

COURSE OUTLINE

COURSE: Aircraft Systems Maintenance

PROGRAM: 280.C0 Aircraft Maintenance Technology

DISCIPLINE: 280 Aeronautics

WEIGHTING: Theory: 0 Practical Work: 4 Personal Study : 2

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

OFFICE HOURS

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Morning					
Afternoon					

Coordinator(s)	Office	☎ extension	✉ email or web site
Éric Goudreault	C-160	4691	eric.goudreault@cegepmontpetit.ca
Serge Rancourt	C-160	4664	serge.rancourt@cegepmontpetit.ca

INTRODUCTION AND CONTEXT OF THIS COURSE IN THE PROGRAM

This course is offered during the sixth session of the Aircraft Maintenance Program and is the main practical activity devoted to aircraft systems.

The knowledge gained in other courses, in particular those related to general electricity, aerodynamics, flight instruments, hydraulics, pneumatics and systems operation is essential in order to follow this course.

Inspecting, servicing and maintaining aircraft systems are a top priority for an AME and this is the goal of this course.

In order to enable students to achieve the ministry objective, the activities reflect the following frame work:

- systems standards, specifications and specific regulations
- methods used to inspect and test a system
- identification of all the possible causes of a defect
- use of simulation and defect diagnosis software (if possible)
- follow-up of maintenance procedures
- appropriate technical vocabulary
- workplace hazardous materials information system
- professionalism : safe attitude and behaviour

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) and Avionics (280.D0) according to Transport Canada requirements. The application of Transport Canada policies regarding absences is available on the college website and in the student agenda under the heading « Privilèges accordés par Transports Canada ».

COMPETENCIES OF THE EXIT PROFILE (STUDENT SKILL PROFILES)

Execute maintenance of aircraft systems.

MINISTERIAL OBJECTIVE(S) AND COMPETENCIES

0269 Perform maintenance on aircraft systems.

026C Perform maintenance on aircraft landing gear systems.

TERMINAL OBJECTIVE OF THE COURSE (FINAL COURSE OBJECTIVE)

Develop a methodology and technic of work on aircraft systems according to the manufacturer's procedures and in compliance with Transport Canada standards.

TECHING AND LEARNING STRATEGIES

As a team, students will be asked to perform exercises to maintain aircraft systems on aircraft or models, and evaluate the performances of aircraft systems

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Each activity requires the use of prior knowledge and the application of strict standards and regulations previously established that may come from various levels: Transport Canada, aircraft parts manufacturers, employers, recognized organizations, maintenance policy manual, etc

COURSE PLAN

WEEK	LEARNING OBJECTIVES	CONTENT
1	<ul style="list-style-type: none"> Plan and sort out the sequence of operation in relation with the norms, specifications, objectives, needs and characteristic of different systems. 	<ul style="list-style-type: none"> - Presentation of the activities and instructions of execution, presentation of the grids of evaluation, formation of the teams.
2, 3, 4	<ul style="list-style-type: none"> Plan and sort out the sequence of operation in relation with the norms, specifications, objectives, needs and characteristic of different systems. Perform activities related to the necessary maintenance and repairs of a system to maintain its airworthiness; Identify snags in relation with establish data during system functional tests Apply health and safety standards in all activities Store tools and equipment Keep the working area cleaned and unobstructed 	<ul style="list-style-type: none"> - Activities in rotation. <ul style="list-style-type: none"> • Ground run on the CL 601. • Familiarization and fuel system functional test on the Dornier 328. • Familiarization and system functional test (to be determined by the availability of aircraft).
6, 7, 8	<ul style="list-style-type: none"> Plan and sort out the sequence of operation in relation with the norms, specifications, objectives, needs and characteristic of different systems. Perform activities related to the necessary maintenance and repairs of a system to maintain its airworthiness; Execute procedures relative to the maintenance and repair of landing gears Identify snags in relation with establish data during system functional tests Apply health and safety standards in all activities Store tools and equipment Keep the working area cleaned and unobstructed 	<ul style="list-style-type: none"> - Activities in rotation. <ul style="list-style-type: none"> • Nose wheel steering functional test on the Challenger, CL 601. • Pressurization functional test on the PA31P. • De-icing and anti-icing system functional test on the Dornier 328.
9, 10, 11	<ul style="list-style-type: none"> Plan and sort out the sequence of operation in relation with the norms, specifications, objectives, needs and characteristic of different systems. Perform activities related to the necessary maintenance and repairs of a system to maintain its airworthiness; Execute procedures relative to the maintenance and repair of landing gears Identify snags in relation with establish data during system functional tests Apply health and safety standards in all activities Store tools and equipment Keep the working area cleaned and unobstructed 	<ul style="list-style-type: none"> - Activities in rotation. <ul style="list-style-type: none"> • Thrust reverser functional test on the Challenger, CL 601. • Oxygen system functional test and servicing on Dornier 328. • Landing gear functional test on the Learjet 60.

