

## COURSE OUTLINE

**COURSE :** **Blueprint Reading for Aircraft Maintenance**

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

**DISCIPLINE :** 280 Aeronautics

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

Instructor(s)	Office	☎ Extension	✉ E-mail or Web site
Denis Grenier	A-193	4386	denis.grenier@college-em.qc.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.***

Coordonnateur(s) du départ.	Bureau	☎ poste	✉ courriel ou site web
Robert Turcotte	A-183	4723	robert.turcotte@college-em.qc.ca
Pascal Belfix	A-183	4720	pascal.belfix@college-em.qc.ca

## **CONTEXT OF 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.

## **MINISTERIAL OBJECTIVE(S) OR COMPETENCE(S)**

**025P** 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.  <p style="text-align: right;"><b>Appendix C, Part 2</b></p>	<ul style="list-style-type: none"> <li>▪ Aircraft reference plane systems. <b>(24.0.1)</b></li> <li>▪ Positioning and orienting components on an aircraft using blueprint information.</li> <li>▪ Using zones on design sheets. <b>(1.0.5)</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ Exercise using aircraft in the hangars</li> <li>▪ Exercises in class (formative)</li> <li>▪ Homework and reports (summative)</li> </ul>
1.2. Interpret the nomenclature of assembly and installation drawings.	<ul style="list-style-type: none"> <li>▪ Interpreting lists of assembly parts having several configurations.</li> <li>▪ Identifying interfaces of each component.</li> <li>▪ Locating the required parts on the drawing.</li> <li>▪ Interpreting cascade family tree diagrams.</li> <li>▪ Establishing connections between a cascade diagram, nomenclature, standard and manufactured components.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Exercises in class (formative)</li> <li>▪ Homework and reports (summative)</li> </ul>
1.3. Interpret the geometry of parts or of a mechanism.  <p style="text-align: right;"><b>Appendix C, Part 2</b></p>	<ul style="list-style-type: none"> <li>▪ Developing spatial vision.</li> <li>▪ Obtaining precise information from blueprints.</li> <li>▪ Interpreting the geometry of parts that are machine-cut, shaped and made from composite materials. <b>(1.0.5)</b></li> </ul>	
1.4. Identify blueprints, schematics and other documents required to carry out requested work.  <p style="text-align: right;"><b>Appendix C, Part 2</b></p>	<ul style="list-style-type: none"> <li>▪ Locating the elements to use from a family tree diagram of an aircraft.</li> <li>▪ Selecting appropriate documents for the task that needs to be done.</li> <li>▪ Interpreting pagination system using the ATA-100 standard. <b>(5.0.4)</b></li> </ul>	

**Activity Period : 10 hours**

Learning Objective	Content	Personal Study Activities
2.1. Interpret the relationship between views, cuts and sections of a technical drawing.  <p style="text-align: center;"><b>Appendix C, Part 2</b></p>	<ul style="list-style-type: none"> <li>▪ Interpreting American orthogonal projections.</li> <li>▪ Interpreting connections between different views of a part.</li> <li>▪ Interpreting views of a cut, of sections and of enlarged views.</li> <li>▪ Interpreting legends related to types of lines. <b>(1.0.5)</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ Exercises in class (formative).</li> <li>▪ Homework and reports (summative).</li> </ul>
2.2. Distinguish categories of drawings, schematics and technical proposals.	<ul style="list-style-type: none"> <li>▪ Distinguishing between figurative drawings (isometric, exploded view), definition drawings and assembly and installation drawings.</li> <li>▪ Distinguishing between sketches, drawings, schematics and technical proposals.</li> <li>▪ Interpreting drawings of components in composite materials.</li> <li>▪ Distinguishing electric symbols.</li> </ul>	

**Activity Period : 9 hours**

Learning Objectives	Content	Personal Study Activities
3.1. Interpret information written on the drawing (title block, notes, revisions, tables, nomenclature).	<ul style="list-style-type: none"> <li>▪ Interpreting titles, part numbers , materials, scales.</li> <li>▪ Interpreting designations (threads, bending), revisions and annotations.</li> <li>▪ Interpreting traceability of a component.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Exercises in class (formative).</li> <li>▪ Homework and reports (summative).</li> </ul>
3.2. Interpret specialized symbols.  <p style="text-align: center;"><b>Appendix C, Part 2</b></p>	<ul style="list-style-type: none"> <li>▪ Interpreting symbols associated with sheet metal components.</li> <li>▪ Interpreting different standardized symbols associated with electrical components.</li> <li>▪ Interpreting abbreviations associated with technical drawings. <b>(22.3.34)</b></li> </ul>	

