

# FRS 104

## Firefighters Intermediate Skills I

**45 clock hours**

**3 credit hours**

Course	Title	Lecture/Skill	Total	Fractional Credit
FRS 1041	Water Supply	5 1	6	0.4
FRS 1042	Foam Fire Streams	2 1	3	0.2
FRS 1043	Salvage	3 1	4	0.3
FRS 1044	Overhaul	2 0	2	0.1
FRS 1045	Fire Alarms and Communications	3 0	3	0.2
FRS 1046	Hazardous Materials Awareness	8 0	8	0.5
FRS 1047	Hazardous Materials Operations	16 0	16	1.1
FRS 1048	Sprinklers	3 0	3	0.2

**FRS 1041**

**WATER SUPPLY  
LEVEL I**

Lecture	Skill	Fractional Credit
5	1	0,4

**Course Description**

This program is designed to provide the firefighter with a general understanding of water systems. The information included in this unit will broaden the base of understanding of a water supply system and how it works. This program will cover hydrant systems as well as static water sources for determining their value as a firefighting water supply source.

**Prerequisites: FRS 1012, 1016 or Consent**

**Corequisite: NONE**

**Task List**

1.	Connect a supply hose to a hydrant and fully open and close the hydrant.
2.	Demonstrate hydrant-to-pumper hose connections for forward and reverse hose lays.
3.	Assemble and connect the equipment necessary for drafting from a static water supply source.
4.	Describe the deployment of a portable water tank.
5.	Describe the assembling of equipment necessary for the transfer of water between portable water tanks.
6.	Describe loading and off-loading of tanks on mobile water supply apparatus.

**Lecture**

**Instructor Equipment List**

Projection Screen  
Chalkboard or Marker board  
Overhead projector  
Slide projector  
TV/VCR

**Skills**

**Instructor Equipment List**

Pumper  
Hard suction assorted hoses  
Hydrant wrench  
Gate valves  
Spanner wrenches

**Student Equipment List**

Full protective equipment

**Old FRT Number: 190 / FRT 119**

Lecture	Skill	Fractional Credit
2	1	0.2

Course Description
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This course is designed to instruct the student in foam performance, extinguishing properties and types of foam used in the fire service today.
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<b>Prerequisites:</b> FRS 1012, 2023 or consent
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<b>Corequisite:</b> NONE
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Task List
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|----|--|
| 1. | Assemble and operate a foam fire stream arrangement given the appropriate equipment. |
| 2. | Demonstrate the methods for applying a foam stream.                                  |

**Lecture****Instructor Equipment List**

Projection screen  
Chalkboard or marker board  
Overhead projector  
Slide Projector  
TV/VCR  
Eductor  
Nozzle

**Skills****Instructor Equipment List**

Pumper  
Eductor  
Nozzle  
Hose  
Foam concentrate

**Student Equipment List**

Full protective equipment

**Old FRT Number: 205 / FRT 120**

Lecture	Skill	Fractional Credit
3	1	0.3

Course Description
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This course reviews salvage methods and operating procedures that further reduce fire, water, and smoke damage during and after fires.
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<b>Prerequisites: FRS 1033 or consent</b>	<b>Corequisite: NONE</b>
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Task List
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|----|---|
| 1. | Identify the purpose of salvage and its value to the public and the fire department.                  |
| 2. | Demonstrate 2 folds and rolls for salvage covers.   |
| 3. | Demonstrate 2 methods of deploying salvage covers to cover property.                                  |
| 4. | Demonstrate the construction and use of a water chute.  |
| 5. | Demonstrate the construction and use of a water catchall.   |
| 6. | Demonstrate the covering or closing of building openings, including doors, windows, floors and roofs. |
| 7. | Demonstrate the removal of debris and the removal and routing of water from a structure.              |
| 8. | Demonstrate the procedures of inspection, cleaning, and maintaining salvage equipment.                |

**Lecture****Instructor Equipment List**

Projection screen  
Chalkboard or marker board  
Overhead projector  
Slide projector  
TV/VCR

**Skills****Instructors Equipment List**

Assorted hand tools  
Ventilation equipment  
Salvage equipment

**Students****Equipment List**

Full protective equipment  
SCBA

**Old FRT Number: 215 / FRT 121**

**FRS 1044**

**OVERHAUL  
Level I**

Lecture	Skill	Fractional Credit
2	0	0.1

**Course Description**

This program is designed to provide the firefighter with a general understanding of the purpose and scope of overhaul, including recognition of hidden fires and methods used to separate, remove, and relocate charred materials.