12, 13, 14	<ul style="list-style-type: none">• Plan and sort out the sequence of operation in relation with the norms, specifications, objectives, needs and characteristic of different systems.• Perform activities related to the necessary maintenance and repairs of a system to maintain its airworthiness;• Execute procedures relative to the maintenance and repair of landing gears• Identify snags in relation with establish data during system functional tests• Apply health and safety standards in all activities• Store tools and equipment• Keep the working area cleaned and unobstructed	<ul style="list-style-type: none">- Activities in rotation.<ul style="list-style-type: none">• Landing gear functional test on the Challenger, CL 601.• Hydraulic proxy switch test on Dornier 328.• System functional test (to be determined by the availability of aircraft).
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SYNTHESIS OF SUMMATIVE EVALUATION METHODS

Description of Evaluation Activity	Learning Objective(s)	Context	Evaluation criteria	Weighting (%)
<p>Week 5: 1st summative evaluation</p>	<ul style="list-style-type: none"> • Plan and sort out the sequence of operation in relation with the norms, specifications, objectives, needs and characteristic of different systems. • Perform activities related to the necessary maintenance and repairs of a system to maintain its airworthiness; • Identify snags in relation with establish data during system functional tests 	<p>Individual exam lasting about 3 class periods</p>	<ul style="list-style-type: none"> • Precise identification of standards; • Judicious choice of operations to be executed; • Fair distinction of the functioning of a system; 	<p>25%</p>
<p>Week 15: 2nd summative evaluation</p>	<ul style="list-style-type: none"> • Plan and sort out the sequence of operation in relation with the norms, specifications, objectives, needs and characteristic of different systems. • Perform activities related to the necessary maintenance and repairs of a system to maintain its airworthiness; • Execute procedures relative to the maintenance and repair of landing gears • Identify snags in relation with establish data during system functional tests 	<p>Individual exam lasting about 4 class periods</p>	<ul style="list-style-type: none"> • Precise identification of standards; • Judicious choice of operations to be executed; • Fair distinction of the functioning of a system; • Identification and analysis of anomalies; • Logic problem solving. 	<p>40%</p>
<p>This 40% evaluation is used to certify and validate that the students have reached the final objective of the course: "Develop a methodology and technic of work on aircraft systems according to the manufacturer's procedures and in compliance with Transport Canada standards."</p>				
<p>Week 2 to 14: Technical record</p>	<p>Complete work order and the activity report in regard to the work performed.</p>		<p>Per evaluation grid given at the beginning of the semester.</p>	<p>17.5%</p>
<p>Week 2 to 14: Summative evaluation</p>	<p>Evaluate student competencies during the activities.</p>		<p>Per evaluation grid given at the beginning of the semester.</p>	<p>17.5%</p>

Total : 100%

REQUIRED MATERIAL

None.

MEDIAGRAPHY

Cassou, G. « Aérotechnique: cellule, équipements et circuits », Éditeur Institut aéronautique Jean Mermoz, 1975. D 629.13431 C 345 a (hydraulique. Trains. Carburant. Oxygène. Dégivrage. Pressurisation).

Féminier, Didier. « Cellule et systèmes d'aéronefs » Modulo Éditeur, 1982. D 629.13431 F 329 c (hydraulique, trains, carburant, oxygène, dégivrage, pressurisation).

Fleury, J., Weyland, J. « Technologie cellule », Institut aéronautique Jean Mermoz, 1981. D 629.13431 F 618t 629.13431 P 873 c (Hydraulique, Trains, Carburant, Oxygène, Sécurité, Dég. Press).

Jeppesen. « A&P Technician Airframe Textbook », édition 2003, ATP series. 629.134 A298. (hydraulique, trains, protection contre les incendies carburant, oxygène, protection contre le givre et le pluie, dégivrage, climatisation et pressurisation).

