

## COURSE OUTLINE

**COURSE:** **Propeller Maintenance**

**PROGRAM:** 280.C0 Aircraft Maintenance

**DISCIPLINE:** 280 Aeronautics

**WEIGHTING:** Theory: 1                      Practical: 2                      Personal Study : 1

Teacher(s)	Office	☎ Extension	✉ email or website
Mathieu.rodrigue	D-113B	2135	<a href="mailto:mathieu.rodrigue@cegepmontpetit.ca">mathieu.rodrigue@cegepmontpetit.ca</a>

### OFFICE HOURS

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Morning	11H-12H				
Afternoon			13H-15H	12H-13H	

Coordinator(s)	Office	☎ Extension	✉ email or website
Louis Deschênes	D-113D	4607	<a href="mailto:louis.deschenes@ena.ca">louis.deschenes@ena.ca</a>

## CONTEXT OF THIS COURSE IN THE PROGRAM

This course is offered during the fifth semester of the program. By the end of the course, students will have developed the ability to:

- Gather the necessary information for propeller maintenance.
- Perform the removal and disassembly of propellers and their systems.
- Perform an inspection and repair propellers and their systems.
- Perform the assembly and installation of propellers and their systems.
- Perform a compliance inspection for propeller installation.

**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 ».

## COMPETENCIES OF THE EXIT PROFILE (STUDENT SKILL PROFILES)

Perform maintenance on propellers.

## MINISTERIAL OBJECTIVE(S) AND COMPETENCIES

**0264** To maintain propellers and propeller-related systems.

## TERMINAL OBJECTIVE OF THE COURSE (FINAL COURSE OBJECTIVE)

To verify conformity of propeller systems and propeller installation.

## TEACHING AND LEARNING STRATEGIES

- The platform LÉA will be used for grades and attendances registration.
- For all communication the platform TEAMS will be used.
- All class documentation and activity instruction will be provided via the platform TEAMS.

### Theory:

Students will enrich their course notes with the multi-media presentations that will be followed by formal lectures.

### Practical Work:

This part consists mainly of laboratory work where students must refer to manufacturer's manuals by following procedures and theoretical notes while using the equipment and precision tools.

**COURSE PLANNING – THEORY**

**Activity Periods: Weeks 1, 2, 3**

Learning Objectives	Content	Personal Study Activities
1.1 Explain the factors that influence the performance and design of a propeller	<ul style="list-style-type: none"> <li>▪ Definition of blade profiles, lift, angle of attack, blade angle, plane of rotation, relative wind</li> <li>▪ Effects of various forces at play on the design (pitch, twist, and shape of the blades)</li> <li>▪ Materials used for construction, advantages and disadvantages.</li> <li>▪ Effects on the airplane, dissymmetry of thrust, critical power, gyroscopic effect</li> </ul>	Theory class presentation, documents, and related activities via TEAMS.
1.2 Explain the principles of operation of various types of propellers and propeller systems.	<ul style="list-style-type: none"> <li>▪ Definition and use of propellers and systems: fixed pitch, variable pitch or constant speed</li> <li>▪ Examples of application of the different types</li> </ul>	Theory class presentation, documents, and related activities via TEAMS.
1.3 Explain the different modes of operation of a propeller or a propeller system.	<ul style="list-style-type: none"> <li>▪ Definition of : feathering, reverse thrust, propulsion</li> <li>▪ Examples of applications of the different modes</li> </ul>	Theory class presentation, documents, and related activities via TEAMS.
1.4 Describe the devices used at the base of propeller systems.	<ul style="list-style-type: none"> <li>▪ Springs and basic forces on the blade angle</li> <li>▪ Usefulness of the other hydraulic, pneumatic or electric devices on the blade angle</li> </ul>	Theory class presentation, documents, and related activities via TEAMS.

**Activity Periods: Weeks 5, 6, 7**

Learning Objectives	Content	Personal Study Activities
1.5 Explain the control and security systems of a propeller	<ul style="list-style-type: none"> <li>▪ Definition and effects of the regulator, synchronizer and synchrophasor systems</li> </ul>	Theory class presentation, documents, and related activities via TEAMS.
1.6 Describe measuring and control devices for the performance of a propeller and a propeller system	<ul style="list-style-type: none"> <li>▪ Definitions of speedometer, torque and angle of incidence</li> <li>▪ Examples of instrument use</li> </ul>	Theory class presentation, documents, and related activities via TEAMS.
1.8 Identify the propellers and the propeller systems according to the manufacturer's specifications	<ul style="list-style-type: none"> <li>▪ Finding the serial and model number of the propeller or the system</li> </ul>	Theory class presentation, documents, and related activities via TEAMS.

