# University of Illinois Fire Service Institute

# Course Syllabus

**Course Title:** Hazardous Materials Operations

**Course Duration:** 33 hours

**Program:** Hazardous Materials Program

**Course Prerequisites:** Hazardous Materials Awareness

**Course Description:** This course provides to those who are or will be operating as a member of a fire department, law enforcement agency, EMS agency, emergency management agency, or other first responder agency, the basic skills needed to evaluate and work defensively at an incident involving the release of hazardous materials. The objectives of the course are to teach participants: basic hazards and risk-assessment techniques for Hazmat and CBRNE environments; selecting and using proper personal protective equipment provided to the first responder at the Operations level; performing basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available; an understanding of the types of CBRNE and WMD events that may be presented to the first responder; and an understanding of the relevant standard operating guidelines and termination procedures.

**Course Requirements and/or Recommendations:**

| | |
|---|---|
| Prerequisite – Hazardous Materials Awareness | 7 hours |
| Pre-Course Work – Optional Online Step 1 Work | 0 hours |
| Course Work – Practical exercises, scenarios, exam | 33 hours |
| Post-Course Work – None | 0 hours |
| Minimum documented **OSFM** hours: | 40 hours |

**Required Textbook:**
Hazardous Materials Awareness and Operations, Jones & Bartlett Learning, 3rd Edition.

The textbook is loaned to the student by IFSI for the duration of the class.

**Reading Assignments:**
Day 1: p. 4-7, p. 38-43, p. 48-67, p. 180-199
Day 2: p. 72-85, p. 330-349
Day 3: p. 143-152, Chapter 12

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**Course Policies:**

**Attendance Policy:** IFSI requires students to attend (100%) or make up all course content that leads to certification. Students are expected to attend on time and to remain in class for the duration of the course. Students MUST COMPLETE all portions of a certification course, both classroom and practical, to be eligible to receive their certification.

If a student misses any portion of class with an accumulated absence of 20% or less of scheduled class time, it will be the student's responsibility to arrange the make-up of the missed course content with the instructor(s) or program manager. The student must make up the specific course content that s/he missed, not just the hours. Make-ups are limited to 20% of scheduled class time. Make-ups must be documented on the class roster. If a student's absence is greater than 20% refer to "True Emergencies" section of the IFSI Examination Policy.

**Safety Policy:** Students shall understand and follow all instructions pertaining to operational safety, as stated by instructors or as written in course materials. Instructors and students shall be mindful of safety at all times. Conduct judged to be unsafe shall be grounds for dismissal from the course.

**Academic Integrity Policy:** IFSI has the responsibility for maintaining academic integrity so as to protect the quality of the education provided through its courses, and to protect those who depend upon our integrity. It is the responsibility of the student to refrain from infractions of academic integrity, from conduct that may lead to suspicion of such infractions, and from conduct that aids others in such infractions. Any violation of the code of conduct is grounds for immediate dismissal from the course.

**Grading Policy:** Decisions regarding certificates of course completion shall be made solely by the lead instructor of the course. All grading of exams shall be conducted by the Curriculum/Testing Office. All grading of practical exercises shall be based upon the standards set by the regulatory agency referenced in the course material and IFSI.

> Retesting: If a student fails to pass an exam, retesting takes place on set dates at regional sites across the state. More information is provided in the course completion e-mail and on the IFSI website.

**American Disabilities Act:** As guaranteed in the Vocational Rehabilitation Act and in the American Disabilities Act, if any student needs special accommodations they are to notify their instructor and provide documentation as soon as possible so arrangements can be made to provide for the student's needs. If arrangements cannot be made at the class site, the student will test at an alternative time and place where the special accommodations can be made.

**Evaluation Strategy:** Written homework and practical skills testing are completed throughout the course. A written test and final practical incident are conducted at the completion of the course. In addition, several simulated evolutions and tabletop scenarios are used throughout the course.

**Course Content:**

Module: 1
Title: Laws, Regulations, & Standards
Terminal Learning Objective:
At the conclusion of this module, the student will *apply* the laws, regulations and standards to examples of WMD and hazardous materials incidents.

Module: 2
Title: Response Components
Terminal Learning Objective:
At the conclusion of this module, the student will *determine* the strategic objectives to be completed at all hazardous materials/WMD incidents.

Module: 3
Title: Chemical and Physical Properties
Terminal Learning Objective:
At the conclusion of this module, the student will *predict* how the chemical and physical properties of a product will affect response to a hazardous materials/WMD incident.

Module: 4
Title: Health and Safety
Terminal Learning Objective:
At the conclusion of this module, the student will *relate* health hazards with an associated material and its container.

Module: 5
Title: Personal Protective Equipment
Terminal Learning Objective:
At the conclusion of this module, the student will *work* in each type of personal protective equipment (PPE) available to the Operations trained responder.

