

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY
SAULT STE. MARIE, ONTARIO**



COURSE OUTLINE

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|-------------------------|---|--------------------------------|----------------|
| COURSE TITLE: | SURVEYING | | |
| CODE NO. : | OEL810 | SEMESTER: | |
| PROGRAM: | CIVIL/ARCHITECTURAL/CONSTRUCTION | | |
| AUTHOR: | S. IENCO | | |
| DATE: | Jan 13 | PREVIOUS OUTLINE DATED: | Sept 08 |
| APPROVED: | Laurie Poirier | | |
| TOTAL CREDITS: | 4 | | |
| PREREQUISITE(S): | NONE | | |
| HOURS/WEEK: | 4 | | |

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*For additional information, please contact
School of Continuing Education
(705) 759-2554, Ext.2612*

I. COURSE DESCRIPTION:

This course will introduce you to basic surveying principles. The topics will deal with theory, application and care of the level, chain and total station. The theory is enhanced with practical field exercises.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Explain the purpose of surveying by identifying various types of surveys; describing equipment used to perform such surveys; and indicate the interaction of errors, mistakes and field data collection in a survey

Potential Elements of the Performance:

- Define surveying.
 - Identify types and purpose of surveying.
 - Identify the basic instruments commonly used in surveying.
 - Distinguish between accuracy and precision.
 - Define errors and mistakes in surveying.
 - Recognize and appreciate the importance of collecting and recording appropriate field notes.
2. Participate as an active member of a survey team to select and operate leveling survey equipment for the purpose of conducting, measuring, calculating, recording and disseminating data according to given standards.

Potential Elements of the Performance:

- Define leveling.
- Identify leveling instruments and their use.
- Identify and use leveling rods and accessories.
- Describe the process of differential leveling.
- Identify and use the two basic equations of

leveling.

- Demonstrate the proper procedure for setting up the level, taking rod readings, and entering data in the field book.
- Record and reduce field notes to established standards.
- Solve problems involving the degree of accuracy
- Perform a field exercise using a single instrument set up.
- Solve and perform a *differential leveling* exercise.
- Solve and perform a *benchmark leveling* exercise.
- Solve and perform a *profile leveling* exercise.
- Solve and perform a *peg test* to ensure proper adjustment of instrument.

3. Acquire, record and reduce linear measurements using various approved techniques, equipment and procedures.

Potential Elements of the Performance:

- Differentiate among different methods of linear measurement.
- Establish a personal pace.
- Explain the duties of the head surveyor and rear surveyor.
- Explain the various uses for tape accessories.
- State the procedure for making slope measurements.
- List the sources of chaining mistakes.
- Convert slope distances into horizontal distances.
- Compute incorrect tape length effects on chaining.
- Compute temperature effects on chaining.

4. Identify and describe the functions and parts of a total station; measure and record angular measurements with the total station; perform associated angular calculations for azimuths and bearings of open and

closed traverses.

Potential Elements of the Performance:

- Identify the components of a total station.
- Set up a total station over a point.
- Demonstrate the procedure for making angular measurements.
- Read angular measurement.
- Measure horizontal angles.
- Perform angular arithmetic calculations.
- Calculate bearing and azimuths of open and closed traverses.
- Describe and outline the procedure for prolonging a straight line, interlining between two points, intersecting a line and prolonging a straight line past an obstacle.

III. TOPICS:

1. Introduction and Surveying Fundamentals
2. Leveling
3. Linear Measurement
4. Total Station

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Adobe Acrobat Reader, Macromedia Flash

Students in Algoma Area

The fieldwork component can take place at Sault College. The facilitator will notify the student of the schedule.

Students Outside of the Algoma Area

An important component of this course is the fieldwork component. It is the student's responsibility to find a professional surveyor or engineer for mentoring and evaluation. The professional will be contacted by the facilitator once notified.

V. EVALUATION PROCESS/GRADING SYSTEM:

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

- Assignments (3) 10%
- Field Book and Participation 40%
- Midterm Test 25%
- Final Test 25%

TOTAL 100%

The minimum passing mark is 50%. Your registering college will convert the percent to a letter grade.

VI. SPECIAL NOTES:

1. If you are a student with a disability please identify your needs to the tutor and/or the Centre for Students with Disabilities at your registering college.
 2. Students, it is your responsibility to retain course outlines for possible future use to support applications for transfer of credit to other educational institutions.
 3. 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.
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