FIRE 280 Course Outline as of Spring 2018

CATALOG INFORMATION

Dept and Nbr: FIRE 280 Title: FIRE DYNAMICS
Full Title: Structural Firefighting Dynamics
Last Reviewed: 9/9/2024

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	0.25	Lecture Scheduled	3.00	1	Lecture Scheduled	3.00
Minimum	0.25	Lab Scheduled	5.00	1	Lab Scheduled	5.00
		Contact DHR	0		Contact DHR	0
		Contact Total	8.00		Contact Total	8.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 6.00 Total Student Learning Hours: 14.00

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:	
Formerly:	

Catalog Description:
This course is designed to develop the fundamental skills necessary to combat structure fires by exposing students to real fire behavior scenarios. During the course, students will review topics such as flashover, roll over, reading smoke, flow path and ventilation as it pertains to fire behavior and modern suppression techniques.

Prerequisites/Corequisites:
Course Completion of Fire 208.1

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: This course is designed to develop the fundamental skills necessary to combat structure fires by exposing students to real fire behavior scenarios. During the course, students will review topics such as flashover, roll over, reading smoke, flow path and ventilation as it pertains to fire behavior and modern suppression techniques. (Grade or P/NP)
Prerequisites/Corequisites: Course Completion of Fire 208.1

Recommended:
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:
Major Applicable Course

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Describe fire behavior in an enclosed structure and the impact of fire suppression and ventilation activities
2. Demonstrate the ability to effectively conduct interior fire suppression activities

Objectives:
Upon completion of the course, students will be able to:
1. Describe the four stages of fire
2. Identify the different fire behavior factors and the impact they have on the fire
3. Describe the different ventilation factors and their effect on the fire
4. Demonstrate the ability to identify the stage and/or characteristics of a fire from the quality of the smoke
5. Describe the personal protective equipment (PPE) and procedures used to promote safety when conducting interior fire operations
6. Describe the correct water stream application during interior fire operations.

Topics and Scope:

I. Stages of Fire
   A. Incipient stage
   B. Growth stage
   C. Free burning stage
   D. Decay stage
II. Fire Behavior Factors
   A. Fuels
      1. Fuel load
      2. Fuel types

3. Fuel Arrangement
4. Ratio of Fuel to room or building

B. Roll over

C. Flashover

1. Causes of flashover
2. Thermal radiation feedback
3. Pre-flashover conditions
4. Flashover conditions

D. Backdraft

E. Modern fire behavior vs. legacy fire behavior

III. Ventilation Factors

A. Fuel-air mixture

B. Effects of openings

1. Doors
2. Windows
3. Suppression created openings

C. Flow path

1. Bi-directional flow
2. Neutral plane

IV. Reading Smoke

A. Volume

B. Velocity

C. Density

D. Color

V. Survival Techniques

A. Secondary means of egress

B. Personal Protective Equipment

C. Risk vs. Gain

VI. Water Application

A. Effect of the application of hose streams patterns - water application measures

1. Combination streams
2. Straight streams

B. Heat checks

Assignment:

Lecture-Related Assignments:

1. Students will be required to complete 6-7 hours of reading assignments before attending the first class meeting

Lab-Related Assignments:

1. Flow path exercise (Doll house)
2. 2-4 manipulative based scenarios

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.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.	Writing 0 - 0%

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

Decision-based scenarios (Flow path exercise)	Problem solving 50 - 75%

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

Performance based manipulative scenarios	Skill Demonstrations 10 - 40%

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

None	Exams 0 - 0%

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

Attendance and participation	Other Category 10 - 30%

Representative Textbooks and Materials:
Analysis of Changing Residential Fire Dynamics and Its Implications on Firefighter Operational Timeframes. Kerber, Stephen. Underwriters Laboratories Incorporated. 2012 (classic)