

## Course outline

<b>COURSE:</b>	<b>Inspection and Minor Repairs of Aircraft</b>		
<b>PROGRAM:</b>	280.C0 Aircraft Maintenance		
<b>DISCIPLINE:</b>	280 Aeronautics		
<b>WEIGHTING:</b>	Theory: 2	Practical work: 3	Personal study: 2

Teacher(s)	Office	☎ Extension	✉ E-mail or web site
Mora, Joaquin	C-160	4220	<a href="mailto:joaquin.mora@cegepmontpetit.ca">joaquin.mora@cegepmontpetit.ca</a>

### OFFICE HOURS

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Morning					
Afternoon					

Coordinator(s)	Office	☎ Extension	✉ Email or Website
Jeanne Dumas Roy	C-160	4470	<a href="mailto:jeanne.dumasroy@cegepmontpetit.ca">jeanne.dumasroy@cegepmontpetit.ca</a>
Joaquin Mora	C-160	4220	<a href="mailto:joaquin.mora@cegepmontpetit.ca">joaquin.mora@cegepmontpetit.ca</a>

## 1 CONTEXT OF THIS COURSE IN THE PROGRAM

This course is offered during the second semester of the program.

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 [Student Guide](#) website under the heading « Information/AME and AML licences ».

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

By the end of the course, students will have developed:

- dexterity with tools and equipment;
- research skills using technical manuals;
- familiarity with materials and hardware;
- ability to make minor repairs;
- ability to install and remove solid rivets.

## 3 MINISTERIAL OBJECTIVE(S) AND COMPETENCIES

**025X** To clean, inspect and protect aircraft materials.

**025Z** To prepare and assemble sheet metal.

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

By the end of the course, students will be able to clean, inspect and protect aircraft materials and to prepare and assemble sheet metal.

## 5 TEACHING AND LEARNING STRATEGIES

### Theory

The theoretical part of the course Inspection and Minor Repairs is organized into four themes:

- use of technical manuals;
- inspection and classification of damage;
- prevention and elimination of corrosion;
- minor repairs and riveting.

Exercises and discussions in class will be used as a strategy to allow students to develop the necessary skills to service an aircraft. Research assignments in technical manuals and the use of multimedia tools will reinforce the learning process.

### Practical work

During the laboratory periods, the instructor will guide students with practical demonstrations of different tools and measuring instruments. Students will acquire manual dexterity and the competence necessary to be an aircraft maintenance technician through a variety of practical exercises that involve evaluating damage, treating corrosion and other observed defects. The different minor repair projects during the session, will be assembled by riveting according to aeronautical standards. All activities will comply with the health and safety procedures applicable to the aeronautical industry.

## 6 COURSE PLAN

### LEARNING OBJECTIVES

- 1- To clean, inspect and protect aircraft materials (025X)
- 2- To prepare and assemble sheet metal (025Z)

### THEORY

WEEK	# OBJECTIVE	CONTENT	MODE OF INSTRUCTION AND LEARNING ACTIVITIES	DOCUMENTATIONS, RESOURCES, AND TECHNOLOGICAL TOOLS.
1	025X To differentiate and identify the different types of rivets used in aeronautical assemblies.	Presentation of course outline.  Types of rivets - Solid rivets - Blind rivets - Special rivets		Read course outline and rules.  Review of Study Document and personal notes.
2 and 3	025X To be able to select correct type and size of rivet for an assembly.	Rivet selection	In class lecture, videos, and examples.  In class exercises.	Review of Study Document and personal notes.
	025X Apply the standards for positioning aeronautical fasteners.	Layout and spacing of rivets		
	025X Apply the standards for preparing sheet metal to receive aeronautical fasteners.	Drilling of sheet metal. Hole preparation for flush head rivets. Assembly of sheet metal parts.		
	025X To identify and describe tools used for rivet installation.	Hand riveting tools. Compression riveting tools. Rivet gun. Rivet set (Snaps). Bucking bars.		
	025X Describe rivet installation, inspection and removal procedure.	Rivet installation procedure Rivet inspection Rivet removal procedure		
4	025X and 025Z Distinguish and identify technical documentation available to the AME.	ATA classification standards. Manufacturer's maintenance or service manual. AC43-13 and AC 43-4A		
	025X Differentiate materials used in aeronautical assemblies.	Differentiate types of Aluminum and plastics,		

