

COURSE OUTLINE

COURSE: Aircraft Systems Operation

PROGRAM: 280.C0 Aircraft Maintenance

DISCIPLINE: 280 Aeronautics

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

Instructor(s)	Office	☎ Extension	✉ Email or Website
Simon Potel	C-186	4529	simon.potel@cegepmontpetit.ca

OFFICE HOURS

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Morning	8.10 to 10.00				9.10 to 11.00
Afternoon					
Other					

For questions and support Microsoft Teams is preferred. Refer to: *Important informations sheet for details.*

Coordinator(s)	Office	☎ Extension	✉ Email or Website
Éric Goudreault	C-160	4691	eric.goudreault@cegepmontpetit.ca
Stéphanie Arpin	C-160	4630	stephanie.arpin@cegepmontpetit.ca

1 CONTEXT OF THIS COURSE IN THE PROGRAM

The course *Aircraft Systems Operation* (280-5A4) is offered during the 5th session of the Aircraft Maintenance Program (280.C0). All students enrolled in this program are called upon in one manner or another to analyze, do work and inspect the integrity and operation of aircraft systems.

In the workshops, students review the condition of components and check their operation on the test benches. On the aircraft, they perform necessary maintenance work on the systems to assure the airworthiness of the aircraft. Troubleshooting is characterized by first analyzing, understanding and testing the operation of the systems. Next the reasons for the system failure must be identified, justified and confirmed. In order to correct the problem, students need to then be able to replace the defective component, check the settings and make the adjustments as determined by the designer of the aircraft and approved by the civil aviation authority. Students must find this information in the appropriate maintenance manuals. The final step involves checking the integrity of the system by testing its operation and then signing the maintenance release, in the appropriate technical files.

In short, to carry out all of the responsibilities related to the position, an aircraft maintenance technician must be able to explain and analyze the operation of systems as well as their components, use appropriate vocabulary, gather the necessary documentation for the job and apply all required security measures to maintain the airworthiness of the aircraft.

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 ».

2 COMPETENCIES OF THE EXIT PROFILE (STUDENT SKILL PROFILES)

Perform maintenance on aircraft systems.

3 MINISTERIAL OBJECTIVE(S) AND COMPETENCIES

026C Perform activities related to maintaining aircraft systems.

0269 Perform maintenance of landing gear.

4 TERMINAL OBJECTIVE(S) AND COMPETENCIES

At the end of this course, student will be able to understand general principle of operation of certain aircraft systems and identify, compare, analyse and troubleshoot different parts of similar systems and determine the cause of an anomalies.

5 TEACHING STRATEGY

This course will be in hybrid modes mixing asynchronous and synchronous methods. Synchronous classes will occur live on Teams for a period of 1.5 to 2hrs each week following schedule. The remaining 2hrs are dedicated to continue personal learning in asynchronous mode giving more flexibility.

A preparation time of one hour is required before each class. Live sessions will include a feedback of your preparation, a general review of technical aspects, explanations and videos, questions and discussion in group and exercise and activities when applicable. Time for individual questions or help will be possible at the end. The physical principles used in the operation of the systems will be explained during these periods, supported by questions and discussions to develop a detailed analysis of the operation of the systems.

All sort of documentation will be made available on LÉA. For one-on-one communication and help, Microsoft Teams should be preferred.

6 COURSE PLANNING

LEARNING OBJECTIVE

1. Understand and analyze general operation of a landing gear system.
2. Understand and analyze general operation of ice protection systems.
3. Understand and analyze general operation of air conditioning systems.
4. Understand and analyze general operation of oxygen systems.
5. Understand and analyze general operation of fuel systems.

WEEK	LEARNING OBJECTIVE	CONTENT	TEACHING STRATEGY/MODE AND LEARNING ACTIVITIES	MATERIAL
1	1	Presentation, expectations, guidelines, main instructions and course plan. Introduction to aircraft systems, classification and importance.	Synchronous: – Students expectations and actual knowledge of aircrafts systems.	Notebook ATA 32 and documentation on LÉA http://www.s-techent.com/ATA100.htm
			Asynchronous: – Revision and reading of theoretical notions to complete learning.	
2	1	ATA 32 and sub systems.	Synchronous: – Landing gear design. – Exercise on oleopneumatic operation.	Notebook ATA 32 and documentation on LÉA
			Asynchronous: – Exercise on ldg characteristics	
3	1	ATA 32 and sub systems.	Synchronous: – Braking systems	Notebook ATA 32 and documentation on LÉA
			Asynchronous: – Revision and reading of theoretical notions to complete learning. – Exercise on brake system	
4	1	ATA 32 and sub systems.	Synchronous: – Steering control system and gear locking	Notebook ATA 32 and documentation on LÉA
			Asynchronous: – Revision and reading to complete learning.	

