

## COURSE OUTLINE

**COURSE:** Internship on Helicopter Maintenance

**PROGRAM:** 280.C0 Aircraft Maintenance Technology

**DISCIPLINE:** 280 Aeronautics

**WEIGHTING:** Theory: 0                      Practical : 4                      Personal Study: 1

Instructor(s)	Office	☎ Extension	✉ Email or Website
Marc-Antoine Charette	C-183	4418	<a href="mailto:ma.charette@cegepmontpetit.ca">ma.charette@cegepmontpetit.ca</a>
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Serge Rancourt	C-160	4664	<a href="mailto:serge.rancourt@cegepmontpetit.ca">serge.rancourt@cegepmontpetit.ca</a>

### OFFICE HOURS FOR STUDENTS

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Morning					
Afternoon					

Coordinator(s)	Office	☎ Extension	✉ Email or Website
Éric Goudreault	C-160	4691	<a href="mailto:eric.goudreault@cegepmontpetit.ca">eric.goudreault@cegepmontpetit.ca</a>
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## CONTEXT OF THIS COURSE IN THE PROGRAM

This course is offered during the sixth session of the program and it is one of the two capstone courses for the comprehensive assessment at the end of the program. The *Internship 1 helicopter* course 280-5C3-EM is a pre requisite for this course and is also a co-requisite with *Internship on Airplane Maintenance*, 280-6A4-EM.

**Transports 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 (280.03) and Avionics (280.04) 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)

Carry on aircraft maintenance.

## MINISTRY OBJECTIVE(S) AND COMPETENCIES

**026F** Perform activities related to helicopter maintenance.

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

By the end of this course, students will be able to:

- Carry out a maintenance activity according to applicable airworthiness standards

## TEACHING AND LEARNING STRATEGIES

Work is performed in teams of two; a rotation of exercises is scheduled with an adequate availability of the models and aircraft. At the beginning of the session, each student will receive his or her activity schedule within the list of planned activities for the course. Each week, students must perform their internship while assuring proper operation and safety procedures.

COURSE PLANNING

<b>Objective</b>	<b>Weeks</b>
1. Use the appropriate documentation for the different activities.	All
2. Plan and carry out the various activities in an efficient and coordinated way, respecting the health and safety rules.	3 to 15
3. Check out unserviceable components and correct any anomalies.	5,8,9,10 and 11
4. Change a configuration aircraft taking into account the weight and center of the aircraft	6 and 12
5. Find and apply the appropriate regulations for the different activities.	1 to 15
6. Perform adequate certification for the different activities	3 to 12

<u>Week</u>			<u>Activities</u>
1	<b>Introduction/Maintenance manual research</b>	<b>206/350</b>	
2	<b>Troubleshooting (Formative)</b>	<b>IN CLASS 206/300/120</b>	
3	<b>Tail rotor driveshaft damper inspection</b>	<b>300 CAL</b>	<b>1</b>
4	<b>Electrical failure research exercise</b>	<b>R44 MIX</b>	<b>2</b>
5	<b>Mast removal/installation</b>	<b>206L BHT</b>	<b>3</b>
6	<b>Landing gear configuration change</b>	<b>206B UXA</b>	<b>4</b>
7	<b>Engine control rigging</b>	<b>H125 IAQ</b>	<b>5</b>
8	<b>Acceptance check</b>	<b>R44 MIX</b>	<b>6</b>
9	<b>Main rotor head removal/installation</b>	<b>H125 IAQ</b>	<b>7</b>
10	<b>Free wheeling unit</b>	<b>206B JPL</b>	<b>8</b>
11	<b>Servo actuators</b>	<b>206B JPL</b>	<b>9</b>
12	<b>Weight and balance (Formative)</b>	<b>IN CLASS/206B UXA</b>	<b>10</b>
13	<b>Blade manipulation and inspection (Formative)</b>	<b>206/412/H125</b>	
14	<b>Configurations</b>	<b>105 CFN</b>	
15	<b>On ground and in flight vibration analysis (Formative)</b>	<b>120 LSP</b>	

SYNTHESIS OF SUMMATIVE EVALUATION METHODS

Activity Evaluation Description	Learning context and method of evaluation	Learning Objective(s)	Evaluation Criterias	Due Date (assignment or exam)	Weighting (%)
Participation to 10 of the listed activities.	Work will be performed in teams of 2, while evaluation will be individually.	All	See Appendix	Between Weeks 2 and 15 inclusively	10 activities will be evaluated (10% per activity for a total of 100%)

**TOTAL: 100%**

## REQUIRED MATERIAL

None

## MEDIAGRAPHY

SCHAFFER, J., Basic Helicopter Maintenance, Aviation Maintenance, Basin, WY, 1980, 459 p. Réf. : 629.1346S 296b.

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, Department of Transportation, Us Government Printing Office, Washington DC, 1977.

Maintenance manual and item parts catalogue manual.

Vidéo : Helicopter vibration.

## 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](http://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 (PPMÉTÉHV)*, 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.

APPENDIX

Task evaluation (Competencies)				
	Excellent	Good	Acceptable	Inadequate
<b>Retrieving information</b>	3 All information was found easily within the first 15 minutes of the course.	2 All information was found within the first 15 minutes of the course.	1 With assistance, the information was found within the first 15 minutes of the course.	0 Couldn't find the information or found after the first 15 minutes of the course.
<b>Following the procedure</b>	3 All steps followed adequately.	2 Most steps followed.	1 Some steps were missed or mixed.	50% of total. A major mistake was done and the integrity of the aircraft was compromised.
<b>Task achievement</b>	3 The task was done on time and hardware secured iaw standards.	2 Task done on time but hardware wasn't secured properly.	1 Task done on time but hardware wasn't secured	0 Task not completed.
<b>Tools and equipments</b>	3 Tools and equipment were used adequately.	2 During the task, improper tools were used.	1 During the task, some tools or equipments were used inadequately.	50 % of total. The task was stopped due to inadequate use of tools and equipment. Serious possible injury.
<b>Safety</b>	3 The task was achieved safely.	2 The task was done but some NOTES, WARNING and CAUTIONS were missed.	1 The task was done and most NOTES, WARNINGS and CAUTIONS were missed.	0 The task was stopped due to possibilities of injuries. <i>(not wearing safety glasses)</i> .
<b>Individual involvement</b>	3 The student was involved in all facets of the task.	2 The student was involved in some facets of the task.	1 Most of the tasks were carried out by his colleagues.	0 Absent or useless to his team.
<b>Clean up</b>	2 Area and aircraft cleaned. Equipment put away.		1 Area and aircraft not cleaned or equipment wasn't put away	
<b>Total</b>	/20			/10

Competencies Clarification			
<b>Retrieving information</b> Proper technical manual. Precision. Time. With or without assistance.	<b>Following the procedure</b> Precise application. Using proper software. Chronology. Understanding and correct interpretation. Compliance with standards and specifications.	<b>Task achievement</b> Rigorous judgment of work priorities and judicious choice of operations to be executed. Precise execution. Troubleshooting. Work quality.	<b>Tools and equipments</b> Proper equipment planning and work area. Proper tools used.
<b>Safety</b> Safety glasses Safety shoes Workdress Task accomplishment	<b>Individual involvement</b> Helpfull for his teammate. Involve in technical research and all technical task steps. Involve in the set up and clean up.	<b>Claien up</b> Work area. Aircraft. Toolbox. POL stowed properly.	