



## COURSE OUTLINE: ATQ122 - AVIATION ELECTRONICS

Prepared: Ryan London

Approved: Greg Farish, Chair, Aviation Technology - Flight

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|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Course Code: Title</b>                                                                            | ATQ122: AVIATION ELECTRONICS                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Program Number: Name</b>                                                                          | 4161: AVIATION TECHNIQUES                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Department:</b>                                                                                   | CONTROL - SAULT                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Semesters/Terms:</b>                                                                              | 22W                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Course Description:</b>                                                                           | This course is an introduction to basic electrical theory in general and as it relates to Aviation. The student will be exposed to the means of generating electrical power on small general aviation type aircraft. The student will begin to understand the relationship between magnetism and electrical generation. Applying Ohm's law and various other mathematical formulas the student will discover how basic DC circuits operate.                       |
| <b>Total Credits:</b>                                                                                | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Hours/Week:</b>                                                                                   | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Total Hours:</b>                                                                                  | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Prerequisites:</b>                                                                                | There are no pre-requisites for this course.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Corequisites:</b>                                                                                 | There are no co-requisites for this course.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Vocational Learning Outcomes (VLO's) addressed in this course:</b>                                | <b>4161 - AVIATION TECHNIQUES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Please refer to program web page for a complete listing of program outcomes where applicable.</b> | VLO 3 Apply mathematical concepts and operations to verify various aviation-related conversions, calculations, measurements, and layouts.                                                                                                                                                                                                                                                                                                                         |
|                                                                                                      | VLO 5 Apply oral and written technical communication skills to succeed in college level aviation programs.                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                                      | VLO 6 Explain the purpose and function of key components of a general type aircraft to support safe aircraft operation and maintenance.                                                                                                                                                                                                                                                                                                                           |
|                                                                                                      | VLO 8 Develop effective learning and study skills to support success in the current program of study and advancement into subsequent, higher level, studies in Aviation.                                                                                                                                                                                                                                                                                          |
| <b>Essential Employability Skills (EES) addressed in this course:</b>                                | EES 3 Execute mathematical operations accurately.<br>EES 4 Apply a systematic approach to solve problems.<br>EES 5 Use a variety of thinking skills to anticipate and solve problems.<br>EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.<br>EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others.<br>EES 11 Take responsibility for ones own actions, decisions, and consequences. |
| <b>Course Evaluation:</b>                                                                            | Passing Grade: 50%,<br><br>A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.                                                                                                                                                                                                                                                                                                                              |

In response to public health requirements pertaining to the COVID19 pandemic, course delivery and assessment traditionally delivered in-class, may occur remotely either in whole or in part in the 2021-2022 academic year.



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**Other Course Evaluation & Assessment Requirements:**

The student will be assessed by a combination of attendance and deportment, quizzes, assignments and a final exam. Weighting of each will be as follows: 30% for tests/quizzes, 30% for assignments, 40% for the final exam. A minimum mark of 50% overall, is required to pass the course.

Quizzes will be given without prior notice.

Students may request a deferment of a test for compassionate reasons. Compassionate Grounds for deferment will include but not be limited to death of an immediate family member, personal illness, or recent diagnosis of a serious illness of a family member. Make-ups will not be permitted after the fact for compassionate reasons.

A classroom code of conduct can be found in the Sault College Student Code of Conduct, on the Sault College Website. This along with the list of Unacceptable Behaviours in the Aviation SOP will be adhered to.

In the case of illness, a phone call, voice mail or e-mail message is expected before class.

If a student expects to be late or will be delayed for any reason, every attempt should be made to contact the professor, or leave a message on voice mail or e-mail.

Although attitude, co-operation, etc., are not graded, students may be terminated based on their performance in this area (see section 5.2 Aviation SOP).

Dates of tests will be announced at least 1 week in advance.

If a faculty member determines that a student is at risk of not being successful in their academic pursuits and has exhausted all strategies available to faculty, student contact information may be confidentially provided to Student Services in an effort to offer even more assistance with options for success. Any student wishing to restrict the sharing of such information should make their wishes known to the coordinator or faculty member.

**Books and Required Resources:**

Aircraft Electricity and Electronics by Thomas K. Eismin  
 Publisher: McGraw-Hill Edition: 7  
 ISBN: 9781260108217

**Course Outcomes and Learning Objectives:**

| <b>Course Outcome 1</b>                                                                                                                                        | <b>Learning Objectives for Course Outcome 1</b>                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Analyze Series, Parallel and Series Parallel DC circuits containing voltage, current, and resistors to determine individual voltage, current and power values. | Utilize electrical terminology and principles to find unknown quantities in series circuits, parallel circuits and series-parallel circuits and present the information in appropriate units.                                                         |
| <b>Course Outcome 2</b>                                                                                                                                        | <b>Learning Objectives for Course Outcome 2</b>                                                                                                                                                                                                       |
| Analyze magnetic properties of circuits and devices.                                                                                                           | <p>Explain magnetic properties of materials.</p> <p>Determine the direction and behavior of magnetic flux in a conductor and a coil as a result of current flow.</p> <p>Describe the operating principles of aircraft alternators and generators.</p> |

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|                                               | <b>Course Outcome 3</b>                                                                                                                                                                                                                                              | <b>Learning Objectives for Course Outcome 3</b>                                                                                                                                               |                 |                   |             |     |            |     |               |     |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------|-------------|-----|------------|-----|---------------|-----|
|                                               | Describe the different batteries found in aircraft.                                                                                                                                                                                                                  | State the differences between a Lead-Acid and a Nickel-Cadmium battery.<br><br>Identify primary cell and secondary cell type batteries.<br><br>State precautions when working with batteries. |                 |                   |             |     |            |     |               |     |
| <b>Evaluation Process and Grading System:</b> | <table border="1"> <thead> <tr> <th>Evaluation Type</th> <th>Evaluation Weight</th> </tr> </thead> <tbody> <tr> <td>Assignments</td> <td>30%</td> </tr> <tr> <td>Final Exam</td> <td>40%</td> </tr> <tr> <td>Tests/Quizzes</td> <td>30%</td> </tr> </tbody> </table> |                                                                                                                                                                                               | Evaluation Type | Evaluation Weight | Assignments | 30% | Final Exam | 40% | Tests/Quizzes | 30% |
| Evaluation Type                               | Evaluation Weight                                                                                                                                                                                                                                                    |                                                                                                                                                                                               |                 |                   |             |     |            |     |               |     |
| Assignments                                   | 30%                                                                                                                                                                                                                                                                  |                                                                                                                                                                                               |                 |                   |             |     |            |     |               |     |
| Final Exam                                    | 40%                                                                                                                                                                                                                                                                  |                                                                                                                                                                                               |                 |                   |             |     |            |     |               |     |
| Tests/Quizzes                                 | 30%                                                                                                                                                                                                                                                                  |                                                                                                                                                                                               |                 |                   |             |     |            |     |               |     |
| <b>Date:</b>                                  | August 13, 2021                                                                                                                                                                                                                                                      |                                                                                                                                                                                               |                 |                   |             |     |            |     |               |     |
| <b>Addendum:</b>                              | Please refer to the course outline addendum on the Learning Management System for further information.                                                                                                                                                               |                                                                                                                                                                                               |                 |                   |             |     |            |     |               |     |

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