



## COURSE OUTLINE

<b>COURSE:</b>	<b>Avionics Maintenance</b>		
<b>PROGRAM:</b>	280.C0 Aircraft Maintenance Technology		
<b>DISCIPLINE:</b>	280 Aeronautics		
<b>WEIGHTING:</b>	Theory: 0	Practical Work: 3	Personal Study : 1

<b>Professeur(s)</b>	<b>Bureau</b>	<b>☎ poste</b>	<b>✉ courriel ou site web</b>
Boyer, Serge	A-192	4546	serge.boyer@college-em.qc.ca
Boileau, Michel	A-192	4685	michel.boileau@college-em.qc.ca
Dagher, Maya	A-192	4682	maya.dagher@college-em.qc.ca
Dubois, Marcel	A-192	4680	marcel.dubois@college-em.qc.ca
Gere, Andrei	A-187	4649	andrei.gere@college-em.qc.ca
Gillard, Pierre	A-187	4552	pierre.gillard@college-em.qc.ca
Gosselin, Raymond	A-187	4650	raymond.gosselin@college-em.qc.ca
Laurin, Nicholas	A-192	4665	nicholas.laurin@college-em.qc.ca
Lemoyne, Pierre	A-192	4681	pierre.lemoyne@college-em.qc.ca
Rădulescu, Andrei	A-187	4648	andrei.radulescu@college-em.qc.ca
Rivière, Frantz	A-192	4675	frantz.riviere@college-em.qc.ca
Trần, Quốc Túy	A-187	4232	quoctuy.tran@college-em.qc.ca
Tremblay, Éric	A-187	4662	eric.tremblay@college-em.qc.ca

### OFFICE HOURS

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Morning					
Afternoon					

<b>Coordinator(s)</b>	<b>Office</b>	<b>☎ Extension</b>	<b>✉ Email or Website</b>
Gosselin, Raymond	A-187	4650	raymond.gosselin@collegeem.qc.ca
Laurin, Nicholas	A-192	4665	Nicholas.laurin@college-em.qc.ca

This course outline is the translation of "Plan de cours – 280-533-EM – Maintenance avionique". In case of any contradictions, the French version, which is the original, prevails.

## CONTEXT OF THIS COURSE IN THE PROGRAM

This course is offered in the sixth session of the program. It is assumed that students who enroll in the course have passed the courses in their preceding sessions, in particular: 280-3D4 DC Avionics, 280-4A4 AC Avionics and 280-5B4 Radio Systems. Students who do not meet these conditions may still enroll in the course, the Avionics Department believes that these students will find it more difficult to pass the course.

In addition, students must have obtained a Restricted Radiotelephone Certificate prior to enrolling in this course in order to be able to test onboard radio equipment. Students who do not have the RRC radio license cannot perform certain laboratory activities which will result in a penalty in the evaluation.

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

- The ability to perform installation and repair work on aircraft with AC and DC electrical generation and distribution systems
- The ability to diagnose and repair basic problems involved in aircraft with AC and DC electrical generation and distribution systems.

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.

## MINISTRY OBJECTIVE(S) AND COMPETENCIES

### **025T To maintain direct-current circuits on an aircraft.**

**(training duration: 100 course periods)**

Distribution of the 025T competence in the program:

3 <sup>rd</sup> session	280-3D4-EM: DC Avionics	55 periods out of 100
4 <sup>th</sup> session	280-4A4-EM: AC Avionics	30 periods out of 100
▶ 6 <sup>th</sup> session	280-6A3-EM: Avionics Maintenance	15 periods out of 100
Total:		100 periods

### **0263 To check the operation of simple alternating-current currents on an aircraft.**

**(training duration: 70 course periods)**

Distribution of the 0263 competence in the program:

3 <sup>rd</sup> session	280-3D4-EM: DC Avionics	5 periods out of 70
4 <sup>th</sup> session	280-4A4-EM: AC Avionics	30 periods out of 70
4 <sup>th</sup> session	280-605-EM: Aircraft Instrumentation	5 periods out of 70
▶ 6 <sup>th</sup> session	280-6A3-EM: Avionics Maintenance	30 periods out of 70
Total:		70 periods

## LEARNING AND TEACHING STRATEGIES

The acquisition of the material, which is spread out over 15 laboratory sessions, will be facilitated by a series of exercises to better reflect the real conditions of a manufacturer operating in accordance with CAR561 and an approved maintenance organization operating in accordance with CAR 573. The various exercises are designed to incorporate the concepts of a quality assurance system that meets the criteria of the regulations mentioned above.

