

CATALOG INFORMATION

Dept and Nbr: CONS 63 Title: HOW BUILDINGS WORK
Full Title: How Buildings Work
Last Reviewed: 3/31/2011

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

Total Out of Class Hours: 105.00

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:
Introduction to major building systems including foundations, structural frames, exterior cladding and roofs, doors and windows, insulation, interior finishes, space conditioning (heating ventilating and air conditioning: HVAC), and utilities (water, electrical, gas). Application of principles of sustainability to building orientation, energy conservation, water conservation, indoor air quality, material selection, and site drainage. Includes analysis of working drawings.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100 and Course Completion or Concurrent Enrollment in CONS 62

Limits on Enrollment:

Schedule of Classes Information:
Description: Introduction to major building systems including foundations, structural frames, exterior cladding and roofs, doors and windows, insulation, interior finishes, space conditioning (heating ventilating and air conditioning: HVAC), and utilities (water, electrical, gas).

Application of principles of sustainability to building orientation, energy conservation, water conservation, indoor air quality, material selection, and site drainage. Includes analysis of working drawings. (Grade Only)

Prerequisites/Corequisites:

Recommended: Eligibility for ENGL 100 or ESL 100 and Course Completion or Concurrent Enrollment in CONS 62

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:

Not Certificate/Major Applicable

COURSE CONTENT

Outcomes and Objectives:

Upon completion of the course, students will be able to:

1. Interpret a site analysis for building placement and site water management
2. Identify different types of foundation systems and explain how they transfer building loads to ground
3. Identify major structural systems and explain how they transfer building loads to foundations
4. Identify major exterior finish systems and explain their role in providing thermal and environmental separation
5. Identify elements that contribute to indoor air quality and explain what they contribute
6. Apply sustainability principles to site, building system and building material choices

Topics and Scope:

I. Introduction and overview of

- A. Site design
- B. Major building systems
- C. Building loads, load transfer and building shear
- D. Building performance concerns
- E. Sustainability principles

II. An examination of building systems and how they work including foundations, structural systems, exterior cladding and roofs, insulation, vapor retarders and vapor barriers, doors and windows, interior finishes, water supply systems, plumbing and irrigation systems, electrical

systems, gas and propane systems, and HVAC (heating, ventilation and air conditioning) systems.

- A. Functions of each system
- B. Types of each system and their components
- C. Materials used in each system
- D. Structural support required for each system
- E. Physical connections within a system and between different systems
- F. Functional relationships between systems
- G. Common air and moisture problems and solutions related to each system
- H. Sustainability issues for each system
- I. Analysis of working drawings for each system

Assignment:

Reading: 25-30 pages per week

Papers: 2-4 papers, 2-5 pages in length

Homework question sets: 6-8

Homework problem sets: 4-6

Quizzes: 2-4

Final exam or final paper and presentation

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.

Papers; homework question sets

Writing
20 - 40%

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

Homework problem sets

Problem solving
25 - 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.

Quizzes, problem solving quizzes, final exam or final paper and presentation

Exams
20 - 30%

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

Attendance and participation

Other Category
0 - 10%

Representative Textbooks and Materials:

Building Construction Illustrated; 4th edition, Francis D.K. Ching; Wiley 2008

Fundamental Building Technology; A.J. Charlett; Routledge; 2006

Fundamentals of Integrated Design for Sustainable Building; Keeler and Burke; Wiley; 2009

Integrative Design Guide to Green Buildings; 7 Group, Reed; Wiley; 2009

Green Building Fundamentals; 2nd edition; Montoya; Prentice Hall; 2010

Instructor prepared materials