

J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: CIV 171

Credits: 3

Course Title: Surveying I

Course Description: Introduces surveying equipment, procedures, and computations, including adjustment of instruments, distance measurement, leveling, angle measurement, traversing, traverse adjustments, area computations, and introduction to topography. Prerequisite or Co-requisite: MTH 115 or equivalent. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

General Course Purpose: To introduce the student to the fundamentals of field surveying

Course Prerequisites and Co-requisites:

Prerequisite or Co-requisite: MTH 115 or equivalent

Course Objectives:

Upon completing the course, the student will be able to:

Lecture:

- a. Identify the duties of a surveyor;
- b. Identify the units of measure, computations, accuracy, and precision used by a surveyor;
- c. Make horizontal distance (taping) corrections;
- d. Compute mathematically and check leveling problems;
- e. Adjust angles for closure;
- f. Complete and correct bearings for magnetic declination;
- g. Compute and adjust latitudes and departure of a traverse;
- h. Compute the coordinates of a traverse;
- i. Compute the area of a traverse;
- j. Draw contour lines and other topographic features; and
- k. Demonstrate an understanding of EDM Equipment.

Lab:

- a. Measure distances by pacing;
- b. Measure distances by taping;
- c. Determine elevations by differential leveling;
- d. Determine elevations by profile leveling;
- e. Determine elevations by trigonometric leveling;
- f. Measure direct angles of a closed traverse;
- g. Measure deflection angles of a closed traverse;
- h. Measure vertical angles;
- i. Locate physical features of a closed traverse;
- j. Determine elevation to draw contour lines;
- k. Draw a topographic map;
- l. Record field notes correctly and accurately; and
- m. Traverse measurement using EDM equipment.

Major Topics to Be Included:

- a. Introduction
- b. Measurements and computations
- c. Measuring horizontal distances
- d. Measuring vertical distances
- e. Measuring angles and directions
- f. Horizontal curve surveys
- g. Topographic surveys and maps

Effective Date of Course Content Summary: February, 2009