Course Outline

2026-2027 Catalog

CNST 15 - Materials and Methods of Construction

Catalog Description

Transfer Status: CSU

Unit(s): 3.00

Lecture: 51.00 Contact hours/102.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

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Course Description: A comprehensive study of the principle building materials and systems that are found in the construction industry. An in-depth review of how these materials and systems interact together to produce a complete design and project. The class highlights upon materials testing, quality control, green building products, and various project delivery methods.

Objectives

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

1. Demonstrate an ability to use surveying methods for construction layout [ACCE-SLO #8].
2. Describe the advantages and disadvantages of specific materials in certain applications.
3. Identify principles of law related to construction management administration [ACCE-SLO #15].
4. Identify when and where to use specific techniques/systems such as shoring, various foundation designs, dewatering, etc.
5. Describe how and where to use all major systems, materials, and methods utilized in typical construction projects.
6. Recall the (CSI) classifications used in industry.
7. Assemble construction estimates using various techniques assessing productivity and costs [ACCE – SLO #18].

Course Content

Topic Titles / Suggested Time Topic

Lecture

Topics	Lec Hrs
Introduction to Construction Materials and Methods	3.00
Introduction to Site Work	3.00
Introduction to Soils	3.00
Introduction to Foundations	3.00
Introduction to Concrete	3.00
Introduction to Cast in Place Concrete (CIP)	3.00
Introduction to Concrete Masonry and Masonry	3.00
Introduction to Pre-cast Concrete and Tilt-Up Concrete	3.00
Introduction to Steel Framed Construction	3.00
Introduction to Wood, Plastics, and Composites	3.00
Introduction to Conveying Systems	3.00
Introduction to Wood and Light Metal Frame Construction	3.00
Introduction to Exterior and Interior Finishes for Light Frame Construction	3.00
Introduction to Cladding Systems	3.00
Introduction to Electrical and Mechanical Systems	3.00
Introduction to Plumbing Systems	3.00
Introduction to Roofing Systems	3.00
Total Hours:	**51.00**

Methods of Instruction

A. Field Trips
B. Guest Speakers
C. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
D. Lecture
E. Multimedia Presentations

Methods of Evaluation

A. Exams/Tests
B. Quizzes

C. Homework

Examples of Assignments

Reading Assignments

1. Read the chapter on Cladding Systems and be prepared to discuss in class.
2. Read assigned trade journal article and be prepared to discuss in class.

Writing Assignments

1. Bi-weekly Jobsite observation logs, Students will record observations of a construction activity on a jobsite from a safe distance on a provided form.
2. Write a one-page essay, explaining the difference between a working and non-working joint on an exterior cladding system.

Out-of-Class Assignments

1. Students will be required to perform take-off assignments from the Butte College Field House Project Plans relating to the material system that we are covering in class.
2. Students will be required to keep a Course Resource Notebook to demonstrate industry standards in the documentation of their activities. Students will be required to keep a Course Resource Notebook to demonstrate industry standards in the documentation of their activities.

Recommended Materials of Instruction

W.D. Spence & E. Kultermann. (2016). Construction Materials, Methods, & Techniques. *Cengage Learning, 3rd.*

Minimum Qualifications

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

Created/Revised by: Williams, Tom
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