**COURSE PLAN – PRACTICAL WORK**

Activity Periods: Weeks 1 to 15

<b>1.Task planification of propeller and propeller system maintenance</b>		
<b>Learning Objectives</b>	<b>Content</b>	<b>Personal Study Activities</b>
1.7 Identify the safety requirements for work on propellers and propeller systems	<ul style="list-style-type: none"> <li>▪ Determining whether the propeller must be removed or not according to the work plan.</li> <li>▪ If the propeller is not removed, putting it in a safe position (angle of incidence); make sure that the engine cannot start (remove magnetos and spark plugs); wear safety glasses.</li> <li>▪ If the propeller is removed, making sure that the engine cannot start; wear safety glasses, secure the propeller on the work bench</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
1.9 Identify relevant information in the documentation of regulations for the maintenance of propellers and propeller systems.	<ul style="list-style-type: none"> <li>▪ Special documents (measurement recording and inspection sheets, and work documents)</li> <li>▪ Laws and regulations specific to the maintenance of propellers and propeller systems</li> <li>▪ Logbooks and entries to make during maintenance</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS

<b>2.Perform propeller and propeller system removal</b>		
<b>Learning Objectives</b>	<b>Content</b>	<b>Personal Study Activities</b>
2.1 Use relevant documentation for the maintenance of propellers or propeller systems.	<ul style="list-style-type: none"> <li>▪ Identifying the propeller or the system according to the model or the serial number</li> <li>▪ Finding allowable limits when conducting an inspection</li> <li>▪ Validating the application of the propeller or propeller system using logbooks.</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
2.2 Apply the laws and regulations relevant to maintenance of propellers or propeller systems.	<ul style="list-style-type: none"> <li>▪ Researching laws and regulations that apply to specific cases.</li> <li>▪ Tracking using logbooks</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
2.3 Plan the logical sequence of operations for maintenance of propellers or propeller systems	<ul style="list-style-type: none"> <li>▪ Using the documentation that accompanies propellers, deciding the sequence of operations according to those possible: removal, disassembly, balancing, cleaning, repairing, assembling, installing, adjusting linkages</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
2.4 Plan and identify the use of material necessary for maintenance of propellers or propeller systems.	<ul style="list-style-type: none"> <li>▪ Using the documents and the logical sequence of operations, finding equipment, material, and hardware necessary and arranging them in a safe manner</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS

<b>3.Perform propeller and propeller system installation</b>		
<b>Learning Objectives</b>	<b>Content</b>	<b>Personal Study Activities</b>
3.1 Apply safety rules for removing propellers or propeller systems.	Steps to follow: <ul style="list-style-type: none"> <li>▪ Using protective equipment (goggles, gloves, etc.)</li> <li>▪ Establishing a safety zone</li> <li>▪ Ensuring that the propeller is correctly positioned for removal according to the manufacturer's manual.</li> <li>▪ Ensuring that the engine will not start</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
3.2 Use the procedure described in the manufacturer's manuals for removing propellers or propeller systems.	<ul style="list-style-type: none"> <li>▪ Visual inspection of propellers, propeller systems and/or linkages</li> <li>▪ Identification of useful reference points (position marks) Removal as per the procedure</li> <li>▪ Visual inspection of the removed pieces</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
3.3 Analyze inspection results and the guidelines on relevant documents.	<ul style="list-style-type: none"> <li>▪ Learning to write inspection results in special documents or in the logbooks according to the limitations described in the manuals or the documents that accompany the propeller or propeller system</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS

<b>4-5-6-7-8. Perform propeller disassembly, inspection, repair and assembly</b>		
<b>Disassembly</b>		
<b>Learning Objectives</b>	<b>Content</b>	<b>Personal Study Activities</b>
4.1 Apply safety rules for dismantling propellers or propeller systems.	Steps to follow: <ul style="list-style-type: none"> <li>▪ Using protective equipment (goggles, gloves, etc.)</li> <li>▪ Establishing a safety zone</li> <li>▪ Installing parts on an appropriate table</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
4.2 Use the procedure written in the manufacturer's manual for the disassembly	Steps to follow: <ul style="list-style-type: none"> <li>▪ Using the specialized equipment and tools that are recommended in the manual.</li> <li>▪ Making sure to record the position marks.</li> <li>▪ Removal, inspecting and handling of equipment according to procedures.</li> <li>▪ Cleaning, identifying, and storing parts according to procedures.</li> <li>▪ Recording work done in appropriate documents</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS

