

CATALOG INFORMATION

Dept and Nbr: CONS 71B      Title: MATERIALS & METHODS CONS  
Full Title: Materials and Methods of Construction 2  
Last Reviewed: 10/8/2018

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	2.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	2.00	Lab Scheduled	0	17.5	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	2.00		Contact Total	35.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00

Total Student Learning Hours: 105.00

Title 5 Category: AA Degree Applicable  
Grading: Grade or P/NP  
Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP  
Also Listed As: ARCH 71B  
Formerly:

**Catalog Description:**  
Exploration of masonry, steel frame, cement and concrete, concrete reinforcing, site-cast and pre-cast concrete construction, pre- and post-tensioning, and high-rise cladding systems.

**Prerequisites/Corequisites:**  
Course Completion of ARCH 71A ( or CONS 71) OR Course Completion of CONS 71A

**Recommended Preparation:**

**Limits on Enrollment:**

**Schedule of Classes Information:**  
Description: Exploration of masonry, steel frame, cement and concrete, concrete reinforcing, site-cast and pre-cast concrete construction, pre- and post-tensioning, and high-rise cladding systems. (Grade or P/NP)  
Prerequisites/Corequisites: Course Completion of ARCH 71A ( or CONS 71) OR Course Completion of CONS 71A  
Recommended:  
Limits on Enrollment:

Transfer Credit: CSU;  
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:
<b>CSU Transfer:</b>	Transferable	Effective:	Spring 2004
		Inactive:	
<b>UC Transfer:</b>		Effective:	Inactive:

**CID:**

**Certificate/Major Applicable:**  
Certificate Applicable Course

## **COURSE CONTENT**

### **Outcomes and Objectives:**

Upon successful completion of this course the students will be able to:

1. Compare characteristics of different masonry materials and the results of the manufacturing process in the production of different masonry products.
2. Evaluate attributes of masonry wall and roof construction systems and apply the logic of masonry construction to the design of buildings.
3. Evaluate attributes of heavy steel framing and apply the logic of heavy steel framing to building frame design.
4. Compare characteristics of different types of cement and concrete and the requirements for placing concrete for building construction.
5. Evaluate the attributes of one-way and two-way sitecast concrete systems and apply the logic of one-way and two-way systems to building framing design.
7. Analyze the role of regular reinforcing and posttensioning in concrete building systems.
8. Evaluate the attributes of precast concrete systems and apply the logic of precast concrete systems to building design.
9. Analyze the role of cladding systems and sealant joints in cladding of high-rise buildings.

### **Topics and Scope:**

1. Brick masonry
  - a. History of use
  - b. Mortar types and uses
  - c. The logic of brick masonry construction system
  - d. Elements of the system and their connections
2. Stone and concrete block masonry
  - a. History of use

- b. Stone: solid and veneer systems
- c. Concrete block masonry types and uses
- d. The logic of stone and concrete block masonry system
- e. Elements of the system and their connections
- 3. Masonry loadbearing wall construction
  - a. Types of masonry walls
  - b. The logic of masonry loadbearing wall construction system
  - c. Elements of the system and their connections
  - d. Spanning systems for masonry walls
  - e. Masonry and the Codes
- 4. Heavy steel frame construction
  - a. History of use
  - b. How steel is made
  - c. The logic of steel framing systems
  - d. Elements of the system and their connections
  - e. Common problems of heavy steel frame system
  - f. Unique characteristics of wood light frame system
  - g. Building Code concerns
- 5. Concrete construction
  - a. History of use
  - b. Cement and concrete, characteristics and manufacture
  - c. Making formwork and placing concrete
  - d. Logic of reinforcing for concrete
  - e. Concrete prestressing - pretensioning and posttensioning
- 6. Sitecast concrete framing systems
  - a. Slabs, walls and columns
  - b. The logic of a one-way concrete system
  - c. The logic of a two-way concrete system
  - d. Posttensioning a sitecast concrete system
  - e. Principles of economic design of sitecast concrete systems
  - f. Building Code concerns.
- 7. Precast concrete framing systems
  - a. Typical precast structural elements and how they are manufactured
  - b. The logic of assembly concepts for precast buildings
  - c. Connections of elements in the system
  - d. Building Code concerns
- 8. High-rise cladding systems
  - a. Design requirements for cladding systems
  - b. The logic of designing watertight joints in cladding
  - c. Sealant joints in cladding
  - d. Building Code concerns

### **Assignment:**

- 1. Read 20 - 30 pages per week in text and outline chapters.
- 2. Interpreting working drawing content.
- 3. Exercises to apply information to specific situations, including sketches and calculations.
- 4. Research for and preparation of 3-5 page term paper on a material or method of construction.
- 5. Written assignments involving analysis and synthesis of course material.

6. Exams include objectives exams; sketches and problems.

### 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.

Written homework, Term papers, Chapter outlines.

Writing  
20 - 35%

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

Homework problems, Sketches & calculations.

Problem solving  
30 - 50%

**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.

Multiple choice, True/false, Matching items, Completion, Sketches.

Exams  
20 - 30%

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

Class participation.

Other Category  
0 - 5%

### Representative Textbooks and Materials:

Fundamentals of Construction by Allen. 3rd edition, 1999.