

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

COURSE OUTLINE

COURSE TITLE _____ SURVEYING _____

CODE No. _____ SUR201 _____ SEMESTER HI _____

PROGRAM _____ CIVIL ENGINEERING TECHNICIAN _____

INSTRUCTOR _____ F.E. WALL _____

DATE — SEPTEMBER 1997 — PREVIOUS OUTLINE _____ SEPT. 1995

APPROVED:
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TOTAL CREDIT HOURS: 64

PREREQUISITE(S): SUR235

I. PHILOSOPHY/GOALS:

The goal of this course is to ensure that the student has developed a complete set of basic survey skills. Upon completion, the student will have demonstrated an ability to set up and operate transits and levels, perform several survey calculations including simple highway curves and volumes, calculate and layout grades. The student will be introduced to Total Station Survey equipment and procedures, and electronic plan generation.

n. STUDENT PERFORMANCE OBJECTIVES (OUTCOMES):

Upon successful completion of this course the student will:

- 1) Setup and perform simple field procedures using levels, transits, and theodolites
- 2) Describe the components of the Total Station Survey and electronic plan generation process
- 3) Calculate the information required and utilize it to layout a circular curve in the field
- 4) Calculate the information required and use it to layout a section of road or an underground utility installation
- 5) Calculate quantities from survey data using established methods

in. TOPICS TO BE COVERED:

- 1) Levels, Transits, and Theodolites
- 2) Total Station Survey
- 3) Simple Highway Curves
- 4) Construction Layout
- 5) Quantity Surveys

IV. LEARNING ACTIVITIES/REQUIRED RESOURCES

1. Levels, Transits, and Theodolites

Learning Activities: In class instruction, demonstrations, and field exercises on the use of:

- Repeating Optical Theodolites
- Direction Optical Theodolites
- Electronic Theodolites
- Theodolites vs. Transits

Resources: Chapter 4

2. Total Station Survey

Learning Activities: In class instruction, demonstrations, and field exercises on:

- Total Station equipment
- Field procedures
- Electronic plan generation

Resources: Chapter 5 and prepared handouts

3. Simple Highway Curves

Learning Activities: In class instruction, problem sets, and field exercises on:

- Horizontal circular highway curves
- Geometry of curves
- Curve deflections and chord calculations
- Field procedures

Resources: Chapter 12

4. Construction Layout

Learning Activities: In class instruction, problem sets, and field exercises on:

- Building construction surveys
- Road construction surveys
- Utility construction surveys

Resources: Chapters 9, 11, 13

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5. Quantity Surveys

Learning Activities: In class instruction, problem sets on:

- Construction quantity measurements
- Area calculations
- Cross-sections, end areas, and volumes

Resources: Chapter 15

V. EVALUATION METHODS: (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS, ETC.)

A final grade will be derived as follows:

Assignments	20%
Field Book and Attendance	10%
Practical Tests	10%
Midterm Test	25%
Final Test	35%
Total	100%

The grading system used will be as follows:

A+	90%-100%
A	80%-89%
B	70%-79%
C	55%-69%
R	Repeat

- 1) Attendance during field exercises is required.
Field books will be reviewed for completeness, clarity, and organization.
- 2) Two short practical tests will be administered during the semester. Each student will perform and must pass the tests individually. Each student can try the test when he or she feels ready, and may re-try it if unsuccessful the first time. The tests are:
 - (a) Set up a level, read a rod, and establish an elevation at a second point.
 - (b) Set up a transit or theodolite with an optical plummet, turn and read an angle.

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- 3) Minimum acceptable grade for this course is 55%.
- 4) If at the end of the semester the overall mark is below 55%, then it will be up to the instructor whether or not a rewrite test will be granted. The criteria employed for arriving at that decision is class attendance, class participation, and overall grade, which must be at least 45%.
- 5) In the case a rewrite is granted, it will be permitted only once, it will cover the entire course outline and will limit the maximum obtainable grade to 60%.

VI. REQUIRED STUDENT RESOURCES

<u>Required Text</u>	<u>Surveying with Construction Applications.</u> Second Edition Barry F. Kavanagh
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Vn. ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY:

<u>Book Section</u>	<u>Practical Surveying for Technicians</u> Robert P. Landon
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	<u>Construction Surveying: Layout and Dimension Control</u> Jack Roberts
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Vm. SPECIAL NOTES

Students with special needs (eg. physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.

Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.