Northwest Arkansas Community College
(Workforce Division)

Discipline Code
CST

Course Number
2513

Course Title
Surveying

Catalog Description
A study of the fundamentals of measuring techniques as they relate to leveling, construction layout, and mapping. Emphasis is given to the care and use of optical and electronic instruments. Two hours lecture-discussion and one two-hour laboratory period per week.

Prerequisites
Math 1003 or higher with a C or better

Credit Hours
3 credit hours

Contact hours
45 lecture contact hours

Load hours
3 load hours

Semesters Offered
Fall, Spring, Summer

ACTS Equivalent
N/A

Grade Mode
A-F

Learning Outcomes
Upon completing this course, the student should be able to:

- Set up and operate an optical level and an electronic total station.
- Reduce Levelling, profile, and topographic field data.

- Use basic trig functions to calculate coordinates and layout dimensions.
- Calculate Closure error and adjustments for a basic closed traverse.
- Layout a simple structure using baseline offset or radial method.
- Calculate earthwork volumes.
- Calculate the basic elements of a horizontal and vertical curve.
- Interpret raw data file generated from a field data collector.
- Explain the basic components of a survey grade GPS system.
- Plan a control network for the layout of a large commercial construction site.
- Apply basic surveying techniques for construction layout and control.

General Education Outcomes Supported

- Students develop higher order thinking skills.
- Students can write clear, coherent, well-organized documents, substantially free of errors.
- Students develop effective oral communication skills.
- Students can achieve mathematical literacy.
- Students can employ a variety of sources to locate, evaluate, and use information.

Standard Practices

Topics list

- Construction drawings
- Surveying equipment
- Timed setup of surveying devices
- Topography
- Field book

Learning activities

- Courses must, at a minimum, cover the core learning outcomes for each topic. Faculty may add to these outcomes, but may not omit any of them.
- An orientation to survey equipment identification and safe operation lays the foundation for activities throughout the class.
- Field exercises are discussed, assigned, and then demonstrated by the setup and use of surveying equipment in a variety of applications.
- Advanced mathematical applications are demonstrated by accurate surveying outcomes.
- Since all general education outcomes are supported by specific course and program outcomes, all instructors should include learning activities that develop these outcomes in their courses and identify them in course syllabi. Instructors

should describe how these activities will be evaluated in their course syllabi and/or reflected in their gradebooks.

Assessments

Written exams, timed instrument setup, lab exercises, and homework assignments.

Grading guidelines

- 90% score of all graded assignments = A
- 80% - 89% score on all graded assignments = B
- 70% - 79% score on all graded assignments = C
- 60% - 69% score on all graded assignments = D
- <60% score on all graded assignments = F

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