Airplane

Learning Objectives:

- Conduct maintenance work (inspect, locate, modify).
- Troubleshoot (mechanical, hydraulic and electrical problems)
- Complete relevant documentation for the work that was done.

Activity 14:

Practical Exam

Learning Objectives:

Students must apply a rigging procedure or a servicing procedure of an aircraft component.

Activity 15:

Theory Exam

Learning Objectives:

- Review of practical exam.
- Theory exam on Activities 1 to 9.

Note: Free activities could replace any other planned activities.

7 SYNTHESIS OF SUMMATIVE EVALUATION METHODS

Description of Evaluation Activity	Context of realization and evaluation mode	Learning Objective(s)	Evaluation criteria	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	See Table 1	Week 2 to week 4 - formative evaluations. 8th week - Assessment report with the student. Week 5 to week 15 - summative evaluations.	40%
Practical Exam. Plan and perform a maintenance task on an aircraft according to a methodology and a working technique adapted to the aeronautical standard.	Individual, between 50 to 90 minutes depending of the activity.	all	See Table 1	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%

Table 1 Evaluation criteria
<ol style="list-style-type: none"> A) Accurate identification of information and maintenance procedures within a prescribed time. B) Verification and consistent interpretation of operating parameters on different systems. C) Precise evaluation of the condition of the component according to standards. D) Accurate execution of procedures for rectification of anomalies. E) Systematic identification of all anomalies and commissioning according to standards. F) Careful and accurate documentation of work in aircraft maintenance record sets.

7 SYNTHESIS OF SUMMATIVE EVALUATION METHODS (cont's)

Description of Evaluation Activity	Context of realization and evaluation mode	Learning Objective(s)	Evaluation criteria	Due Date (approximate date assignment due or exam given)	Weighting (%)
Technical records. Writing technical snags and rectifications	- Individual, according to a simulation - With the help of sample supply by the teacher.	Record inspections and interventions in airplane work sheets	- Writing procedure according to the model provided. - Exact description of the technical problem. - Full and exact description of the rectification. - Respect of the presentation standards of the model provided.	Three samples picked by the teacher during the session will be evaluate	10%
Review of week 14 practical exam. Inspection, research and a written exam on all concepts acquired during the internship.	- Individual - The exam will include a practical and written part.	See activities 1 to 14	-Precise founding and exact description of the anomalies. -Use the right reference to trace a standard. -Pertinence and accuracy of the answer according to the course standard. -Fullness of the answer according to the course standard.	15th week	20%

30%

TOTAL: 100%

8 REQUIRED MATERIAL

<ul style="list-style-type: none"> - Course notes, (the number will be provided by the instructor during the first course) - All health and safety equipment's/clothing's as per school hangar or Lab requirement/rule
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9 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, Washington DC, 1977.
- Maintenance manuals and manufacturer parts.

10 REQUIREMENTS TO PASS THE COURSE

1. Passing Mark

- The passing mark for this course is 60% by adding the marks for the theory and practical work for the course.

2. Attendance for Summative Evaluations

- Students must be present for summative evaluations and must comply with the instructions given by the instructor to carry out the evaluation activity and written in the course outline. Unexcused tardiness for a summative evaluation could result in being excluded from the activity. Any absence from a summative evaluation that is not due to serious reasons (illness, death in the family, etc.) could result in a mark of zero (0) for the activity. Students are responsible for meeting with the instructor before an evaluation activity is held or immediately upon returning to ÉNA to explain the reason for an absence.
- Proper documentation, such as a medical certificate, a death certificate, legal papers, etc., must be shown if the reason for absence is serious and recognized as such by the instructor(s), arrangements will be made between the instructor(s) and the student to make up the activity.

3. Submitting Assignments

- All assignments must be submitted by the date, hour and location designated by the instructor(s). Late assignments will be penalized 10% per day that they are late and will receive a mark of zero (0) after 6 days.

4. Presentation of Written Work

- The instructor(s) will provide students with information and guidelines regarding the presentation of written work. When the presentation of an assignment is unacceptable, the work will be penalized as a late assignment until an acceptable version is submitted. In this case, the penalties for late work will be applied (Late assignments will be penalized 10% per day that they are late and will receive a mark of zero (0) after 6 days). Students must follow the standards adopted by the Cégep for written work (« *Normes de présentation matérielle des travaux écrits* »). These can be found at : <http://rsmh.cegepmontpetit.ca/normes-de-presentation-materielle-des-travaux-ecrits-du-cegep/>.

11 METHOD OF COURSE PARTICIPATION

SAFETY MEASURES IN THE HANGARS

1. Students participating in any training, maintenance or manufacturing activity either in the hangars or workshops shall always wear safety boots or shoes, ÉNA overall and safety glasses.
2. Smoking is prohibited in school, hangars and on the ramp giving access to the airport.

3. Sitting on workbenches, machineries or equipment's will not be tolerated.
4. Do not use any machineries or equipment's without having first the permission of the instructor.
5. Long hair will have to be secured before working with machineries.
6. Workbenches, machineries and workplaces shall be clean after being used or prior leaving courses.
7. Circulation in any hangars of unauthorized persons is prohibited.
8. No visitors without permission.
9. Watches, rings and chains must be removed prior starting course.

12 OTHER DEPARTMENTAL REGULATIONS

- Students are encouraged to consult the website for the specific regulations for this course:
<http://guideena-en.cegepmontpetit.ca/departement-rules/>
<https://mareussite.cegepmontpetit.ca/ena/mon-parcours/mon-programme/regles-departementales>

13 INSTITUTIONAL POLICIES AND REGULATIONS

- All students enrolled at Cégep 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* (PIEA), *la Politique institutionnelle de la langue française* (PILF), *la Politique pour un milieu d'études et de travail exempt de harcèlement et de violence* (PPMÉTEHV), *les Conditions d'admission et cheminement scolaire*, *la Procédure concernant le traitement des plaintes étudiantes dans le cadre des relations pédagogiques*.
- The full text of these policies and regulations is accessible on the Cégep web site at the following address: <http://www.cegepmontpetit.ca/ena/a-propos-de-l-ecole/reglements-et-politiques>. 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.

14 STUDENT ACCESSIBILITY CENTER – FOR STUDENTS WITH DISABILITIES

- Students having received a professional diagnosis of impairment (motor skills, neurological, organic, sensory, learning difficulties, mental health, autism spectrum disorder or other) or suffering from a temporary medical condition may request special accommodations.
- Students seeking these accommodations must forward their diagnosis to the CSA by either MIO to "Service, CSA-ENA" or email to "servicesadaptesena@cegepmontpetit.ca".
- Students already registered with the CSA must communicate with their teachers at the beginning of the semester to discuss those accommodations they have been awarded by the CSA.

15 ANNEX