ÉCOLE NATIONALE D'AÉROTECHNIQUE
UN CAMPUS DU CÉGEP ÉDOUARD-MONTPETIT

280-1A3-EM

FALL 2018

Département de techniques de génie aérospatial

COURSE OUTLINE

COURSE : **Blueprint Reading for Aircraft Maintenance**

PROGRAM : 280.C0 Aircraft Maintenance

DISCIPLINE : 280 Aeronautics

WEIGHTING : Theory : 1 Practical : 2 Personal Study : 2

Instructor(s)	Office	☎ extension	✉ E-mail or web site
Denis Grenier	A-183	4386	denis.grenier@cegepmontpetit.ca

Office hours

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Morning					
Afternoon					

Outside the hours of availability, it is possible to contact the teacher by the MIO system to make arrangements for an appointment.

Coordinator(s)	Office	☎ extension	✉ e-mail
Carl Garneau	A-183	4707	carl.garneau@cegepmontpetit.ca

CONTEXT OF THIS COURSE IN STUDENT'S PROGRAM

This course is given during the first session of the program.

By the end of this course, the student will have developed the ability to sketch and interpret clear technical drawings as well as visual aids used in documentation.

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) 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)

Mastering aeronautical maintenance working techniques

MINISTERIAL OBJECTIVE(S) AND COMPETENCIE(S)

025P Interpret schematics, detailed, assembly and installation drawings.

TERMINAL OBJECTIVE OF THE COURSE (FINAL COURSE OBJECTIVE)

Interpret schematics, detailed, assembly and installation drawings.

TEACHING AND LEARNING STRATEGIES

Using technical drawings of aircraft components, students will learn to interpret information presented in graphic and written form in order to eventually carry out work on aircraft.

Each week students will have a one-hour lecture class followed immediately by two hours of practice to reinforce learning. Most work will have a formative evaluation.

NOTE: In order to receive credit for experience for 19 of the 48 months required for an AME Transport Canada license, you must:

- **receive a mark of 70% or higher;**
- **be absent less than 5% of the course (1 class absence).**

COURSE PLAN

Activity Period: 10 hours

Learning Objective	Content	Personal Study Activities
1.1. Using a reference plane, locate and orient each component on an aircraft. ***Appendix C, Part 2***	▪ Aircraft reference plane systems. **(24.0.1)** ▪ Positioning and orienting components on an aircraft using blueprint information. ▪ Using zones on design sheets. **(1.0.5)**	▪ Exercise using aircraft in the hangars ▪ Exercises in class (formative) ▪ Homework and reports (summative)
1.2. Interpret the nomenclature of assembly and installation drawings.	▪ Interpreting lists of assembly parts having several configurations. ▪ Identifying interfaces of each component. ▪ Locating the required parts on the drawing. ▪ Interpreting cascade family tree diagrams. ▪ Establishing connections between a cascade diagram, nomenclature, standard and manufactured components.	▪ Exercises in class (formative) ▪ Homework and reports (summative)
1.3. Interpret the geometry of parts or of a mechanism. ***Appendix C, Part 2***	▪ Developing spatial vision. ▪ Obtaining precise information from blueprints. ▪ Interpreting the geometry of parts that are machine-cut, shaped and made from composite materials. (1.0.5)	
1.4. Identify blueprints, schematics and other documents required to carry out requested work. ***Appendix C, Part 2***	▪ Locating the elements to use from a family tree diagram of an aircraft. ▪ Selecting appropriate documents for the task that needs to be done. ▪ Interpreting pagination system using the ATA-100 standard. **(5.0.4)**	

Activity Period: 10 hours

Learning Objective	Content	Personal Study Activities
2.1. Interpret the relationship between views, cuts and sections of a technical drawing. ***Appendix C, Part 2***	▪ Interpreting American orthogonal projections. ▪ Interpreting connections between different views of a part. ▪ Interpreting views of a cut, of sections and of enlarged views. ▪ Interpreting legends related to types of lines. **(1.0.5)**	▪ Exercises in class (formative). ▪ Homework and reports (summative).
2.2. Distinguish categories of drawings, schematics and technical proposals.	▪ Distinguishing between figurative drawings (isometric, exploded view), definition drawings and assembly and installation drawings. ▪ Distinguishing between sketches, drawings, schematics and technical proposals. ▪ Interpreting drawings of components in composite materials. ▪ Distinguishing electric symbols.	

Activity Period : 9 hours

Learning Objectives	Content	Personal Study Activities
3.1. Interpret information written on the drawing (title block, notes, revisions, tables, nomenclature).	▪ Interpreting titles, part numbers , materials, scales. ▪ Interpreting designations (threads, bending), revisions and annotations. ▪ Interpreting traceability of a component.	▪ Exercises in class (formative). ▪ Homework and reports (summative).
3.2. Interpret specialized symbols. ***Appendix C, Part 2***	▪ Interpreting symbols associated with sheet metal components. ▪ Interpreting different standardized symbols associated with electrical components. ▪ Interpreting abbreviations associated with technical drawings. **(22.3.34)**	

Activity Period: 10 hours

Learning Objectives	Content	Personal Study Activities
4.1. Interpret information in a mechanical or electric schematic. ***Appendix C, Part 2***	▪ Interpreting annotations referring to dimensions, geometry, tolerances, symbols and revisions. ▪ Interpreting simple electric schematics ▪ Identifying standards **(1.05)**	▪ Exercises in class (formative). ▪ Homework and reports (summative).
4.2. Locate interfaces of each component of a mechanism in order to represent its geometrical shape.	▪ Interpreting geometry. ▪ Interpreting the principle characteristics of components. ▪ Identifying interfaces of each component. ▪ Obtaining required information from the blueprint to carry out requested work.	