### Week 5 – Summative evaluation #1

WEEK	# OBJECTIVE	CONTENT	MODE OF INSTRUCTION AND LEARNING ACTIVITIES	DOCUMENTATIONS, RESOURCES, AND TECHNOLOGICAL TOOLS.
6 To 9	025X Distinguish and identify different types of corrosion.	Forms of corrosion  Propitious areas for corrosion formation.	In class lecture, videos, and examples.  In class exercises.	Review of Study Document and personal notes.
	025X Distinguish techniques and methods of prevention and elimination of corrosion.	Identifying techniques and methods commonly used to prevent corrosion.  Identifying techniques and methods commonly used to eliminate corrosion.  Structural repair manual: treating according to damage.		

### Week 10 – Summative evaluation #2

WEEK	# OBJECTIVE	CONTENT	MODE OF INSTRUCTION AND LEARNING ACTIVITIES	DOCUMENTATIONS, RESOURCES, AND TECHNOLOGICAL TOOLS.
11 To 14	025Z Distinguish and identify different types of damage.	Impact damage Damage due to aging and environment conditions Fatigue Corrosion	In class lecture, videos, and examples.  In class exercises.	Review of Study Document and personal notes.
	025Z Classify types of damages	Identification and localisation of damage		
	025Z Identify the type of structure	Primary, secondary, tertiary structure		
	025Z Determine acceptable damage limits	Authorized vs unauthorized damage.		
	025Z Evaluate the damage	Evaluating damage regarding tolerances, standards and specifications.		
	025Z Select various abrasive and sealing products.	Distinguishing different types of abrasives and usage. Choosing sealant according to the area where it will be used.		

### Week 15 – Summative evaluation #3 (final exam)

## PRACTICAL WORK (LABORATORY)

WEEK	# OBJECTIVE	CONTENT	MODE OF INSTRUCTION AND LEARNING ACTIVITIES	DOCUMENTATIONS, RESOURCES, AND TECHNOLOGICAL TOOLS.
1 To 4	025Z Choose tools according to work to be done.	Characteristics and standards related to using tools for measuring, cutting, plying, riveting and finishing.  Procedures for using tools and equipment.  Planning and organizing the workplace.	In laboratory demonstration and coaching by teacher.  In laboratory practice and work performing.	Review of Study Document and personal notes.
	025Z Prepare material to fabricate part according to engineering drawing	Material selection and preparation  Cutting to size and deburring Bending		
	025Z Apply standards for installing aeronautical fasteners.	Pitch, edge distance, spacing. Riveting.		
	025Z Layout of fasteners according to specifications on engineering drawing	Size and number of rivets  Pitch, edge distance and spacing		
	025Z Explain the use, the installation and the removal of aeronautical fasteners.	Hardware.  Solid and blind rivets.		

### Week 5 – Lab evaluation #1

WEEK	# OBJECTIVE	CONTENT	MODE OF INSTRUCTION AND LEARNING ACTIVITIES	DOCUMENTATIONS, RESOURCES, AND TECHNOLOGICAL TOOLS.
6 To 8	025Z Select various abrasive and sealing products.	Distinguishing different types of abrasives and usage. Choosing sealant according to the area where it will be used.	In laboratory demonstration and coaching by teacher.  In laboratory practice and work performing.	Review of Study Document and personal notes.
	025Z Recognize health and safety risks.	Safe handling of tooling		
	025Z Drilling and hole preparation for rivet installation	Using appropriate and safe methods.		
	025Z Installation of rivets	Using appropriate and safe methods.		
	025Z Inspection of rivets	Describe tolerances for type and size of rivet.  Identify and mark rivets that are not within tolerances.		
025Z Replacement of rivets that do not meet tolerances	Removal of rivets using appropriate method.  Install new rivet and inspect			

