

FT R161: BUILDING CONSTRUCTION FOR FIRE PROTECTION

Originator

michael_ketaily

College

Oxnard College

Discipline (CB01A)

FT - Fire Technology

Course Number (CB01B)

R161

Course Title (CB02)

Building Construction for Fire Protection

Banner/Short Title

Bldg Constr for Fire Prot

Credit Type

Credit

Start Term

Fall 2021

Catalog Course Description

This course covers the fundamentals of building construction as they relate to fire protection. It focuses on classification by occupancy and types of construction, with emphasis on fire protection features, including building equipment, facilities, fire resistive materials and high-rise considerations. The elements of construction and design of structures are shown to be key factors when inspecting buildings, preplanning fire operations and operating at emergencies.

Taxonomy of Programs (TOP) Code (CB03)

2133.00 - *Fire Technology

Course Credit Status (CB04)

D (Credit - Degree Applicable)

Course Transfer Status (CB05) (select one only)

B (Transferable to CSU only)

Course Basic Skills Status (CB08)

N - The Course is Not a Basic Skills Course

SAM Priority Code (CB09)

C - Clearly Occupational

Course Cooperative Work Experience Education Status (CB10)

N - Is Not Part of a Cooperative Work Experience Education Program

Course Classification Status (CB11)

Y - Credit Course

Educational Assistance Class Instruction (Approved Special Class) (CB13)

N - The Course is Not an Approved Special Class

Course Prior to Transfer Level (CB21)

Y - Not Applicable

Course Noncredit Category (CB22)

Y - Credit Course

Funding Agency Category (CB23)

Y - Not Applicable (Funding Not Used)

Course Program Status (CB24)

1 - Program Applicable

General Education Status (CB25)

Y - Not Applicable

Support Course Status (CB26)

N - Course is not a support course

Field trips

May be required

Grading method

Letter Graded

Does this course require an instructional materials fee?

No

Repeatable for Credit

No

Units and Hours

Carnegie Unit Override

No

In-Class

Lecture

Minimum Contact/In-Class Lecture Hours

52.5

Maximum Contact/In-Class Lecture Hours

52.5

Activity

Laboratory

Total in-Class

Total in-Class

Total Minimum Contact/In-Class Hours

52.5

Total Maximum Contact/In-Class Hours

52.5

Outside-of-Class

Internship/Cooperative Work Experience

Paid

Unpaid

Total Outside-of-Class

Total Outside-of-Class

Minimum Outside-of-Class Hours

105

Maximum Outside-of-Class Hours

105

Total Student Learning

Total Student Learning

Total Minimum Student Learning Hours

157.5

Total Maximum Student Learning Hours

157.5

Minimum Units (CB07)

3

Maximum Units (CB06)

3

Prerequisites

FT R151 or concurrent enrollment

Entrance Skills

Entrance Skills

Students need to have a basic understanding of building construction, fire protection devices and how they contribute/slow the fire spread.

Prerequisite Course Objectives

FT R151-Analyze the basic components of fire as a chemical reaction, the major phases of fire, and the main factors that influence fire spread and fire behavior.

FT R151-Identify the effects of fire on the environment and the historical reactions made to protect society.

FT R151-Recognize the major organizations that contribute to fire protection.

FT R151-Illustrate the various types of public and private fire protection equipment and systems.

Requisite Justification

Requisite Type

Prerequisite

Requisite

FTR151

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Concurrent

Requisite

FTR151

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Content review

Student Learning Outcomes (CSLOs)**Upon satisfactory completion of the course, students will be able to:**

- | | |
|---|--|
| 1 | The student will identify major types of building construction and their features. |
| 2 | The student will identify the indicators of potential structural failure as they relate to firefighter safety. |

Course Objectives**Upon satisfactory completion of the course, students will be able to:**