Particular emphasis will be placed on techniques to implement to avoid the 12 human factors usually found in aircraft maintenance.

At all times students will be required to pay attention to health and safety measures at work in order to acquire the reflexes needed to avoid accidents as much as possible.

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## COURSE PLAN

### 025T To maintain direct-current circuits on an aircraft.

Element of the Ministry Objective	Learning Objectives	Content	Transport Canada Reference	Personal Study Activities
4. Diagnose and correct defects	1. Collect data for circuits and systems	<ul style="list-style-type: none"> <li>• Steps to follow :                             <ul style="list-style-type: none"> <li>- Find the manufacturer's documentation</li> <li>- Determine the parameters of the system</li> <li>- Identify the normal operation of the system</li> <li>- Determine the location of the components</li> <li>- Determine the location of the relevant test points</li> <li>- Determine the necessary measuring devices</li> </ul> </li> </ul>	22.3.11. 22.3.32. 22.3.43.	
	2. Perform tune-up according to the inspection	<ul style="list-style-type: none"> <li>• Steps to follow:                             <ul style="list-style-type: none"> <li>- Open the required access panels</li> <li>- Recreate or simulate normal operating conditions</li> <li>- Measure the data at the test points</li> <li>- Compare the data collected with the reference values</li> <li>- Determine the need for additional further tests</li> <li>- Determine the need for additional test equipment</li> <li>- Determine the need for flight tests</li> </ul> </li> </ul>		
	3. Perform systems tests	<ul style="list-style-type: none"> <li>• Optimize the tests that can be performed following the manufacturer's instructions</li> </ul>		
	4. Analyze the data collected	<ul style="list-style-type: none"> <li>• Compare the data obtained for each of the previous tests with:                             <ul style="list-style-type: none"> <li>- the specifications of the aircraft manufacturer</li> <li>- the specifications of the system element manufacturer</li> </ul> </li> <li>• Identify the defect</li> </ul>	22.3.27	
	5. Correct defects while respecting safety procedures	<ul style="list-style-type: none"> <li>• Repair or replace the defective element</li> <li>• Test for proper system operation</li> </ul>	22.3.15 22.3.40	

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Element of the Ministry Objective	Learning Objectives	Content	Transport Canada Reference	Personal Study Activities
	6. Write a report	<ul style="list-style-type: none"> <li>• Include in report a table showing the current performance of the aircraft versus the specified minimal performance and operations that were performed.</li> <li>• Make decision regarding the aircraft's airworthiness</li> </ul>		
6. Repair and replace wires and terminals.	1. Select tools, equipment and required accessories in compliance with standards, procedures and specifications.	<ul style="list-style-type: none"> <li>• Select pins and terminals</li> <li>• Select clamps: determine use and limitations of crimping tools</li> <li>• Create antenna coaxial cables</li> </ul>		
	2. Determine the sequence of operation.	<ul style="list-style-type: none"> <li>• Use AC 43-13 to establish a work method in a given situation</li> <li>• Use the manufacturer's documentation (methodology)</li> </ul>		
	3. Perform crimping operations	<ul style="list-style-type: none"> <li>• Steps to follow : <ul style="list-style-type: none"> <li>- Identify the cables and wires to crimp and become familiar with the instructions on cutting and stripping.</li> <li>- Use production documentation, correctly select connecting components</li> <li>- Use relevant documents, correctly position the components</li> <li>- Use the manufacturer's documentation, check the tools and know the standards related to certifying tools</li> <li>- Use production documentation, assemble a harness with various types of terminations</li> <li>- Use the manufacturer's documentation, inspect your work and determine whether the work complies with standards and specifications</li> </ul> </li> </ul>	22.3.33. 22.3.39.	
	4. Carry out final assembly	<ul style="list-style-type: none"> <li>• Correctly identify wires and cables according to the code supplied by the manufacturer : wire print</li> <li>• Select attaching device to tether harness to the structure</li> </ul>		