**Prerequisites: FRS 1028, 1034 or consent**

**Corequisite: NONE**

**Task List**

1.	Identify the purpose of overhaul.
2.	Recognize at least 4 indicators of hidden fires.
3.	Expose hidden fires by opening ceilings, walls and floors and by pulling apart burned materials.
4.	Separate, remove, and relocate charred material to a safe location while protecting the area of origin for determination of cause.
5.	Define duties of firefighters left at the fire scene for fire and security surveillance.

**Lecture**

**Instructor Equipment List**

Projection screen  
Chalkboard or marker board  
Overhead projector  
Slide projector  
TV/VCR

**Skills**

**Instructor Equipment List**

Projection screen  
Chalkboard or marker board  
Overhead projector  
Slide projector  
TV/VCR

**Old FRT Number: 220 / FRT 122**

**FRS 1045**

**FIRE ALARMS AND  
COMMUNICATIONS  
LEVEL I**

Lecture Skill Fractional  
Credit

3	0	0.2
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**Course Description**

This course covers basic information pertaining to fire alarms and communications including radio operations, alarm receiving equipment, and dispatching procedures.

**Prerequisites: NONE**

**Corequisite: NONE**

**Task List**

1.	Explain the procedures for a citizen to report a fire or other emergency.
2.	Explain the procedures for receiving
3.	Define the purpose and function of all alarm-receiving instruments and personnel-alerting equipment provided to the department and its members.
4.	Identify procedures required for receipt and processing of business and personal calls.
5.	Define and demonstrate prescribed fire department radio procedures including routine traffic, emergency traffic and emergency evacuation signals.

**Instructor Equipment List**

Projection screen  
Chalkboard or marker board  
Overhead projector  
Slide projector TV/VCR

**Old FRT Number: 225 / FRT 123**

**HAZARDOUS MATERIALS  
FIRST RESPONDER  
AWARENESS**

8	0	0.5
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**Course Description**

This course introduces the student to the principles of recognizing hazardous materials presence, protecting themselves from hazardous materials and calling for trained personnel, and securing the area safely.

**Prerequisites:** NONE

**Corequisite:** NONE

**Task List**

1.	Identify the definition of hazardous materials.
2.	Identify the DOT hazard classes and divisions of hazardous materials and identify common examples of materials in each hazard class or division.
3.	Identify the primary hazards associated with each of the DOT hazard classes and divisions of hazardous materials by class or division.
4.	Identify typical container shapes that may indicate hazardous materials.
5.	Identify typical occupancies and locations in the community where hazardous materials are manufactured, transported, stored, used, or disposed of.
6.	Identify typical container shapes that may indicate hazardous materials.
7.	Identify facility and transportation marking and colors that indicate hazardous materials, including: a. UN/NA identification numbers; b. NFPA 704 markings; c. Military hazardous materials markings; d. Special hazard communication markings; e. Pipeline marker; and f. Container markings.
8.	Given an NFPA 704 marking, identify the significance of the colors, numbers and special symbols.
9.	Identify U.S. and Canadian placards and labels that indicate hazardous materials.
10.	Identify the basic information on material safety data sheets (MSDS) and shipping papers that indicates hazardous materials.
11.	Identify where to find material safety data sheets (MSDS).
12.	Identify entries on a material safety data sheet that indicate the presence of hazardous materials.
13.	Identify the entries on shipping papers that indicate the presence of hazardous materials.
14.	Match the name of the shipping papers found in transportation (air, highway, rail, and water) with the mode of transportation.
15.	Identify the person responsible for having the shipping papers in each mode of transportation.
16.	Identify where the shipping papers are found in each mode of transportation.
17.	Identify where the papers may be found in an emergency in each mode of transportation.
18.	Identify examples of clues (other than occupancy/location, container shape, markings/color, placard/labels and shipping papers) that use the senses of sight, sound, and odor to indicate hazardous materials.
19.	Describe the limitations of using the senses in determining the presence or absence of hazardous materials.
20.	Identify difficulties encountered in determining the specific names hazardous materials in both facilities and transportation.
21.	Identify sources for obtaining the names of, UN/NA identification numbers for, or types of placard associated with hazardous materials in transportation.
22.	Identify sources for obtaining the names of hazardous materials in a facility.
23.	Identify the ways hazardous materials are harmful to people, the environment, and property at hazardous materials incidents.
24.	Identify the general routes of entry for human exposure to hazardous materials.
25.	Given the current edition of the Emergency Response Guidebook, identify the three methods for determining the appropriate guide page for a specific hazardous material.

