

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



Sault College

COURSE OUTLINE

COURSE TITLE: SURVEYING

CODE NO. : SUR 235 **SEMESTER:** II

PROGRAM: CIVIL/ARCHITECTURAL/ CONSTRUCTION
ENGINEERING TECHNICIAN

AUTHOR: S. IENCO

DATE: DEC - 04 **PREVIOUS OUTLINE DATED:** JAN - 04

APPROVED:

DEAN

DATE

TOTAL CREDITS: 4

PREREQUISITE(S): SUR 101

LENGTH OF COURSE: 16 WEEKS **TOTAL CREDIT HOURS:** 64

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For additional information, please contact C. Kirkwood, Dean
School of Technology, Skilled Trades & Natural Resources
(705) 759-2554, Ext.688

I. COURSE DESCRIPTION:

This course is designed to provide you with a basic understanding of Geographical Information Systems (GIS), and its integration to Global Positioning Systems (GPS). The course culminates with a one-week practical surveying field camp.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Display a basic knowledge of Geographical Information Systems.

Potential Elements of the Performance:

- define a GIS
- discuss applications to specific fields of endeavour
- describe the various components of a GIS
- describe vector and raster spatial referencing techniques

2. Search and query a GIS for a variety of applications.

Potential Elements of the Performance:

- use the ArcView software interface for moving around and displaying spatial information
- apply fundamental file management techniques for storing and retrieving GIS files
- demonstrate an ability to relate attribute information to spatial information
- define and describe the components of topology
- search and query a GIS database for a variety of applications

3. Produce charts, graphs and presentation maps using a desktop GIS mapping system.

Potential Elements of the Performance:

- prepare charts and graphs for presentation
- prepare presentation plans including maps, charts, tables, graphs and other appropriate map information
- prepare a presentation layout for a small GIS project

4. Describe spatial referencing systems.

Potential Elements of the Performance:

- define projection systems
- demonstrate an understanding of the Universal Transverse Mercator projection

5. Display a basic understanding of data input, output and data management methods.

Potential Elements of the Performance:

- demonstrate spatial and attribute data input
- digitise spatial information
- describe fundamental data security, integrity and updating issues

6. Display a basic knowledge of Global Positioning Systems (GPS)

Potential Elements of the Performance:

- describe the evolution of GPS
- define the segments of a Global Positioning System
- explain how GPS systems measure
- identify the GPS coordinate system
- discuss satellite geometry, accuracies and errors
- list the various applications in GPS
- demonstrate keypad usage and data entry for a handheld GPS unit
- collect waypoints
- collect routes
- collect tracks
- download GPS data into ArcView GIS

7. Participate in a one-week surveying field camp

Potential Elements of the Performance:

- Run a level loop and calculate closure
- Set a tribrack over a point using an optical plumb
- Observe multiple set of angles
- Observe and close the angles of a five-sided polygon using a total station
- Reduce filed notes

III. TOPICS:

1. Introduction and GIS Fundamentals
2. GIS Software
3. Presentation of Charts, Tables, Graphs and Layouts
4. Spatial Referencing
5. Data Input, Output and Management
6. Global Positioning Systems
7. Survey Field Camp

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Surveying Principles and Applications
Barry F Kavanagh

V. EVALUATION PROCESS/GRADING SYSTEM:

You will be assigned a final grade based on successful completion of assignments, quizzes and tests, weighted as follows:

Assignments/Quizzes	30%
Participation and attendance	10%
Two tests of equal weight	<u>60%</u>
TOTAL	100%

Each assignment and quiz carries equal weight. Late submittals receive only a maximum grade of 50%. However, assignments handed in later than one week will receive a grade of 0%.

An average of 50% on assignments/quizzes, and 50% on tests is required for successful completion of this course.

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 placement or non-graded subject areas.	
U	Unsatisfactory achievement in field	

X	placement or non-graded subject areas. 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:

Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1101 or call Extension 703 so that support services can be arranged for you.

Retention of course outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism:

Students should refer to the definition of "academic dishonesty" in *Student Rights and Responsibilities*. Students who engage in "academic dishonesty" will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. 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.

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.

Substitute course information is available in the Registrar's office.

Testing Absence

If a student is unable to write a test on the date assigned, the following procedure is required:

- The student shall provide the Professor with advance notice preferably in writing of his/her need to miss the test.
- The student may be required to document the absence at the discretion of the Professor.
- All decisions regarding whether tests shall be re-scheduled will be at the discretion of the Professor.
- The student is responsible to make arrangements, immediately upon return to the College with his/her course Professor related to make-up of the missed test prior to the next scheduled class for the course in question.
- In the event of an emergency on the day of the test, the student may require documentation to support the absence and must telephone the College to identify the absence. The college has a 24 hour electronic voice mail system (759-2554) Ext. 600

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.