FIRE 85 Course Outline as of Fall 2024

CATALOG INFORMATION

Dept and Nbr: FIRE 85 Title: HAZMAT IC
Full Title: Hazardous Materials Incident Commander
Last Reviewed: 10/14/2019

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	2.00	Lecture Scheduled	2.25	17.5	Lecture Scheduled	39.38
Minimum	2.00	Lab Scheduled	0	5	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	2.25		Contact Total	39.38
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 78.75 Total Student Learning Hours: 118.13

Title 5 Category:	AA Degree Applicable
Grading:	P/NP Only
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	FIRE 270.3

Catalog Description:
A study of the emergency response to Hazardous Material (Hazmat) incidents with an emphasis on the role of the Incident Commander (IC) as defined by OSHA Hazardous Waste Operations and Emergency Response (Hazwoper) regulations, including basic hazardous materials chemistry, regulations, the tactics and strategy of mitigation, decontamination, and scene management. Upon successful completion, students will receive a certificate in Hazardous Materials IC from the California Specialized Training Institute (CSTI).

Prerequisites/Corequisites:
Course Completion of FIRE 208.1 or FIRE 290 (Completion of basic fire academy or equivalent as determined by the Dean of Public Safety Instruction.)

Recommended Preparation:
Eligibility for ENGL 100 OR EMLS 100 (formerly ESL 100) or equivalent

Limits on Enrollment:

Schedule of Classes Information:
Description: A study of the emergency response to Hazardous Material (Hazmat) incidents with an emphasis on the role of the Incident Commander (IC) as defined by OSHA Hazardous Waste

Operations and Emergency Response (Hazwoper) regulations, including basic hazardous materials chemistry, regulations, the tactics and strategy of mitigation, decontamination, and scene management. Upon successful completion, students will receive a certificate in Hazardous Materials IC from the California Specialized Training Institute (CSTI). (P/NP Only)
Prerequisites/Corequisites: Course Completion of FIRE 208.1 or FIRE 290 (Completion of basic fire academy or equivalent as determined by the Dean of Public Safety Instruction.)
Recommended: Eligibility for ENGL 100 OR EMLS 100 (formerly ESL 100) or equivalent
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 2020	Inactive:	
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Demonstrate the ability to safely initiate command and implement the Incident Command System (ICS) at a hazardous materials incident.
2. Demonstrate the ability to assume the role of command or general staff positions at a hazardous materials incident and develop an incident action plan.

Objectives:
At the conclusion of this course, the student should be able to:

1. Identify course objectives, requirements, assignments, activities, evaluation methods and participation requirements.
2. Describe the role of the IC as defined by T-8, California Code of Regulations (CCR) and the laws, regulations, resources and plans that guide an emergency response to a hazardous materials incident.
3. Demonstrate the ability to collect and interpret response information from a variety of reference materials, technical resources, computer databases and monitoring equipment.
4. Demonstrate the ability to estimate the potential outcomes within the endangered area in a simulated hazardous materials release.
5. Demonstrate the ability to write incident response objectives for a hazardous materials release.
6. Identify the potential response options available for a hazardous materials release.
7. Demonstrate the ability to approve an appropriate level of Personal Protective Equipment

(PPE) commonly used in a hazardous materials incident.
8. Demonstrate the ability to determine if response objectives should be defensive, offensive or non-interventional for a hazardous materials release.
9. Describe how to use the principles of Operational Risk Management to develop appropriate response objectives to a hazardous materials release.
10. Develop an Incident Action Plan (IAP) for a hazardous materials release consisting of an ICS form 201 and site safety plan that conforms with local operating protocols.
11. Demonstrate the ability to evaluate the progress of a planned response to a hazardous materials incident to ensure objectives are being met and to adjust the IAP if needed.
12. Describe the primary hazardous materials protective action options and the factors considered in their selection.
13. Demonstrate the ability to terminate the emergency phase of a hazardous materials incident, how to transfer command, conduct an incident debriefing and multi-agency critique and submit required reports and documentation.

Topics and Scope:

I. Orientation and Administration
   A. Review of facilities
   B. Review of classroom requirements
   C. Review of syllabus, participation, assignments and evaluation methods
II. Incident Commander Training Requirements - Hazardous Waste Site Operations and Emergency Response (Hazwoper) requirements
III. Laws Governing Hazmat Response
   A. Clean Water Act
   B. Resource Conservation and Recovery Act of 1976 (RCRA)
   C. Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA)
   D. Superfund Amendments and Reauthorization Act of 1986 (SARA)
   E. National Contingency Plan
      1. National Oil & Hazardous Substances Pollution Contingency Plan - Role of the On-Scene Coordinator
      2. National Strike Force
      3. Local environmental response teams
   F. Local Hazmat response plans
   G. Hazwoper regulations
   H. State laws and regulations
      1. Health & Safety Code Chapter 6.95
      2. Vehicle Code Section 2454
      3. Immunity laws
      4. Media access (Penal Code section 409.5d)
IV. Assisting and Cooperating Hazmat Response Agencies
   A. Federal agencies
   B. State agencies
      1. Department of Fish and Game
      2. California Department of Fire (CALFIRE)
      3. Highway Patrol
      4. California Department of Transportation (CALTRANS)
V. ICS and Legal Mandates
   A. California Code of Regulations (CCR) 5192(q)3
   B. Standardized Emergency Management System (SEMS)
   C. Hazwoper regulations

