

## Course outline

COURSE : **Aircraft system operation**

PROGRAM : 280.C0 Aircraft Maintenance

DISCIPLINE : 280 Aeronautics

WEIGHTING : *Theory* : 2 *Practice* : 2 *Personal Study* : 2

Teacher(s)	Office	☎ extension	✉ e-mail ou website
Simon Potel	C186	4529	simon.potel@ena.ca

### Office hours

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Morning	From 11h10 to 13h00 at C-186				
Afternoon		From 16h10 to 18h00 at C-186			
Other					

Coordinator(s)	Office	☎ extension	✉ e-mail
Mora, Joaquin	C-160	4225	<a href="mailto:joaquin.mora@ena.ca">joaquin.mora@ena.ca</a>
Rancourt, Serge	C-160	4664	<a href="mailto:serge.rancourt@ena.ca">serge.rancourt@ena.ca</a>

## 1 CONTEXT OF THIS COURSE WITHIN 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 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) 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 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 OF THE COURSE (FINAL COURSE OBJECTIVE)

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 AND LEARNING STRATEGIES

The theoretical aspect of this course is based on lectures supported by PPT presentations, reflective activities, and group discussions. To support the theoretical notions, the student will be able to reinforce his learning by using parts and models available in the classroom. He will also be able to see the components of the systems in a real context on the aircraft during viewing periods in the hangar. The student will be required to put his knowledge into practice and analyze the operating principles of components and/or systems through the study of diagrams and extracts from technical manuals.

In the case of situations of isolation or absences linked to the health situation, it will be possible to temporarily continue distance learning, both for the theoretical and practical aspects.

## 6 COURSE PLAN

### LEARNING OBJECTIVES

1. Distinguish different systems and their main components.
2. Analyse system general operation.
3. Determine and troubleshoot system failure.

WEEK	# OBJECTIVE	CONTENT	MODE OF INSTRUCTION AND LEARNING ACTIVITIES	DOCUMENTATIONS, RESOURCES, TECHNOLOGICAL TOOLS AND URL ADDRESS
1	1	Course plan, ATA system presentation, and ATA 32.	Chapter ATA 32 content In class	Notebook (LÉA) Documentation (LÉA)
2	1,2	ATA 32	Chapter ATA 32 content In class	Notebook (LÉA) Documentation (LÉA)
3	1,2	ATA 32	Chapter ATA 32 content In class	Notebook (LÉA) Documentation (LÉA)
4	1,2,3	ATA 32. Activities and exercises of analysis of diagrams and functional sequences. Revision activity in form of visualization at the hangar.	Chapter ATA 32 content In class / hangar	Notebook (LÉA) Documentation (LÉA)
5	1,2,3	Semester work presentation and evaluation 1.	Evaluation in class	Semester work (LÉA)
6	1,2	ATA 36	Chapter ATA 36 content In class	Notebook (LÉA) Documentation (LÉA)
7	1,2,3	ATA 30	Chapter ATA 30 content In class	Notebook (LÉA) Documentation (LÉA)
8	1,2	ATA 21	Chapter ATA 21 content In class	Notebook (LÉA) Documentation (LÉA)
9	1,2,3	ATA 21	Chapter ATA 21 content In class	Notebook (LÉA) Documentation (LÉA)
10	1,2,3	Revision activity in form of visualization at the hangar and evaluation 2.	Evaluation in class	
11	1,2	ATA 35	Chapter ATA 35 content	Notebook (LÉA)

WEEK	# OBJECTIVE	CONTENT	MODE OF INSTRUCTION AND LEARNING ACTIVITIES	DOCUMENTATIONS, RESOURCES, TECHNOLOGICAL TOOLS AND URL ADDRESS
			In class	Documentation (LÉA)
12	1,2,3	ATA 28	Chapter ATA 28 content In class	Notebook (LÉA) Documentation (LÉA)
13	1,2,3	ATA 28 ATA 26	Chapters ATA's 28 and 26 content In class	Notebook (LÉA) Documentation (LÉA)
14	1,2,3	Dedicated to semester work.	Support by teacher	Semester work (LÉA) Documentation (LÉA)
15	1,2,3	Evaluation 3	Common evaluation	

## 7 SYNTHESIS OF SUMMATIVE EVALUATION METHODS

Description of Evaluation Activity	Context	Learning objective(s)	Evaluation Criteria <sup>1</sup>	Due Date (approximate date assignment due or exam given)	Weighting (%)
Evaluation 1. Description, role and functional analysis of components and whole ATA 32 system.	Individual exam. Short answers and some multiples choices. Duration 2 hours.  No material allowed.	1,2,3	System operation analysis, malfunction identification and troubleshooting	Week 5	20 %
Evaluation 2. Description, role and functional analysis of components and whole ATA's 36, 30 and 21 systems.	Individual exam. Short answers and some multiples choices. Duration 2 hours.  No material allowed.	1,2,3	System operation analysis, malfunction identification and troubleshooting	Week 10	20 %

