

COURSE OUTLINE

COURSE: **Aircraft Systems Maintenance**

PROGRAM: 280.C0 Aircraft Maintenance Technology

DISCIPLINE: 280 Aeronautics

WEIGHTING: Theory: 0 Practical Work: 4 Personal Study : 2

Instructor(s)	Office	☎ extension	✉ email or web site
Vincent Grenon	C-186	4623	vincent.grenon@college-em.qc.ca

OFFICE HOURS

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Morning					
Afternoon					

Coordinator(s)	Office	☎ extension	✉ email or web site
Pierre Ménard	C-160	4207	pierre.menard@college-em.qc.ca
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INTRODUCTION AND CONTEXT OF THIS COURSE IN THE PROGRAM

This course is offered during the sixth session of the Aircraft Maintenance Program and is the main practical activity devoted to aircraft systems.

The knowledge gained in other courses, in particular those related to general electricity, aerodynamics, flight instruments, hydraulics, pneumatics and systems operation is essential in order to follow this course.

In order to enable students to achieve the ministry objective, the activities reflect the following frame work:

- systems standards, specifications and specific regulations
- methods used to inspect and test a system
- identification of all the possible causes of a defect
- use of simulation and defect diagnosis software (if possible)
- follow-up of maintenance procedures
- appropriate technical vocabulary
- workplace hazardous materials information system
- professionalism : safe attitude and behaviour

Inspecting, servicing and maintaining aircraft systems are a top priority for an AME and this is the goal of this course. In addition to the knowledge already acquired in previous courses, students in this course will be required to:

- Carry out aircraft systems inspections and operational tests;
- Determine the possible causes of defects detected during the operation tests;
- Perform activities related to the necessary maintenance and repairs of a system to maintain its airworthiness;
- Record repairs, inspections and modifications in the technical records
- Ensure that all controls and switches comply with the check list
- Apply health and safety standards in all activities
- Store tools and equipment
- Keep the working area cleaned and unobstructed
- Find and interpret norms, specifications and technical information
- Consult divers aircraft system and component historic
- Identify the health and safety rules for specific task on different aircraft systems
- Plan and sort out the sequence of operation in relation with the norms, specifications, objectives, needs and characteristic of different systems.
- Chose and prepare the equipment, tooling and hardware necessary for the execution of the work
- Inspect and verify system components
- Carry out inspection and functional test aircraft systems and landing gear systems
- Identify snags
- Record test and snags
- Identify snags in relation with establish data during system functional tests
- Identify components and their relationship that could create snags
- Chose a logic sequence to resolve a snag
- Analyse the data related to a snag
- Identify the potential sources of a snag
- Determine a possible cause of a snag
- Apply norms and specifications relative to the work
- Evaluate damaged parts and distinguish the type of damage
- Use specific and specialise equipment and tooling
- Execute procedures relative to the maintenance and repair of landing gears
- Verify the quality of the work
- Record repairs, tests, modifications in the aircraft technical records

MINISTRY OBJECTIVE

Perform maintenance on aircraft systems.

TEACHING STRATEGY

As a team, students will be asked to perform exercises to maintain aircraft systems on aircraft or models,. Each activity requires the use of prior knowledge and the application of strict standards and regulations previously established that may come from various levels: Transport Canada, aircraft parts manufacturers, employers, recognized organizations, maintenance policy manual, etc.

COURSE PLAN

Week 1: Presentation of the course outline and activities. Team formation and introduction.

Week 2, 3, 4: Activities in rotation.

1. Familiarization, CL 601
2. Familiarization, Dornier 328
3. Familiarization, PA31P and Learjet

Week 5:

1. First exam

Week 6, 7, 8: Activities in rotation.

1. Nose wheel steering functional test on the Challenger, CL 601
2. Pressurization functional test on the PA31P.
3. De-icing and anti-icing system functional test on the Dornier 328..

