

# Fire Science

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## Introduction to Fire Science

### FIRE 1100 - 3 Credits

Introduction to the field of fire protection. History, chemistry, fire problems, fire protection, equipment, organization and fire service careers are discussed. (3 lecture hours)

## Basic Operations Firefighter- Mod A

### FIRE 1101 - 6 Credits

This is a hybrid course that provides partial training toward Basic Operations Firefighter Certification by the Office of the State Fire Marshal. Topics discussed include orientation/organization, fire behavior, building construction, safety, communication, self contained breathing apparatus (SCBA) extinguisher training, ropes and knots, hazardous material operations level, and the national incident management system (NIMS) 100 and 700 Course. Completion qualifies students for the State Fire Marshal Certification Test Module A. Prerequisite: As Per the current Office of the State Fire Marshal Illinois Administrative code 141.300-a. Student must be engaged in firefighting and a member of an organized Illinois fire department or Fire Brigade. Student must provide National Fire Protection Association (NFPA) compliant protection clothing and self-contained breathing apparatus (SCBA) in accordance with NFPA safety standards. Students must be clean-shaven. (3 lecture hours, 6 lab hours)

## Basic Operations Firefighter-B

### FIRE 1102 - 6 Credits

Continuation of Fire 1101. This is a hybrid course that provides partial training toward Basic Operations Firefighter Certification by the Office of the State Fire Marshal. Topics discussed include ladders, hose and appliances, nozzles and fire streams, water supply, forcible entry, ventilation, hazardous material operations level continuation, fire service vehicle operator. Completion qualifies students for the State Fire Marshal Certification Test Module B. Prerequisite: Fire Science 1101 or equivalent and as Per the current Office of the State Fire Marshal Illinois Administrative code 141.300-a. Student must be engaged in firefighting and a member of an organized Illinois fire department or Fire Brigade. Student must provide National Fire Protection Association (NFPA) compliant protection clothing and self-contained breathing apparatus (SCBA) in accordance with NFPA safety standards. Students must be clean-shaven. (3 lecture hours, 6 lab hours)

## Basic Operations Firefighter-C

### FIRE 1103 - 6 Credits

Continuation of FIRE 1102. This course is a hybrid that provides partial training toward Basic Operations Firefighter Certification by the Office of the State Fire Marshal. Topics discussed

include search and rescue, fire control, loss control, protecting evidence, fire detection and alarm systems, prevention and public education, wild land and ground cover firefighting, firefighter survival, technical rescue awareness, completion of hazardous material operations level, and courage to be safe. Course completion qualifies students for the State Fire Marshal Certification Test Module C. Prerequisite: Fire Science 1102 with a grade of C or better or equivalent and as Per the current Office of the State Fire Marshal Illinois Administrative code 141.300-a. Student must be engaged in firefighting and a member of an organized Illinois fire department or Fire Brigade. Student must provide National Fire Protection Association (NFPA) compliant protection clothing and self-contained breathing apparatus (SCBA) in accordance with NFPA safety standards. Students must be clean-shaven. (3 lecture hours, 6 lab hours)

## **Advanced Technician Firefighter**

### **FIRE 1104 - 4 Credits**

Continuation of FIRE 1101, FIRE 1102, FIRE 1103 sequence. The Advanced Technician Firefighter is considered by Office of the State Fire Marshal (OSFM) to be the senior technical level in the fire suppression career ladder. A state certified examination will be administered to determine qualification. Prerequisite: Fire Science 1101, Fire Science 1102, and Fire Science 1103, or certification as a Firefighter II or Basic Operations Firefighter or consent of instructor (2 lecture hours, 4 lab hours)

## **Fire Prevention I**

### **FIRE 1111 - 3 Credits**

Study of the causes of fires and the major categories of fire hazards. Analysis of heat source, fuel supply and oxygen supply hazards. Emphasis is placed on recognition and control of all fire hazards. Prerequisite: Fire Science 1100 or equivalent or consent of instructor (3 lecture hours)

## **Fire Prevention Officer Module A**

### **FIRE 1113 - 3 Credits**

Designed for personnel whose duties are inspecting structures, conducting basic fire investigations and performing fire prevention education activities. (3 lecture hours)

## **Fire Prevention Officer Module B**

### **FIRE 1114 - 3 Credits**

Continuation of Fire Science 1113, including knowledge of fire codes used in fire prevention and education. Prerequisite: Fire Science 1113 with a grade of C or better or consent of instructor (3 lecture hours)

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## Fire Prevention Officer Module C