Activity Period: 6 hours

Learning Objective	Content	Personal Study Activities
5.1. Interpret information in a detailed schematic. ***Appendix C, Part 2***	▪ Interpreting written and graphic information from a schematic **(1.05)**	▪ Exercises in class (formative). ▪ Homework and reports (summative).
5.2. Make sketches and detailed schematics.	▪ Representing components that comply with technical design standards (in particular ASME standards Y14.5-M, 1994). ▪ Write notes indicating dimension tolerances, materials, appropriate treatment and any other important information.	

SYNTHESIS OF SUMMATIVE EVALUATION METHODS

Description of Evaluation Activity	Context	Learning Objective(s)	Evaluation Criteria*	Due Dates (dates to hand in work or date of exam period)	Weighting (%)
Assignments ▪ Imperial system ▪ Orthogonal projections ▪ Questionnaires regarding blueprints ▪ Nomenclature ▪ Technical sketch ▪ Aircraft reference plane	Individual Work: ▪ -Produce and complete views as per drawing standards ▪ Perform operations on fractions ▪ Answer a questionnaire related to a drawing	2 1	Accuracy of answer Compliance with drawing standards	Week-assignment 3-1 (5 pts) 5-2 (5 pts)	10%
▪ Mini-test ▪ Orthogonal Projections ▪ Technical sketches	▪ One period individual test without documentation ▪ Complete the views according to drawing standards ▪ Perform operations on fractions ▪ Answer a questionnaire related to a drawing	2 4 5		Week 4	15%
Exam 1 ▪ Orthogonal Projections ▪ Interpreting a drawing from a questionnaire ▪ Making a sketch ▪ Interpreting nomenclature Interpreting aircraft reference planes	▪ Two period individual test without documentation ▪ Create a drawing family tree ▪ Complete the views according to drawing standards ▪ Answer a questionnaire related to a drawing	1, 2, 3 & 5		Week 7	30%
Report	Team work in groups of 2 or 3 Case study: describing the installation of a drain	All	Logical sequence of installation Compliance with drawing standards	Week 13	10%
Final Exam	▪ Three period individual test with documentation is permitted. ▪ Interpreting drawings from questionnaires ▪ Theory questions	All	Accuracy of answer Compliance with drawing standards	Week 15	35%

TOTAL : 100%

Note 1: Evaluation criterias will be given at least one week prior evaluation (Article 5.1j PIEA)

OBLIGATORY REQUIRED MATERIAL

COOP Course Manual : Theory # _____ Questionnaire # _____

Blueprints # 5298

- ¼-inch graph paper pad
- Lead pencil with white eraser
- Ruler with Imperial system

MEDIAGRAPHY

Delmar. *Blueprint Reading for Machinists*. Albany, N.Y. : Delmar Publishers, c1972.

Giesecke, F. & Al. *Dessin technique*. Montréal : Édition du renouveau pédagogique, c1987, 453 p. (cote de la bibliothèque : A 604.2G455t 1980 Fn 1987).

Many other references are included in: *Dessin technique et dessin industriel.*

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. Tardiness

Students who arrive late after the beginning of the first period of a course are considered absent for this period.

3. Attendance for Summative Evaluations

Students must be present for summative evaluations and must comply with the instructions given by the instructor to carry out the evaluation activity and written in the course outline. Unexcused tardiness for a summative evaluation could result in being excluded from the activity. Any absence from a summative evaluation that is not due to serious reasons (illness, death in the family, etc.) could result in a mark of zero (0) for the activity.

Students are responsible for meeting with the instructor before an evaluation activity is held or immediately upon returning to ENA to explain the reason for an absence. Proper documentation, such as a medical certificate, a death certificate, legal papers, etc., must be shown if the reason for absence is serious and recognized as such by the instructor(s), arrangements will be made between the instructor(s) and the student to make up the activity.

4. Submitting Assignments

All assignments must be submitted by the date, hour and location designated by the instructor(s). Late assignments will be penalized 10% per day that they are late and will receive a mark of zero (0) after one week.

5. Presentation of Written Work

The instructor(s) will provide students with information and guidelines regarding the presentation of written work. When the presentation of an assignment is inacceptable, 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 in the documentation center on the Cégep web site www.cegepmontpetit.ca/normes under the heading ***Liens éclair*, Bibliothèques, « Méthodologie ».**

METHODS OF COURSE PARTICIPATION

Any student whose behavior in the laboratory creates a dangerous situation for other people will first be warned by the instructor and then excluded from the lab until his or her case can be reviewed by the instructor and the coordinator of the aircraft construction department.

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 S

All students enrolled at Cégep 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* (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.