

Introduction to Fire Science

Course Design

2005-2006

Course Information

Organization	Eastern Arizona College
Division	Allied Health
Course Number	FSC 100
Title	Introduction to Fire Science
Credits	3
Developed by	B. Stephen Cullen, Ph.D. & Harry Swanson
Lecture/Lab Ratio	3 Lecture/0 Lab
Transfer Status	Non-transferable
Activity Course	No
CIP Code	43.0203
Assessment Mode	Pre/Post Test (100 Questions/100 Points)
Semester Taught	Upon Request
GE Category	None
Separate Lab	No
Awareness Course	No
Intensive Writing Course	No

Prerequisites

None

Educational Value

This course is designed for those who aspire to enter the profession of fire fighting.

Description

The primary intent of this course is to acquaint new firefighters with history, traditions, terminology, organization and operation of the service.

Supplies

Access to Computer

Access to Internet

Notebook

Competencies and Performance Standards

1. Discuss and describe the scope, purpose and organizational structure of fire and emergency service.

Performance Standards

Student will demonstrate competence by

- o identifying the different types of fire service positions.
- o understanding the recruitment, application, and selection process.
- o describing the major organizations that provide emergency responses.
- o understanding the primary mission of the fire service.
- o identifying the six objectives of successful fire fighting.
- o defining roles of responsibility for the major roles of fire suppression.

Student performance will be successful when he/she

- o lists and defines the four basic types of fire service positions including, career, volunteer, combination, paid-one-call, and public safety departments.
- o outlines in writing the firefighter selection process including recruitment, application, written examination, physical ability test and oral interviews.
- o recites the primary mission of the fire service.
- o list and defines the six objectives of successful fire fighting including rescue, exposure protection, fire confinement, fire extinguishment, salvage and overhaul, and fire cause determination.
- o lists and outlines in writing the eight major personnel positions of fire suppression personnel including firefighter, fire apparatus driver/operator, company officer, battalion or district chief, safety officer, public information officer, assistant or deputy chief, and fire chief. Student will also draw an organization chart to support response.

2. Identify and explain the components of fire prevention including code enforcement, public information, and public and private fire protection systems.

Performance Standards

Student will demonstrate competence by(colon out)

- o reciting an overview of early traditions of the history of fire protection in America.
- o recognizing and listing the common fire hazards.
- o recognizing and reciting the steps of fire survey.
- o identifying the standard map symbols.
- o identifying the basic steps included in the process of fire investigation.

Student performance will be successful when he/she

- o outlines in writing the evolution of fire service, including early fire laws and ordinances.
- o outlines in writing the evolution and development of the fire engine, gear and equipment.
- o lists in writing the major fires that had a significant impact of the development of fire service.
- o lists in writing common and special fire hazards. Student will also list in writing with

- o 100% accuracy target hazard properties.
- o outlines in writing the basic steps with 100% accuracy for a fire survey including the qualifications needed for personnel to conduct survey.
- o with 100% accuracy, completes written exam pertaining to standard map symbols.
- o draws a map of a predetermined structure with 100% accuracy using standard map symbols.
- o list and defines in writing the role of the fire investigation.

3. Analyze the basic components of fire as a chemical reaction, the major phases of fire, and examine the main factors that influence fire spread and fire behavior.

Performance Standards

Student will demonstrate competence by(colon out)

- o gaining understanding of the basic concepts of physical science and defines fire.
- o defining the terms fire, transmission of heat, conduction, convection, radiation, matter, conservation of mass and energy, and chemical reactions .
- o defining combustion and outlining the four components necessary for combustion to occur.
- o identifying common oxidizers.
- o defining fire development and the three stages of fire development.

Student performance will be successful when he/she (colon out)

- o defines in writing the terms fire. Defines in writing the term Physical Science
- o lists and defines with 100% accuracy the following terms: transmission of heat, conduction, convection, radiation, matter, conservation of mass and energy, and chemical reactions.
- o lists and defines in writing with 100% accuracy the four components necessary for combustion to occur, including (colon out) oxygen, fuel, heat, and self-sustained chemical reaction.
- o lists in writing the common oxidizers, including (colon out) Bromates, Bromine, Chlorates, Chlorine, Fluorine, Iodine, Nitrates, Nitric acid, Nitrites, Perchlorates, Permanganates, and Peroxides.
- o lists in writing and defines with 100% accuracy the stages of fire development, including ignition, growth, flashover, fully developed, and decay.

4. Describe the common types of fire and emergency service facilities, equipment, and apparatus.

Performance Standards

Student will demonstrate competence by(colon out)

- o identifying the basic types of building construction.
- o gaining understanding of firefighter hazards related to building construction.
- o identifying the major types of alarm systems.
- o describing the importance of automatic sprinkler systems and how they function.
- o identifying the major facilities of a fire department.

- o identifying the basic equipment that pumpers carry.
- o identifying the four distinct categories of aerial apparatus.
- o identifying the three types of rescue vehicles.
- o identifying special firefighting units.

Student performance will be successful when he/she (colon out)

- o lists and defines with 100% accuracy the five types of building construction.
- o lists and defines basic hazards as applied to building condition and construction.
- o lists and defines with 100% accuracy the major types of alarm systems including heat, fixed-temperature heat, rate-of-rise heat, photoelectric smoke, ionization smoke, automatic, remote, proprietary, and central station systems.
- o outlines in writing the importance of automatic sprinkler systems and diagrams and how they function.
- o lists and defines in writing the fire department facilities including fire stations, administrative offices, telecommunication centers, training centers, and maintenance shops.
- o lists in writing the basic equipment that pumpers carry including ladders, forcible entry tools, nozzles, hose adapters/appliances, hose tools, self-contained breathing apparatus, pike poles, and salvage covers.
- o lists in writing the four distinct categories of aerial apparatus including aerial ladder, platform, telescoping platform apparatus, and articulating aerial platform apparatus.
- o lists and defines light medium, and heavy rescue vehicles and gives example of each.
- o recites example of special firefighting units including mobile, air and fireboat.

5. Compare and contrast effective management concepts for various emergency situations.

Performance Standards

Student will demonstrate competence by

- o understanding the four basic organizational principles as applied to fire fighting.
- o understanding the importance and function of organizational chart.
- o recognizing the different types of fire departments.
- o understanding how fire departments are funded.
- o comparing and contrasting the difference between policies and procedures.
- o identifying the basis for clear communication and effective operations.
- o recognizing the five major areas of the Incident Management System.

Student performance will be successful when he/she

- o lists the four basic organizational principles that firefighters must remember including unity of command, span of control, division of labor, and discipline.
- o defines in writing the term organizational chart and purpose.
- o draws organizational chart for small-sized, medium-sized, and large-sized fire departments.
- o lists in writing the basic types of fire departments including municipal, public safety, county/parish/borough, fire district, and fire protection district.

- o outlines the funding sources for different types of fire departments.
- o compares and contrasts the concepts of policies and procedures.
- o lists in writing the basis for clear communication including common terminology, modular organization, integrated communications, unified command structure, consolidated action plan, manageable span of control, and comprehensive resource management.
- o draws an organization chart that reflects the major areas the Incident Management System.

Grading Information

Grading Scale

A	100-90%
B	89-80%
C	79-70%
D	69-60%
F	Below 60%