

**CONS 102 Course Outline as of Fall 2024****CATALOG INFORMATION**

Dept and Nbr: CONS 102 Title: CONST PRACTICE AND TECH

Full Title: Construction Practice and Technologies

Last Reviewed: 9/11/2023

<b>Units</b>	<b>Course Hours per Week</b>		<b>Nbr of Weeks</b>		<b>Course Hours Total</b>	
Maximum	3.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00

Total Student Learning Hours: 157.50

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:**

Students will be introduced to basic and standard construction methods and construction sequencing for residential and light commercial buildings. Field trip(s) will be required.

**Prerequisites/Corequisites:****Recommended Preparation:**

Eligibility for ENGL 1A OR EMLS 100 (formerly ESL 100) or equivalent

**Limits on Enrollment:****Schedule of Classes Information:**

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Limits on Enrollment:

Transfer Credit:

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:

<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
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<b>CSU Transfer:</b>	Effective:	Inactive:
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<b>UC Transfer:</b>	Effective:	Inactive:
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**CID:**

**Certificate/Major Applicable:**

Certificate Applicable Course

## **COURSE CONTENT**

### **Student Learning Outcomes:**

At the conclusion of this course, the student should be able to:

1. Describe the proper construction sequencing and order of operations for a typical building project.
2. Analyze the interdependencies of different construction sequences and processes.
3. Explain the connection and relationship of office project management to field project management.
4. Identify proper jobsite etiquette, professional demeanor, communication protocols, and best-work practices as related to field construction.

### **Objectives:**

At the conclusion of this course, the student should be able to:

1. Observe and evaluate current project construction processes, sequencing, and material use at local area jobsites.
2. Use plan-reading skills to understand project implementation and execution during the duration of a project.
3. Maintain a journal of field reports for visited construction sites.
4. Utilize computer-based applications appropriate to facilitate field construction processes.

### **Topics and Scope:**

- I. Field Construction Practice and Technologies Overview
  - A. Construction management site facilities
  - B. Work crews and other site visitors
  - C. Material staging and storage
  - D. Equipment and vehicles
  - E. Tools and supplies storage
  - F. Restroom facilities
  - G. Jobsite security and access
  - H. Safety issues
- II. Basic Site Building Layout and Surveying Techniques

- A. Site plans
  - B. Property line determinations
  - C. Staking-out and marking building and other site components
- III. Layout and Installation: Grading and Utilities
- A. Points of connection to infrastructure systems: water, electricity, storm water, sewage, data/telecommunication, and gas
  - B. Trenches for utilities
  - C. Overhead utilities
  - D. Temporary utilities
- IV. Introduction to Basic Construction Hand and Power Tools
- A. Hand tools
  - B. Power tools
    - 1. Corded tools
    - 2. Cordless tools
      - a. Gasoline-powered tools
      - b. Battery-powered tools
    - 3. Pneumatic tools
    - 4. Power-actuated fastener tools
  - C. Measuring tools
    - 1. Levels and plumbs: string bob, bubble, and digital levels types
    - 2. Tape measures: tape coil and laser types
    - 3. The carpenter's square
  - D. Survey tools
  - E. Ladders and scaffolding
  - F. Tool belts
  - G. Tool storage
  - H. Tool maintenance and care
  - I. Mobile technology: tablets and smartphones
  - J. Pumps: air, water, and other fluids
  - K. Dust and dirt confinement systems
- V. Foundation and Slab-On-Grade Construction
- A. Concrete formwork
  - B. Reinforcing bars and welded-wire fabric in concrete construction
  - C. Slab-on-grade construction and sub-slab components: drainage, gravel, vapor barriers, and sand
  - D. Foundation types such as spread footing, isolated footings, pier and grade beam, pile and pier cap, and post-tensioned raft slabs
  - E. Construction and control joints in concrete
  - F. Concrete embedments
- VI. Wood and Light Gauge Steel Framing
- A. Dimensional lumber sizes and species
  - B. Cold-formed steel framing member sizes
  - C. Typical framing layout for floors, walls, stairs, ceilings, and roofs
- VII. Mechanical, Electrical and Plumbing (MEP)
- A. Rough-in MEP such as backflow preventors, fire suppression systems, piping, fittings, conduits, conductors, wiring, junction boxes, weatherhead, meters, and electrical distribution panels
  - B. Finish MEP such as equipment, fixtures, faucets, switches, face plates, diffusers, grilles, thermostats, switches, and controls
- VIII. Roofing
- A. Fiberglass composition roofing systems
  - B. Emulsion-applied roofing systems

- C. Single-ply mechanical membrane systems
  - D. Metal roofing systems
- IX. Exterior Envelope Elements
- A. Windows and doors
  - B. Flashing, counterflashing, reglets, drip edges, weep screeds, expansion joints, and copings
  - C. Vapor barriers
  - D. Exterior finishes such as metal, wood, plaster, masonry, and veneer
  - E. Sealants and coatings
  - F. Thermal insulation such as fiberglass batt, cellulose, foam-in-place, and rigid insulation systems
  - G. Exterior finish trim work
  - H. Drainage elements such as gutters, rainwater leaders, downspouts, diverters, scuppers, and collection boxes
- X. Interior Finish
- A. Floors
    1. Wood finish flooring and installation
    2. Sheet products and installation
    3. Tile products and installation
    4. Emulsion applied products
    5. Sealants
  - B. Walls
    1. Gypsum wallboard products and installation
    2. Glass mortar units
    3. Fiberglass reinforced panels (FRP)
    4. Wood finishes
  - C. Ceilings
    1. Gypsum board products and installation
    2. Suspended panel systems
    3. Wood ceilings
  - D. Casework
    1. Cabinetry and countertops
    2. Window and door casework and trim
    3. Baseboards, moldings, and other interior trim
- XI. Inspections and Observations
- A. Building department inspections
  - B. Special inspections
  - C. Architectural and structural observations and field reports
- XII. Trades and Scope of Work Coordination

All topics and scope will be covered in lecture and lab.

**Assignment:**

Lecture-Related Assignments:

1. Reading assignments (20-40 pages per week)
2. Study question set(s) (1-3 weekly)
3. Quiz(zes) (1-4)
4. Midterm exam
5. Final exam

Lecture and Lab-related Assignments:

1. Field Reports or other lab exercises (6-12)

## 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.

Field reports or other lab exercises

Writing  
10 - 30%

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

Study question set(s)

Problem solving  
20 - 40%

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

None

Skill Demonstrations  
0 - 0%

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

Quiz(zes); exams

Exams  
30 - 50%

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

Class participation

Other Category  
5 - 10%

## Representative Textbooks and Materials:

Fundamentals of Residential Construction. 5th ed. Allen, Edward, Schreyer, Alexander C., Thallon, Rob. Wiley. 2022.

Building Construction Illustrated. 6th ed. Ching, Francis D.K. Wiley. 2019.

Instructor prepared materials