FIRE 1115 - 3 Credits

Continuation of Fire Science 1114 including development of student skills in public education and fire investigation. Prerequisite: Fire Science 1114 with a grade of C or better or consent of instructor (3 lecture hours)

## Codes and Laws

FIRE 1120 - 3 Credits

Study supplemented by plan reviews of codes and standards that relate to fire prevention and life safety in structures and includes the relationship between building officials and fire prevention personnel. (3 lecture hours)

## Independent Study

FIRE 1840 - 1-4 Credits

Exploration and analysis of topics within the discipline to meet individual student-defined course description, goals, objectives, topical outline and methods of evaluation in coordination with and approved by the instructor. This course may be taken four times for credit as long as different topics are selected. Prerequisite: Consent of instructor is required. (1 to 4 lecture hours)

## Extinguishing and Alarm Systems

FIRE 2201 - 3 Credits

Introductory course to familiarize public and private fire protection personnel with various types of fire protection systems. (2 lecture hours, 2 lab hours)

## Fire Apparatus

FIRE 2210 - 3 Credits

Study of the design, function and operating characteristics of motorized fire apparatus, including evaluation of custom and commercial chassis, power plant and fire pumps, and cost/benefit approach to apparatus purchasing. (3 lecture hours)

## Fire Apparatus Engineer

FIRE 2211 - 3 Credits

Continuation of Fire Science 2210. Application and skills necessary to qualify for Fire Apparatus Engineer/Driver/Operator positions. Meets or exceeds the requirements of National Fire Protection Association (NFPA) 1002, Fire Apparatus Drive/ Operator Professional Qualifications. Prerequisite: Fire Science 2210 or consent of instructor (2 lecture hours, 2 lab hours)

## **Principles/Fire Behavior and Combustion**

**FIRE 2213 - 3 Credits**

Introduction to the broad range of factors that cause a fire. The basics of fire chemistry and physics, ignition, fire growth, spread, and suppression are covered. Prerequisite: Fire Science 1100 with a grade of C or better or equivalent or consent of instructor. (3 lecture hours)

## **Building Construction**

**FIRE 2215 - 3 Credits**

Provides the components of building construction related to firefighter and life safety. Elements of construction and design of structures are key factors when inspecting buildings, pre-planning fire operations, and operating at emergencies. Prerequisite: Fire Science 1100 with a grade of C or better or equivalent or Fire Science 1103 with a grade of C or better or equivalent or consent of instructor. (3 lecture hours)

## **Principles/Firefighter Safety & Survival**

**FIRE 2218 - 3 Credits**

Basic principles and history related to the national firefighter life safety initiatives, focusing on the need for cultural and behavior change throughout the emergency service. Prerequisite: Fire Science 1100 with a grade of C or better or equivalent or consent of instructor. (3 lecture hours)

## **Tactics I**

**FIRE 2221 - 3 Credits**

Principles of coordinating fire ground tactics by utilization of manpower and equipment. Various fire situations presented for analysis and evaluation. Prerequisite: Fire Science 1100 or consent of instructor (3 lecture hours)

## **Tactics II**

**FIRE 2222 - 3 Credits**

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Designed for the Fire Officer responsible for commanding a fire or emergency scene involving multiple companies. Subject areas include strategic concepts in fire fighting, duties and responsibilities of command officers, incident command system (scene, manpower, apparatus, and Rapid Intervention Teams (RIT) management), multi-company operations, disasters, high-rise operations, critical incident stress, and tactical exercises. Prerequisite: Fire Science 2221 with a grade of C or better or equivalent or consent of instructor (3 lecture hours)

## Hazardous Materials Awareness

### FIRE 2230 - 3 Credits

First responders will gain the knowledge and skills associated with hazardous substances, the risks associated with them, and the role of the emergency responder. Review of the U.S. Department of Transportation Emergency Guidebook and other resources, and appropriate notifications to the community. After successful completion of this course, first responders will be allowed to take the Office of the State Fire Marshal (OSFM) certification exam. Prerequisite: Fire Science 1100 with a grade of C or better or equivalent or consent of instructor (3 lecture hours)

## Hazardous Materials Operations

### FIRE 2231 - 3 Credits

Intended for members of a fire department or other first responder agency. Includes basic hazards and risk-assessment techniques for Haz-mat and Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) environments. Perform basic control, containment and/or confinement operations. After successful completion of this course, first responders will be allowed to take the Office of the State Fire Marshal (OSFM) certification exam. Prerequisite: Fire Science 2230 with a grade of C or better, or equivalent or consent of instructor (2 lecture hours, 2 lab hours)