D. Hazmat response groups
E. Hazmat position descriptions
F. Hazmat team typing
G. Information Officer (IO) - Dealing with the media

VI. Hazard Assessment
A. The hazard assessment process
B. Physical properties of hazardous materials
C. Toxicological properties of hazardous materials - exposure limits
D. Hazmat reference sources
1. Chemical Transportation Center (CHEMTREC)
2. Printed reference guides
3. Computer databases
E. Determining response options
1. Baseline questions
2. Response option hierarchy
3. Impact of the hazmat's properties on response options
4. Impact of resources on response options
F. Monitoring and detection instruments
1. Combustible gas Indicators (CGI)
2. Portable and fixed gas detectors
3. Radiation detectors
4. Thermal imaging cameras (TIC)
5. Photo ionization detectors (PID)
6. Monitoring equipment problems
7. Interpreting monitoring equipment results - estimating potential harm
G. Hazwoper regulations
1. IC requirements
2. Site Safety Plan - ICS 208 Form
3. National Fire Protection Association (NFPA) standard 471
4. Role, authority and qualifications of a Safety Officer (SO)

VII. Determining Hazmat Response Options, Objectives and Outcomes
A. Offensive
B. Defensive
C. Non-intervention

VIII. Personal Protective Equipment (PPE)
A. Determining appropriate PPE
B. PPE limitations

IX. Evaluating Risk
A. Operational Risk Management (ORM) Principles
1. Accept no unnecessary risk
2. Accept necessary risk when benefits outweigh costs
3. Make risk decisions at the appropriate level
4. Integrate ORM into operations and planning
B. ORM steps
1. Identify the hazard and what can go wrong
2. Assess the risk
3. Analyze risk control measures
4. Make control decisions
5. Implement risk controls
6. Supervise and review
C. Risk Identification
1. Hazmat recognition clues

2. Common risks in hazmat incidents
3. IC tasks
4. Identifying unacceptable risks
5. Dealing with lessor risks

X. IAPs
- A. Site safety plans
- B. IAP forms
- C. Essential IAP components

XI. Controlling Risks
- A. Engineering controls
- B. Administrative controls
- C. PPE

XII. Protective Actions
- A. Protective action options
  1. Evacuation
  2. Sheltering “in-place”
  3. Non-intervention
- B. Protective action risks and costs
- C. Impact of CCR 5192(q)3(c) and 29 CFR 1910.120(q)3(iii)
- D. Authorities for protective actions
  1. Police powers of the state
  2. Penal Code section 409
  3. Emergency services act (Government Code section 8634)
  4. Vehicle code
  5. Fish & Game Code
- E. Protective action time factors
  1. Availability of evacuation routes
  2. Material released
  3. Estimated incident duration
- F. Evacuation vs. shelter in place factors
  1. Type of population
  2. Type of shelter available
  3. Air filtration rate of released product
  4. Weather factors
- G. Protective Action Management
  1. Human behavior
  2. Evacuation message
  3. Traffic control measures
  4. Shelter suitability
- H. Special populations and protective actions

XIII. Incident Termination
- A. Incident termination definition
- B. Reasons for incident termination
- C. Incident debriefing
  1. Purpose of an incident debriefing
  2. Elements of an incident debriefing
  3. Debriefing procedures
- D. Incident critique
  1. Purpose of an incident critique
  2. Elements of an incident critique
  3. Critique procedures
  4. Critiques and liability

E. Post-Incident analysis
1. Purpose of a post-incident analysis
2. Elements of a post-incident analysis
3. Post-incident analysis procedures
4. Post-incident analysis topics

Assignment:

1. Performance scenarios (individual and class) (2 - 3)
2. Reading assignments (3 - 5)
3. Written exercises (2 - 4)
4. Quizzes (2 - 4)
5. CSTI exam

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 exercises	Writing 5 - 20%

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

Scenarios	Problem solving 5 - 15%

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

Scenarios	Skill Demonstrations 5 - 15%

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

CSTI exam, quizzes	Exams 50 - 75%

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

Attendance and participation	Other Category 5 - 10%

Representative Textbooks and Materials:
Hazardous Materials First Responder Operational. CSTI. 2011 (classic)
Hazardous Materials Incident Commander. CSTI. 2012 (classic)
DOT - Emergency Response Guide. Dept. of Transportation. 2016