WEEK	# OBJECTIVE	CONTENT	MODE OF INSTRUCTION AND LEARNING ACTIVITIES	DOCUMENTATIONS, RESOURCES, AND TECHNOLOGICAL TOOLS.
9	025X Locate areas on an aircraft likely to develop corrosion and defects.	Distinguishing different types of corrosion and their causes. Distinguishing different types of defects and their causes. Identifying problem areas according to the aircraft and the environment.	<p>In laboratory demonstration and coaching by teacher.</p> <p>In laboratory practice and work performing.</p>	Review of Study Document and personal notes.
	025X Distinguish and identify materials to be subjected to an inspection or a non-destructive test.	Identifying different materials used in aeronautics and their interrelation.		
	025X Select and carry out inspections and tests according to standards and specifications.	Distinguishing between inspection categories and tests generally used in the aeronautical industry. Choosing applicable inspections and tests according to the material and the standards and specifications related to technical documents.		
	025X Apply inspection and testing procedures.	Respecting established procedures. Methods used.		
	025X Locate signs of corrosion and defects.	Identifying types of corrosion and signs of fatigue and defects (e.g. small and large cracks, wear, etc.).		
	025X Determine tolerances for damage caused by defects.	Consulting AC 43-4A for general tolerances. Distinguishing different tolerances according to the type of damage and the area that was damaged. Consulting the manufacturer's structural repair manual to check whether the damage is minor.		
	025X Measure the damage.	Appropriate use of measuring tools. Evaluating damage regarding tolerances, standards and specifications.		
	025X Record the results.	Formulating entries in the inspection and follow-up reports.  Using appropriate technical vocabulary.		

**Week 10 – Lab evaluation #2**

WEEK	# OBJECTIVE	CONTENT	MODE OF INSTRUCTION AND LEARNING ACTIVITIES	DOCUMENTATIONS, RESOURCES, AND TECHNOLOGICAL TOOLS.
10 To 14	025X and 025Z Select appropriate techniques and methods.	Make a choice according to: - the characteristics of the materials and damage. - standards and specifications. the nature of the operations to be carried out.	In laboratory demonstration and coaching by teacher.  In laboratory practice and work performing.	Review of Study Document and personal notes.
	025Z Apply workplace health and safety regulations as well as environmental standards.	Respect for the regulations and instructions, implementation of the methods of individual protection. Respect for the environmental standards according to the workplace.		
	025X Cover the areas to be protected.	Appropriate use of masking tape and specific protection covers. Protection of the environmental surfaces for the treated area.		
	025X Apply the corrosion process of elimination.	Using cleaning/scouring/scrubbing/pickling process. Using mechanical and chemical processes to eliminate corrosion. Polishing/buffing process Respecting processes.		
	025X and 025Z Adapt operations according to the equipment and material.	Appropriately using tools and equipment according to their characteristics and the nature of the corroded material.		
	025X Prepare the material and the surface to treat to prevent corrosion.	Preparing the surface to be treated. Making a choice of the material according to the treatment to be carried out.		
	025X Apply treatment procedures.	Following directives and operating instructions according to the products being used. Respecting procedures. Methods to be used.		
	025X and 025Z Inspect results and compliance.	Checking the quality of the work. Checking complete shrinkage from masking to protect environmental surfaces.		

**Week 15 – Lab evaluation #3 (final evaluation)**

## 7- SYNTHESIS OF SUMMATIVE EVALUATION METHODS

### THEORY

Description of Evaluation Activity	Context	Learning objective(s)	Evaluation Criteria	Due Date	Weighting (%)
Written exam Multiple choice and short answer	Individual No notes allowed	Material from weeks 1 to 4 (025X)	Relevance and accuracy of answers. Coherent and concise explanations	Week 5	10 %
Written exam Multiple choice and short answer	Individual No notes allowed	Material from weeks 6 to 9 (025X)		Week 10	10 %
Terminal evaluation Multiple choice and short answer	Individual No notes allowed	Material from weeks 11 to 14 (025Z)		Week 15	20 %
				<b>SUBTOTAL</b>	<b>40 %</b>

### LABORATORY

Description of Evaluation Activity	Context	Learning objective(s)	Evaluation Criteria	Due Date	Weighting (%)
Practical exam with a series of parts to fabricate.	Individually. personal notes and reference documents allowed.	Metal preparation and assembly (025X)	The evaluation criteria will be provided to you at the time of the evaluation	Week 5	15 %
Treatment of a corroded plate in three stages.		Corrosion treatment (025Z)		Week 10	15 %
Final exam Various tasks and riveting aluminum sheets.		Minor repairs and riveting (025X)		Week 14	20 %
		Repairing by patching (025X)		Week 15	10 %
				<b>SUBTOTAL</b>	<b>60 %</b>

<b>TOTAL</b>	<b>100%</b>
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## 8 REQUIRED MATERIAL

Theory classes: a paper copy of the study document (available on LÉA) is recommended but not



mandatory. Students that prefer to take class notes on a laptop can do so but no cellphone will be allowed in class.