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Element of the Ministry Objective	Learning Objectives	Content	Transport Canada Reference	Personal Study Activities
	5. Check work	<ul style="list-style-type: none"> <li>Steps to follow:               <ul style="list-style-type: none"> <li>- Check continuity using an ohmmeter</li> <li>- Determine the torque for various applications</li> <li>- Perform test procedures by pulling lugs and contacts</li> <li>- Test proper operation of the system or subsystem.</li> </ul> </li> </ul>		
	6. Store equipment and clean up	<ul style="list-style-type: none"> <li>Follow safe work method:               <ul style="list-style-type: none"> <li>- Clear workspace of any interference could cause an accident.</li> <li>- Use symbols to assure safety</li> <li>- Comply with restrictions on storing products and tools</li> <li>- Respect characteristics of the space for storing batteries</li> </ul> </li> </ul>		
	7. Record information	<ul style="list-style-type: none"> <li>Comply with standards and specifications</li> </ul>		

**0263 To verify simple alternating-current circuits on an aircraft.**

Element of the Ministry Objective	Learning Objectives	Content	Transport Canada Reference	Personal Study Activities
3. Check the AC electrical generation and distribution on an aircraft.	1. Check the AC generation system of an aircraft whose primary generation is continuous.	<ul style="list-style-type: none"> <li>Check alternative secondary generation: rotary UPS or semiconductors that convert the primary DC power supply into AC power to charge</li> </ul>	22.3.9 22.3.27 22.3.41 22.3.42 22.3.45	
	2. Check the AC distribution system on an aircraft whose primary generation is DC and whose secondary generation is AC.	<ul style="list-style-type: none"> <li>Check the distribution of the alternative generation of the piston single-engine, of the piston twin-engine, of the turbine single engine and of the turbine twin-engine:               <ul style="list-style-type: none"> <li>- Check protective elements for the electrical distribution: circuit breakers, fuses.</li> <li>- Check the control elements for the electrical distribution: switches, relays</li> <li>- Check all items supplied with alternating current on the model.</li> </ul> </li> </ul>	22.3.9 22.3.27 22.3.41 22.3.42 22.3.45	

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Element of the Ministry Objective	Learning Objectives	Content	Transport Canada Reference	Personal Study Activities
	3. Check the AC distribution system on an aircraft with AC primary generation and DC secondary generation	<ul style="list-style-type: none"> <li>• Check priority and load-shedding of busbars</li> <li>• Check the model for: <ul style="list-style-type: none"> <li>- electric distribution protection elements</li> <li>- electric distribution control elements</li> </ul> </li> </ul>	22.3.9 22.3.27 22.3.41 22.3.42 22.3.45	
	4. Diagnose defects (snags) in the AC generation and distribution system on an aircraft with DC primary generation: <ul style="list-style-type: none"> <li>- Piston single-engine</li> <li>- Piston twin-engine</li> <li>- Turbine single-engine</li> <li>- Turbine twin-engine</li> </ul>	<ul style="list-style-type: none"> <li>• Identify defects by comparing intended operation and current operation of the electrical generation system on an aircraft</li> <li>• Carry out instructions from a manufacturer's chart of procedures</li> <li>• Identify defects</li> </ul>	22.3.34 22.3.45	
	5. Diagnose defects (snags) in the electrical generation and distribution system on an aircraft with AC primary generation: <ul style="list-style-type: none"> <li>- Generation System: 115 Volts, 400 Hertz and 26 Volts 400 Hertz without putting alternators in parallel</li> <li>- Generation system: 115 Volts, 400 Hertz and 26 Volts 400 Hertz with putting alternators in parallel</li> <li>- Variable frequency AC power system</li> </ul>	<ul style="list-style-type: none"> <li>• Identify defects by comparing the intended operation and the current operation of the aircraft's electrical generation system</li> <li>• Carry out instructions of a chart of procedures or manufacturer</li> <li>• Identify defects</li> </ul>	22.3.34 22.3.45	
	6. Test auxiliary power systems.	<ul style="list-style-type: none"> <li>• Tests can be performed on a stopped aircraft with auxiliary unit by following the manufacturer's instructions.</li> <li>• Tests with the auxiliary unit working by following manufacturer's instructions</li> </ul>		
	7. Test emergency power system	<ul style="list-style-type: none"> <li>• Tests can be performed by following the manufacturer's instructions.</li> </ul>		
4. Perform maintenance on an electric engine.	1. Follow the usual inspection procedures.	<ul style="list-style-type: none"> <li>• Conduct pre-flight operational inspection</li> <li>• Perform visual inspection if the last flight report is satisfactory</li> <li>• Perform periodic inspection as per the manufacturer's operation manual</li> </ul>		