26.	Given the current edition of the Emergency Response Guidebook, identify the two general types of hazards found on each guide page.
27.	Identify the location of both the local emergency response plan and the organization's standard operating procedures.
28.	Given a copy of the current edition of the Emergency Response Guidebook, describe the difference between the protective action distances in the orange-bordered guide pages and the green-bordered pages in the document.
29.	Given the local emergency response plan or the organization's standard operating procedures, identify the role of the first responder at the awareness level during a hazardous materials incident.
30.	Given the local emergency response plan or the organization's standard operating procedures, identify the basic precautions to be taken to protect himself/herself and others in a hazardous materials incident.
31.	Identify the precautions necessary when providing emergency medical care to victims of hazardous materials incidents.
32.	Identify typical ignition sources found at scenes of hazardous materials incidents.
33.	Given the identity of various hazardous materials (name, UN/NA identification number, or type placard), identify the following response information using the current edition of the Emergency Response Guidebook: <ul style="list-style-type: none"> <li>a. Emergency action (fire, spill, or leak and first aid);</li> <li>b. Personal protective equipment necessary; and</li> <li>c. Initial isolation and protective action distances.</li> </ul>
34.	Given the current edition of the Emergency Response Guidebook and the name of a hazardous material, identify the recommended personal protective equipment for the particular incident from the following list of protective equipment: <ul style="list-style-type: none"> <li>a. Street clothing and work uniforms;</li> <li>b. Structural firefighters' protective clothing;</li> <li>c. Positive pressure self-contained breathing apparatus;</li> <li>d. Chemical-protective clothing and equipment.</li> </ul>
35.	Given the current edition of the Emergency Response Guidebook, identify the definitions for each of the following protective actions: <ul style="list-style-type: none"> <li>a. Isolate hazard area and deny entry;</li> <li>b. Evacuate; and</li> <li>c. In-place protection</li> </ul>
36.	Given the current edition of the Emergency Response Guidebook, identify the shapes of recommended initial isolation and protective action zones.
37.	Given the current definition of the Emergency Response Guidebook, describe the difference between small and large spills as found in the table of isolation distances.
38.	Given the current edition of the Emergency Response Guidebook, identify the circumstances under which the following distances are used at a hazardous materials incident: <ul style="list-style-type: none"> <li>a. Table of initial isolation and protective action distances; and</li> <li>b. Isolation distances in the numbered guides.</li> </ul>
39.	Identify the techniques used to isolate the hazard area and deny entry to unauthorized persons at hazardous materials incidents.
40.	Identify the initial notification procedures for hazardous materials incidents in the local emergency response plan or the organization's standard operating procedures.

### **Instructor Equipment List**

Projector screen  
Chalkboard or marker board  
Overhead projector  
Slide projector  
TV/VCR

**Old FRT 235 / FRT 124**

**HAZARDOUS MATERIALS  
OPERATIONS  
FOR FIRST RESPONDERS**

16	0	1.1
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**Course Description**

This course involves training to meet Federal Occupational Safety and Health Administration (OSHA), local occupational health and safety regulations and, U.S. Environmental protection (EPA) requirements.

**Prerequisites: FRS 1014, 1046 or consent**

**Corequisite: None**

**Task List**

1.	Given examples of various hazardous materials containers, identify the general shapes of containers for liquids, gases, and solids.
2.	Given examples of the following tank cars, identify each tank car by type: a. Non-pressure tank cars with and without expansion domes; b. Pressure tank cars; and c. Cryogenic liquid tank cars.
3.	Given examples of the following intermodal tank containers, identify each intermodal tank container by type: a. Non-pressure intermodal tank containers; and b. Pressure intermodal tank containers.
4.	Given examples of the following cargo tanks, identify each cargo tank by type: a. MC-306/DOT 406 cargo tanks; b. MC-307/DOT-407 cargo tanks; c. MC-312/DOT-412 cargo tanks; d. MC-331 cargo tanks; e. MC-338 cargo tanks; and f. Dry bulk cargo tanks.
5.	Given examples of the following facility tanks, identify each fixed facility tank by type: a. Non-pressure facility tanks; and b. Pressure facility tanks.
6.	Given examples of facility and transportation containers, identify the markings that differentiate one container from another.
7.	Given examples of the following transport vehicles and their corresponding shipping papers, identify the vehicle or tank identification marking in all applicable locations: a. Rail transport vehicles, including tank cars; b. Intermodal equipment including tank containers; and c. Highway transport vehicles, including cargo tanks.
8.	Given examples of facility containers, identify the markings indicating container size, product contained, and/or site identification numbers.
9.	Given examples of facility and transportation situations involving hazardous materials, identify the name(s) of the hazardous material(s) in each situation.
10.	Identify the following information on a pipeline marker: a. Product; b. Owner; and c. Emergency telephone number.