- | | |
|---|---|
| 1 | Identify various types of building construction. |
| 2 | Understand theoretical concepts of how fire impacts major types of building construction. |
| 3 | Identify firefighter life safety hazards of buildings. |
| 4 | Analyze the hazards and tactics associated with different types of building construction. |
| 5 | Explain the different loads and stresses that are placed on a building and their interrelationships. |
| 6 | Identify the function of each principle structural component in typical building design. |
| 7 | Differentiate between fire resistance, flame spread, and describe the testing procedures used to establish ratings for each. |
| 8 | Identify the role of GIS as it relates to building construction. |
| 9 | Describe building construction as it relates to firefighter safety, building codes, fire prevention, code inspection, firefighting strategy, and tactics. |

Course Content**Lecture/Course Content**

1. History of Fire Protection for Buildings
2. Classification of Occupancy by Groups and Divisions
 - a. Fire Loads by Occupancy
 - b. Effects of Fire Based on Occupancy and Fire Load
3. Classification of Buildings by Type of Construction
 - a. Fire Potential and Fuel Contribution by Types of Construction
4. Effect and Spread of Fire
 - a. Framing
 - i. Protected
 - ii. Unprotected
 - b. Walls and Partition
 - c. Floor and Roof Assemblies
5. Exposure Protection
 - a. Location
 - b. Openings (Interior and Exterior)
 - c. Fire Subdivisions, Height and Areas
6. Interior Finish
 - a. Flame Spread
 - b. Fuel Contribution
 - c. Smoke Development
7. Fire Protection Problems and Fire Potential
 - a. Building under Construction, Alteration, Demolition
 - b. Special Structures

8. Building Plans and Blueprints
9. Evaluating Structural Fire Damage
 - a. Structural Stability
 - b. Estimating Fire Loss
10. Value and Use of Exits
 - a. Life Safety of Occupants
 - b. Use for Fire Fighting Access
11. Electrical Systems
12. Fixed Fire Protection Equipment
 - a. Automatic Fire Sprinklers
 - b. Wet and Dry Standpipes
 - c. Fire Detection Systems
13. Fire Protection for High-Rise Buildings
 - a. Effects of Fire Spread and Suppression Problems
14. Fire Resistance of Building Materials
 - a. Principles of Fire Resistance
 - b. Wood
 - c. Steel
 - d. Concrete
 - e. Non-Combustible

Laboratory or Activity Content

none

Methods of Evaluation

Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):

Problem solving exercises
Written expression

Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):

Computational homework
Essays
Group projects
Individual projects
Oral analysis/critiques
Objective exams
Oral presentations
Problem-Solving Assignments
Problem-solving exams
Quizzes
Role playing
Reports/papers
Research papers
Simulations

Instructional Methodology

Specify the methods of instruction that may be employed in this course

Audio-visual presentations
Class discussions
Case studies
Distance Education
Group discussions
Instructor-guided use of technology
Lecture
Role-playing

Describe specific examples of the methods the instructor will use:

1. Instructor will direct interactive instructional activities asking students to research building code and fire code requirements.
2. Instructor will present information on the different types of building construction and how it influences fire spread.
3. Instructor will breakdown the Fire Code into different categories, articles, divisions and subsections.

4. Instructor will present information on both lightweight and conventional roof construction and required ventilation operations.
5. Instructor will develop small group exercises in which the students will identify buildings which are subject to collapse under fire conditions.
6. Instructor will lead guided and focused discussions on the history of significant fires and their impact on building practices, fire suppression and the development of fire and building codes.

Representative Course Assignments

Writing Assignments

1. Essays on subjects such as building types, building features, and effects of fire on building stability.
2. Journals on subjects such as differences in building construction.
3. Homework Assignments to include subjects related to course objectives such as life safety hazards of buildings.
4. Term Papers on selected topics, i.e. different building types, differences in building construction, building features, effects of fire on building stability, fire as related to building classes, and identifying life safety hazards of buildings.