Kroes/Watkins/Delp. « Aircraft Maintenance & Repair », 6e édition, Mac Millan/McGraw-Hill, 1993. A629.1346M158m (Hydraulique. Trains. Carburant. Oxygène. Sécurité. Dégivrage. Pressurisation).

Poujade, A. « Cellule et systèmes », Éditeur Institut aéronautique, Jean Mermoz, 1985. D 629.13431 P 873 c (hydrauliques. Trains. Carburant. Oxygène. Dégivrage. Pressurisation).

Ropoll J.C. « Cellule, circuits », Éditeur École nationale de l'aviation civile, 1984. A 629.13431R592c (Hydraulique. Trains. Oxygène. Dégivrage. Pressurisation).

USA, Dep. of Transportation. « Advisory circular DOT FAA », EA-AC 43.13-1B.

USA, Dep. of Transportation. «Airframe and powerplant; airframe handbook », AC 65-ISA, FAA 1976. D 629.1343 E 83a (Hydraulique. Trains. Carburant. Oxygène. Sécurité. Dégivrage. Pressurisation).

USA, Dep. of Transportation. « Maintenance d'aéronefs, Méthodes, techniques et pratiques reconnues » Circulaire d'information, EA-AC 43.13-1A et 2A ISBN2-89113-114-2.

Wild, Thomas W. « Transport category aircraft system » by Thomas, W. Wild. A 629.133349 W 668T. Edition Englewood, Col. : Jeppesen Sanderson, inc, c1996.

REQUIREMENTS TO PASS THE COURSE

(1) Passing Mark

The passing mark for this course is 60% (PIEA, article 5.1m).

(2) Attendance for Summative Evaluations

Attendance at summative evaluation activities is mandatory. (PIEA, article 5.2.5.1).

(3) Submitting Assignments

Homework required by the teacher must be handed in at the established date, place and time. The penalties associated with delays are established according to departmental rules (PIEA, article 5.2.5.2).

In case of delay the penalties are:

- See section « Department rules » at the following website link:
<http://guideena-en.cegepmontpetit.ca/department-rules/>

(4) Presentation of Written Work

The student must meet the "Written Work Standard Presentation" adopted by the CEGEP. Non-compliance with these standards may delay the acceptance of work or affect the rating granted. These standards are available in **Flash Links, Bibliothèques** under "**Méthodologie**" of the CEGEP Documentation Centers at: www.cegepmontpetit.ca/normes.

The **departmental penalties** for non-compliance with Written Work Standard Presentation (PIEA, article 5.3.2) are:

- See section « Department rules » at the following link:
<http://guideena.cegepmontpetit.ca/regles-des-departements/>
<http://guideena-en.cegepmontpetit.ca/department-rules/>

CLASS PARTICIPATION EXPECTATIONS

SAFETY MEASURES IN THE HANGARS

1. Access to the hangar is forbidden to students without the clothing recommended by ÉNA (Polo and work pants recommended)
2. Sitting on benches or aircraft is prohibited.
3. Shoes must be worn at all times (sandals are prohibited).
4. Safety glasses must be worn when working on the machinery.
5. Aircrafts and benches must be cleaned after use.
6. The work areas must be cleaned after each course.
7. Cellular phone are prohibited in the hangar.
8. No one may circulate in the hangar unless authorized.
9. No visitors are allowed without authorization.

10. Overhead crane is only operated by the teacher.

OTHER DEPARTMENTAL REGULATIONS

Students are encouraged to consult the website for the specific regulations for this course:
<http://guideena-en.cegepmontpetit.ca/department-rules/>

INSTITUTIONAL POLICIES AND REGULATIONS

All students enrolled in the École nationale d'aérotechnique of Édouard-Montpetit CEGEP must be aware of and comply with the contents of institutional policies and regulations. In particular, the *Politique institutionnelle de la langue française (PILF)*, the *Politique pour un milieu d'études et de travail exempt de harcèlement et de violence (PPMÉTEHV)*, the *conditions of admission and academic progress*, the *procedure dealing with student complaints within educational relations*.

The complete version of these policies and regulations is available on the CEGEP website at the following address: <http://www.cegepmontpetit.ca/ena/a-propos-de-l-ecole/reglements-et-politiques> and <http://www.cegepmontpetit.ca/ipesa>. In case of discrepancy between the version appearing elsewhere and the complete version, the complete version will be applied and will be considered the official version for legal purposes.