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Element of the Ministry Objective	Learning Objectives	Content	Transport Canada Reference	Personal Study Activities
	2. Follow overhaul procedures.	<ul style="list-style-type: none"> <li>• Disassemble the engine : <ul style="list-style-type: none"> <li>- Use appropriate tools</li> <li>- Use a clean space</li> <li>- Identify the order of removal</li> </ul> </li> <li>• Check electrical components : <ul style="list-style-type: none"> <li>- Use a growler</li> <li>- Use an ohmmeter for continuity or short-circuit tests</li> </ul> </li> <li>• Engine assembly</li> <li>• Check proper operation prior to installation on the aircraft</li> </ul>		
5. Diagnose and correct defects.	1. Collect data on circuits and systems.	<ul style="list-style-type: none"> <li>• Steps to follow: <ul style="list-style-type: none"> <li>- Find the manufacturer's documentation</li> <li>- Determine the system's parameters</li> <li>- Identify normal operation of the system</li> <li>- Determine the location of the components</li> <li>- Determine the location of relevant test points</li> <li>- Determine the necessary measuring devices</li> </ul> </li> </ul>	22.3.11 22.3.32 22.3.43	
	2. Perform verification tune-up	<ul style="list-style-type: none"> <li>• Steps to follow: <ul style="list-style-type: none"> <li>- Open required access panels</li> <li>- Recreate or simulate normal operating conditions</li> <li>- Measure test point data</li> <li>- Compare data collected with reference values</li> <li>- Determine need for further testing</li> <li>- Determine need for additional test equipment</li> <li>- Determine need for flight tests</li> </ul> </li> </ul>		
	3. Test systems	<ul style="list-style-type: none"> <li>• Tests can be performed following the manufacturer's instructions</li> </ul>		
	4. Analyze collected data	<ul style="list-style-type: none"> <li>• Compare data obtained for each of the previous tests with: <ul style="list-style-type: none"> <li>- The specifications of the aircraft manufacturer</li> <li>- The specifications of the system element manufacturer</li> </ul> </li> <li>• Identify the defective element</li> </ul>	22.3.27	

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Element of the Ministry Objective	Learning Objectives	Content	Transport Canada Reference	Personal Study Activities
	5. Correct defects	<ul style="list-style-type: none"> <li>• Repair or replace defective element</li> <li>• Test system for proper operation</li> </ul>	22.3.15 22.3.40	
	6. Write a report	<ul style="list-style-type: none"> <li>• Present report in table form showing current performance of the aircraft versus the minimal performance specified as well as the operations that were performed</li> <li>• Make a decision regarding the airworthiness of the aircraft</li> </ul>	22.3.15 22.3.40	
7. Replace modular units	1. Plan the work	<ul style="list-style-type: none"> <li>• Identify the unit to install: research in the manufacturer's installation manuals.</li> <li>• Identify voltage levels used</li> <li>• Develop a response plan</li> <li>• Obtain necessary material and tools</li> </ul>	22.3.27 22.5.36	
	2. Perform installation activities	<ul style="list-style-type: none"> <li>• Use tools appropriately and safely</li> <li>• Perform mechanical assembly</li> <li>• Make system connections</li> </ul>		
	3. Check installation for compliance	<ul style="list-style-type: none"> <li>• Electrical charge test</li> </ul>		
	4. Perform operation tests	<ul style="list-style-type: none"> <li>• Respect manufacturer's instructions</li> </ul>		
	5. Analyze collected data	<ul style="list-style-type: none"> <li>• Compare collected data with the values specified by the manufacturer</li> </ul>		
	6. Record information in work orders			