Critical Thinking Assignments

1. Participate in small group discussions focusing on current building construction using lightweight materials.
2. Participate in online discussions focusing on Pre-1933 unreinforced building construction.
3. Participate in group activities with the purpose of identifying different types of building construction and how they impact firefighter safety..
4. Participate in group activities and identify the building components such as a facade, common attic, balloon construction and lightweight roof construction.
5. Identify sounding techniques for roof operations on conventional construction.

Reading Assignments

1. Weekly assignments in the text, and reading handouts.
2. Professional journals, i.e. NFPA Journal, Fire Engineering, and Fire House.

Other assignments (if applicable)

None

Outside Assignments

Representative Outside Assignments

1. Students will read one chapter per week from assigned book.
2. Students will prepare and deliver presentations on occupancy types and corresponding building construction.
3. Weekly short assignments related to class delivery and modern building construction techniques.
4. Internet inquiry activities relating to the uniformed building code.
5. Complete a research paper on lightweight building materials.
6. Perform an analysis of historical building collapses including the Twin Towers.

Articulation

C-ID Descriptor Number

FIRE 130 X

Status

Approved

District General Education**A. Natural Sciences****B. Social and Behavioral Sciences****C. Humanities****D. Language and Rationality****E. Health and Physical Education/Kinesiology****F. Ethnic Studies/Gender Studies**

Course is CSU transferable

Yes

CSU GE-Breadth**Area A: English Language Communication and Critical Thinking****Area B: Scientific Inquiry and Quantitative Reasoning****Area C: Arts and Humanities****Area D: Social Sciences****Area E: Lifelong Learning and Self-Development****CSU Graduation Requirement in U.S. History, Constitution and American Ideals:****IGETC****Area 1: English Communication****Area 2A: Mathematical Concepts & Quantitative Reasoning****Area 3: Arts and Humanities****Area 4: Social and Behavioral Sciences****Area 5: Physical and Biological Sciences****Area 6: Languages Other than English (LOTE)****Textbooks and Lab Manuals**

Resource Type

Textbook

Description

Fire Protection Publications (2016). *Building Construction Related to the Fire Service* (4th). Oklahoma State University Fire Protection Publications.

Distance Education Addendum

Definitions

Distance Education Modalities

Hybrid (51%–99% online)
Hybrid (1%–50% online)
100% online

Faculty Certifications

Faculty assigned to teach Hybrid or Fully Online sections of this course will receive training in how to satisfy the Federal and state regulations governing regular effective/substantive contact for distance education. The training will include common elements in the district-supported learning management system (LMS), online teaching methods, regular effective/substantive contact, and best practices.

Yes

Faculty assigned to teach Hybrid or Fully Online sections of this course will meet with the EAC Alternate Media Specialist to ensure that the course content meets the required Federal and state accessibility standards for access by students with disabilities. Common areas for discussion include accessibility of PDF files, images, captioning of videos, Power Point presentations, math and scientific notation, and ensuring the use of style mark-up in Word documents.

Yes

Regular Effective/Substantive Contact

Hybrid (1%–50% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Students will post a discussion board topic concerning building collapses during fire suppression efforts.

Hybrid (51%–99% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Students will post a discussion board topic concerning building collapses during fire suppression efforts.
Synchronous Dialog (e.g., online chat)	Students will share their thoughts of the online lecture in an online chat with their classmates.

100% online Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Students will post a discussion board topic concerning building collapses during fire suppression efforts.
Synchronous Dialog (e.g., online chat)	Students will share their thoughts of the online lecture in an online chat with their classmates.
Other DE (e.g., recorded lectures)	Students will meet online with Instructor via Zoom.

Examinations

Hybrid (1%–50% online) Modality

Online
On campus

Hybrid (51%–99% online) Modality

Online
On campus

Primary Minimum Qualification

FIRE TECHNOLOGY

Review and Approval Dates

Department Chair

05/22/2020

Dean

05/22/2020

Technical Review

08/26/2020

Curriculum Committee

08/26/2020

Curriculum Committee

11/25/2020

CCCCO

MM/DD/YYYY

Control Number

CCC000267805

DOE/accreditation approval date

MM/DD/YYYY