

# University of Illinois Fire Service Institute

## Course Syllabus

**Course Title:** Hazardous Materials Awareness and Operations  
(1072 – Ch4, 5, 6.2, 6.6)

**Course Duration:** 40 hours

**Program:** Hazardous Materials

**Course Prerequisites:** None

**Course Description:**

The Hazardous Materials Operations 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:**

Pre-Course Work – Completion on online Step 1 pre-course work

Course Work – Complete all reading assignments, homework, practicals, and exercises

Post-Course Work – None

**Required Textbook:**

Schnepf, Rob. International Association of Fire Chiefs. Hazardous Materials Awareness and Operations, 3rd Edition. Jones & Bartlett Publishing, 2019.

Students can either purchase the textbook on their own or one will be provided to them for use during the course.

# University of Illinois Fire Service Institute

## **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. For courses requir

**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

# University of Illinois Fire Service Institute

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: Students will be evaluated with an end of course exam and performance evaluation checklist.

## **Course Content:**

### Module 1: 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: Response Components

#### Terminal Learning Objective:

At the conclusion of this module, the student will determine the strategic and tactical objectives to be completed at all hazardous materials/WMD incidents.

### Module 3: 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: 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: Personal Protective Equipment

#### Terminal Learning Objective

At the conclusion of this module, the student will be able to work in each type of personal protective equipment (PPE) available to the Operations trained responder.

# University of Illinois Fire Service Institute

## Module 6: 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: Recognition and Identification of Transportation Containers

### Terminal Learning Objective

At the conclusion of this module, the student will recognize different types of transportation containers and markings and determine the hazards associated with the materials transported or stored within the container.

## Module 8: Fixed Facilities

### Terminal Learning Objective

At the conclusion of this module, the student will recognize different types of fixed facility containers and markings and the hazards associated with the materials transported or stored within the container.

## Module 9: 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: Monitoring

### Terminal Learning Objective

At the conclusion of this module, the student will demonstrate effectively monitoring an atmosphere for an unknown material.

## Module 11: 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.

# University of Illinois Fire Service Institute

## Module 12: Incident Management

### Terminal Learning Objective

At the conclusion of this module, the student will describe the different roles in the incident management system (IMS) and what role the first responder will play in a hazardous material incident.

## Module 13: Product Control

### Terminal Learning Objective

At the conclusion of this module, the student will demonstrate confining a hazardous material to a certain area.

## Module 14: Foam

### Terminal Learning Objective

At the conclusion of this module, the student will demonstrate using foam to suppress vapors.

## Module 15: Unknown Hazard Analysis

### Terminal Learning Objective

At the conclusion of this module, the student will identify ways to obtain information about a product that is not known.

## Module 16: Decontamination

### Terminal Learning Objective

At the conclusion of this module, the student will demonstrate proper selection, set-up, operation, and tear down of a decontamination line.

## Module 17: Dry Decontamination

### Terminal Learning Objective

At the conclusion of this module, the student will demonstrate proper decontamination of a responder without using water.

# University of Illinois Fire Service Institute

## Reference List:

Adams, Barbara and Leslie Miller. Hazardous Materials for First Responders 3rd Ed. IFSTA. Fire Protection Publications. Stillwater, OK, 2004.

Federal Emergency Management Agency. [www.fema.gov](http://www.fema.gov).

National Fire Protection Association Standard 1072 Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Personnel Professional Qualifications, 2017.

National Fire Protection Association Standard 472 Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents, 2013.

Noll, Gregory, Michael Hildebrand and James Yvorra. Hazardous Materials: Managing the Incident 3rd Ed. IFSTA. Red Hat Publishing Co., 2005

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](http://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.

United States Department of Homeland Security. [www.dhs.gov](http://www.dhs.gov).

Illinois OSHA. Illinois OSHA Fact Sheet, Fire Departments, Commonly Overlooked Illinois OSHA Requirements.