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## Session Calendar

Periods		Content	Personal Study	Objectives	
Week 1	3	Introduction to the course	<ul style="list-style-type: none"> <li>• Presentation of the Course Outline</li> <li>• Review of health and safety measures in the laboratories and hangars</li> <li>• Review of the 12 human factors involved in aircraft maintenance</li> <li>• Use of the manufacturer's manuals</li> <li>• Preparing work cards</li> <li>• Review of plugging in AC and DC Ground Power Units on aircraft</li> <li>• Introduction to different crimping methods and electrical harness manufacturing</li> </ul>	025T : 4.1., 6.6. 0263 : 5.3.	
(Weeks 2, 3, 4 and 5)	12	Perform and inspect crimping and harnessing	<ul style="list-style-type: none"> <li>• Description, identification and use of tools for marking wires, stripping and crimping</li> <li>• Using documentation provided by the tool and connector manufacturers</li> <li>• Checking tool calibration</li> <li>• Wire identification marking to comply with applicable standards</li> <li>• Creating a harness with connectors and terminals following an installation document.</li> <li>• Creating a shielded wire using thermal sleeves</li> <li>• Attaching the harness wires by lacing techniques with waxed cord and plastic tie-wraps</li> <li>• Inspecting connector and harness wire crimping</li> <li>• Explanation of the contact problems encountered</li> <li>• Installing harness in a structure and using appropriate fasteners</li> <li>• Final inspection of the harness on the structure</li> </ul>	Occupational Health and Safety (OHS) Rules Review of Manufacturer's Process AC.43-13.	025T : 6.1., 6.2., 6.3., 6.4., 6.5, 6.6., 6.7.
		Create an antenna cable.	<ul style="list-style-type: none"> <li>• Identifying appropriate coaxial cable</li> <li>• Identifying coaxial connectors</li> <li>• Identifying required tools</li> <li>• Creating a coaxial cable with BNC connectors</li> <li>• Inspecting created cable and checking electrical compliance</li> </ul>	OHS Rules Theory review of antennas and radio frequency AC.43-13.	025T : 6.1., 6.2., 6.3., 6.5., 6.6.

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Weeks 6 to 11 will be done in rotation and in groups of two.					
Weeks 6 to 11	3	Replace modular units.  <i>(Laboratory #6 in rotation)</i>	<ul style="list-style-type: none"> <li>• Open a work card to replace one or several LRU (Line Replacement Units) on board an aircraft.</li> <li>• Identify the location of the LRU(s) to replace on board an aircraft.</li> <li>• Replace the LRU(s) according to the appropriate manuals.</li> <li>• Perform operating test of the replaced LRU(s).</li> <li>• Close the work card.</li> <li>• Complete the appropriate label on the device or devices removed from the aircraft.</li> </ul>	OHS Rules. <b>Review the study guide for the Restricted Radiotelephone Operator's Certificate.</b>  Review of avionics systems and their location in the aircraft.	0263 : 7.1., 7.2., 7.3., 7.4., 7.5., 7.6.
Weeks 6 to 11	3	Repair and/or install wires, terminals, connectors and ground contacts on an aircraft.  <i>(Laboratory #7 in rotation)</i>	<ul style="list-style-type: none"> <li>• Identify work to be carried out.</li> <li>• Open a work card (NRWC-<i>Non Routine Work Card</i>).</li> <li>• Determine a work sequence.</li> <li>• Find appropriate technical documentation.</li> <li>• Perform tasks.</li> <li>• Visually inspect the installation or repair.</li> <li>• Operational Check of the installed or repaired circuits.</li> <li>• Close the work card.</li> </ul>	OHS Rules. Use manufacturer's technical documentation. ATA100 system AC.43-13.	025T : 4.1., 4.2., 4.3., 4.4., 4.5., 4.6., 6.1., 6.2., 6.5., 6.6., 6.7.

