



SURVEYING

SUR101

COURSE NAME

COURSE NUMBER

**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 transit. The theory is emphasized by applying it to practical field exercises.

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

(Generic Skills Learning Outcomes placement on the course outline will be determined and communicated at a later date.)

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.

**n. LEARNmG OUTCOMES AND ELEMENTS OF THE PERFORMANCE  
(Continued)**

- Perform with the help of a survey crew (three students) a field exercise using single instrument set up.
- Perform a *differential leveling* exercise.
- Perform a *benchmark leveling* exercise.
- Perform a *profile leveling* exercise.
- 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.
- List the duties of the head surveyor and rear surveyor.
- Demonstrate the various uses for taping accessories.
- Measure distances using a steel chain.
- 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 transit; measure and record angular measurements with the transit; perform associated angular calculations for azimuths and bearings of open and closed traverses.

Potential Elements of the Performance:

- Identify the components of a transit.
- Set up a transit over a point.
- Demonstrate the procedure for making angular measurements.
- Read transit verniers.
- Measure horizontal angles singly and doubly.
- 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.

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**m. TOPICS:**

Note: Topics inherently overlap and are not necessarily developed as isolated units or in the order presented.

1. Introduction and Surveying Fundamentals
2. Linear Measurement
3. Leveling
4. Engineer's Transit

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

Study Guide

Hardcover Field Book ^^  
(Available at Campus Shop)

**V. EVALUATION PROCESS/GRADING SYSTEM**

Students will be assigned a final grade based on successful completion of tests, assignments, projects and attendance, weighted as follows:

Field Book and Attendance	<b>20%</b>
Assignments (including Fieldwork)	<b>20%</b>
Midterm Test	<b>25%</b>
Final Test	<b>35%</b>
<b>TOTAL</b>	<b>100%</b>

**VI. SPECIAL NOTES:**

Special Needs

If you are a student with special needs (eg. physical limitations, visual impairments, hearing impairments, learning disabilities), you are encouraged to discuss required accommodations with the instructor and/or contact the Special Needs Office, Room E1204, Ext. 493, 717, 491 so that support services can be arranged for you.

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- 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 post-secondary institutions.
- Disclaimer for Meeting the Needs of the Learners
- Substitute Course Information is available at the Registrar's Office.

**Vn. PRIOR LEARNING ASSESSMENT**

Students who wish to apply for advanced credit in the course should consult the instructor. Credit for prior learning will be given upon successful completion of the following: