



Course Outline

2026-2027 Catalog

CNST 45 - Construction Graphics

Catalog Description

Transfer Status: CSU

Unit(s): 3.00

Lecture: 34.00 Contact hours/68.00 Out of class hours/102.00 Total hours/2.00 Unit(s)

Lab: 51.00 Contact hours/0.00 Out of class hours/51.00 Total hours/1.00 Unit(s)

Total: 85.00 Contact hours/68.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

Course Description: This course is a study of construction graphics as a representation of our built environment with the ability to communicate 3D forms and ideas through 2D representations and 3D computer models. The focus is on the development of the graphic communication skills needed by the construction professional by establishing a working vocabulary of symbols, details, and views used in construction drawings through lecture and practical application. Students will learn techniques of basic sketching and visualization, as well as an introduction to computer aided drafting and modeling using Sketch-up, Revit, and Navisworks (3D modeling and viewing software tools).

Objectives

Upon successful completion of this course, the student should be able to:

1. Use key construction graphics and modeling terminology.
2. Sketch basic forms and structures.
3. Apply electronic-based technology to manage the construction process.
4. Relate the concepts of 2D construction graphics to 3D modeling.
5. Employ the principles of 2D construction graphics.
6. Build and manipulate basic 3D computer models.
7. Describe various applications of virtual construction and modeling in the design and construction industry.
8. Analyze 2D construction documents for 3D modeling.

Course Content

Topic Titles / Suggested Time Topic

Lecture

<u>Topics</u>	<u>Lec Hrs</u>
Introduction to construction graphics	4.00
Introduction to construction graphics vocabulary, symbols, and details	3.00
Introduction to plan views and sketch techniques	3.00
Introduction to construction graphics and modeling software	6.00
Introduction to 2D graphics and software	3.00
Introduction to 2D graphic building and manipulation	3.00
Introduction to 3D graphics and modeling	3.00
Introduction to 3D graphic building and manipulation	3.00
Introduction to virtual design	3.00
Introduction to virtual construction	3.00
Total Hours:	34.00

Lab

<u>Topics</u>	<u>Lab Hrs</u>
Applications of construction graphics and lab procedures	3.00
Construction graphics vocabulary, symbols, and details	3.00
Plan views and sketching	3.00
Construction graphics and modeling software	6.00
2D graphics and software	6.00
2D building and manipulation	6.00
3D graphics and modeling	6.00
3D building and manipulation	6.00
Virtual design	6.00

Topics**Lab Hrs**

Virtual construction

6.00

Total Hours: 51.00**Methods of Instruction**

- A. Demonstrations
- B. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- C. Laboratory Experiments
- D. Lecture
- E. Multimedia Presentations

Methods of Evaluation

- A. Exams/Tests
- B. Quizzes
- C. Homework
- D. Lab Projects

Examples of Assignments**Reading Assignments**

1. Read Section 5 of the software manual and be prepared to discuss in class.
2. Read assigned tech journal article and be prepared to discuss in class.

Writing Assignments

1. Write a detailed order of operations to set up a new project in Sketch-up, explain each step.
2. Write a two-page essay, explaining how the tech journal article can be implemented to increase job- site productivity.

Out-of-Class Assignments

1. Using engineering graph paper sketch a perspective view of a staircase with at least 5 treads and at least one handrail.
2. Using the Butte College Fieldhouse Project Plans and Specifications and Revit, recreate a 3D model of the Staff Lounge.

Recommended Materials of Instruction

Bertoline, Gary R. (2018). Introduction to Graphics Communication for Engineers. *McGraw Hill*, 4e. 978-1307385571.

Other Learning Materials

Architectural scale, Engineering scale, straight edge (triangle or ruler), graph paper (engineering pad), pencils and paper

Minimum Qualifications

Industrial Technology
Manufacturing Technology
Building Codes And Regs
Construction Management
Construction Technology
Engineering (Masters Required)
Engineering Technology (Masters Required)

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