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Weeks 6 to 11	3	<p>Troubleshoot DC electrical power generation and distribution systems</p> <p><i>(Laboratory #8 in rotation)</i></p>	<ul style="list-style-type: none"> <li>• Open a work card (NRWC) on failure of the DC electrical power generation and distribution system on an aircraft.</li> <li>• Find the circuit(s) involved in the technical documentation.</li> <li>• Locate the involved components and circuits on the aircraft.</li> <li>• Develop a strategy for measuring and troubleshooting.</li> <li>• Open the access panels or allow access to the involved components, as needed ; write new work card and log book entry for opening access panels.</li> <li>• Conduct tests and take measures leading to resolving the problem(s).</li> <li>• Identify the cause of the identified problem(s).</li> <li>• Check affected circuit(s) with operating tests which may include a run-up.</li> <li>• Close work cards related to the work that was performed.</li> </ul>	<p>OHS Rules.</p> <p>Review methods to fill out work cards.</p> <p>Use of manufacturer's technical documentation.</p> <p>ATA100 System.</p> <p>AC.43-13.</p>	<p>025T :</p> <p>4.1., 4.2., 4.3., 4.4., 4.5., 4.6.</p>
	Weeks 6 to 11	3	<p>Perform maintenance on a DC starter-generator</p> <p><i>(Laboratory #9 in rotation)</i></p>	<ul style="list-style-type: none"> <li>• Find maintenance procedure in the supplier's documents (CMM-<i>Component Maintenance Manual</i>).</li> <li>• Fill out work card.</li> <li>• Conduct inspection and maintenance following manufacturer's specifications.</li> <li>• Complete the work card and an authorized release certificate « Form One ».</li> </ul>	<p>OHS Rules.</p> <p>Use of manufacturer's technical documentation.</p> <p>ATA100 System.</p>

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Weeks 6 to 11	3	<p>Troubleshoot AC secondary generation systems of an aircraft with DC primary electrical generation. (Learjet)</p> <p><i>(Laboratory #10 in rotation)</i></p>	<ul style="list-style-type: none"> <li>• Open a work card on failure of the AC electrical generation and distribution system on an aircraft that has primary DC power.</li> <li>• Find the involved circuit(s) in the technical documentation.</li> <li>• Locate affected components and circuits on the aircraft.</li> <li>• Develop a strategy for measuring and troubleshooting.</li> <li>• Open the access panels or allow access to the affected components, as needed; write new work card and log book entry for opening access panels.</li> <li>• Conduct tests and measures leading to resolving the problem(s).</li> <li>• Identify the cause of the identified problems.</li> <li>• Check affected circuit(s) with operating tests which may include a run-up.</li> <li>• Close work cards related to the work that was performed.</li> </ul>	<p>OHS Rules.</p> <p>Review methods to fill out work cards.</p> <p>Use of manufacturer's technical documentation.</p> <p>ATA100 System AC.43-13</p>	<p>0263 :</p> <p>3.1, 3.2, 3.4, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6</p>
Weeks 6 to 11	3	<p>Operational check-up of fire-detection system</p> <p><i>(Laboratory #11 in rotation)</i></p>	<ul style="list-style-type: none"> <li>• Open a work card on failure of the radio communication systems on an aircraft.</li> <li>• Find the involved circuit(s) in the technical documentation.</li> <li>• Perform the operational check-up following the maintenance manual procedures</li> <li>• Open the access panels to allow access to the system components, as needed; write new work card and log book entry for opening access panels.</li> <li>• Close work cards related to the work that was performed.</li> </ul>	<p>OHS Rules.</p> <p>Review methods to fill out work cards.</p> <p>Use of manufacturer's technical documentation.</p> <p>ATA100 System. AC.43-13.</p>	<p>025T :</p> <p>4.1., 4.2., 4.3., 4.4., 4.5., 4.6.</p>

