

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



**COURSE OUTLINE**

**COURSE TITLE:** OUTDOOR NAVIGATION

**CODE NO. :** NRT123 **SEMESTER:** One

**PROGRAM:** ECOSYSTEM SURVEYS FIELD SKILLS, FIELD NATURALIST, FISH & WILDLIFE CONSERV., FOREST CONSERV., PARK OPERATION SKILLS, ADVENTURE RECREATION & PARKS, NATURAL ENVIRONMENT TECHNICIAN/TECHNOLOGIST

**AUTHOR:** Erwin Goertz

**DATE:** MAY 2012 **PREVIOUS OUTLINE DATED:** MAY '11

**APPROVED:** "B.Punch"

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	<b>CHAIR</b>	<b>DATE</b>
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**TOTAL CREDITS:** 3

**PREREQUISITE(S):** None

**HOURS/WEEK:** 3

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**For additional information, please contact Brian Punch, Chair, Environment/ Design/Business Programs, School of Environment and Technology**  
**(705) 759-2554, Ext. 2681**

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Course Name

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Code No.

## I. COURSE DESCRIPTION:

Students will gain skills in orienteering and navigating in forested areas using a magnetic hand compass, topographic map, OMNR standard aerial photographs and global positioning systems (GPS). Students will use a navigational protractor, metric scale, and digital planimeter in the planning and presentation of field exercises. Students will be introduced to pacing and distance measurement devices (50 m rope, 30 m tape, hip-chain) in order to measure distances.

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

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

1. **Be able to use a magnetic hand compass and navigate to a destination.**

Potential Elements of the Performance:

- determine azimuths and bearings and convert from one to the other
- understand and set magnetic declination on a compass

2. **Be able to determine distances by pacing and measuring distances using a 50 m rope.**

Potential Elements of the Performance:

- determine pacing factor and be able to pace distances in summer and winter
- understand the measurement divisions for a 50 m rope
- be able to maintain and properly store equipment

3. **Be able to use OMNR aerial photographs, OBM and NTS maps in order to travel from one location to another using a magnetic hand compass.**

Potential Elements of the Performance:

- understand scales of photographs and maps
- identify major features on aerial photographs and cover type changes
- be able to measure distances and directions on aerial photographs and maps
- be able to calculate directions on a map and aerial photograph using a navigational protractor

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Course Name

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Code No.

4. **Be able to view aerial photographs in three dimensions.**

Potential Elements of the Performance:

- define stereoviewing, stereoscope, stereopair and stereogram
- list two types of stereoscopes and the advantages/disadvantages of each
- correctly orient a stereopair of aerial photographs for stereoviewing
- correctly handle and take care of OMNR aerial photographs
- be able to order existing aerial photography from the provincial government

5. **Be able to use and understand the principles of Global Positioning Systems (GPS)**

Potential Elements of the Performance:

- understand the accuracy of GPS receivers (GPSr)
- be able to mark (enter) a field position in the GPSr while in the field
- be able to enter a field position using map co-ordinates
- be able to navigate to waypoints entered into the GPS using a compass and the GPSr
- be able to record positions from the GPSr onto a map

6. **Be able to determine areas on maps using a dot grid, the line transect method and a digital planimeter.**

Potential Elements of the Performance:

- understand how to use a dot grid for measuring areas
- know how to handle dots that fall on the area's boundary line
- know the components/keys on a digital planimeter & how to use it
- be able to measure areas using a compass and the line transect method

7. **Use and interpret topographic maps (OBM, NTS). This includes being able to accurately reference any point using latitude/longitude as well as UTM co-ordinates.**

Potential Elements of the Performance:

- recognize the different ways of expressing scale
- identify all lines, numbers and symbols on maps
- recognize the divisions used on a map to measure long/lats and UTM co-ordinates
- draw topographic profiles and calculate gradients
- be able to read contour lines and determine elevations and major topographic features

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Course Name

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Code No.

**8. Use basic equipment including the metric scale, distance measurement devices, and navigational protractor.**

Potential Elements of the Performance:

- use the metric scale for distance measurements on a variety of maps with various scales
- measure directions and apply magnetic declination on maps using a navigational protractor
- properly use a distance measurement device.

**III. TOPICS:**

1. Introduction to course, lettering style, units of measurement and conversions.
2. Compassing
3. Determining directions indoors and outdoors
4. Measuring distances
5. Determining distances indoors and outdoors
6. Grid networks
7. GPS
8. OMNR aerial photographs
9. Stereoviewing and determining directions in the field using aerial photographs
10. Area determination
11. Topographic maps and reading contours

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Course Name

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Code No.

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

- Outdoor Navigation course manual
- NTS 1:50 000 Topographic Map Sheets #41 K/9
- Metric Scale (1:500 to 1:2500)
- Navigational Protractor
- Calculator
- Clipboard
- Dot Grid (provided by instructor)
- Personal Safety Whistle (Fox 40 fluorescent orange)
- Brunton 15TDCL Compass
- Pocket Stereoscopes (2 power)

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

Evaluation will be based on weekly quizzes, assignments handed out in class, assignments to be completed in the field and tests.

1. Quizzes	10%
2. Assignments	40%
3. Tests (2)	<u>50%</u>
	<b>100%</b>

Quizzes are given at the beginning of each class. Students who are late for class will forfeit the quiz mark. Assignments which are conducted in the field must have a passing grade of 50%. Assignments are due on specific dates. The instructor will review and correct the answers for the questions on late assignments, however, the student may forfeit the marks for these. Under special circumstances, which will be verified, students may be given credit for late assignments. Students will repeat any unsatisfactory assignments until satisfactorily completed. Students must wear appropriate safety gear (hardhat, safety vest, safety boots, safety whistle) when conducting field exercises as well as carry a compass and safety whistle with them at all times.

**Note:** For a breakdown of individual marks by assignment by week refer to the course syllabus on LMS.

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 Course Name

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 Code No.

The following semester grades will be assigned to students:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 - 100%	4.00
A	80 - 89%	4.00
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 - 59%	1.00
F (Fail)	49% or below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field/clinical placement or non-graded subject areas.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject areas.	
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:

### Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

### Disability Services:

If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office.

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Course Name

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Code No.

Prior Learning Assessment:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

Credit for prior learning can also be given upon successful completion of a challenge exam or portfolio.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Code of Conduct*. A professor/instructor may assign a sanction as defined below, or make recommendations to the Academic Chair for disposition of the matter. The professor/instructor may (i) issue a verbal reprimand, (ii) make an assignment of a lower grade with explanation, (iii) require additional academic assignments and issue a lower grade upon completion to the maximum grade “C”, (iv) make an automatic assignment of a failing grade, (v) recommend to the Chair dismissal from the course with the assignment of a failing grade. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

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.