

COURSE OUTLINE

Hazardous Materials Technician

Course Description

FS 211. Hazardous Materials Technician. 8 hours credit. Prerequisite: Valid documentation of successfully completing certification requirements for the National Fire Protection Associations 472 standard on competencies for a Hazardous Materials First Responder at the Operations Level. This course will enable the student to meet the minimum competencies of the National Fire Protection Associations 472 standard on professional competencies for hazardous material responders at the Technician level. The student will learn how to respond to hazardous materials/weapons of mass destruction (hazmat/WMD) incidents using a risk based response process by which the student analyzes a problem involving hazmat/ WMD, selects applicable decontamination procedures, and controls a release using specialized protective clothing and control equipment.

Course Relevance

This course will meet minimum standard requirements for NFPA 472 professional competencies for hazardous materials responders at the Technician level, preparing the student for the International Fire Service Accreditation Congress certification exam.

Required Materials

Noll, G and Hildebrand M. (2005). *Hazardous materials, managing the incident*. (3rd ed.). Stillwater, OK: Red Hat Publishing.

Supplemental Materials

Hazardous Materials: Managing the Incident Student Workbook.

Learning Outcomes

The intention is for the student to be able to:

1. Analyze a hazmat/WMD incident to determine the complexity of the problem and potential outcomes.
2. Plan a response within the capabilities of available personnel, personal protective equipment and control equipment.
3. Implement the plan to favorably change the outcomes consistent with the standard operating procedures and site safety and control plan.
4. Evaluate the progress of the planned response.
5. Demonstrate the proper methods in terminating an incident.

Learning PACT Skills that will be DEVELOPED and documented in this course

Through involvement in this course, the student will develop ability in the following PACT skill area(s):

Analytical Thinking Skills

1. Critical thinking

- Through use of an appropriate analytical process the student will be able to analyze a hazmat/WMD incident to determine the complexity of the problem and potential outcomes.
2. Problem solving
 - Through the use of effective problem solving the student will plan a response within the capabilities of available personnel, personal protective equipment, and control equipment.

Technology Skills

1. Discipline-specific technology
 - Through use of personal protective equipment and control equipment, the student will demonstrate professional competency requirements.

Major Summative Assessment Task(s)

These learning outcome(s) and Learning PACT skill(s) will be demonstrated by:

1. Performing a series of cognitive (A skill) and practical (T skill) skill evolutions to demonstrate proficiency and prepare the student for national certification to the level of Hazardous Materials Technician.

Course Content

- I. Skills/Competencies – Actions that are essential to achieve the course outcomes:
 - A. Analyzing the incident
 1. Survey hazardous materials and WMD incidents
 2. Collect and interpret hazardous and response information
 3. Describe the condition of container involved in the incident
 4. Predict likely behavior of materials and their containers where multiple materials are involved
 5. Estimate the likely size of an endangered area
 - B. Planning the response
 1. Identify response objectives
 2. Identify the potential response options
 3. Select personal protective equipment
 4. Select decontamination procedures
 5. Develop a plan of action
 - C. Implementing the planned response
 1. Perform incident command duties
 2. Use protective clothing and respiratory protection
 3. Perform control functions identified in incident action plan
 4. Perform decontamination operations identified in incident action plan
 - D. Evaluating progress
 1. Evaluate the effectiveness of the control functions
 2. Evaluate the effectiveness of the decontamination process
 - E. Terminating the Incident
 1. Assist in the debriefing process
 2. Assist in the incident critique process
 3. Demonstrate the reporting and documentation procedures

Learning Units

- I. Hazardous materials management system
 - A. Laws, regulations, and standards
 - B. Hazmat management system

- II. Health and safety
 - A. Toxicology
 - B. Exposure to environmental conditions
 - C. Health and safety management procedures
 - D. Site safety practices and procedures

- III. Incident management system
 - A. The players
 - B. Command operations
 - C. Hazmat branch operations
 - D. Incident analysis

- IV. Politics of hazmat incident management
 - A. Political issues and concerns
 - B. Media relations

- V. Site management control
 - A. Site management task
 - B. Establishing command
 - C. Approaching and positioning
 - D. Staging areas
 - E. Establishing isolation perimeter
 - F. Hazard control zones
 - G. Initiating public protective actions
 - H. Protection in place
 - I. Evacuation

- VI. Identify the problem
 - A. Basic principles
 - B. Identification methods and procedures
 - C. Shipping papers and facility documents

- VII. Hazard risk evaluation
 - A. Terms and definitions
 - B. Sources of hazard data and information
 - C. Compiling hazard information
 - D. Evaluating risk
 - E. Behavior of hazmats in soil and groundwater

- VIII. Personal protective clothing
 - A. Levels of protective clothing

IX. Information management and resource coordination

- A. Information management
- B. Resource coordination

X. Implementing response objectives

- A. Strategic goals
- B. Tactical objectives
- C. Rescue and protective actions
- D. Spill control/ containment
- E. Leak control/containment
- F. Fire control operations
- G. Special tactical problems
- H. Transfer and recovery operations

XI. Decontamination

- A. Understanding the basic of decontamination
- B. Decontamination methods
- C. Site selection and management
- D. Field decontamination procedures
- E. Medical emergencies requiring decontamination
- F. Decontamination and infection control
- G. Special facilities and equipment
- H. Clean-up
- I. Post incident decontamination concern

XII. Terminating the incident

- A. Termination activities

Learning Activities

The student will engage in classroom instruction and practical evolutions that will measure his/her professional competencies.

Grade Determination

The student will be evaluated through written exams, skill proficiency assessments, and other methods of evaluation at the discretion of the instructor.