FIRE 76 Course Outline as of Fall 2012

CATALOG INFORMATION

Dept and Nbr: FIRE 76 Title: BLDG CONSTR FIRE PROTECT
Full Title: Building Construction for Fire Protection
Last Reviewed: 5/8/2023

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	17.5	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:
This is a State mandated core course that identifies the different types of elements of construction and design that effect structural firefighting. This course is the study of the components of building construction that relate to fire safety. The elements of construction and design of structures are shown to be key factors when inspecting buildings, preplanning fire operations, and operating at fires. The development and evolution of building and fire codes, and studies in relationship to past fires in residential, commercial, and industrial occupancies. There is one site visit required for both classroom and on-line offerings. (Grade Only)

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Schedule of Classes Information:
Description: This is a State mandated core course that identifies the different types of elements of construction and design that effect structural firefighting. This course is the study of the

components of building construction that relate to fire safety. The elements of construction and design of structures are shown to be key factors when inspecting buildings, preplanning fire operations, and operating at fires. The development and evolution of building and fire codes, and studies in relationship to past fires in residential, commercial, and industrial occupancies. There is one site visit required for both classroom and on-line offerings. (Grade Only) (Grade Only)
Prerequisites/Corequisites:
Recommended: Eligibility for ENGL 100 or ESL 100
Limits on Enrollment:
Transfer Credit: CSU;
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:	Transferable	Effective:	Fall 1996	Inactive:	
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:
Certificate Applicable Course

COURSE CONTENT

Outcomes and Objectives:
Upon completion of the course, the student will be able to:
1. Identify occupancy designations of the building code and fire code.
2. List the construction regulations that correspond to designated occupancies.
3. Describe the different loads that are placed on a building and the transmission of loads.
4. List and compare the structural elements for various types of construction.
5. Define flame spread, its hazards, contributing factors, and possible solutions.
6. Identify practices and procedures that have been developed for different types of construction that are hazardous to firefighter safety.

Topics and Scope:

I. Concepts of Construction
  A. Definition of Loads
    1. Stress and strains
    2. Compression, tension, and torsion forces
    3. Dead loads
    4. Live loads
    5. Impact loads
    6. Static and repeated loads
    7. Wind loads

8. Concentrated loads
9. Imposition of loads
10. Fire loads
11. Suspended loads

B. Structural Elements
1. Beams
2. Columns
3. Walls
4. Roofs
5. Arches

C. Transmission of loads
1. Foundations
2. Connections

II. Methods and Materials of Construction, Renovation, and Demolition
A. Construction regulations
B. The building design and construction process
C. Site preparation
D. Hazards
1. Building under construction
2. Renovation
3. Demolition

E. Characteristics of materials
1. Wood
2. Masonry and stone
3. Concrete
4. Metal
5. Glass
6. Asbestos
7. Synthetic materials
8. Gypsum

III. Building and Fire Codes
A. History of building codes and fire protection
B. Fire codes and standards

IV. Features of Fire Protection
A. Noncombustible buildings
B. Fire resistive buildings
C. Fire growth (flame spread)
1. Building contents
2. Hidden building elements
3. Interior finish
4. Void spaces
5. Remodeled ceilings
6. Aircraft interiors
7. Acoustical treatment
8. Carpeting
9. Decorations and contents

D. Fire and smoke containment
E. Ventilation
F. Fire protection systems

V. Wood Frame Construction
A. Types
1. Log cabin

2. Post and frame
3. Balloon frame
4. Platform frame
5. Plank and beam

B. Lightweight trusses and other wooden elements
C. Fire stopping
D. Protecting wood from ignition
E. Sheathing and siding
F. Roofing materials

VI. Heavy Timber and Mill Construction
A. Code classified
B. Use of unprotected steel

VII. Ordinary Construction
A. Definitions and elements of construction
B. Structural stability and fire barriers

VIII. Noncombustible Construction
A. Steel buildings
B. Fire characteristics of steel

IX. Concrete Construction
A. Definitions and elements of construction
B. Structural stability and fire resistance

X. Specific Occupancy Details and Hazards to Firefighters
A. Apartment buildings
B. Places of Worship
C. Covered Mall Buildings
D. Factories
E. Storage Buildings
F. High-rises
G. Hospitals and nursing homes
H. Hotels and motels
I. Jails and prisons
J. Museums and libraries
K. Nightclubs
L. Office buildings
M. Parking garages
N. Restaurants
O. Schools
P. Single family homes
Q. Theaters
R. Warehouses

XI. Fire Behavior vs. Building Construction
A. Fire spread
B. Smoke and fire containment

Assignment:

1. Reading 20-30 pages from textbook
2. Completion of 17 weekly assignment sheets
3. Term project and/or internet research project
4. Quizzes, midterm, and final exam
5. Powerpoint presentation
6. One site visit

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.

Reading 20-30 pages from textbook; Completion of 17 weekly assignment sheets; Term project and/or internet research project	Writing 15 - 25%

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

Homework problems	Problem solving 5 - 10%

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

Classroom oral presentation	Skill Demonstrations 5 - 10%

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

Multiple choice,True/false; Essay Exam	Exams 55 - 65%

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

None	Other Category 0 - 0%

Representative Textbooks and Materials:

(1) Building Construction for the Fire Service, Francis Brannigan, National Fire Protection Association, fourth edition 2007.

(2) National Fire Protection Association Handbook 20th Edition, 2007.