<b>Inspection</b>		
<b>Learning Objectives</b>	<b>Content</b>	<b>Personal Study Activities</b>
5.1 Apply safety rules for inspecting propellers and propeller systems	Steps to follow: <ul style="list-style-type: none"> <li>▪ Using protective equipment (goggles)</li> <li>▪ Establishing a safety zone</li> <li>▪ Installing parts on an appropriate support (inspection table)</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
5.2 Follow the inspection rules in the manufacturer's manual	<ul style="list-style-type: none"> <li>▪ Choosing appropriate tools and gauges based on the inspections to be performed: measuring the angle of incidence, the blade angle, the thickness, the depth, the diameter and performing a visual inspection.</li> <li>▪ Carrying out the inspection</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
5.3 Analyse the inspection results and the guidelines in relevant documents.	<ul style="list-style-type: none"> <li>▪ Comparing the results with the standards in specialized documents and/or logbooks</li> <li>▪ Making a diagnosis that describes the defect.</li> <li>▪ Recording inspection maintenance results in appropriate tracking document</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS

<b>Repair</b>		
<b>Learning Objectives</b>	<b>Content</b>	<b>Personal Study Activities</b>
6.1 Apply safety rules for repairing propellers and propeller systems	Steps to follow: <ul style="list-style-type: none"> <li>▪ Using protective equipment (goggles, gloves, etc.)</li> <li>▪ Establishing a safety zone</li> <li>▪ Installing parts on an appropriate support</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
6.2 Analyze defects in the propeller or propeller system	<ul style="list-style-type: none"> <li>▪ identifying and describing the defect found on the part during the visual inspection by using the diagnosis written in the documentation</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
6.3 Suggest a solution for the defect that was found	<ul style="list-style-type: none"> <li>▪ Solutions: adjusting linkages; repairing surface defects; balancing, adjusting alignment, or indicating not reparable</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
6.4 Perform the repair and record the results in the relevant documents	<ul style="list-style-type: none"> <li>▪ Choosing the necessary specialized equipment or tools</li> <li>▪ Using the manufacturer's manual to perform the repair.</li> <li>▪ Visual inspection or using instruments to check the results of the repair.</li> <li>▪ Recording results in writing in the documentation</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
6.5 Analyze the results of the repair and record them in the relevant documents	Determining the success of the repair Recording the decision in writing in the documents and logbooks	Laboratory notes and documentation: see exercises related to laboratories in TEAMS

<b>Repair conformity analysis</b>		
<b>Learning Objectives</b>	<b>Content</b>	<b>Personal Study Activities</b>
7.1 Apply safety rules for installing propellers and propeller systems	<p>Steps to follow:</p> <ul style="list-style-type: none"> <li>▪ Using protective equipment (goggles, gloves, etc.)</li> <li>▪ Establishing a safety zone</li> <li>▪ Installing parts on an appropriate support</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
7.2 Use the procedure described in the manufacturer's manual for installing propellers or propeller systems	<ul style="list-style-type: none"> <li>▪ Using the specialized equipment and tools recommended in the manual.</li> <li>▪ Using position marks already recorded, torques.</li> <li>▪ Checking results and balance if necessary</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
7.3 Record the results of the installation in the appropriate documents	<ul style="list-style-type: none"> <li>▪ Specialized documents and logbooks must contain information on installation</li> </ul>	Laboratory notebook: see exercises related to laboratories

<b>Assembly</b>		
<b>Learning Objectives</b>	<b>Content</b>	<b>Personal Study Activities</b>
8.1 Apply safety rules for installing propeller and propeller systems	<p>Steps to follow:</p> <ul style="list-style-type: none"> <li>▪ Using protective equipment (goggles, gloves, etc.)</li> <li>▪ Establishing a safety zone</li> <li>▪ Ensuring that the propeller is correctly positioned for installation according to the manufacturer's manual.</li> <li>▪ Making sure that the engine cannot start</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
8.2 Use the procedure described in the manufacturer's manual for installing propellers or propeller systems	<ul style="list-style-type: none"> <li>▪ Using appropriate specialized equipment and tools</li> <li>▪ Using reference points already recorded</li> <li>▪ Carefully following the procedure according to the type of shaft splined or tapered.</li> <li>▪ Adjusting parts (linkages, regulators, etc.)</li> <li>▪ Visual inspection of the propeller, the linkages, the controls, and the regulators</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
8.3 Analyze the inspection results and the guidelines in the relevant documents	<ul style="list-style-type: none"> <li>▪ Determining the success of the installation after inspecting and writing the results in the specialized documents and/or logbooks</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS

