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SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: SURVEYING

Code No.: SUR 109-5 Semester: 4-llHLL. ^

Program: C/b'G

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APPROVED: ChairpersonJ Date: as Su/fo

SURVEYING SUR 109-5

Course Name Course Number

Total Credit Hours

Prerequisite(s):

I. PHILOSOPHY/GOALS;

To introduce the student to basic surveying principles. The topics covered will be measurements, levelling theory and practice, and angular measurements and direction.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

LEVELLING:

1) Set up the level.
2) Read the levelling rod.
3) Care and maintain the level.
4) Identify the parts of the level.
5) Define backsight, foresight, turning point, height of instrument and bench mark.
6) Set up the field notebook.
7) Record levelling notes.
8) Carry out the duties of a rod person, instrument person and notekeeper.
9) Recognize the different sources of errors in levelling and take necessary precautions.
10) Identify bench marks.
11) Establish bench marks.
12) Transfer grades.
li) Carry a set of elevations from one point to another.

CHAINING:

1) Measure distances with chaining equipment and make proper adjustments.
2) Demonstrate the various use for the plumb bob and chaining pins.
3) List and perform the basic duties of the head chainperson and rear chainperson.
4) Participate within a field crew and act as a head chainperson, rear chainperson and notekeeper.
5) Recognize and list the sources of chaining errors.
6) Produce notes that are legible, neat and accurate.
7) Perform chaining computations for chains that are too short or too long.
8) Reduce slope chaining distances to horizontal distances.

TRANSIT:

1) Demonstrate the correct procedure for mounting, removing and storing the transit head.
2) Demonstrate the proper method of transporting a mounted transit in the field.
3) Set up a transit.
4) Demonstrate proper use of tangent screws.
5) Plumb a site.
6) Measure a horizontal angle.
7) Read the verniers.
8) State the basic functions of a transit.

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 and compute the latitudes and departures of a traverse.
3) Balance a traverse using compass rule.
4) Calculate any two missing measurements of either bearing or distance in a closed figure.
5) Compute plane coordinates.
6) Compute areas by D.M.D.'s
7) Plot a traverse with protractor and scale and/or coordinates.

STADIA:

1) Measure the H.I. with a tape.
2) Read stadia intervals.
3) Read and book the horizontal angles and vertical angles.
4) Reduce field notes and compute the horizontal distances and elevations.

HORIZONTAL CURVES;

1) Compute T, L, E, M, R, and station of B.C. and E.C. for circular curve.
2) Compute chord layout lengths.
3) Tabulate all data required to lay out by deflection angles, a simple horizontal curve.
4) Be familiar with the field procedure for laying out the curve.

TOPIC NO.	TOPIC INFORMATION
	GENERAL - Introduction - Definitions of surveying types, kinds and purposes of surveys - Kinds of surveying measurements - Accuracy and precision of measurements - Errors and mistakes
	LEVELLING - Introduction of levelling - Methods of measuring differences in elevation - Terms and definitions - Theory of levelling form of field notes - Levelling instruments and their use - Levelling rods and related necessary precautions - Field exercise
	APPLICATION OF LEVELLING - Profiles and their uses - Methods of obtaining field data - Plotting profiles from field notes - Field exercise - Grade lines and grade computations - Giving grade in field - Contours and contour levelling - Plotting contours from field notes
	ANGULAR MEASUREMENT AND DIRECTION - Terms and definitions - Units of angular measurement - Angular computations - Methods of making angular measurements, meridians, azimuths and bearings - Angles formed by lines of known direction - Azimuths and bearings from field angles - Magnetic compass surveying

TOPIC	TOPIC INFORMATION
	LINEAR MEASUREMENT - Terms and definitions - Units of measurements - Significant figures - Standard condition of steel tape - Taping accessories - Taping methods - Taping notes - Errors in chaining - Slope corrections - Corrections for tapes of incorrect length - Sources of error - Duties of head chainperson and rear chainperson - Pacing **ENGINEERS TRANSIT** - Basic principles - Types of transits - Method of use - Reading verniers - Measuring horizontal angles - Running straight lines - Balancing in - Prolonging a line past an obstacle - Sources of error' - Hand signals for transit work **TRAVERSING** - Types of traverses - Angular closure - Bearing calculations - Latitudes and departures - Precision and accuracy - Traverse adjustments - Coordinate computations - Area computation

III. METHOD OF ASSESSMENT

Assignments	20%
Short Quizzes (in class)	10%
Mid Semester Tests	30%
Final Semester Test	40%
TOTAL	100%

A	80 - 100%
B	70 - 79%
C	60 - 69%
X-R	UNDER 60%

1) Minimum acceptable grade is 60%.

2) Your assignments will carry equal weight and you will be notified one week in advance prior to handouts. Their due date is one week from issuing, and late submissions will be penalized in the following fashion:

   1 day late - loss of 20% for that particular assignment
   2 days late - loss of 10% for that particular assignment
   3 days late - loss of 10% for that particular assignment

   NO ASSIGNMENTS will be accepted on the 4th day.

3) The in-class short quizzes will be given as the study lesson lends itself applicable. Each quiz will carry an equal weight. If you miss one quiz you will not be penalized. However, all subsequent quizzes will be penalized accordingly.

   Mid term test or tests, as well as the final test, will be announced in advance. If your grade in either of these test is below 59% then it will be up to the instructor whether you receive an "X" (Incomplete) or an "R" (Repeat). The criteria employed for arriving at that decision is class attendance and participation. If an "X" is administered then in your re-write test the best obtainable mark will be a "C". NOTE that re-writes are permitted only once. The final semester test re-writes will be scheduled only during the prescribed raake-up period.