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Periods		Content	Personal Study	Objectives	
Week 12	3	Prepare test procedures on the main and auxiliary AC generation systems and on the emergency power system.	<ul style="list-style-type: none"> <li>• Prepare check of the CL601 Challenger APU (electrical tasks) and the AC distribution system including the operation of the shedable bars according to the manufacturer's procedures.</li> <li>• Prepare check of the CL601 Challenger ADG according to the manufacturer's procedures.</li> <li>• Find relevant technical documentation.</li> <li>• Find relevant JIC (<i>Job Instruction Cards</i>).</li> <li>• Determine procedure for starting and stopping the APU and the engines.</li> <li>• Develop procedures for testing the APU, the AC distribution and the ADG.</li> <li>• Open appropriate routine work card.</li> <li>• Mini-test to check students' understanding of the handling and manoeuvres to be performed while respecting safety measures.</li> </ul>	OHS Rules. Use of manufacturer's technical documentation. ATA100 System.	0263: 3.3, 3.6., 3.7
Weeks 13 and 14	6	Become familiar with and troubleshooting performing exercises using simulation software for AC primary electrical generation systems.	<ul style="list-style-type: none"> <li>• Become familiar with the simulator operation.</li> <li>• Become familiar with the operation of the systems involved.</li> <li>• Check proper operation of the circuits and systems on the simulator.</li> <li>• Determine a diagnosis of the operational status of the systems.</li> <li>• Open work cards related to the work to be performed.</li> </ul>	Review primary AC generation on board an aircraft and its distribution. Review methods to fill out work cards. Use of manufacturer's technical documentation. ATA100 System.	025T : 4.1., 4.2., 4.3., 4.4., 4.5., 4.6.  0263 : 3.5., 5.1., 5.2., 5.3., 5.4., 5.5., 5.6.
Week 15	3	Exam on troubleshooting AC primary electrical generation systems using simulation software.	<ul style="list-style-type: none"> <li>• Check proper operation of the circuits and systems on the simulator.</li> <li>• Determine a diagnosis of the operational status of the systems</li> <li>• Open work cards related to the work to be performed.</li> </ul> <p>DURATION: 75 minutes per student</p>		025T : all  0263 : all

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## ROTATION SCHEDULE (Weeks 6 to 11)

Week	Team 1	Team 2	Team 3	Team 4	Team 5	Team 6
6	Lab 6	Lab 7	Lab 8	Lab 9	Lab 10	Lab 11
7	Lab 11	Lab 6	Lab 7	Lab 8	Lab 9	Lab 10
8	Lab 10	Lab 11	Lab 6	Lab 7	Lab 8	Lab 9
9	Lab 9	Lab 10	Lab 11	Lab 6	Lab 7	Lab 8
10	Lab 8	Lab 9	Lab 10	Lab 11	Lab 6	Lab 7
11	Lab 7	Lab 8	Lab 9	Lab 10	Lab 11	Lab 6

