

## COURSE OUTLINE

**COURSE :** Internship on Helicopter 1

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

**DISCIPLINE :** 280 Aeronautics

**WEIGHTING :** Theory: 0                      Practical Work: 3                      Personal Study: 1

<b>Teacher (s)</b>	<b>Office</b>	<b>☎ Extension</b>	<b>✉ Email or Website</b>
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					

<b>Dep. Coordinator(s)</b>	<b>Office</b>	<b>☎ Extension</b>	<b>✉ Email or Website</b>
Goudreault, Éric	C-160	4691	<a href="mailto:eric.goudreault@cegepmontpetit.ca">eric.goudreault@cegepmontpetit.ca</a>
Rancourt, Serge	C-160	4664	<a href="mailto:serge.rancourt@cegepmontpetit.ca">serge.rancourt@cegepmontpetit.ca</a>

## **CONTEXT OF THIS COURSE IN THE PROGRAM**

This course is situated in the fifth program semester.

By the end of this course, students will have developed the ability to:

- conduct research in technical manuals
- apply inspection procedures
- identify defects (snags)
- record information
- determine the maintenance schedule

This course is a mandatory pre-requisite for the 280-6B4-EM course.

**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.**

**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.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)**

To master the aeronautic maintenance work technics.

## **MINISTERIAL OBJECTIVE(S) AND COMPETENCIES**

**026D** To perform activities related to inspecting airplanes and helicopters.

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

At the end of the course, the student will be able to plan and perform helicopter inspections according to a methodology and inspection work technique adapted to the aeronautical standard.

## **TEACHING AND LEARNING STRATEGIES**

Through an inspection directive, students carry out a maintenance task on an aircraft using the maintenance manual as a reference.

In this course emphasis will be put on real and simulated scenarios. Students work in teams of two or three.

Before any summative evaluations, students will have had a formative evaluation to maximize the opportunity to succeed.

This is a 45 hour course given over a period of twelve weeks. The duration of each course will be as follows:

Week 1: 2 hours (introduction to internship)

Week 2-11: 4 hours (internships)

Week 12: 3 hours (practical exam)

For a total of 45 hours.

**COURSE PLAN**

<b>Learning Objectives</b>	<b>Content</b>
1. Use the appropriate documentation for the different activities.	All
2. Plan and carry out the different activities in an efficient and coordinated way, respecting the health and safety rules.	2 to 11
3. Inspect components and systems.	2 to 11
4. Keep working area clean and safe.	1 to 12

<u>Weeks</u>				<u>Activities</u>
1.	<b>Introduction</b>			
2.	<b>Main rotor (formative)</b>	300	CAL	1
3.	<b>Swashplate</b>			2
4.	<b>Oil flow check / Overrunning clutch oil level check</b>	500	GNV	3
5.	<b>Tail rotor rigging</b>	300	CAL	4
6.	<b>Electrical snags (formative)</b>	500	GNV	5
7.	<b>Compressor wash (formative)</b>	120	LSP	6
8.	<b>Daily inspection (formative)</b>	350	VYL	7
9.	<b>Tail rotor assembly</b>	350	IAQ	8
10.	<b>100 hours inspection</b>	R44	MIX	9
11.	<b>Tail rotor control tube (Nylatron) / tailboom</b>	206L	BHT	10
12.	<b>Exam</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 6 of the listed activities.	Work will be performed in teams of 2 or 3, while evaluation will be done individually.	All	See appendix.	Between Weeks 2 and 11	10% per activity for a total of 60%
Written and practical Exam:  Gather all informations  Plan work  Proceed to inspection  Safetying	Individually. Written exam including theory part, research, multiple choice and short answers.      Practical exam	All	Use the proper reference to trace a standard, a procedure and a part.  -Accuracy of the answer (PCM) according to the course standard.  -Pertinence and accuracy of the answer according to the course standard.  -Completeness of the answer according to the course standard.  - Understanding of actions.  -Manufacturers standards.	Week 12	40%

**TOTAL : 100%**

**REQUIRED MATERIAL**

None

## MEDIAGRAPHY

*Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair EA-AC 43.13-1A/2A*, Department of Transportation (FAA), ©1989, 410 pages.

Shafer Joseph, *Basic Helicopter Maintenance*, Riverton International Aviation, ©1980.

*Aircraft Hardware Standards Manual and Engineering Reference*, Stanley J. Dyik, 138 pages.

*Airworthiness Manual*, Transport Canada, Canadian Government Publishing Center, 1986, Ottawa.

*Applicable Maintenance Manual*.

AC65-9A : *Airframe & Powerplant Mechanics, General Handbook*, U.S. Department of Transportation, Federal Aviation Administration (FAA), 1976, 549 pages.

Video : "Ground run".

## 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 « Règles des départements » at the following website link:  
<http://guideena.cegepmontpetit.ca/regles-des-departements/>

### (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 « Règles des départements » at the following link:  
<http://guideena.cegepmontpetit.ca/regles-des-departements/>

## **METHODS OF COURSE PARTICIPATION**

### SECURITY MEASURES IN THE HANGARS

1. Access to the hangar is forbidden to students without ÉNA's recommended clothings. (Polo and pants highly recommended).
2. Prohibition of sitting on workbenches or aircraft.
3. Safety shoes are mandatory at all times. (Sandals prohibited)
4. Safety glasses mandatory for working on aircraft.
5. Clean aircraft and workbenches after use.
6. Clean the location of your aircraft after each lesson.
7. Cell "PROHIBITED" in the hangar.
8. Movement in the hangar prohibited to unauthorized persons.
9. No visitors without permission.
10. Strictly forbidden to use the overhead crane.

### **OTHER DEPARTEMENTAL REGULATIONS**

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

<http://guideena.cegepmontpetit.ca/regles-des-departements/>.

### **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>. 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>	2 All information was found easily within the first 15 minutes of the course.	1 All information was found within the first 15 minutes of the course.	.5 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>	5 All steps followed adequately.	3 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>	5 The task was done on time and hardware secured iaw standards.	3 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>	2 Tools and equipment were used adequately.	1.5 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>	2 The student was involved in all facets of the task	1 The student was involved in some facets of the task.	.5 Most of the tasks were carried out by his colleagues.	0 Absent or useless to his team.
<b>Clean up</b>	1 Area and aircraft cleaned. Equipment put away.	.5 Area and aircraft not cleaned or equipment wasn't put away		0 Area and aircraft not cleaned and equipment wasn't put away
<b>Total</b>	/20			/10

**Retrieving information:** Proper technical manual, procedure and timing.

**Following the procedure:** Following the maintenance manual, using proper technical manual, following steps, proper understanding and interpretation, following standard and specifications.

**Task achievement:** priorities in work planning, hardware safetying, resolving snags, work quality.

**Tools and equipments:** proper equipment preparation and work area.

**Safety:** safety glasses and shoes. Work dress and safety while working.

**Individual involvement:** Team member, involve in all task facets, helpful and useful.

**Clean up:** Working area, aircraft tool box and POL.