11.	Given a pesticide label, identify each of the following pieces of information; then match the piece of information to its significance in surveying the hazardous materials incident: a. Name of 11 pesticide; b. Signal word; c. Pest control product (PCP) number (in Canada); d. Precautionary statement; e. Hazard statement; and f. Active ingredient.
12.	Identify and list the surrounding conditions that should be noted when surveying hazardous materials incidents.
13.	Give examples of ways to verify information obtained from the survey of a hazardous materials incident.
14.	Match the definitions associated with the DOT hazard classes and divisions of hazardous materials, including refrigerated liquefied gases and cryogenic liquids, with the class or division.
15.	Identify two ways to obtain a material safety data sheet (MSDS) in an emergency.
16.	Using a material safety data sheet (MSDS) for a specified material, identify the following hazard and response information: a. Physical and chemical characteristics; b. Physical hazards of the material; c. Health hazards of the material; d. Signs and symptoms of exposure; e. Route of entry; f. Permissible exposure limits; g. Responsible party contact; h. Precautions for safe handling (including hygiene practices, protective measures, procedures for cleanup of spills or leaks); i. Applicable control measures including personal protective equipment; and j. Emergency and first aid procedures.
17.	Identify the following: a. The type of assistance provided by CHEMTREC/CANUTEC; b. How to contact CHEMTREC/CANUTEC; and c. The information to be furnished to CHEMTREC/CANUTEC.
18.	Identify two methods of contacting the manufacturer or shipper to obtain hazard and response information.
19.	Given situations involving known hazardous materials, interpret the hazard and response information obtained for the current edition of the Emergency response Guidebook, material safety data sheets (MSDS), CHEMTREC/CANUTEC, and shipper/manufacturer contacts.
20.	Match the following chemical and physical properties with their significance and impact on the behavior of the container and/or its contents: a. Corrosivity (pH); b. Flammable (explosive) range; c. Flash point; d. Form (solid, liquid, gas); e. Ignition (auto ignition) temperature; f. Reactivity; g. Specific gravity; h. Toxic products of combustion; i. Vapor density; and j. Water solubility.
21.	Identify the differences among the following terms: a. Exposure and hazard; b. Exposure and contamination; and c. Contamination and secondary contamination.
22.	Identify three types of stress that could cause a container system to release its contents.
23.	Identify five ways in which containers can breach.
24.	Identify four ways in which containers can release their contents.

25.	Identify at least four dispersion patterns that can be created upon release of a hazardous material.
26.	Identify the three general time frames for predicting the length of time that exposures may be in contact with hazardous materials in an endangered area.
27.	Identify the health and physical hazards that could cause harm.
28.	Identify the health hazards associated with the following terms: a. Asphyxiant; b. Irritant/corrosive; c. Sensitizer/allergen; d. Convulsant; and e. Chronic health hazard.
29.	Identify a resource for determining the size of an endangered area of a hazardous materials incident.
30.	Given the dimensions of the endangered area and the surrounding conditions at a hazardous materials incident, estimate the number and type of exposures within that endangered area.
31.	Identify resources available for determining the concentrations of a released hazardous material within an endangered area.
32.	Identify the factors for determining the extent of physical, health, and safety hazards within the endangered area of a hazardous materials incident given the concentrations of the released material.
33.	Identify the steps for determining the number of exposures that could be saved by the first responder with the resources provided by the authority having jurisdiction and operating in a defensive fashion, given an analysis of a hazardous materials problem and the exposures already lost.
34.	Describe the steps for determining defensive response objectives given an analysis of a hazardous material incident.
35.	Identify the defensive options to accomplish a given response objective.
36.	Identify the purpose for, and the procedures, equipment, and safety precautions used with each of the following control techniques: a. Absorption; b. Dike, dam, diversion, retention; c. Dilution; d. Vapor dispersion; and e. Vapor suppression.
37.	Identify the appropriate respiratory protection required for a given defensive option.
38.	Identify the three types of respiratory protection and the advantages and limitations presented by the use of each at hazardous materials incidents.
39.	Identify the required physical capabilities and limitations of personnel working in positive pressure self-contained breathing apparatus.
40.	Identify the appropriate personal protective equipment required for a given defensive option.
41.	Identify skin contact hazards encountered at hazardous materials incidents.
42.	Identify the purpose, advantages and limitations of the following levels of protective clothing at hazardous materials incidents: a. Structural firefighting clothing; b. High temperature-protective clothing; and c. Chemical-protective clothing. 1. Liquid splash-protective clothing; and 2. Vapor-protective clothing.
43.	Identify ways that personnel, personal protective equipment, apparatus, too and equipment become contaminated.

