

**ARIZONA WESTERN COLLEGE
SYLLABUS**

FSC 112 HAZARDOUS MATERIALS AWARENESS AND OPERATIONS
Credit Hours: 3 Lec 2, Lab 1.5

PREREQUISITES: None

COURSE DESCRIPTION

Course will provide the emergency responder with the ability to identify emergency scenes and respond to releases or potential releases of hazardous materials as part of the initial response to the incident for the purpose of protecting nearby persons, the environment, or property from the effects of the release. Successful completion qualifies the student to sit for certification examination conducted by the Arizona Center of Fire Service Excellence. This class will meet or exceed the requirements as defined by NFPA 472, Standard for Professional Competence of Responders to Hazardous Materials Incidents and NFPA 1072, Standard for Hazardous Materials/Weapons of Mass Destruction Response Personnel Professional Qualifications.

1. COURSE GOALS

- 1.1 Analyze a hazardous materials incident to determine the magnitude of the problem in terms of outcomes.
- 1.2 Plan an initial response within the capabilities and competencies of available personnel, personal protective equipment, and control equipment.
- 1.3 Implement the planned response to favorably change the outcomes consistent with the local emergency response plan and the organization's standard operating procedures.
- 1.4 Evaluate the progress of the actions taken to ensure that the response objectives are being met safely, effectively, and efficiently.

2. OUTCOMES

Upon satisfactory completion of this course, the student will be able to:

- 2.1 Identify the difference between hazardous materials/WMD incidents and other emergencies
- 2.2 Identify the location of both the emergency response plan and/or standard operating procedures.
- 2.3 Define the terms hazardous materials (or dangerous goods, in Canada) and weapons of mass destruction.
- 2.4 Understand the difference(s) between the standards and federal regulations that govern hazardous material response activities.
- 2.5 Describe the different levels of hazardous materials training: awareness, operations, technician, specialist, and incident commander.
- 2.6 Explain the need for a planned response to a hazardous materials incident
- 2.7 Describe how to approach a scene size-up with potential hazardous materials involved.
- 2.8 Identify and describe the types of containers that are often used to contain hazardous materials.
- 2.9 Describe the purpose and types of various transportation and facility markings for hazardous materials.
- 2.10 Identify and describe the four routes of entry harmful substances take in the human body.
- 2.11 Use the Emergency Response Guidebook (ERG).
- 2.12 Describe states of matter and their physical and chemical changes.
- 2.13 Discuss the critical characteristics of flammable liquids.
- 2.14 Discuss a responder's role in working with hazards, exposure, and contamination.
- 2.15 Describe how hazardous material exposure can lead to chronic and/or acute health effects.
- 2.16 identify and describe common types of hazardous materials containers.
- 2.17 Describe the ways in which hazardous materials are transported.
- 2.18 Identify resources for technical chemical information.
- 2.19 Identify the components of potential terrorist incidents.
- 2.20 Explain how to respond to terrorist incidents.
- 2.21 Explain how to estimate the potential harm or severity of an incident.
- 2.22 Explain how exposures might be affected by various types of hazardous materials incidents.
- 2.23 Describe how to plan an initial response.
- 2.24 Describe how to select personal protective equipment for an incident.

