

# EASTERN ARIZONA COLLEGE

## Hazardous Materials First Responder Operations

Course Design  
2016-2017

**Course Information**

**Division** Allied Health  
**Course Number** FSC 106  
**Title** Hazardous Materials First Responder Operations  
**Credits** 2  
**Developed by** Charles A. Jacobs/Revised by Martin deMasi  
**Lecture/Lab Ratio** 2 Lecture/0 Lab

**Transfer Status**

ASU	NAU	UA
Non Transferable	Elective Credit	Non Transferable

**Activity Course** No  
**CIP Code** 43.0203  
**Assessment Mode** Portfolio  
**Semester Taught** Upon Request  
**GE Category** None  
**Separate Lab** No  
**Awareness Course** No  
**Intensive Writing Course** No

**Prerequisites**

None

**Educational Value**

Adult learners, mainly emergency response personnel, required to or interested in, participating in receiving hazardous materials response training.

**Description**

This class prepares students to function as first responders at the operations level. Emphasis is on the basic characteristics of hazardous materials, hazardous materials laws and regulations, and the components of a planned response. Preparation for Arizona Structural Fire Fighter certification through the Arizona Center for Fire Service Excellence (ACFSE) using International Fire Service Accreditation Congress (IFSAC) standards and testing. This course is presented in compliance with 29 Code of Federal Regulations (29CFR) Chapter XVII 1910.120 (q)(6)(ii) and the Arizona Administrative Code Title 8, Chapter 2, Article 6.

**Supplies**

None

## **Competencies and Performance Standards**

### **1. Assess common emergency response situations for the presence of hazardous materials.**

#### **Learning objectives**

*What you will learn as you master the competency:*

- a. Describe how various emergency responses may involve hazardous materials.
- b. Explain why the ability to recognize and identify hazards is important to first responders.
- c. Explain how the location of an incident may indicate the type and quantity of hazards present.
- d. Describe the hazards involved with specific industries.
- e. Discuss the tasks involved in a standardized approach to incidents involving hazardous materials as first responder operations level trained personnel.

#### **Performance Standards**

*You will demonstrate your competence:*

- o by passing a written exam with a score of 75% or greater
- o by passing a practical exam

*Performance will be successful when:*

- o learner describes how various emergency responses may involve hazardous materials
- o learner explains why the ability to recognize and identify hazards is important to first responders
- o learner explains how the location of an incident may indicate the type and quantity of hazards present
- o learner describes the hazards involved with specific industries
- o learner discusses the tasks involved in a standardized approach to incidents involving hazardous materials as first responder operations level trained personnel

### **2. Assess an emergency scene for health and safety dangers due to hazardous materials.**

#### **Learning objectives**

*What you will learn as you master the competency:*

- a. Describe the four major routes of entry into the body by hazardous materials.
- b. Describe the toxic effects that may result from exposure to hazardous materials.
- c. List five types of biological hazards.
- d. Define medical surveillance.
- e. Identify the elements of medical surveillance.
- f. Explain why medical surveillance is important to First Responders.
- g. Discuss the requirements for medical surveillance under the applicable OSHA and EPA standards.

#### **Performance Standards**

*You will demonstrate your competence:*

- o by passing a written exam with a score of 75% or greater

*Performance will be successful when:*

- o learner describes the four major routes of entry into the body by hazardous materials
- o learner describes the toxic effects that may result from exposure to hazardous materials
- o learner lists five types of biological hazards

- o learner defines medical surveillance
- o learner identifies the elements of medical surveillance
- o learner explains why medical surveillance is important to First Responders
- o learner discusses the requirements for medical surveillance under the applicable OSHA and EPA standards

