

FIRE 0644 - HAZARDOUS MATERIALS SPECIALIST 1F

Catalog Description

Prerequisite: Completion of FIRE 643 with grade of "C" or better or approved Federal/State equivalent course(s)

Hours: 40 (32 lecture, 8 laboratory)

Description: Introduction to mitigation techniques. Includes plugging, patching and repairing methods; advanced chemical field identification testing procedures, and fixed facility repair considerations. Part one of a two part series leading to certification as a Hazardous Materials Specialist. Meets requirements of CA Code of Regulations Title 8, Section 519(q). (not transferable) (not degree applicable) (pass/no pass grading)

Course Student Learning Outcomes

- CSLO #1: Explain the need for effective medical monitoring of emergency personnel at a hazardous materials emergency.
- CSLO #2: List the reporting and documentation requirements for a hazardous materials emergency.
- CSLO #3: Demonstrate ability to evaluate a hazardous materials emergency and initial a mitigation plan.
- CSLO #4: Explain how to identify an unknown hazardous material.

Effective Term

Fall 2019

Course Type

Credit - Nondegree-applicable

Contact Hours

40

Outside of Class Hours

64

Total Student Learning Hours

104

Course Objectives

Lecture Objectives:

1. Identify Personal Protective clothing and Basic Safety Rules;
2. Explain how to perform field identification of Hazardous Materials;
3. Evaluate safe and effective medical monitoring techniques at a simulated hazardous materials incident;
4. Evaluate procedures for off-loading hydrocarbons from a rolled-over MC 306/DOT 406 aluminum tank truck;
5. Identify and analyze the reporting and documentation requirements consistent with an emergency response plan and standard operating procedures.

Laboratory Objectives:

1. Practice safe hazardous materials mitigation skills at a simulated incident while wearing Level A chemical protective clothing;
2. Practice repairing simulated leaks on a rail tank car;

3. Judge the performance of members of a Haz Mat Team in simulated hazardous materials incident;
4. Analyze a hazardous materials incident to determine the magnitude of the problem while employing proper resolution outcomes;
5. Assess a hazardous materials incident and identify special containers involved and, given the appropriate equipment, identify or classify unknown materials, verify the identity of the materials, and determine the concentration present;
6. Develop a list of response objectives for a simulated problem at a facility and a transportation hazardous material incident.

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- Not Transferable

Methods of Evaluation

- Objective Examinations
 - Example: Students will take a multiple-choice examination on detection devices. Standard Grading. Example question: Which three initial detection devices would you use to establish your hazard control zones? A. Radiation Monitor/Colorimetric tubes/passive dosimeters, B. pH paper/Radiation monitor/Colorimetric tubes, C. pH paper/Radiation monitor/CGI, D. pH paper/Radiation monitor/PID.
- Reports
 - Example: Compare and contrast the advantages and disadvantages associated with an analog meter when used to detect the presence of a hazardous material. Rubric Grading.
- Skill Demonstrations
 - Example: Given a field scenario simulating a hazardous material incident, analyze the incident to determine the problem and predict the outcomes. Utilize appropriate technical references to determine product identification and hazards, CPC requirements, and appropriate tactical operations and decontamination procedures. Grade base on industry standard.

Repeatable

No

Methods of Instruction

- Laboratory
- Lecture/Discussion

Lab:

1. The instructor will demonstrate how to properly use radiological monitoring equipment and how to interpret readings. After receiving specific information on radiation detection settings, students will calculate the actual meter readings.

Lecture:

1. The instructor will lecture on hydrocarbons and their derivatives. Students will then identify the hazards associated with the hydrocarbon derivatives on the provided list.

Typical Out of Class Assignments

Reading Assignments

1. Read the material in the text on basic chemistry including physical and chemical changes and the periodic table. Be prepared to discuss in class the ways in which chemicals may degrade when they come into contact with other substances.
2. Read the material in the text on radiation and the technical methods for determining the presence of radiation. Then determine which protective action, time, distance or shielding, is the most appropriate action for the provided list of radioactive materials.

Writing, Problem Solving or Performance

1. At a hexane spill you get a meter reading of 20% LEL on your CGI. The conversion factor for hexane is 1.3 and an LEL of 1.1%. What is the actual concentration of hexane in % LEL and ppm?
2. Develop and analyze a site safety plan and an Incident Action Plan.

Other (Term projects, research papers, portfolios, etc.)

Required Materials

- Hazardous Materials - Special Mitigation Techniques
 - Author: California Specialized Training Institute
 - Publisher: State of California
 - Publication Date: 2003
 - Text Edition:
 - Classic Textbook?:
 - OER Link:
 - OER:
- Chemistry of Hazardous Materials
 - Author: Eugene Meyer
 - Publisher: Brady
 - Publication Date: 2010
 - Text Edition: 5th
 - Classic Textbook?:
 - OER Link:
 - OER:
- Hazardous Materials, Managing the Incident
 - Author: Gregory G. Noll & Michael s. Hildebrand
 - Publisher: Jones and Bartlett Learning
 - Publication Date: 2014
 - Text Edition: 4th
 - Classic Textbook?:
 - OER Link:
 - OER:

Other materials and-or supplies required of students that contribute to the cost of the course.