## Hazardous Materials Technician A

### FIRE 2232 - 3 Credits

Laws regulating training requirements for the Hazardous Materials Technician A as set forth by Occupational Safety and Health Act (OSHA), Illinois Department of Labor (IDOL), Environmental Protection Agency (EPA), and the National Fire Protection Association (NFPA). Identifies a hazardous material incident, determines the magnitude of the problem, identifies and interprets hazard response information through the use of monitoring equipment. Prerequisites: Fire Science 1104 and Fire Science 2231 or state equivalents or consent of instructor (2 lecture hours, 2 lab hours)

## Hazardous Materials Technician B

### FIRE 2233 - 3 Credits

Continuation of Hazardous Materials Technician A involves the analysis and application of rescue procedures, tactics and strategies. Both Hazardous Materials A and B are required to satisfy National Fire Protection Association (NFPA) 472, Department of Labor (DOL), Occupational Safety and Health Act (OSHA), Environmental Protection Agency (EPA), and requirements of 29 Code of Federal Requirements (CFR) 1910.120. Prerequisite: Fire Science 1104 and Fire Science 2232 or state equivalents or consent of instructor (2 lecture hours, 2 lab hours)

## **Industrial Safety**

### **FIRE 2240 - 3 Credits**

Precautions and safeguards essential for protection of lives and property in various types of occupational establishments. (3 lecture hours)

## **Fire Leadership I**

### **FIRE 2251 - 3 Credits**

Fire fighting personnel will be introduced to management, supervision, and leadership skills  
Prerequisite: Fire Science 1103 with a grade of C or better or equivalent or consent of instructor (3 lecture hours)

## **Fire Leadership II**

### **FIRE 2252 - 3 Credits**

Continuation of FIRE 2251 with emphasis placed on application of principles. Prerequisite: Fire Science 2251 or consent of instructor (3 lecture hours)

## **Fire Leadership III**

### **FIRE 2253 - 3 Credits**

Continuation of FIRE 2252 analyzing and organizing personnel assignments. Developing personnel policies, preparing capital budgets and fiscal financing, developing public relations programs, and developing management systems for the fire service. Prerequisite: Fire Science 2252 or consent of instructor (3 lecture hours)

## **Fire Leadership IV**

### **FIRE 2254 - 3 Credits**

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Continuation of FIRE-2253 advanced personnel management, organizing health and safety programs, and labor relations. Prerequisite: Fire Science 2253 or consent of instructor (3 lecture hours)

## Fire Service Instructor I

FIRE 2255 - 3 Credits

Fundamentals as applied to in-service training for fire department personnel. The course meets or exceeds the requirements of the Office of the Illinois State Fire Marshals Division of Career Development and Public Education. (2 lecture hours, 2 lab hours)

## Fire Service Instructor II

FIRE 2256 - 3 Credits

Curriculum planning, facilities layout and advanced teaching principles. The course meets or exceeds the requirements of the Office of the Illinois State Fire Marshals Division of Career Development and Public Education. Prerequisite: Fire Science 2255 or consent of instructor (2 lecture hours, 2 lab hours)

## Fire Investigation

FIRE 2260 - 3 Credits

Techniques and procedures for the investigation of fires including the origin and causes of fires, fire behavior, chemistry of fire, structural fire patterns, detection of arson, role of the investigator, and role of the crime laboratory. Prerequisite: Fire Science 1100 or consent of instructor (3 lecture hours)

## Fire/Arson Investigation I

FIRE 2261 - 3 Credits

Designed for fire investigators to gain knowledge in scene examination, evidence investigation, fire protection technology and sketching. Prerequisite: Fire Science 2260 or consent of instructor (3 lecture hours)

## Fire/Arson Investigation II

FIRE 2262 - 3 Credits

Continuation of FIRE-2261 includes motives, communications, case presentations and explosives. Prerequisite: Fire Science 2261 or consent of instructor (3 lecture hours)

## Fire/Arson Investigation III

### FIRE 2263 - 3 Credits

Continuation of FIRE-2262 includes crime scene photography, evidence collection, accelerant detection canines, arson for profit, and search and seizure. Prerequisite: Fire Science 2262 or consent of instructor (3 lecture hours)