Module: 6
Title: Intelligence & Resources
Terminal Learning Objective:
At the conclusion of this module, the student will *interpret* intelligence and resource information as it relates to the hazardous materials/WMD response.

Module: 7
Title: Recognition and Identification of Transportation Containers
Terminal Learning Objective:
At the conclusion of this module, the student will *determine* the hazards associated with the materials stored within transportation containers.

Module: 8
Title: Fixed Facilities
Terminal Learning Objective:
At the conclusion of this module, the student will *determine* the hazards associated with the materials stored at a fixed facility.

Module: 9
Title: Terrorist and Other Criminal Activities
Terminal Learning Objective:
At the conclusion of this module, the student will *classify* terrorist incidents into the five basic categories of Chemical, Biological, Radiological, Nuclear, and Explosive.

Module: 10
Title: Monitoring
Terminal Learning Objective:
At the conclusion of this module, the student will *monitor* an atmosphere for an unknown material.

Module: 11
Title: Incident Analysis
Terminal Learning Objective:
At the conclusion of this module, the student will *describe* procedures for predicting the release of a material from its container.

Module: 12
Title: Incident Management
Terminal Learning Objective:
At the conclusion of this module, the student will *describe* the different roles in the incident management system (IMS).

Module: 13
Title: Product Control
Terminal Learning Objective:
At the conclusion of this module, the student will *confine* a hazardous material to a certain area.

Module: 14
Title: Foam
Terminal Learning Objective:
At the conclusion of this module, the student will *use* foam to suppress vapors.

Module: 15
Title: Decontamination
Terminal Learning Objective:
At the conclusion of this module, the student will *operate* a decontamination line.

**Reference List:**

Federal Emergency Management Agency. www.fema.gov.

IFSTA. Hazardous Materials for First Responders 5th Ed. Fire Protection Publications. Stillwater, OK, 2017.

National Fire Protection Association Standards 472 Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents, 2018.

Schnepp, Rob. Hazardous Materials Awareness and Operations 3rd Ed. Jones and Bartlett Publishers, Sudbury, MA, 2019.

United States Department of Homeland Security. www.dhs.gov.

U.S. Department of Labor, Code of Federal Regulations: Labor 29 CFR 1910.120. Washington, D.C., Office of the Federal Register, National Archives and Records Administration, 1996.

U.S. Department of Labor, Code of Federal Regulations: Transportation 49 CFR Parts 100 to 77. Washington, D.C., Office of the Federal Register, National Archives and Records Administration, 1995.

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## Course Schedule

### DAY ONE

| Event | Duration |
|---|---|
| Course Introduction & Paperwork | 45 minutes |
| Module 1 – Laws, Regulations, & Standards | 15 minutes |
| Module 2 – Response Components | 30 minutes |
| Module 3 – Chemical & Physical Properties | 1 hour |
| Module 4 – Health & Safety | 45 minutes |
| Module 13 – Product Control | 45 minutes |
| **Lunch** | |
| Module 14 – Foam | 1 hour |
| **Practical – Foam and Product Control** | 2 hours |
| Module 9 – Terrorist and Other Criminal Activities | 1 hour |
| Review of Materials from the Day | 15 minutes |

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## DAY TWO

| Event | Duration |
|---|---|
| Review Day 1 Homework | 30 minutes |
| Module 7 – Recognition and Identification | 1 hour |
| Module 8 – Fixed Facilities | 1 hour |
| Module 12 – Incident Management | 1 hour |
| Module 6 – Intelligence & Resources | 1 hour |
| **Lunch** | |
| Module 5 – PPE | 1 hour |
| **Practical – PPE** | 2 hours |
| Science Activity | 30 minutes |
| Review of Materials from the Day | 15 minutes |

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## DAY THREE

| Event | Duration |
|---|---|
| Review Day 2 Homework | 30 minutes |
| Module 11 – Incident Analysis | 1 hour |
| Module 10 – Monitoring | 1 hour |
| **Practical – Monitoring** | 1 hour and 30 min |
| **Lunch** | |
| Module 15 – Decontamination | 1 hour |
| Decontamination Set-up and Demo | 1 hour |
| **Practical – Decontamination (Group 1)** | 2 hours |
| **Scenario (Group 2)** | |
| Review of Materials from the Day | 15 minutes |

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## DAY FOUR

| Event | Duration |
|---|---|
| Review Homework | 1 hour |
| **Practical – Decontamination (Group 2)** | 2 hours |
| **Scenario (Group 1)** | |
| **Performance Evaluations** | 1 hour |
| **Lunch** | |
| **Performance Evaluations** | 2 hours |
| **Final Exam** | 1 hour and 30 min |
| Course Closing & Equipment Breakdown | 45 minutes |