### 3. Demonstrate a basic knowledge of hazardous materials and the principles of chemistry.

#### **Learning objectives**

*What you will learn as you master the competency:*

- a. List five basic clues for identifying hazardous materials.
- b. Describe the DOT system of placarding.
- c. Recognize DOT placards and labels and describe the hazards represented.
- d. Describe the NFPA 704 System.
- e. Identify highway cargo tanks by shape.
- f. Identify rail tank cars by shape.
- g. Identify tank containers by shape.
- h. Identify products by container shapes and sizes.
- i. List other resources used to identify hazardous materials.
- j. Recognize the states of matter.
- k. Describe the factors affecting the rate of chemical reactions.
- l. State the relationship between the Fahrenheit and Centigrade temperature scales.
- m. Describe how the pH scale is used to assess the hazard of acids and bases.
- n. Discuss three types of radiation and the methods for protecting against radiation exposure.
- o. Define: vapor density, flash point, lower and upper explosive limits, specific gravity, solubility and vapor pressure.

#### **Performance Standards**

*You will demonstrate your competence:*

- o by passing a written exam with a score of 75% or greater
- o by passing a practical exam

*Performance will be successful when:*

- o learner lists five basic clues for identifying hazardous materials
- o learner describes the DOT system of placarding
- o learner recognizes DOT placards and labels and describe the hazards represented
- o learner describes the NFPA 704 System
- o learner identifies highway cargo tanks by shape
- o learner identifies rail tank cars by shape
- o learner identifies tank containers by shape
- o learner identifies products by container shapes and sizes
- o learner lists other resources used to identify hazardous materials
- o learner recognizes the states of matter
- o learner describes the factors affecting the rate of chemical reactions
- o learner states the relationship between the Fahrenheit and Centigrade temperature

scales

- o learner describes how the pH scale is used to assess the hazard of acids and bases
- o learner discusses three types of radiation and the methods for protecting against radiation exposure
- o learner defines: vapor density, flash point, lower and upper explosive limits, specific gravity, solubility and vapor pressure

#### **4. Demonstrate a basic understanding of a planned response to hazardous materials incidents.**

##### ***Learning objectives***

*What you will learn as you master the competency:*

- a. Explain the limitations of structural fire-fighting gear.
- b. Describe the types of respiratory equipment.
- c. Explain the limitations of self-contained breathing apparatus (SCBA).
- d. Describe basic decontamination procedures.
- e. Explain when personal protective equipment (PPE should be inspected).
- f. Describe PPE storage methods.
- g. Describe how to access assistance at a hazardous materials incident.
- h. List the common components of an incident management system.
- i. Describe the functions of sections within the incident.
- j. Define hot, warm and cold zones.
- k. List the areas or functions that might be found within each zone.
- l. Describe the first responder's initial actions on arriving at a hazardous materials incident.
- m. Describe offensive procedures used by operations trained responders.
- n. Describe incident termination procedures.
- o. Explain the value of post-incident analysis to improving hazardous materials incident response.

##### ***Performance Standards***

*You will demonstrate your competence:*

- o by passing an exam with a score of 75% or greater
- o by passing a practical exam on the limitations of structural firefighting gear

*Performance will be successful when:*

- o learner explains the limitations of structural fire-fighting gear
- o learner describes the types of respiratory equipment
- o learner explains the limitations of self-contained breathing apparatus (SCBA)
- o learner describes basic decontamination procedures
- o learner explains when personal protective equipment (PPE should be inspected)
- o learner describes PPE storage methods
- o learner describes how to access assistance at a hazardous materials incident
- o learner lists the common components of an incident management system
- o learner describes the functions of sections within the incident
- o learner defines hot, warm and cold zones
- o learner lists the areas or functions that might be found within each zone

- learner describes the first responder's initial actions on arriving at a hazardous materials incident
- learner describes offensive procedures used by operations trained responders
- learner describes incident termination procedures
- learner explains the value of post-incident analysis to improving hazardous materials incident response

***Types of Instruction***

Classroom Presentation

***Grading Information***

***Grading Rationale***

Mandatory attendance for scheduled class time. Written exam score of 75% or greater on State Exam; Pass or fail.

***Grading Scale***

P/F This course is appropriate for pass/fail grading. Student must obtain a 75% in order to pass this course.