## Emergency Medical Technician (EMT)

### FIRE 2271 - 10 Credits

Course includes emergency care skills, including management of bleeding, fractures, airway obstruction, cardiac arrest and emergency childbirth. Also addresses patient assessment skills and the use and maintenance of common emergency equipment. Completion of this course with a grade of B or better qualifies students to sit for the state or national exam. Prerequisite: Must be at least 18 years old with a high school diploma or equivalent, and pass the Writing Essay Placement Test Score-Category One and Reading Placement Test Score-Category One or Fire Science 2283 with a grade of B or better. Admission to program is required. (5 lecture hours, 10 lab hours)

## Paramedic Transition

### FIRE 2272 - 3 Credits

Transition course for Emergency Medical Technician-Basic (EMT) seeking Paramedic certification. Prerequisite: Current certification as an EMT-B or consent of instructor (2 lecture hours, 2 lab hours)

## Vehicle and Machinery Operations

### FIRE 2273 - 3 Credits

Introductory step in the acquisition of all knowledge and skills required in the various specialties of extrication. Prerequisite: Fire Science 1103 or consent of instructor (2 lecture hours, 2 lab hours)

## Paramedic I

### FIRE 2274 - 8 Credits

Introduction to advanced emergency medical services including the role of the paramedic and the ethical and legal aspects that influence field practice skills basic to the care of all patients. Prerequisite: Fire Science 2271, consent of instructor and acceptance by a hospital; program admission approval required. (4 lecture hours, 8 lab hours)



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## Paramedic II

### FIRE 2275 - 8 Credits

Continuation of FIRE-2274 integration of previously learned principles and skills and the introduction of new theory, preparation of the learner for expanded medical responsibilities. Further emphasis on the pharmacological agents and adjunctive equipment utilized in pre-hospital care. Prerequisite: Fire Science 2274 or consent of instructor (4 lecture hours, 8 lab hours)

## Paramedic III

### FIRE 2276 - 8 Credits

Continuation of Fire Science 2275 practice of paramedicine in the care of patients with cardiovascular disorders. In-depth study in anatomy and pathophysiology relevant to cardiovascular disorders, arrhythmia identification and subsequent treatment. Experiences in telemetry monitoring, emergency department, and intensive care unit rotations. Prerequisite: Fire Science 2275 or consent of instructor (4 lecture hours, 8 lab hours)

## Paramedic IV

### FIRE 2277 - 8 Credits

Continuation of Fire Science 2276 skills and fundamentals for the care of the patient in medical or traumatic emergencies. Emphasis is placed on development of assessment practices and the integration of appropriate treatment modalities in a pre-hospital setting. Prerequisite: Fire Science 2276 or consent of instructor (4 lecture hours, 8 lab hours)

## EMT Instructor Training

### FIRE 2282 - 3 Credits

Designed to give the Emergency Medical Technician-Basic (EMT-B) an overview of the educational process for the adult learner. Prerequisite: Fire Science 2271, consent of instructor, and approval of Illinois Department of Public Health (IDPH) (2 lecture hours, 2 lab hours)

## Emergency Medical Responder

### FIRE 2283 - 3 Credits

This course introduces students to pre-hospital and emergency medicine training. Includes basic medical treatments and practical skills in emergency medical care. During the course, students have the opportunity to earn their cardiopulmonary resuscitation credentials and complete the state-approved cognitive and psychomotor exams. (2 lecture hours, 2 lab hours)

## Trauma Assessment

FIRE 2285 - 3 Credits

Provides licensed Emergency Medical Technicians (EMT) with knowledge of acute, critical changes in physiological and psychological signs and symptoms in pre-hospital emergency care of pediatric, adult, and geriatric patients. Prerequisite: Fire Science 2271 with a grade of C or better or equivalent or consent of instructor (2 lecture hours, 2 lab hours)

## Pediatric Education for Prehospital Prof

FIRE 2286 - 3 Credits

Develop the skills and knowledge of the prehospital professional in the care of ill and injured children. Prerequisite: Fire Science 2271 with a grade of C or better or consent of instructor (2 lecture hours, 2 lab hours)

## Advanced Selected Topics

FIRE 2820 - 1-4 Credits

Advanced exploration and analysis of selected topics with a specific theme indicated by course title listed in college Class Schedule. (1 to 3 lecture hours, 1 to 3 lab hours)

## Internship (Career & Technical Ed)yCoop Ed/Internship Occup

FIRE 2860 - 1-4 Credits

Course requires participation in Career and Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the Associate Dean from the academic discipline where the student is planning to earn credit.

## Internship Advanced (Career & Tech Ed)

FIRE 2865 - 1-4 Credits

Continuation of Internship (Career and Technical Education). Course requires participation in Career & Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide

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appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the Associate Dean from the academic discipline where the student is planning to earn credit.