Week 9, 10, 11: activities in rotation

1. Landing gear functional test on the Challenger, CL 601.
2. Oxygen system functional test and servicing on Dornier 328.
3. Main landing gear down locks mechanism inspection and rigging on the PA-31P

Week 12, 13, 14: activities in rotation

1. Thrust reverser operational test on the Challenger, CL 601.
2. Hydraulic proxy switch test on Dornier 328.
3. Landing gear functional test on the Learjet 36.

Week 15:

1. Summative evaluation #2.

SYNTHESIS OF EVALUATION METHODS

Description of Evaluation Activity	Learning Objective(s)	Context		Weighting (%)
Week 5: 1 st summative evaluation	Check operation of the systems.	Long answer exam and/or multiple choice	Individual exam lasting about 2 class periods	20%
Week 15: 2 nd summative evaluation	Check operation of the systems.	Long answer exam and/or multiple choice	Individual exam lasting about 2 class periods	40%
Week 2 to 14: Technical record	Complete work order in regards to the work performed.			20%
Week 2 to 14: Summative evaluation	Evaluate student competencies during the activities			20%

Total : 100%

List of competencies assessed during educational activities

Competencies	Description	Weighting (%)
Capacity to apply safe health rules	Clothing, tools protective equipment, equipment	20%
Capacity to follow and respect standards and specifications	Maintenance manuals, CAR, AC 43.13, airworthiness directives, service bulletins, certificates of registration, advisory certificates	30%
Capacity to evaluate the condition of service for system components	Structural components, mechanical components, electrical components	20%
Capacity to use equipment and tools appropriately	Hand tools, power tools, pneumatic tools, equipment used for aircraft maintenance	20%
Capacity to store equipment and clean the work area	Manuals, tools, aircraft components, workshop, equipment	10%

Total : 100%

REQUIREMENTS TO PASS THE COURSE

1) Passing Mark

The passing mark for the course is 60%.

2) Attendance for Summative Evaluations

Attendance for summative evaluation activities is mandatory. Students must comply with instructions to carry out the evaluation activity planned by the teacher and written in the course outline.

The teacher may refuse a student's right to participate in a summative activity if the student is late without justification.

Any absence from a summative evaluation that is not due to a serious reason (illness, death in the family, major event, etc.) could result in a mark of zero (0) for the given activity.

Students are responsible for meeting their instructor prior to an evaluation activity or immediately upon returning to ENA in order to explain the reasons for the absence and show supporting documents. If the reasons are serious and recognized as such by the teacher, the conditions for completing the activity at a later date will be determined between the teacher and student.

3) Submitting Assignments

All assignments must be submitted by the date, hour and place designated by the instructor. Late submissions will be penalized 10% for each day they are late and a mark of zero (0) will be attributed after one week.

4) Presentation of Work

The teacher will provide students with information and guidelines regarding the presentation and sequence for assignments. When an assignment is judged unacceptable due to its presentation, the work will not be marked until it meets the standards determined by the instructor. In this case, the penalty for late work will be applied to the assignment.

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 recherche** ».

REQUIREMENTS FOR CLASS PARTICIPATION

Students are required to comply with the rules taught regarding the use of equipment and to respect safety rules related to system operation tests on aircraft and models. Any non-compliant use or behaviour is dangerous and will result in the student being excluded from the course. It is forbidden to wear open shoes during laboratory classes. Safety glasses must be worn when required.

MANDATORY EQUIPMENT

Course manual assigned by the teacher.

MEDIAGRAPHY

Cassou, G. « Aérotechnique: cellule, équipements et circuits », Éditeur Institut aéronautique Jean Mermoz, 1975. D 629.13431 C 345 a (hydraulique. Trains. Carburant. Oxygène. Dégivrage. Pressurisation).

Féminier, Didier. « Cellule et systèmes d'aéronefs » Modulo Éditeur, 1982. D 629.13431 F 329 c (hydraulique, trains, carburant, oxygène, dégivrage, pressurisation).