44.	Describe how the potential for secondary contamination determines the need for emergency decontamination procedures.
45.	Identify the purpose of emergency decontamination procedures at hazardous materials incidents.
46.	Identify the advantages and limitations of emergency decontamination procedures.
47.	Identify the procedures for establishing scene control through control zones.
48.	Identify the criteria for determining the locations of the control zones at hazardous materials incidents.
49.	Identify the basic techniques for the following protective actions at hazardous materials incidents: a. Evacuation, and b. In-place protection.
50.	Identify the considerations associated with locating emergency decontamination areas.
51.	Demonstrate the ability to perform emergency decontamination.
52.	Identify the items to be considered in a safety briefing prior to allowing personnel to work on a hazardous materials incident.
53.	Identify the role of the first responder at the operations level during hazardous materials incidents as specified in the local emergency response plan and the organizations standard operating procedures.
54.	Identify the levels of hazardous materials incidents as defined in the local emergency response plan.
55.	Identify the purpose, need, benefits and elements of an incident management system (IMS) at hazardous materials incidents.
56.	Identify the considerations for determining the location of the command post for a hazardous materials incident.
57.	Identify the procedures for requesting additional resources at a hazardous materials incident.
58.	Identify the responsibilities of the safety officer.
59.	Identify the importance of the buddy system in implementing the planned defensive options.
60.	Identify the importance of the back-up personnel in implementing the planned defensive options.
61.	Identify the safety precautions to be observed when approaching and working at hazardous materials incidents.
62.	Identify the symptoms of heat and cold stress.
63.	Identify the physical capabilities required for and the limitations of personnel working in the personal protective equipment as provided by the authority having jurisdiction.
64.	Match the function of the operational components of the positive pressure self-contained breathing apparatus provided the hazardous materials responder to the name of the component.
65.	Describe the appropriate tools and equipment, and describe how to perform the following defensive control activities: a. Absorption; b. Dike, dam, diversion and retention; c. Dilution; d. Vapor dispersion; and e. Vapor suppression.
66.	Identify the location and use of the mechanical, hydraulic and air emergency remote shutoff devices as found on MC-306/DOT 406 and MC-331 cargo tanks.
67.	Describe the objectives and dangers or search and rescue missions at hazardous materials incidents.
68.	Identify the considerations for evaluating whether defensive options are effective in accomplishing the objectives.
69.	Describe the circumstances under which it would be prudent to pull back from a hazardous materials incident.
70.	Identify the methods for communicating the status of the planned response to the incident commander through the normal chain of command.
71.	Identify the methods for immediate notification of the incident commander and other response personnel about critical emergency conditions at the incident.

### Instructor Equipment List

Projector screen  
Chalkboard or marker board  
Overhead projector  
Slide projector

TV/VCR  
DOT Guidebooks  
Sample placards

**Old FRT Number: 240 / FRT 125**

Lecture	Skill	Fractional Credit
3	0	0.2

**Course Description**

This course is designed to give the firefighter a basic understanding of how sprinkler systems are designed and how they operate.

**Prerequisites:** FRS 1041 or consent

**Corequisite:**

**Task List**

1.	Define the value of automatic sprinklers in providing safety to the occupants of a structure.
2.	Identify a fire department sprinkler connection and water motor alarm.
3.	Connect hose line(s) to a fire department connection of a sprinkler or standpipe system.
4.	Explain how the automatic sprinkler head activates and releases water.
5.	Stop the flow of water from a sprinkler head using a wedge or stopper.
6.	Identify the main control valve on an automatic sprinkler system.
7.	Operate a main control valve on an automatic sprinkler system from "open" to "closed" and then back to "open".

**Lecture**

**Instructor Equipment List**

Projection screen  
Chalkboard or marker board  
Overhead projector  
Slide projector  
TV/VCR

**Skills**

**Instructor Equipment List**

Pumper sprinkler systems or  
Mock up sprinkler  
Distribution equipment/tools  
Hose and hose appliances

**Student Equipment List**

Personal protective clothing

**Old FRT Number: 265 / FRT 126**