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5	1	Preparation for upcoming evaluation	Synchronous: – Review, questions and exercises	Notebook ATA 32 and documentation on LÉA
			Asynchronous: – Review, and exercises	
6	2	ATA 30 Regulation over icing Ground de-icing	Synchronous: – Aircraft icing concept – Exercise ATA 30	Notebook ATA 30 and documentation on LÉA
			Asynchronous: – Revision and reading to complete learning. – Exercise ATA 30	
7	3	ATA 21	Synchronous: – Air conditioning systems	Notebook ATA 21 and documentation on LÉA
			Asynchronous: – Revision and reading to complete learning.	
8	3	ATA 21	Synchronous: – Aircraft pressurisation concept	Notebook ATA 21 and documentation on LÉA
			Asynchronous: Revision and reading to complete learning. Exercise ATA 21	
9	2,3	Preparation for upcoming evaluation	Synchronous: – Review, questions and exercises	Notebooks ATA 30 and 21 and documentation on LÉA
			Asynchronous: – Review, and exercises	
10	1 to 5	Session work	Synchronous: – Session work presentation	Documentation on LÉA
			Asynchronous: – Time allowed for session work	
11	4	ATA 35 + session work	Synchronous: – Aircraft oxygen systems	Notebook ATA 35 and documentation on LÉA
			Asynchronous: – Revision and reading to complete learning. – Session work	
12	5	ATA 28 + session work	Synchronous: – Aircrafts fuel systems	Notebook ATA 28 and documentation on LÉA
			Asynchronous: – Revision and reading to complete learning. – Session work	
13	4,5	Evaluation 3 (short) + session work	Synchronous: – Session work preparation with teacher's assistance in class	Documentation on LÉA
14	1 to 5	Final evaluation (session work)		

7 SYNTHESIS OF SUMMATIVE EVALUATION METHODS

Description of Evaluation Activity	Context	Learning objective(s)	Evaluation Criterias	Due Date	Weighting (%)
Quiz, exercises or homeworks (cumulated)	Individually. Short answers. Delivered electronically.	According to chapters	Components identification, functional analysis, identify discrepancies or troubleshoot system.	To be determined	10
Evaluation 1	Short-answer and multiple-choice. Individually. In presence at school.	1	Components identification, functional analysis, identify discrepancies or troubleshoot system.	After week 5	20
Evaluation 2	Short-answer and multiple-choice. Individually. In presence at school.	2,3	Components identification, functional analysis, identify discrepancies or troubleshoot system.	After week 10	20
Evaluation 3 (short)	Short-answer and multiple-choice. Individually. In presence at school.	4,5	Components identification, functional analysis, identify discrepancies or troubleshoot system.	Week 13	15
Final evaluation (session work)	Individually in presence at school.	According to applicable chapter	Complete operation analysis of a specific aircraft system. Integration of main highlights and concepts.	Week 14	35
				TOTAL	100 %

8 REQUIRED MATERIAL

Notebook and documentation will be available on LÉA.

No protection equipment required. No physical presence at school is scheduled due to current pandemic situation.

9 MEDIAGRAPHY

JAP Inc. « A&P Technician Airframe Test guide », édition 2002, ATP series. 629.134C891aS (Hydraulique. Trains. Carburant. Oxygène. Sécurité. Dégivrage. Pressurisation).

JAP Inc. « A&P Technician Airframe Workbook », édition 2000-2001, ATP series. 629.134353A296 1992 S (Hydraulique. Trains. Carburant. Oxygène. Sécurité. Dégivrage. Pressurisation).

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

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.

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. Tardiness

Students who arrive late after the beginning of the first period of a course are considered absent for this period.

3. 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 ENA 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.

4. 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 one week.

5. 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.

Students must follow the standards adopted by the Cégep for written work (« *Normes de présentation matérielle des travaux écrits* »). These can be found in the documentation center on the Cégep web site www.cegepmontpetit.ca/normes under the heading *Liens éclair, Bibliothèques, « Méthodologie »*.

11 METHODS OF COURSE PARTICIPATION

Students are expected to follow the rules taught in class regarding the use of equipment and to comply with safety rules related to the operation of aircraft systems and models. Improper use or an improper attitude is dangerous and will lead to a suspension from class.

12 OTHER DEPARTMENTAL REGULATIONS

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

1. Course Attendance

It is the student's responsibility to attend all classes and participate actively. The presence to summative evaluations is mandatory.

2. Tardiness

Students who arrive more than 10 minutes after the beginning of the first period of the course are considered absent for this period. Students who arrive late to the other periods of the same course will not be admitted.

3. Absence of the Instructor

Students must wait ten minutes before considering that a teacher is absent for the course period and must be present for the second hour of the course unless an absence has been announced.

4. Safety and Use of Department Rooms and Services

See the Pre-Flight rules on the college website under the heading for rules and policies at ÉNA (*Règles et politiques*):
<http://ena.cegepmontpetit.ca/etudiants-actuels/documents-et-consignes/regles-de-securite>.

5. Mark Revisions

See Article 6.6.2 of the policies regarding evaluations in the *Politique institutionnelle d'évaluation des apprentissages*.

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 THE CENTRE FOR ADAPTED SERVICES - FOR STUDENTS WITH DISABILITIES

Students with a professional diagnosis (motor, neurological, organic, sensory, learning, mental health, autism spectrum disorder or other limitations) or with a temporary medical condition may apply for accommodations.

To access this service, send your diagnosis either by MIO to "Service, CSA-ENA" or by email to servicesadaptesena@cegepmontpetit.ca.

If you already have an accommodation plan with the CSA, you are invited to contact your teacher at the beginning of the session to discuss the accommodation measures determined by the CSA.