



# Pennsylvania State Fire Academy

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## Minimum Standard for Accreditation (MSA)

July 1992

**Course Title:** Flammable Liquid Fire Fighting (FLBU)

**Length of Course:** 16 Hours

**Lecture/Lab Breakdown:** 10/6

**Prerequisites:** EAM, UPRR, IAFF, HISI

**Referenced Texts:** NFPA Fire Protection Guide on Hazardous Materials; United States Department of Transportation Emergency Response Guide Book; Meidl: Flammable Hazardous Materials (Glencoe Press); NFPA Fire Protection Handbook, 18th edition

**Course Goal:** The student will learn the parameters of and the procedures necessary to attack and extinguish fires involving flammable liquids.

**Description of Course:** This course will introduce the student to basic fire chemistry, characteristics of flammable liquids, parameters of combustion, and extinguishment techniques using dry chemical, water, and foam on live flammable liquid fires.

**Description of Methodology to be used: (Brief)** A combination of lecture, discussion, demonstration, and supervised practice is used.

**Student Equipment/Supply Needs:** Pen/Pencil, Notebook suitable for Field Use, Fire Fighters Turn Out Gear, S.C.B.A.

**Equipment/Audiovisual/Supply requirements:** Classroom with adequate seating, Chalkboard, Slide Projector, VCR/Monitor, Overhead Projector as appropriate for Audiovisuals selected. A large number of audiovisuals are available which are appropriate to this subject matter. The instructor or educational resource facility is encouraged to select as appropriate. Pit or pan approximately six (6) square feet for extinguisher exercises. A pit approximately 200 square feet or larger for hose line exercises. Sufficient extinguishers "Class B" for student use. 2 Pumpers, sufficient 1-1/2 inch or 1-3/4 inch hose for four (4) lines. Water source of 500 GPM.

### **COURSE OUTLINE** **(General - Not Detailed)**

<b><u>Time</u></b>	<b><u>Content</u></b>	<b><u>Instructor Notes</u></b>
:30	Registration & Introduction	Lec.
1:30	Science of Fire, Combustion; Extinguishment	Lec.
Continued		

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**COURSE OUTLINE continued**  
**(General - Not Detailed)**

<b><u>Time</u></b>	<b><u>Content</u></b>	<b><u>Instructor Notes</u></b>
1:00	Science of fire, Chemistry & Tetrahedron	Lec.
1:00	Portable Extinguishers/Mechanics of Operation; Rating System	Lec.
1:30	Liquid Fuels/Characteristics & Fire Behavior	Lec.
1:00	Liquid Fuels/Fire Protection & Suppression	Lec.
1:00	Fluid Containers; Vapor Pressures & Bleves	Lec.
1:30	Principles of Foam & Foam Equipment	Lec.
1:00	Hazardous Substances Identification Systems	Lec.
2:00	Live Fire Exercises with Portable Extinguishers	Lec.
:30	Hose Line Handling Procedures	Lab.
2:00	Live Fire Exercises with Water Fog	Lab.
1:00	Live Fire Exercises with Foam	Lab.
:30	Clean Up & Service	Lab.

**Competency Evaluation Mechanism (Brief description-attach copy):** Students will be evaluated during practical exercise.

**Course Objectives (specific):** The student will:

1. understand the fire triangle and its application to fire extinguishment.
2. understand the fire tetrahedron and the concept of fire extinguishment by radical quenching.
3. understand the principles of operation of various types of portable extinguishers, and the underwriters laboratories rating systems.
4. understand the characteristics of various liquid fuels including flash point, ignition temp., boiling point, flammable range, vapor pressure, vapor density, specific gravity, miscibility, solubility, and heat output, and their influence on fire behavior.
5. understand the principles of fire prevention in storage or spill situations and the procedures necessary to suppress fires in flammable liquids.
6. understand fire fighting foams, their application to flammable liquids, and methods of generating foam.
7. attack and extinguish a small flammable liquid fire using portable extinguishers.
8. attack and extinguish a large scale flammable liquid fire using water fog from handline.
9. attack and extinguish a large scale flammable liquid fire using foam from hand lines.

Continued

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Flammable Liquid Fire Fighting (FLBU)

10. understand the concept of vapor pressure and bleves, and the effect of heat on container integrity.
11. understand two marking systems for identifying flammable or combustible liquids in transportation and/or storage.