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## SYNTHESIS OF SUMMATIVE EVALUATION METHODS

Description of Evaluation Activity	Context	Learning Objective(s)	Due Date (date assignment is due or exam given)	Weighting (%)
Precautions to take with AC and DC ground connections	Report / Individual questionnaire	025T:4.1., 6.6. 0263 :5.3.	Laboratory 1	5
Carrying out and inspecting crimping and harnessing	Individual evaluation of the work performed: <ul style="list-style-type: none"> <li>• Identifying and respecting wire dimensions</li> <li>• Crimping</li> <li>• Thermal sleeves</li> <li>• Installing harness</li> <li>• Attitude/OHS.</li> </ul>	025T: 6.1., 6.2., 6.3., 6.4.,6.5, 6.6., 6.7.	Laboratory 2 to 4	20
Creating an antenna cable	Individual evaluation of the work performed.	025T: 6.1., 6.2., 6.3., 6.5., 6.6.		5
Replacing modular units	Work performed in teams. Reports written individually Individual evaluations for radio communication	0263: 7.1., 7.2., 7.3., 7.4., 7.5., 7.6.	Laboratory 6 (in rotation)	5
Repairing and/or installing grounding on an aircraft	Individual evaluation of work performed.	025T: 4.1., 4.2., 4.3., 4.4., 4.5., 4.6., 6.1., 6.2., 6.5., 6.6., 6.7.	Laboratory 7 (in rotation)	9
Troubleshooting DC electric generation and distribution systems	Evaluation of troubleshooting in teams	025T: 4.1., 4.2., 4.3., 4.4., 4.5., 4.6.	Laboratory 8 (in rotation)	8
Maintenance of a starter-generator	Individual evaluation of work performed	0263: 4.1, 4.2.	Laboratory 9 (in rotation)	9
Troubleshooting AC electric generation and distribution systems	Evaluation of troubleshooting in teams	0263: 3.1, 3.2, 3.4, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6	Laboratory 10 (in rotation)	8
Fire-detection system check-up	Evaluation of performed tasks in teams	025T: 4.1., 4.2., 4.3., 4.4., 4.5., 4.6.	Laboratory 11 (in rotation)	8
Mini-test on auxiliary generation systems, AC distribution and the emergency power system	Individual written exam	0263: 3.3, 3.6., 3.7	Week 12	5
Troubleshooting exam on the simulator	Individual evaluation of work performed (exam)	025T: 4.1., 4.2., 4.3., 4.4., 4.5., 4.6. 0263: 3.5., 5.1., 5.2., 5.3., 5.4., 5.5., 5.6.	Week 15	15
<b>TOTAL:</b>				100

All reports are due at the end of the concerned session.

If a student is absent for an activity or a part of an activity, he or she will receive the mark of zero for the report that corresponds to this activity or part of the activity during which he or she was absent. If the absence is for a serious and documented reason, the student will not be penalized.

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## **Deadlines:**

All work, work documents and reports will be handed in at the end of each session or group of sessions or will be subject to pre-determined penalties.

### REQUIREMENTS TO PASS THE COURSE

#### **(1) Passing Mark**

A passing mark is 60%.

#### **(2) Course Attendance for Summative Evaluations**

Students must be present for summative evaluations.

#### **(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 work day it is late. On the sixth day after the due date, 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***.

#### **(5) Quality of the English language**

The Instructor expects the use of proper English terminology. The formative evaluation also relates to the quality of oral and written English. If need be, the instructor will recommend that students register for an English course.

When a given homework is considered to be unacceptable because of the quality of written English, the correction of this work will be delayed until the work is returned in the standards set by the instructor. In this case, penalties apply to any delay in submitting homework assignments. The instructor may allocate 10% of the mark for any assignment to the quality of oral or written English.

### EXPECTATIONS OF CLASS PARTICIPATION

#### **Laboratory safety and use of the premises:**

Students must be under the supervision of an instructor or a technician whenever they are in the laboratory or using the equipment, unless otherwise indicated.

Any student whose conduct in the laboratory poses a risk to others will receive a warning from the instructor and then be excluded from the laboratory until the case can be reviewed by the instructor and the coordinator of the Avionics Department.

### REQUIRED MATERIAL

Students must have the work clothes required by the college to work in the hangar. This includes safety shoes that comply with CSA Z195 standards and safety glasses. Students who do not have these three elements will be denied access to the hangar or laboratory will not be able to participate in the class and will receive a mark of zero without the opportunity to make it up. All other equipment required for the course is provided by the College.

Students must arrive in class with the required documents.

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## MEDIAGRAPHY

### Mandatory Documents

Course notes, workbook and lab book as well as other complementary computer documents that are available on an internet or intranet support.

### Reference manuals (not mandatory)

EISMIN, THOMAS K. – Aircraft Electricity & Electronics, Fifth Edition, Glencoe, 1997.

This list is not exhaustive

## 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](http://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

Students are encouraged to consult the website for the specific regulations for this course: [http://www.college-em.qc.ca/  
www.college-em.qc.ca/ena/avionique/reglements](http://www.college-em.qc.ca/www.college-em.qc.ca/ena/avionique/reglements)

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