<https://www2.illinois.gov/idol/LawsRules/safety/Documents/Fire%20Departments.pdf>  
accessed 2018 May 30

# University of Illinois Fire Service Institute

NFPA.org Application of NFPA Standards for Volunteers

[https://www.nfpa.org/Assets/files/AboutTheCodes/1021/Standards%20Guide\\_1021\\_1407.pdf](https://www.nfpa.org/Assets/files/AboutTheCodes/1021/Standards%20Guide_1021_1407.pdf) accessed 2018 June 12

National Response Team. Hazardous Materials Emergency Planning Guide. 2001 ed.

[https://www.epa.gov/sites/production/files/201409/documents/cleanrnt10\\_12\\_distiller\\_complete.pdf](https://www.epa.gov/sites/production/files/201409/documents/cleanrnt10_12_distiller_complete.pdf) accessed 2018 May 30

<https://emergency.cdc.gov/agent/riotcontrol/factsheet.asp>

[http://www.who.int/ionizing\\_radiation/about/what\\_is\\_ir/en/](http://www.who.int/ionizing_radiation/about/what_is_ir/en/)

[https://www.remm.nlm.gov/diff\\_contam\\_exp.htm](https://www.remm.nlm.gov/diff_contam_exp.htm)

<https://www.osha.gov/Publications/OSHA3514.htm>

# University of Illinois Fire Service Institute

## Course Schedule

### DAY ONE

<u>Event</u>	<u>Duration</u>
Orientation and Introductions	45 minutes
Module 1: Laws & Regulations, & Standards	45 minutes
Module 2: Response Components	1 hour
Module 3: Chemical & Physical Properties	1 hour
Module 13: Product Control	30 minutes
<b>Lunch</b>	
Module 14: Foam	30 min
<b>Practical – Foam/Product Control</b>	3 hours
Hand out and discuss Performance Evals	30 minutes

Assignment: Day One Homework – Due Day Two 08:00

# University of Illinois Fire Service Institute

## DAY TWO

<u>Event</u>	<u>Duration</u>
Review Day 1 Homework	30 minutes
Module 7: Recognition & Identification of Transp.	1 hour and 15 min
Module 8: Fixed Facilities	1 hour and 15 min
Module 4: Health and Safety	1 hour
<b>Lunch</b>	
Module 5: Personal Protective Equipment	1 hour
<b>Practical – PPE</b> (1/2 class PPE Practical, 1/2 class Module 6: Intelligence and Resources, then switch)	3 hours

Assignment: Day Two Homework – Due Day Three 08:00

# University of Illinois Fire Service Institute

## DAY THREE

<u>Event</u>	<u>Duration</u>
Review Day 2 Homework	30 minutes
First Responder Resiliency	1 hour
Module 11: Incident Analysis	1 hour
Module 12: Incident Management	1 hour
Module 9: Terrorist and Other Criminal Activities	1 hour
<b>Lunch</b>	
Module 10: Monitoring	1 hour
<b>Practical – Monitoring</b>	1 hour and 30 min
Module 15: Unknown Hazard Analysis	1 hour

Assignment: Day Three Homework – Due Day Four 0800

# University of Illinois Fire Service Institute

## DAY FOUR

<u>Event</u>	<u>Duration</u>
Review Day 3 Homework	30 minutes
Module 16: Decontamination	1 hour
Decon Demo and Set-up	1 hour
<b>Practical – Decontamination</b> (1/2 half of class)	2 hours
Tabletop Incident (1/2 half of class)	
<b>Lunch</b>	
<b>Practical - Decontamination</b> (1/2 half of class)	2 hours
Table Top Incident (1/2 half of class)	
Module 17: Dry Decontamination	1 hour and 30 min

# University of Illinois Fire Service Institute

## DAY FIVE

<u>Event</u>	<u>Duration</u>
Final Exam	2 hours
<b>Performance Evaluations</b>	2 hours
<b>Lunch</b>	
<b>Performance Evaluations</b>	4 hours