

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

COURSE OUTLINE

COURSE TITLE: SURVEYING
COURSE CODE: SUR201
PROGRAM: CIVIL/CONSTRUCTION TECHNICIAN
SEMESTER:
AUTHOR: D. ELLIOTT
DATE: AUG. 1996 **PREVIOUS DATE:** SEPT. 1995

APPROVED: *l / l* *^AXVO **DATE:** 9h -OK' IS^-^
(DEAN)

TOTAL HOURS PER WEEK: 4

PREREQUISITES: SUR101

I. COURSE DESCRIPTION

The goal of this course is to ensure that the student has developed a complete set of basic individual and team survey skills. Upon completion, the student will have demonstrated an ability to set up and operate levels, transits, theodolites and total stations, perform several survey calculations including simple highway curves and volumes, calculate and layout grades for construction purposes. The student will utilize electronic Total Station Survey equipment and procedures for pre-engineering and construction layout surveys.

II. 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.)

A. Learning Outcomes

1. Individually demonstrate setup and operation of survey instruments
2. Individually, and as a member of a crew, calculate the information required and layout a circular curve
3. Individually, and as a member of a crew, calculate the information required and use it to layout a section of road and an underground utility installation
4. Employ electronic survey equipment to produce baseplans and provide construction layout
5. Calculate quantities from survey data using established manual and computerized methods

B. Learning Outcomes and Elements of the Performance

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

Individually demonstrate setup and operation of survey instruments

Elements of the Performance:

- Operate repeating and direction optical theodolites
- Describe the differences between transits and theodolites
- Use total stations

2. Individually, and as a member of a crew, calculate the information required and layout a circular curve

Elements of the Performance:

- Describe the component features of simple horizontal highway curves
- Calculate curve deflections and chord lengths
- Layout even stations for a curve in the field
- Calculate key stations for successive highway curves

3. Individually, and as a member of a crew, calculate the information required and use it to layout a section of road or an underground utility installation

Elements of the Performance:

- Describe the critical components required for horizontal control for building, road and buried utility construction
- Establish vertical control for construction layout
- Perform the necessary calculations required and layout a building, a section of road and a section of buried utility

4. Employ electronic survey equipment to produce baseplans and provide construction layout

Elements of the Performance:

- Demonstrate an understanding of the field and office duties involved in total station surveying
- Compare coordinate based surveying with baseline chainage/offset surveying
- Perform a pre-engineering survey using total station
- Generate a baseplan in AutoCAD
- Perform coordinate layout with total station

5. Calculate quantities from survey data using established manual and computerized methods

Elements of the Performance:

- Perform construction quantity measurements
- Perform area calculations
- Plot cross sections, calculate end areas and volumes

III. TOPICS

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

1. Advanced Survey Instruments
2. Simple Highway Curves
3. Construction Layout
4. Electronic Plan Generation and Layout
5. Quantity Surveys

IV. REQUIRED RESOURCES/TEXTS/MATERIALS

Surveying With Construction Applications

Barry F. Kavanagh
Prentice Hall

Hardcover Fieldbook
Sault College Campus Shop

The student will be expected to supply various media and materials necessary to complete the assignments and projects.

METHOD OF EVALUATION (GRADING)

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

Assignments	20%
Fieldbook and Attendance	10%
Practical Tests	10%
Midterm Test	25%
Final Test	35%
TOTAL	100%

The course and curriculum are designed and limited to time based competency. Late assignments will receive a C (60) grade maximum. Assignments more than seven days overdue will receive a grade of zero.

A final letter grade will be assigned as follows:

A+	90-100%
A	80-89%
B	70-79%
C	55-69%
R	Repeat
X	A temporary grade limited to situations with extenuating circumstances, giving a student additional time to complete course requirements
U	Unsatisfactory (mid-term grade only)
S	Satisfactory (mid-term grade only)

Field books will be collected periodically to check for neatness and layout. Field books will be collected at the end of the semester for marking.

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 will be granted. The criteria employed for arriving at that decision is class and field attendance, class participation and overall grade which must be at least 45%.

In the case a rewrite is granted, it will be permitted only once, it will cover the entire course outline and the overall maximum obtainable grade for the course will be limited to 60%.

VI. SPECIAL NOTES

1. Students with special needs are encouraged to discuss required accommodations in confidence with the instructor, or contact the Special Needs Office.
2. Students should refer to the "Statement of Student Rights and Responsibilities". Students engaging in any form of academic dishonesty will receive a zero grade for that assignment or test and/or other penalty which may apply.
3. The instructor reserves the right to modify the course and course outline as deemed necessary to meet the needs of the students, and to accommodate the need to perform field exercises during favourable weather.
4. It is the responsibility of the student to retain all course outlines for possible future use in gaining advanced standing at other post-secondary institutions.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult with the instructor and/or the Prior Learning Assessment Office. Credit for prior learning will be given upon successful completion of the requirements of the Prior Learning Assessment (PLA) as defined in the Course Analysis Form provided for this course.