<b>9. Propeller and propeller system installation conformity</b>		
<b>Learning Objectives</b>	<b>Content</b>	<b>Personal Study Activities</b>
9.1 Apply safety rules for checking compliance on the installation of propeller and propeller systems	Steps to follow: <ul style="list-style-type: none"> <li>▪ Using protective equipment (glasses, gloves, etc.)</li> <li>▪ Establishing a safety zone</li> <li>▪ Installing the propeller or the system safely on a test apparatus according to established procedures</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
9.2 Use the procedure described in the manufacturer's manual for checking compliance of the installation of propellers and propeller systems	<ul style="list-style-type: none"> <li>▪ Researching the procedure in the documents and using the necessary tools</li> <li>▪ Running the system on the mock-up test bench or aircraft engine</li> <li>▪ Checking and recording results in the appropriate documents</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
9.3 Analyze the results of the inspection and the guidelines in the relevant documents	<ul style="list-style-type: none"> <li>▪ Determining if the check was successful or not according to the standards.</li> <li>▪ If successful, recording it in the specialized documents and the logbooks.</li> <li>▪ If not successful, returning it for inspection</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS

<b>10. work area cleanliness</b>		
<b>Learning Objectives</b>	<b>Content</b>	<b>Personal Study Activities</b>
10.1 Apply rules related to health and safety in the workplace	<ul style="list-style-type: none"> <li>▪ Using necessary protective equipment (glasses, gloves, dust masks, etc.)</li> <li>▪ Storing tools and equipment a</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS
10.2 Apply environmental rules for the workplace	<ul style="list-style-type: none"> <li>▪ Disposal of fluids in an appropriate place</li> <li>▪ Storing cleaning cloths in the provided bin</li> <li>▪ Making certain the workplace is clean</li> </ul>	Laboratory notes and documentation: see exercises related to laboratories in TEAMS



<b>Theory 2hr/week (15hr/session)</b>	
1-2	Course Outline Introduction to Propeller Historical facts.
3-4	Propeller vocabulary Operational constraints
4-5	Side effects of propellers Wooden propeller construction
6-7	<b>EVALUATION (25%)</b>
8-9	Aluminium propeller construction Composite propeller
10-11	Constant speed propeller (C/S) Propeller Governor
12-13	Propeller systems
14-15	<b>FINAL EVALUATION (25%)</b>

**Theory Chronology Propeller 280-5A3**

The periods indicated for activities on the Propulsion Department course outlines are approximate. Modifications may be made due to logistical problems or situations.

<b><u>Propeller 280-5A3</u></b>	
<b><u>Laboratory Chronology</u></b>	
<b><u>Class</u></b>	<b><u>Content</u></b>
1	1- Course outline presentation 2- Lab class equipment overview 3- Lab station explanation
2	Lab stations: <ul style="list-style-type: none"> <li>• F/P propeller Removal – visual inspection – F/P Propeller installation and tracking.</li> <li>• F/P Propeller conformity and tracking verification.</li> <li>• F/P propeller static balancing.</li> <li>• Propeller safety-Lockwire</li> </ul>
3	
4	
5	
6	Minor blade section repair explanation and repair inspection.
7	Minor blade section repair conformity evaluation exercise. Minor blade repair inspection.
8	Evaluation – half-semester exam (10%) Evaluation– Minor blade section repair inspection (10%)
9	1- Exam 1 overview 2- Lab station explanation.
10	Lab stations : <ul style="list-style-type: none"> <li>• Perform a C/S propeller conformity verification.</li> <li>• Hartzell compact C/S removal and installation</li> <li>• Hartzell compact C/S blade change</li> <li>• Hamilton STD Hydromatic removal and installation</li> <li>• Propeller Safety - Lockwire</li> </ul>
11	
12	
13	
14	Hartzell Steel clamp
15	Final evaluation- Synthesis Exam (30%)

The periods indicated for activities on the Propulsion Department course outlines are approximate. Modifications may be made due to logistical problems or situations.