Laboratory: In the lab, safety glasses, safety shoes and overalls (or approved ÉNA work clothes) are mandatory at all times. Students not complying with this rule will not be admitted in the laboratory.

## **9 MEDIAGRAPHY**

**CORROSION CONTROL FOR AIRCRAFT**, AC 43-4A, Department of Transportation. Federal Aviation Administration. Washington D.C., U.S. Government Printing Office, 1991, 224 pages.

**AIRCRAFT STRUCTURAL TECHNICIAN**, Dale Hurst, AVOTEK, T-AST-1, Harrisburg VA. 2001, 272 pages, chapters 5 and 9.

**A & P TECHNICIAN AIRFRAME TEXTBOOK**, Jeppesen, JS312692, Englewood, Colorado, 2003, 876 pages, chapters 2, 3, 6 and 8.

**A & P TECHNICIAN GENERAL TEXTBOOK**, Jeppesen, JS312690, Englewood, Colorado, 2003, 568 pages, chapters 11 and 12.

**A & P TECHNICIAN GENERAL TEXTBOOK** and **A & P TECHNICIAN AIRFRAME TEXTBOOK** are recommended for the Inspection and minor repairs (280-2B5).

## **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**

Presence at exams is obligatory. Any absence from an evaluation activity which is not justified by a serious reason will mean a mark of zero and failure of this evaluation. According to article 5.2.5.1 of the *Institutional Policy on the Evaluation of Student Achievement* (IPESA). *“it is the student’s responsibility to take the necessary means to meet his teacher and explain the motives for his absence with a supporting document explaining his absence. If the motives are serious and recognized as such by the teacher, the teacher and the student will agree to the terms of the delay for doing the evaluation or assignment.”*

In addition, the IPESA indicates that *“if a student is late for an evaluation activity with no justifiable reason, the teacher can refuse to allow the student to participate in the said activity.”*

Serious reasons that can be considered are: illness (with a medical certificate), death of a family member (with a death certificate), a force majeure or overpowering event, activities authorized by the College, and legal reason (proof of the court summons).

### **3. Submitting Assignments**

All assignments must be submitted by the date, time and place designated by the teacher (s). Unless there is an agreement with the teacher, late assignments are penalized by the deduction of 10% per day, and a mark of zero will be given when the assignment is six days late. Any assignments due in the fifteenth week cannot be submitted late.

### **4. Presentation of Written Work**

The teacher (s) will provide students with information and guidelines regarding the presentation of written work. When the presentation of an assignment is judged 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-presentation-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

Accident prevention is the responsibility of each and every individual. We invite you to familiarize yourself with all health and safety measures at <https://mareussite.cegepmontpetit.ca/ena/mes-outils/sante-et-securite/>.

Bringing food or beverages into the laboratories is strictly prohibited.

Attire worn by students in laboratories and workshops must feature the ÉNA logo. The use of hooded sweatshirts with drawstrings is not permitted due to safety risks when using equipment or machinery. ÉNA-branded clothing is available for purchase at the ÉNA Coop (room C163-A).

Authorized pants include work pants or jeans without any decorations (studs, metal parts, etc.).

Personal Protective Equipment (PPE) is essential for the safety of students and is mandatory in laboratories, workshops, and hangars. This includes wearing safety footwear (boots or shoes) and safety glasses. Protective clothing such as lab coats or uniforms is only necessary when required.

## **12- 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>

## **13- INSTITUTIONAL POLICIES AND REGULATIONS**

Any student registered at Cégep Édouard-Montpetit must read the content of certain institutional policies and regulations and comply with them.

The French titles for these 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**

None