Semester work	<p>Teamwork based on a specific system (to be determined).</p> <p>Presentation of complete system operation, different operation modes and analysis in case of failure.</p> <p>Access to aircrafts technical library.</p>	1,2,3	System operation analysis, malfunction identification and troubleshooting	Week 14	25 %
Terminal evaluation. Description and functional analysis of all ATA chapters covered during this course.	<p>Individual exam.</p> <p>Short answers and some multiples choices.</p> <p>Duration 3 hours.</p> <p>No material allowed.</p>	1,2,3	System operation analysis, malfunction identification and troubleshooting	Week 15	35 %
				<b>TOTAL</b>	<b>100 %</b>

## 8 REQUIRED MATERIAL

All notebooks and documentation required will be available on Léa in PDF format.

## 9 MEDIAGRAPHY

Domingo, R. (dir.). (2018). Aviation Maintenance Technician Handbook- Airframe (vol. 1 & 2). U.S. Department of transportation, Federal Aviation Administration, Flight Standard services.

[https://www.faa.gov/regulations\\_policies/handbooks\\_manuals/aviation/media/amt\\_airframe\\_hb\\_vol\\_1.pdf](https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/media/amt_airframe_hb_vol_1.pdf)

Duncan, J.S. (dir.). (2018). Aviation Maintenance Technician Handbook-General. U.S. Department of transportation, Federal Aviation Administration, Flight Standard services.

[https://www.faa.gov/regulations\\_policies/handbooks\\_manuals/aviation/media/amt\\_general\\_handbook.pdf](https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/media/amt_general_handbook.pdf)

Finch, R., Fischer, R., Grimes, M., Stits, R. et Watkins W.A. (1998). Advisory circular 43.13-1B, Acceptable methods, techniques, and practices-Aircraft inspection and repair. U.S. Department of Transportation, Federal Aviation Administration, Flight Standard services.

[https://www.faa.gov/documentlibrary/media/advisory\\_circular/ac\\_43.13-1b\\_w-chg1.pdf](https://www.faa.gov/documentlibrary/media/advisory_circular/ac_43.13-1b_w-chg1.pdf)

CAR. Canadian Aviation Regulations. Certification standards 523 and 525. Availables on Transport Canada website.

<https://tc.canada.ca/en/corporate-services/acts-regulations/list-regulations/canadian-aviation-regulations-sor-96-433/standards/airworthiness-chapter-525-transport-category-aeroplanes-canadian-aviation-regulations-cars>

## 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 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.

## **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 one week.

## **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.

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://rmsh.cegepmontpetit.ca/normes-de-presentations-materielle-des-travaux-ecrits-du-cegep/>.

## **5. Plagiarism and other breaches of academic integrity**

- a) Plagiarism consists of copying, translating, paraphrasing, in whole or in part, the work of another person and wrongfully attributing it to oneself, with or without their consent, and constitutes a breach of academic integrity.
- b) The use of works generated entirely or partially by artificial intelligence, if not authorized by the professor, is also considered a breach of academic integrity.
- c) Acts of fraud, such as impersonating another student during a summative assessment, deceiving, cheating, or falsifying documents or results, also constitute breaches of academic integrity.
- d) Any collaboration in such acts or any attempt to commit them is also considered a breach of intellectual ethics.

Any violation of intellectual honesty, as well as any attempt at or collaboration in such an action will result in a mark of "0" for the exam, the assignment or the evaluation activity in question. In this case, the teacher will make a written report to departmental coordination which will be transmitted to the Dean of Studies in accordance with Article 5.6.1 IPESA).

## **11 METHODS OF COURSE PARTICIPATION**

Wearing safety glasses and shoes is mandatory in hangars. 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 mockups. Improper use or an improper attitude is dangerous and will lead to a suspension from class. The use of a laptop or tablet for note taking and monitoring of the PPT presentation (note book) is permitted. Only these uses will be tolerated. Usage of cell phones, MP3, IPOD or cameras is prohibited in class.

By attending online classes through videoconference technology, the student understands that his image and voice may be captured on video in the context of his courses and agrees to this. Videos are only visible during live classes and by the teacher and other participants exclusively.

For pedagogical reasons, some courses may be recorded. It is the teacher's responsibility to clearly inform students beforehand when their images and voices are to be captured on video. Any student opposed to his image and/or voice being recorded may turn off his camera and microphone but will be required to participate in writing through means established by the teacher. Otherwise, students who activate their cameras or their microphones are deemed to have

agreed to their images and voices being taped. These recordings of courses will be available for the express and sole use of those students registered in the courses for the duration of the semester. It is strictly forbidden to broadcast these recordings in any public manner or to use them other than for pedagogical purposes.

No student may record an online course without prior consent from the teacher. Students whose personal information (voices and images) is captured on video may exercise such remedies as provided by the right to access records and the right of rectification per the Act respecting access to documents held by public bodies and the protection of personal information through the Cegep's Secretary General's Office.

## **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**