- 2.25 Identify and describe the types of personal protective equipment needed for hazardous materials incidents.
- 2.26 Identify and describe the four chemical-protective clothing ratings.
- 2.27 Explain the role of respiratory protection
- 2.28 Describe the basic types of decontamination.
- 2.29 Perform emergency decontamination.
- 2.30 Size up an incident.
- 2.31 Identify and describe the safety procedures at a hazardous materials incident.
- 2.32 Describe the protective actions at the operations level
- 2.33 Identify and describe the components of the incident command system.
- 2.34 Explain the role of the operations level responder in implementing a planned response.
- 2.35 Discuss the hazards of fire smoke.
- 2.36 Discuss the effects of carbon monoxide and hydrogen cyanide on the body.
- 2.37 Describe methods for treating smoke inhalation. (pp. 164–165) n Discuss post-fire detection and monitoring needs.
- 2.38 Discuss the purpose of detection devices at fire scenes
- 2.39 Discuss the various technologies available for fire-ground detection and monitoring.
- 2.40 Discuss general fire-ground monitoring principles and practices
- 2.41 Discuss the similarities and differences in how single-use and reusable personal protective equipment (PPE) are used.
- 2.42 Explain how to maintain PPE.
- 2.43 Explain how PPE needs are determined.
- 2.44 Identify and describe specific PPE for hazardous materials response.
- 2.45 Explain the safety considerations when wearing PPE.
- 2.46 Explain the inclusion of PPE in reporting and documenting the incident.
- 2.47 Don a Level B non-encapsulating chemical-protective clothing ensemble.
- 2.48 Doff a Level B non-encapsulating chemical-protective clothing ensemble.
- 2.49 Don a Level C chemical-protective clothing ensemble.
- 2.50 Doff a Level C chemical-protective clothing ensemble.
- 2.51 Don a Level D chemical-protective clothing ensemble.
- 2.52 Identify and describe the types of decontamination.
- 2.53 Describe the purpose of technical decontamination.
- 2.54 Describe the methods of technical decontamination.
- 2.55 Describe the process of technical decontamination
- 2.56 Demonstrate the ability to set up and implement technical decontamination operations in support of entry operations.
- 2.57 Explain the advantages and limitations of mass decontamination operations
- 2.58 Describe how to evaluate the effectiveness of mass decontamination.
- 2.59 Describe the reference sources available for responders charged with performing mass decontamination.
- 2.60 Describe methods for crowd control.
- 2.61 Describe how to preserve evidence during mass decontamination.
- 2.62 Describe the importance of completing reports and documentation of mass decontamination operations.
- 2.63 Set up and perform mass decontamination on ambulatory victims
- 2.64 Set up and perform mass decontamination on non-ambulatory victims.
- 2.65 Analyze a hazardous materials incident.
- 2.66 Describe how to preserve evidence.
- 2.67 Identify and describe actions to take in sampling evidence.
- 2.68 Collect samples and preserve evidence.
- 2.69 Secure, characterize, and preserve a scene.
- 2.70 Document the activity of personnel.
- 2.71 Implement response actions.
- 2.72 Identify samples and evidence to be collected.
- 2.73 Collect samples using equipment and preventing secondary contamination.
- 2.74 Document sampling.
- 2.75 Label, package, and decontaminate evidence.
- 2.76 Describe how to use the following control methods:
 - 2.76.1 Absorption and adsorption

- 2.76.2 Damming
- 2.76.3 Diking
- 2.76.4 Dilution
- 2.76.5 Diversion
- 2.76.6 Retention
- 2.76.7 Remote valve shut-off
- 2.76.8 Vapor dispersion and suppression
- 2.77 Describe the recovery phase of hazardous materials incident.
- 2.78 Use absorption/adsorption to manage a hazardous materials incident.
- 2.79 Construct an over flow dam.
- 2.80 Construct an under flow dam.
- 2.81 Construct a dike.
- 2.82 Use dilution to manage a hazardous materials incident.
- 2.83 Construct a diversion.
- 2.84 Use retention to manage a hazardous materials incident.
- 2.85 Use vapor dispersion to manage a hazardous materials incident.
- 2.86 Use vapor suppression to manage a hazardous materials incident.
- 2.87 Perform the rain-down method of applying foam.
- 2.88 Perform the roll-in method of applying foam.
- 2.89 Perform the bounce-off method of applying foam.
- 2.90 Describe the tactical considerations for victim rescue and recovery at a hazardous materials incident.
- 2.91 Describe the components of victim search, rescue, and recovery.
- 2.92 Describe various victim rescue methods.
- 2.93 A Perform a two-person walking assist.
- 2.94 Perform a two-person extremity carry.
- 2.95 Perform a two-person seat carry.
- 2.96 Perform a two-person chair carry.
- 2.97 Perform a cradle-in-arms carry.
- 2.98 Perform a blanket drag or long backboard rescue.
- 2.99 Perform a long backboard rescue from a vehicle.
- 2.100 Describe how to identify illicit laboratories.
- 2.101 Describe the dangers associated with weapons of mass destruction laboratories.
- 2.102 Explain the tasks and operations at the scene of an illicit laboratory.
- 2.103 Identify and/or avoid potential safety hazards.
- 2.104 Conduct a joint hazardous materials/hazardous device team operation.
- 2.105 Decontaminate tactical law enforcement personnel.
- 2.106 Explain the terminology, concepts, and unknowns of detection and monitoring.
- 2.107 Identify and describe various types of detectors and monitors.
- 2.108 Complete the 10 basic actions for detection and monitoring.
- 2.109 Perform a typical start-up procedure for a multi-gas meter.
- 2.110 Use a multi-gas meter.

