ÉCOLE NATIONALE D'AÉROTECHNIQUE
Un campus du collège Édouard-Montpetit

280-5C3-EM
FALL 2013
Pre-Flight

COURSE OUTLINE

COURSE: **Internship on Helicopters 1**

PROGRAM: 280.CO Aircraft Maintenance Technology

DISCIPLINE: 280 Aeronautics

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

Instructor(s)	Office	☎ Extension	✉ Email or Website
Paul Boudreau	C-183	4329	paul.boudreau@college-em.qc.ca

OFFICE HOURS

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Morning					
Afternoon					

Coordinator(s)	Office	☎Extension	✉ Email or Website
Pierre Ménard	C-160	4207	pierre.menard@college-em.qc.ca
Gérard Leblanc	C-160	4531	gerard.leblanc@college-em.qc.ca

CONTEXT OF THIS COURSE IN THE PROGRAM

This course is offered during the fifth session of the program.

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 280-634-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.

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 (280.03) 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 ».

MINISTRY OBJECTIVE(S) AND COMPETENCIES

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

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.

The course will be 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)

Total: 45 hours

COURSE PLANNING

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

1. Gathering necessary Information

Learning Objectives	Content
1.1 Identify the exact Transport Canada inspection and maintenance standards that apply to helicopters.	All
1.2 Identify the exact specifications of the manufacturer concerning the inspection and maintenance to be performed on the helicopter.	All
1.3 Identify the type of inspection to be performed on the helicopter.	All
1.4 Review the specific facts in the history and technical documentation of the helicopter to inspect.	8

2. Plan work

Learning Objectives	Content
• Establish, in detail, the relevance and type of intervention to carry out from • the history of the helicopter to inspect, • the technical documentation.	7, 8, 9
• Determine the steps for the inspection work.	All
• Determine the necessary equipment to carry out the operations and check the availability.	All
• Respect the limits of intervention and the responsibilities as an aircraft maintenance engineer (AME).	All

3. Carry Out Inspections

Learning Objectives	Content
3.1 Follow and respect standards and specifications.	All
3.2 Apply health and safety rules.	All
3.3 Turn on helicopter systems.	3, 4, 6, 7, 8
3.4 Use equipment and tools appropriately.	All
3.5 Apply inspection procedures.	All
3.6 Evaluate the serviceability of components and systems.	3, 4, 6, 7, 8
3.7 Identify defects (snags).	All
3.8 Check condition and operation of components and systems.	3, 4, 6, 7, 8
3.9 Record defects, checks and inspections in writing or using aircraft maintenance software.	All

4. Store and Clean Work Area

Learning Objectives	Content
4.1 **Store and clean work area**.	All
4.2 Handle equipment safely.	All

List of Activities

1. Introduction.
2. Rotor mast (R-44).
3. Hydraulic system analysis and check / Hydraulic pump drive shaft inspection (AS 350 XIAQ).
4. Oil flow check (Rolls-Royce 250 series) / Overrunning clutch oil level check (MD500 GGNY)
5. Tail rotor (T/R) drive shaft damper friction check (MD500 GGNY).
6. Electrical failure research exercise (Bell 47 XENA) / (AS 350 XIAQ)
7. Compressor wash (Rolls-Royce 250 Series).
8. Daily inspection / Run up
9. T/R inspection (AS 350 XIAQ).
10. Troubleshooting
11. T/R rigging check (Schweizer 269 XCAL). Nylatron sleeve inspection (B 206 XJPL)
12. Exam

SYNTHESIS OF SUMMATIVE EVALUATION METHODS
OPTION: 1

Description of Evaluation Activity	Context	Learning Objective(s)	Due Date (assignment or exam)	Weighting (%)
Participation to listed activities.	Work will be performed in teams of 2 or 3, while evaluation will be individually.	All	Between Weeks 2 and 11	± 6% per activity for a total of 75%
Practical Exam.	Individually.	All	Week 12	25%

TOTAL : 100%

SYNTHESIS OF SUMMATIVE EVALUATION METHODS
OPTION: 2

Description of Evaluation Activity	Context	Learning Objective(s)	Due Date (assignment or exam)	Weighting (%)
Participation to 8 of the activities.	Work will be performed in teams of 2 or 3, while evaluation will be individually.	All	Between Weeks 2 and 11	7% per activity for a total of 56%
Written Exam	Individually.	All	Week 12	16%
9th activity *	Work will be performed in teams of 2 or 3, while evaluation will be individually.	All	Between Weeks 2 and 11	14%
10th activity *	Work will be performed in teams of 2 or 3, while evaluation will be individually.	All	Between Weeks 2 and 11	14%

TOTAL : 100%

***** The lowest and the highest score of the 10 activities are included in the final compilation with a 14% relative weight.

REQUIREMENTS TO PASS THE COURSE

(1) Passing Mark

The passing mark for this course is 60%.

(2) Attendance for Summative Evaluations

Attendance at summative evaluation activities is mandatory.

(3) Submitting Assignments

Assignments must be submitted by the date, place and time determined by the instructor. Any assignment submitted after the due date will be penalized 10% per day for each day it is late up to a week. After one week, the assignment will receive a zero (0).

(4) Presentation of Written Work

Students must follow the standards adopted by the College for written work (*Normes de présentation matérielle des travaux écrits*). These can be found in the documentation centre on the College web site (http://ww2.college-em.qc.ca/biblio/normes.pdf) under the heading ***Aides à la recherché.***

CLASS PARTICIPATION EXPECTATIONS

SECURITY MEASURES IN THE HANGARS

1. Smoking is prohibited.
2. Sitting on benches or machines is prohibited.
3. Shoes must be worn at all times (sandals are prohibited).
4. Machines must not be used without authorization from the instructor.
5. Caps or hairnets must be worn for long hair when working with the machinery.
6. Ties must be removed or tucked inside the shirt when working with machinery.
7. Sleeves with wide cuffs or fringe must not be worn when working near machinery.
8. Safety glasses must be worn when working on the machinery.
9. The machinery and benches must be cleaned after use.
10. The workshop must be cleaned after each course.
11. The bending machine may only be used by authorized personnel.
12. No aluminum or non-ferrous material on the grinders.
13. Suitcases, briefcases and towels are prohibited.
14. No one may circulate in the hangar unless authorized.
15. No visitors are allowed without authorization.

REQUIRED MATERIAL

Course notes, (the number will be provided by the instructor during the first course).

MEDIAGRAPHY

Maintenance d'aéronefs, méthodes, techniques et pratiques reconnues 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.

Manuel de navigabilité, Transports Canada, Centre d'édition du Gouvernement du Canada, 1986, Ottawa.

Manuels d'entretien applicables.

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

Vidéo : "Le point fixe".

INSTITUTIONAL POLICIES AND REGULATIONS

All students enrolled at Collège 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 College web site at the following address: http://www.college-em.qc.ca/campus-de-longueuil/le-college/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.

OTHER DEPARTMENTAL REGULATIONS

Students are encouraged to consult the website for the specific regulations for this course:
http://ena.college-em.qc.ca/etudiants-actuels/programmes-d-etudes/departements-d-enseignement#a2

NOTE: This Course Outline is a translation of the *Plan de cours* for 280-553-EM: *Stage en inspection d'hélicoptère*. If there is a discrepancy, then the original French version will be considered the official version for legal purposes.