SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: SURVEYING

Code No.:   SUR 235-3

Program: CIVIL TECHNICIAN

Semester;   II

Date: JANUARY 1988

Author: S. lENCO

New: Revision: X

APPROVED: _____   *MoA^cAS'M*

Chairperson   Date

<u>CALENDAR DESCRIPTION</u>

SURVEYING   SUR 235-3

COURSE NAME   COURSE NUMBER

<u>PHILOSOPHY/GOALS</u>

The student will enhance his/her ability to use the level, the steel tape and transit. In addition the student will be introduced to traverse surveying and computations, stadia surveying and computation, and topographic mapping.

<u>METHOD OF ASSESSMENT</u>

Field Book	10%
Assignments	15%
Short Quizzes	10%
Mid Term Examination	25%
Final Examination	40%
	1T5W

A+ 90-100%
A   80-89%
B   70-79%
C   60-69%
R   Repeat
X   A temporary grade, limited to situations with
    extenuating circumstances, giving a student
    additional time to complete the requirements of
    the course.

1. Minimum acceptable grade is 60%.

2. Each assignment will carry equal weight. Late submissions will be penalized with a loss of 20% for the first day late and an additional 10% for **each** subsequent late day.

3. The in-class quizzes will cover one or two problems on a specific topic and are worked under examination conditions. Each quiz will carry equal weight.

4. Field books will be collected at the end of each assignment to check for completeness, neatness and layout of work. In addition the books will be collected at the end of semester for a thorough check of two (2) assignments.

5. If, at the end of the semester, your overall average of the combined assigninients, short quizzes, field book, mid semester exam, and final exam is below 60%, then it will be up to the instructor whether you receive an "R" repeat or a re-write. The criteria employed for arriving at that decision is class attendance, class participation and overall score.

6. In case a re-write is granted, it will be permitted only once and will be subjected to the following conditions:

    a) It covers the entire semester's course outline.
    b) The maximum obtainable grade is 60%.
    c) The re-write will cover the entire semester's course work.

PREREQUISITE: SUR 101

TEXT(S): Surveying: Principles and Applications
         Barry F. Kavanagh
         Reston Virginia, 1984

COURSE OUTLINE
SUR 235-3

TOPIC NO,   PERIODS   TOPIC DESCRIPTION

<u>General Review</u>

.differential leveling procedure
.sources of error in leveling and
 necessary precautions
.level peg test
•taping methods and procedure
.corrections for tapes of incorrect
 length

2.   <u>Angles bearing and azimuths</u>

.meridians
.horizontal angles
•bearings
.azimuths
.bearing calculations
.azimuths calculations
.magnetic declination
<u>Engineers transit and theodolite</u>
.basic principles
.types of theodolites
.method of use

          18   <u>Traverse computations</u>

.type of traverses
•angular closure
•latitudes and departures
.precision and accuracy of a traverse
.traverse adjustments
.coordinate computations
.area computations
<u>Stadia surveying</u>
.definitions
.theory of stadia
.applications and limitations of stadia
.reduction of field notes
.field procedure
.plotting of stadia topography

LABORATORY EXERCICES
SUR 235-3

EXERCISE NO.	TOPIC
1	Traverse survey
2	Stadia survey
3	Building layout
4	Prolonging a straight line
5	Peg test
6	Layout of grade stakes for road profile
7	Angle, bearings and compass problems
8	Stadia problems and reduction
9	Traverse computation
10	Area computation
11	Topographic mapping

COURSE OBJECTIVES
SUR 235-3

General Review

1. Identify the requirements of good field notes.
2. Demonstrate an understanding for the reduction of leveling notes.
3. Demonstrate the procedure for setting up a level
4. Check the accuracy of a level using the peg system.
5. Demonstrate the field procedure for making linear measurements using a steel tape.
6. Calculate tape corrections for tapes that are too short or too long.

Angles bearing and azimuths

1. Identify the units of angular measurements.
2. Identify interior angles, deflection angles and exterior angles for a closed traverse.
3. Define magnetic meridian, astronomic meridian and assumed meridian.
4. Identify and calculate bearings for a closed and open traverse.
5. Identify and calculate azimuths for a closed and open traverse.
6. Identify the various parts of a compass.
7. Understand the following terms:
    a) Declination
    b) Isogenic line
    c) Agonic line
8. Calculate corrections for magnetic declination.
9. Identify the sources of errors and mistakes in using a compass.

Traverse computation

1. Compute the bearings and/or azimuths of lines given the angles between the lines and a reference bearing.
2. Balance the angles for a closed traverse.
3. Compute the latitudes and departures of a traverse.
4. Balance a traverse using the compass rule.
5. Calculate any missing measurements of either the bearing or the distance of a closed figure.
6. Compute plane coordinates for a closed traverse.
7. Compute areas using a planimeter.
8. Compute areas by D.M.D.'s.
9. Compute area by coordinates.
10. Plot a traverse with protractor and/or coordinates.

COURSE OBJECTIVES
SUR 235-3

Stadia

1. Measure the H.I. with a tape.
2. Read stadia intervals.
3. Read and book the horizontal angles and the vertical angles,
4. Reduce the field notes and compute the horizontal distances and difference in elevations.
5. Plot a contour map form a set of stadia field notes.
6. Identify the sources of error in stadia surveys.
7. Identify the limitations of stadia surveys.