Introduction to Fire Science

Introduction to Fire Science is a one-credit course that provides students with competencies related to a cluster of public service job preparatory programs and helps students develop knowledge and skills necessary for success and advancement in a specialized public service job preparatory program. Students study possible careers, employability skills, leadership, basic first aid, bloodborne pathogens, fire management services, legal services, and law enforcement services.

Content standards in this course are not intended to serve as the entire curriculum. Teachers are encouraged to expand the curriculum beyond the minimum required content to accommodate specific community interests and utilize local resources. This course encourages critical thinking, use of the scientific method, integration of technology, development of student leadership skills, and application of knowledge and skills related to practical questions and problems. Safety concepts are integrated into instruction to the maximum extent possible.

Career and technical student organizations are integral, cocurricular components of each career and technical education course. These organizations serve as a means to enhance classroom instruction while helping students develop leadership abilities, expand workplace-readiness skills, and broaden opportunities for personal and professional growth.

Career Opportunities

Students will:

1. Describe career opportunities in fire science.

Safety

2. Identify safety practices in fire science.

Fire Behavior

3. Describe the fire triangle.
   - Explaining classes of fire, including associated hazards
   - Identifying products of combustion commonly found in structural fires
   - Explaining units of heat measurement, including British Thermal Unit (BTU), Fahrenheit, Celsius, and calorie

Communication Skills

4. Identify fire service communication skills.
   - Reporting observations in written or oral form
Communication Equipment

5. Describe the use of emergency communication equipment.
   - Defining fire department radio communication procedures for routine and emergency traffic situations

Portable Fire Extinguishers

6. Demonstrate the use of portable fire extinguishers.
   - Identifying the classification of types of fire as they relate to the use of portable extinguishers

Structural Design

7. Identify factors that increase hazards to firefighters in buildings being constructed, renovated, or demolished.
   - Listing signs of potential building collapse
   - Describing actions to be taken when imminent building collapse is suspected

Personal Protective Equipment

8. Explain the use of personal protective equipment in fire science.
   - Describing hazardous atmospheres that require the firefighter to wear a Self-Contained Breathing Apparatus (SCBA)
   - Describing maintenance procedures for emergency equipment

Ropes and Knots

9. Compare types of ropes and knots, including applications in fire science.

Search and Rescue

10. Identify search, rescue, and extrication techniques in fire science.

Ground Ladders

11. Demonstrate the use of ground ladders.
    - Labeling parts of a fire service ladder
    - Identifying types of fire service ground ladders
Ventilation

12. Assess ventilation systems for fire hazards.
   - Matching types of ventilation systems to their descriptions
   - Identifying signs of potential back draft

Fundamentals of a Water Supply System

13. Describe types of water supply systems.
    - Listing recommended water distribution system pipe sizes for residential, business, and industrial long mains
    - Identifying types of water main valves
    - Distinguishing between wet-barrel and dry-barrel fire hydrants

Fire Hose

14. Identify the nozzle and hose for a given fire situation.

Water Streams

15. Assess the importance of a water stream when fighting fires.
    - Explaining guidelines for maintaining water pressure when fighting fires
    - Explaining discharge rates for low-volume, hand-line, and master water streams