**SYNTHESIS OF EVALUATION METHODS**

**Theory**

Description of the evaluation activity	Context	Learning Objective(s)	Evaluation Criteria	Due Date (date assignment is due or exam date)	Weighting (%)
Written exam: multiple choice answers and short answers	Individual. 2-hour duration without documentation	1.1 to 1.5	Precision and compliance of propeller terminology.	Week 4	25%
Written exam: multiple choice answers	Individual 2-hour duration without documentation	All	Compliance of propeller terminology. Compliance of propeller and propeller systems fonction. Propeller system analysis.	Week 8	25%

Sous-total : 50%

**Practical Work**

Description of the evaluation activity	Context	Learning Objective(s)	Evaluation Criteria	Due Date (date assignment is due or exam date)	Weighting (%)
Blade repair inspection	Individual In the laboratory	6.1 to 6.5	Depth, propeller blades blending finish, Blade repair specifications, Blade profile.	Week 8	10%
Written exam base on fix pitch propeller conformity and minor blade repair.	Individual, 2-hour duration	Objectives for Weeks 1 to 8 (see chart)	Compliance of blade terminology, propeller function comprehension, accuracy of information, completeness of the information.	Week 8	10%
Comprehensive Exam (Synthesis)	Individual, 2-hour duration Access to documentation permitted	All	Compliance of blade terminology, propeller function comprehension, accuracy of information, completeness of the information.	Week 15	30%

Subtotal : 50%



## REQUIRED MATERIAL

- Course notes and appropriate manual as specified by the instructor at the beginning of the session.
- Calculator SHARP EL 531 (ENA).
- Overalls (ENA).
- Rag (ENA).
- Safety glasses (clear lens).
- Safety shoes or boots.
- Mechanic's gloves.

## WORK CLOTHES WITH ÉNA LOGO

Clothing worn by students in laboratories and hangars must bear the ÉNA logo. Hooded sweaters that include a drawstring are not permitted due to the safety risks they represent when using equipment or machinery. ÉNA clothing is on sale at the ÉNA Coop (room C-163-A).

The authorized pants are work pants or jeans in good condition that must not have any decoration (nails, metal parts, etc.). As stipulated [in https://mareussite.cegepmontpetit.ca/ena/mes-outils/sante-et-securite/](https://mareussite.cegepmontpetit.ca/ena/mes-outils/sante-et-securite/)

## MEDIAGRAPHY

F. Delp, *Aircraft Propellers and Controls*, Basin, WY, Aviation Maintenance Publish, 1979, 156 pages.

Direction générale de l'aviation civile, *Mécaniciens : cellule et moteur : manuel moteur*, 1971.

F. Delp, *Aircraft Governors*, I.A.P. Inc., 1979, 50 pages.

Bent, R.D. et McKinley J.L., *Aircraft Powerplants*, 5e éd., McGraw-Hill, Montréal, 1985, 596 pages.

Pratt and Whitney, *PT6-A Descriptive Notes*.

Pratt and Whitney, *PW-100 Descriptive Notes*.

*General Aviation Efficiency System*. Light Aircraft Microfiche Library System. Propellers, V.6.

Federal Aviation Administration, *AC43-13-1A/2A: Acceptable Methods, Techniques and Practices : Aircraft Inspection, Repair & Alterations*.

## 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 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.

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

### METHODS OF COURSE PARTICIPATION

Everyone is required to wear work clothes (ENA), safety glasses and safety shoes in the laboratory. Smoking in the lab is prohibited (could cause an explosion) as well as eating and drinking (risk of contamination).

#### For bimodal classes

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 Cégep's Secretary General's Office.

### OTHER DEPARTMENTAL REGULATIONS

Students are encouraged to consult the website for the specific regulations for this course:

<http://guideena-en.cegepmontpetit.ca/department-rules/>

<https://mareussite.cegepmontpetit.ca/ena/mon-parcours/mon-programme/regles-departementales>

## **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, 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 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.

**NOTE:** This Course Outline is a translation of the *Plan de cours* for 280-443-EM: *Fonctionnement et maintenance des hélices*. If there is a discrepancy, then the original French version will be considered the official version for legal purposes.

## **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.

## **APPENDIX**

The activity periods in the course outline are approximate. Changes may be made to adapt to any logistical problems that might arise during the session.