Fleury, J., Weyland, J. « Technologie cellule », Institut aéronautique Jean Mermoz, 1981. D 629.13431 F 618t 629.13431 P 873 c (Hydraulique, Trains, Carburant, Oxygène, Sécurité, Dég. Press).

Jeppesen. « A&P Technician Airframe Textbook », édition 2003, ATP series. 629.134 A298. (hydraulique, trains, protection contre les incendies carburant, oxygène, protection contre le givre et le pluie, dégivrage, climatisation et pressurisation).

Kroes/Watkins/Delp. « Aircraft Maintenance & Repair », 6e édition, Mac Millan/McGraw-Hill, 1993. A629.1346M158m (Hydraulique. Trains. Carburant. Oxygène. Sécurité. Dégivrage. Pressurisation).

Poujade, A. « Cellule et systèmes », Éditeur Institut aéronautique, Jean Mermoz, 1985. D 629.13431 P 873 c (hydrauliques. Trains. Carburant. Oxygène. Dégivrage. Pressurisation).

Ropoll J.C. « Cellule, circuits », Éditeur École nationale de l'aviation civile, 1984. A 629.13431R592c (Hydraulique. Trains. Oxygène. Dégivrage. Pressurisation).

USA, Dep. of Transportation. « Advisory circular DOT FAA », EA-AC 43.13-1B.

USA, Dep. of Transportation. «Airframe and powerplant; airframe handbook », AC 65-ISA, FAA 1976. D 629.1343 E 83a (Hydraulique. Trains. Carburant. Oxygène. Sécurité. Dégivrage. Pressurisation).

USA, Dep. of Transportation. « Maintenance d'aéronefs, Méthodes, techniques et pratiques reconnues » Circulaire d'information, EA-AC 43.13-1A et 2A ISBN2-89113-114-2.

Wild, Thomas W. « Transport category aircraft system » by Thomas, W. Wild. A 629.133349 W 668T. Edition Englewood, Col. : Jeppesen Sanderson, inc, c1996.

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: www.college-em.qc.ca. 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

1. Attendance

Students are responsible for being present at all courses and participating actively.

Once a student has accumulated absences equivalent to 10% of the practical part of the course, the student will receive a warning message in his or her attendance file ; when the absences are greater than 20% of the hours for the practical part of the course, the student will receive a warning that he or she has been excluded from the course.

The penalty due to absences depends on the mark that has accumulated at the moment of the exclusion or by a mark of 55% if the accumulated mark is greater than 60% at the moment this penalty was applied.

An excused absence for serious reasons and for which the teacher cannot offer a make-up activity may not be penalized.

Students who have a grievance can appeal to the assistant director of the department that is involved.

2. Course Attendance – Transport Canada Standards

The Department applies Transport Canada standards which allows a student to miss a maximum of 5% of the course (theory and laboratory). The department compiles the student absences recorded in the programs Aircraft Maintenance (280.03) and Avionics (280.04) according to the requirements of Transport Canada. The application of the Transport Canada policy regarding absences is available on the College web site and in the student agenda under the heading *Privilèges accordés par Transports Canada*.

3. Tardiness

Students who arrive more than ten minutes after the beginning of the first period of a course are considered absent for this period. No tardiness is permitted for subsequent periods for the same course.

4. Teacher Absence

Students must wait ten minutes before considering that a teacher is absent for a course period and must be present for the second hour unless the teacher's absence has been confirmed.

5. Safety and Use of Department Rooms and Services

See the rules for the Pre-Flight Department, *Règles du département de préenvol*, on the College web site, under the heading for ENA's rules and policies, *Règles et politiques*

6. Mark Revisions

See Article 6.6.2 of the *Politique institutionnelle d'évaluation des apprentissages*.

NOTE: This Course Outline is a translation of the *Plan de cours* for 280-664-EM: *Entretien des systèmes*. If there is a discrepancy, then the original French version will be considered the official version for legal purposes.