

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



**COURSE OUTLINE**

**COURSE TITLE:** Navigation I & II

**CODE NO. :** AVF122-2                                   **SEMESTER:** Two

**PROGRAM:** Aviation Technology (Flight)

**AUTHOR:** Louis St Pierre

**DATE:** Dec 2011                   **PREVIOUS OUTLINE DATED:** New

**APPROVED:** "S.Hause"

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**CHAIR**                                   **DATE**

**TOTAL CREDITS:** 2

**PREREQUISITE(S):** none

**HOURS/WEEK:** 2

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**I. COURSE DESCRIPTION:**

This course starts with the elements involved in Dead Reckoning Navigation. These elements are then combined to enable pilots-in-training to pass the navigation section of the Transport Canada Private Pilot written exam and to learn the techniques that pilots use for navigating in flight. This knowledge is also the basis for the Transport Canada Commercial Written exam in second year, and is also preparatory ground instruction for the Private Pilot Licence.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

Upon successful completion of this course, the student will demonstrate the ability to:

1. Use the grid coordinate system to locate places on earth, and to understand track lines on a map

Potential Elements of the Performance:

Geographical Coordinates, Time and longitude, Time zones, Great circle and Rhumb lines

2. Understand Earth's magnetism

Potential Elements of the Performance:

Variation, converting from True to Magnetic, The Magnetic Compass, compass errors, magnetic dip

3. interpret Aeronautical Charts and Publications

Potential Elements of the Performance:

VNC, VTA, LO, CFS, basic chart information,

4. Prepare a navigation chart for dead reckoning navigation

Potential Elements of the Performance:

Using plotting instruments to prepare a chart that can be used by a pilot/navigator

5. use the Jeppesen styled circular slide rule (CR-2 through CR-6) to complete calculations required for Dead Reckoning navigation

Potential Elements of the Performance:

calculations include groundspeed, estimated time enroute, unit conversions, heading, pressure altitude, true altitude and so on

**Note: the E6B flight computer is NOT allowed.**

6. Understand and apply Mental Dead Reckoning Techniques

Potential Elements of the Performance:

Maximum drift, using MDR techniques to estimate a heading and estimated time enroute

7. retrieve and interpret airport information  
Potential Elements of the Performance:  
learn to use the Canada Flight Supplement
8. prepare for a cross country flight in preparation for AFT130 in the summer  
Potential Elements of the Performance:  
completion of two projects that will guide students in the learning how to complete the Sault College navigation log and prepare for a cross country
9. understand radio theory and some of the basic principles of radio navigation aids  
Potential Elements of the Performance:  
radio theory, VOR, transponders, GPS
10. Understand and apply the theory and techniques of dead reckoning navigation, as well as theory of radio navigation aids, required for the completion of the navigation portion of the Transport Canada Private Pilot Exam  
Potential Elements of the Performance:  
this course prepares students for the Private Pilot exam and the Commercial Pilot exam as well as the applicable qualification exams
11. understand and apply practical navigation techniques  
Potential Elements of the Performance:  
applying the knowledge gained in learning how to confirm or revise estimated time enroute, practical drift correction, the watch-to-computer-to-map-to-ground technique, diversions by simulating cross countries

### III. TOPICS:

1. Grid coordinates, Time Zones, Great Circle vs. Rhumb Line
2. Earth's Magnetism and the magnetic compass
3. Aeronautical charts and publications
4. Navigation Chart preparation
5. the Jeppesen circular slide rule flight computer
6. Mental Dead Reckoning
7. The Canada Flight Supplement (CFS)
8. cross country navigation log preparation
9. Radio Navigation Aids
10. Preparation for the Transport Canada written exam
11. Practical Navigation

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

From The Ground Up  
 Flight Training Manual  
 Sault Ste Marie VNC  
 Jeppesen CR-type Navigation Computer (The E6-B is not allowed)  
 Canada Flight Supplement  
 Aeronautical Information Manual (AIM)  
 Navigational Plotting Instruments

**V. EVALUATION PROCESS/GRADING SYSTEM:**

The student will be assessed by a combination of attendance, quizzes, projects, tests and a final exam. Weighting of each will be as follows: 10% for quizzes, 10% for assignments, 30% for all tests prior to the final exam and 50% for the final exam. A minimum mark of 70% is required to pass the course.

- Marks may deducted on a test for using an expired Canada Flight Supplement or VFR navigation chart.
- Unexcused absences will result in 2% deduction of the final mark for each occurrence. Arriving for class late, not having the required charts or equipment will result in a 1% deduction of the final mark for each occurrence, and violations of the dress code will result in a 1% deduction of the final mark for each occurrence.
- Quizzes may be given without prior notice. If a student is absent for a quiz without excuse, the student will get 0% on the quiz. There will be no make-ups of missed quizzes when missed due to unexcused absence. If the student is properly excused, then he or she will be allowed to make-up the quiz.
- Students may request a deferment of a test **prior to the writing of that 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.**
- Dates of tests will be announced at least 1 week in advance.

The following semester grades will be assigned to students:

| <b>Grade</b> | <b><u>Definition</u></b>   | <i>Grade Point Equivalent</i> |
|--------------|--|-------------------------------|
| A+           | 90 – 100%  | 4.00                          |
| A            | 80 – 89%   | 3.00                          |
| B            | 70 - 79%   | 3.00                          |
| F (Fail)     | 69.4% and below  | 0.00                          |
| X            | A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course. |                               |
| NR           | Grade not reported to Registrar's office.  |                               |
| W            | Student has withdrawn from the course without academic penalty.  |                               |

**VI. SPECIAL NOTES:**Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session. *It is possible that once the classroom door has been closed, late arrivers will not be granted admission to the room*

**VI. COURSE OUTLINE ADDENDUM:**

The provisions contained in the addendum located on the portal form part of this course outline.