3. METHODS OF INSTRUCTION

- 3.1 Lecture
- 3.2 Instructional technology presentations
- 3.3 Student participation
- 3.4 Classroom exercises
- 3.5 Field trips
- 3.6 Practical skill application

4. LEARNING ACTIVITIES

- 4.1 Lectures, demonstrations and visual presentations
- 4.2 Practical application
- 4.3 Field trips
- 4.4 Written exercises and periodic examinations
- 4.5 Class discussions
- 4.6 Demonstrations

5. EVALUATION

- 5.1 Exams
- 5.2 Assignments
- 5.3 Participation

6. STUDENT RESPONSIBILITIES

- 6.1 Under AWC Policy, students are expected to attend every session of class in which they are enrolled.
- 6.2 Classroom Assignments: Students are responsible for work missed and for completing all work before the next class meeting. Students are responsible for participating in all oral drills and for taking all exams.
- 6.3 If a student is unable to attend the course or must drop the course for any reason, it will be the responsibility of the student to withdraw from the course. Students who are not attending as of the 45th day of the course may be withdrawn by the instructor. If the student does not withdraw from the course and fails to complete the requirements of the course, the student will receive a failing grade.
- 6.4 Americans with Disabilities Act Accommodations: Arizona Western College provides academic accommodations to students with disabilities through AccessABILITY Resource Services (ARS). ARS provides reasonable and appropriate accommodations to students who have documented disabilities. It is the responsibility of the student to make the ARS Coordinator aware of the need for accommodations in the classroom prior to the beginning of the semester. Students should follow up with their instructors once the semester begins. To make an appointment call the ARS front desk at (928) 344-7674 or ARS Coordinator at (928) 344-7629, in the College Community Center (3C) building, next to Advising.
- 6.5 Academic Integrity: Any student participating in acts of academic dishonesty including, but not limited to, copying the work of other students, using unauthorized “crib notes”, plagiarism, stealing tests, or forging an instructor’s signature—will be subject to the procedures and consequences outlined in AWC’s Student Code of Conduct.
- 6.6 Textbooks and materials: Students are required to bring notebook or loose-leaf book, pens, pencils, dictionaries, and purchase textbook required for class.
- 6.7 Arizona Western College students are expected to attend every class session in which they are enrolled. To comply with Federal Financial Aid regulations (34 CFR 668.21), Arizona Western College (AWC) has established an Attendance Verification process for “No Show” reporting during the first 10 days of each semester.
Students who have enrolled but have never attended class may be issued a “No Show” (NS) grade by the professor or instructor and receive a final grade of “NS” on their official academic record. An NS grade may result in a student losing their federal financial aid.
For online classes, *student attendance in an online class is defined as the following* (FSA Handbook, 2012, 5-90):
 - Submitting an academic assignment
 - Taking an exam, an interactive tutorial or computer-assisted instruction
 - Attending a study group that is assigned by the school
 - Participating in an online discussion about academic matters
 - Initiating contact with a faculty member to ask a question about the academic subject studied in the course