CONS 50 Course Outline as of Fall 2021

CATALOG INFORMATION

Dept and Nbr: CONS 50 Title: CONSTRUCTION SURVEYING
Full Title: Construction Surveying and Measurements
Last Reviewed: 1/25/2016

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	2.00	Lecture Scheduled	1.00	17.5	Lecture Scheduled	17.50
Minimum	2.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	4.00		Contact Total	70.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 35.00 Total Student Learning Hours: 105.00

Title 5 Category:	AA Degree Applicable
Grading:	Grade Only
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Construction surveying and documentation including office and field measurements of distances, elevations, angles and material quantities related to construction layout of building and engineering works.

Prerequisites/Corequisites:
Course Completion of MATH 154 or MATH 155 or higher (MATH) and APTECH 45

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Construction surveying and documentation including office and field measurements of distances, elevations, angles and material quantities related to construction layout of building and engineering works. (Grade Only)
Prerequisites/Corequisites: Course Completion of MATH 154 or MATH 155 or higher (MATH) and APTECH 45
Recommended:

Limits on Enrollment:
Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Accurately complete survey measurements and document them for common construction surveying situations.
2. Use surveying equipment to produce accurate topographical maps and construction layouts.

Objectives:
Upon the completion of this course, the student will:
1. Define and illustrate types of construction measurements and their units as applied to construction surveying.
2. Demonstrate the appropriate use and care of instruments used in construction surveying.
3. Determine and demonstrate the appropriate method to be used in the construction staking of buildings, utilities and roads.
4. Define and give illustrated examples of the use of horizontal and vertical control as applied to construction surveying.
5. Determine the volume of material by the contour, grid and average end methods from a grading plan.
6. Locate and identify all the elements related to construction layout on a site plan.
7. Calculate and plot to scale a topographic map including site improvements from the data provided.
8. Demonstrate how to read construction stakes for buildings, utilities and roads.
9. Calculate slope, horizontal, and vertical distances given appropriate data.

Topics and Scope:

I. Orientation and lab procedures.
II. Construction units of measurement, errors and accuracy.
III. Distance measurements by taping, tacheometer, and electronic distance measurement

instruments.
IV. Difference of elevation; levels and leveling techniques.
V. Methods and techniques of laying out horizontal and vertical angles.
VI. Principles and methods of construction layout.
VII. Stakes, hubs, and control marks for construction control and layout.
VIII. Methods and applications of staking for building, trenching, pipelaying, and road construction.
IX. Measurement and computation of areas and volumes applicable to construction.
X. Principles and application of measurements for shafts, tunnels and offshore construction.
XI. Geopositioning by satellites.
XII. Documentation of construction surveys.

Assignment:

Reading: 20 pages per week
Problem solving: weekly homework assignments including field reports.
Skills demonstration: minimum 2 graphic documentations of field survey results
2-4 Quizzes and 1 final exam

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework assignments, field reports	Problem solving 20 - 30%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Graphic documentation of field surveys	Skill Demonstrations 40 - 50%

Exams: All forms of formal testing, other than skill performance exams.

Quizzes and final exam: multiple choice, and free response	Exams 25 - 35%

Other: Includes any assessment tools that do not logically fit into the above categories.

None	Other Category 0 - 0%

Representative Textbooks and Materials:
Surveying With Construction Applications: B. Kavanagh and D. Slattery, 8th edition, Prentice Hall 2014
Construction Staking: Step by Step Guide, Vol. 13, J. Crume; CreateSpace Independent Publishing Platform, 2014
Instructor prepared materials