

Course Description

FFP1000 | Introduction to Fire Science | 3.00 credits

This course provides an overview of fire protection and emergency services; career opportunities in fire protection and related fields; culture and history of emergency services; fire loss analysis; organization and function of public and private fire protection services; fire departments as part of local government; laws and regulations affecting the fire service; fire service nomenclature; specific fire protection functions; basic fire chemistry and physics; introduction to fire protection systems; introduction to strategy and tactics; and life safety initiatives.

Course Competencies:

Competency 1: Students will explore the theories and fundamentals of how and why fires start, spread, and how they are controlled by:

1. Identifying the physical properties of the three states of matter
2. Describing the components of fire
3. Recalling the physical and chemical properties of fire
4. Describing the basic terms and concepts associated with the chemistry and dynamics of fire and combustion
5. Summarizing the characteristics of water as a fire suppression agent

Competency 2: Students will understand the history and philosophy of fire prevention, including code enforcement, public information, organization and operation of a fire prevention bureau, utilization of fire codes, identification and correction of fire hazards, and the relationships of fire prevention with built-in fire protection systems, fire investigation, and fire and life-safety education by:

1. Analyzing the need, responsibilities, and importance of fire prevention as part of an overall mix of fire protection
2. Discussing minimum professional qualifications at the state and national level for Fire Inspector, Fire Investigator, and Public Educator
3. Describing the history and philosophy of fire prevention

Competency 3: Students will describe the features of design and operation of fire alarm systems, water-based fire suppression systems, special hazard fire suppression systems, and water supply for fire protection and portable fire extinguishers by:

1. Explaining the benefits of fire protection systems in various types of structures
2. Analyzing the elements of a public water supply system
3. Explaining why water is a widely used extinguishing agent and how water extinguishes fires
4. Identifying the different types and components of sprinkler, standpipe and foam systems
5. Analyzing different types of fire and smoke detectors and how they detect fire
6. Explaining the operation and appropriate application for the different types of portable fire extinguishing systems

Competency 4: Students will discuss fire protection; career opportunities in fire protection and related fields; philosophy and history of fire protection/service; fire loss analysis; organization, management, and function of public and private fire protection services; fire departments as part of local government; laws and regulations affecting the fire service; fire service nomenclature; specific fire protection functions; and introduction to fire strategy and tactics by:

1. Discussing the components of the history and philosophy of the modern-day fire service
2. Describing the fire service training requirements; standards and laws associated with training; and the value of higher education in the fire service
3. Identifying local, regional, state, and national organizations that provide emergency response service and

their interrelation to how they impact policies rules, training, and laws

4. Identifying fire protection and emergency-service careers in both the public and in the private sector
5. Describing the scope, purpose, and organizational structure of fire and emergency services organizations
6. Describing the common types of fire and emergency services facilities, equipment, and apparatus

Competency 5: Students will examine the organization and management of a fire department and the relationship of government agencies to the fire service by:

1. Listing employment opportunities in public safety as well as the prerequisites required to be considered for the positions in the field
2. Identifying Public Safety career development practices
3. Describing the concepts of span and control, effective delegation, and division of labor-management principles and concepts
4. Recognizing appropriate appraising and disciplinary actions and the impact on employee behavior
5. Identifying roles and responsibilities of fire department personnel and management/leadership positions
6. Identifying the roles of company officers in current Incident Command/ Management systems to include: ICS, NIMS, and Unified Command

Competency 6: Students will define risk evaluation and control procedures for fire stations, training sites, emergency vehicles, and emergency situations involving fire, EMS, hazardous materials, terrorism, and technical rescue by:

1. Identifying occupational wellness and safety programs for the emergency services
2. Describing the distinction between standards and regulations
3. Identifying regulations and standards that impact health and safety programs
4. Identifying the concepts of risk identification and risk evaluation
5. Describe the considerations for safety while training
6. Describing the considerations for safety while training
7. Defining incident priorities and how they relate to health and safety
8. Describing the relationship of incident management as it relates to health and safety
9. Describing the methods of controlling hazards associated with responding to EMS, hazmat, terrorism-related events, and technical rescue incidents
10. Describing the responsibilities of individual responders, supervisors, safety officers, incident commanders, safety program managers, safety committees and fire department managers as they relate to health and safety programs
11. Describing the responsibility of a safety officer as established within the Incident Command System (ICS)

Competency 7: Students will discuss the federal, state, and local laws that regulate emergency services, national standards influencing emergency services, the standard of care, tort, liability, and a review of court cases by:

1. Discussing the different types of laws, their basic differences, and how the law functions in society
2. Describing federal, state, and local laws, which regulate or influence emergency services
3. Explaining the role and purpose of national codes and standards concerning their legal influence on public safety
4. Discussing the organization and legal structure of the fire department
5. Analyzing the legalities of public safety employment entrance requirements, residency, grooming and drug testing

Competency 8: Students will analyze the principles of fire control through utilization of personnel, equipment, and extinguishing agents on the fire ground by:

1. Identifying steps taken during size-up and recognizing the order in which they will take place at an incident
2. Describing concepts for the effectiveness of fire ground communications
3. Defining the main functions within an IMS system and how they interrelate during an incident
4. Identifying concepts for managing resources for expanding incidents

Competency 9: Students will comprehend basic chemistry relating to the categories of hazardous materials including problems of recognition, reactivity, and health encountered by firefighters by:

1. Summarizing the basic chemistry involved with common hydrocarbon derivatives
2. Explaining basic chemical and physical properties of gases, liquids, and solids, and how to predict the behavior of a substance under adverse conditions

Learning Outcomes:

- Communicate effectively using listening, speaking, reading, and writing skills
- Solve problems using critical and creative thinking and scientific reasoning
- Create strategies that can be used to fulfill personal, civic, and social responsibilities
- Demonstrate knowledge of ethical thinking and its application to issues in society