**Activity Period: 10 hours**

Learning Objectives	Content	Personal Study Activities
4.1. Interpret information in a mechanical or electric schematic.  <p style="text-align: center;"><b>Appendix C, Part 2</b></p>	<ul style="list-style-type: none"> <li>▪ Interpreting annotations referring to dimensions, geometry, tolerances, symbols and revisions.</li> <li>▪ Interpreting simple electric schematics</li> <li>▪ Identifying standards (1.05)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Exercises in class (formative).</li> <li>▪ Homework and reports (summative).</li> </ul>
4.2. Locate interfaces of each component of a mechanism in order to represent its geometrical shape.	<ul style="list-style-type: none"> <li>▪ Interpreting geometry.</li> <li>▪ Interpreting the principle characteristics of components.</li> <li>▪ Identifying interfaces of each component.</li> <li>▪ Obtaining required information from the blueprint to carry out requested work.</li> </ul>	

**Activity Period : 6 hours**

Learning Objective	Content	Personal Study Activities
5.1. Interpret information in a detailed schematic.  <p style="text-align: center;"><b>Appendix C, Part 2</b></p>	<ul style="list-style-type: none"> <li>▪ Interpreting written and graphic information from a schematic (1.05)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Exercises in class (formative).</li> <li>▪ Homework and reports (summative).</li> </ul>
5.2. Make sketches and detailed schematics.	<ul style="list-style-type: none"> <li>▪ Representing components that comply with technical design standards (in particular ASME standards Y14.5-M, 1994).</li> <li>▪ Write notes indicating dimension tolerances, materials, appropriate treatment and any other important information.</li> </ul>	

**SYNTHESIS OF SUMMATIVE EVALUATION METHODS**

Description of Evaluation Activity	Context	Learning Objective(s)	Due Dates (dates to hand in work or date of exam period)	Weighting (%)
Assignments (between 4 and 5)	<u>Individual Work :</u> <ul style="list-style-type: none"> <li>▪ Imperial system</li> <li>▪ Orthogonal projections</li> <li>▪ Questionnaires regarding blueprints</li> <li>▪ Nomenclature</li> <li>▪ Technical sketch</li> <li>▪ Aircraft reference plane</li> </ul>	1 5 2 1 1	Week-assignment 2-1 (5 pts) 3-2 (5 pts) 5-3 (5 pts) 9-4 (5 pts) 11-5 (5 pts)	25%
Mini-test	<ul style="list-style-type: none"> <li>▪ Orthogonal Projections</li> <li>▪ Technical sketches</li> </ul>	2 5	Week 4	5%
Exam 1	<ul style="list-style-type: none"> <li>▪ Orthogonal Projections</li> <li>▪ Interpreting a drawing from a questionnaire</li> <li>▪ Making a sketch</li> <li>▪ Interpreting nomenclature</li> <li>▪ Interpreting aircraft reference planes</li> </ul>	1, 2, 3 & 5	Week 7	25%
Reports (2)	<u>Individual Work :</u> 1- Aircraft reference planes  <u>Team work in groups of 2 or 3</u>  2- Case study: describing the installation of a drain	All	Week 8  Week 13	5%  10%
Final Exam	<ul style="list-style-type: none"> <li>▪ All documentation is permitted.</li> <li>▪ Interpreting drawings from questionnaires</li> <li>▪ Theory questions</li> </ul>	All	Week 15	30%

**TOTAL : 100%**

## REQUIREMENTS TO PASS THE COURSE

### (1) Passing Mark

The passing mark for this course is 60%.

### (2) Presence at Summative Evaluations

Presence is required at summative evaluations.

### (3) Submitting Assignments

Assignments must be submitted by the date, place and time determined by the instructor. All assignments must be submitted by the date, hour and location designated by the instructor(s). Students who are absent must obtain information about any work done in class or assignments from their classmates.

Late assignments will be penalized in the following manner:

- 1 day – 10%
- 2 days – 20%
- 3 days – 50%
- one week – 100\$

### (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 recherche** »

## CLASS 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.

## OBLIGATORY REQUIRED MATERIAL

COOP Course Manual : Theory # \_\_\_\_\_ Questionnaire # \_\_\_\_\_  
Blueprints # \_\_\_\_\_

- 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*.

## **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 (in French) for this course: <http://ena.college-em.qc.ca/etudiants-actuels/programmes-d-etudes/departements-d-enseignement#a1>