National Fire Academy

FESHE Model Curriculum

Associate’s (Core)

February 2008
Building Construction for Fire Protection

Course Description: This course provides the components of building construction that relate to fire and life safety. The focus of this course is on firefighter safety. The elements of construction and design of structures are shown to be key factors when inspecting buildings, preplanning fire operations, and operating at emergencies.

Prerequisite: Completion of Principles of Emergency Services or instructor approval.

Outcomes:

1. Demonstrate an understanding of building construction as it relates to firefighter safety, building codes, fire prevention, code inspection and firefighting strategy and tactics.

2. Classify major types of building construction.

3. Analyze the hazards and tactical considerations associated with the various types of building construction.

4. Explain the different loads and stresses that are placed on a building and their interrelationships.

5. Identify the principle structural components of buildings and demonstrate an understanding of the functions of each.

6. Differentiate between fire resistance and flame spread, and describe the testing procedures used to establish ratings for each.

7. Classify occupancy designations of the building code.

8. Identify the indicators of potential structural failure as they relate to firefighter safety.

9. Identify and analyze the causes involved in the line of duty firefighter deaths related to structural and wildland firefighting, training and research and the reduction of emergency risks and accidents.

Available Texts:
Building Construction and Firefighting; Ralph K. DeLaOssa, Tokiao Publishing, 2007
Building Construction for the Fire Service; Fire Protection Publications
Building Construction Methods and Materials for the Fire Service; Michael Smith, Pearson Education, 2008
Collapse of Burning Buildings; Vincent Dunn, Pennwell, 1988
Supporting References/Research for Faculty and Students:

**U.S. Fire Administration**

*Building Construction, Combustible & Non-Combustible, U. S. Fire Administration*


Applied Research:
[http://www.usfa.fema.gov](http://www.usfa.fema.gov)

Research Reports:
[http://www.usfa.fema.gov](http://www.usfa.fema.gov)

Technical Reports:
[http://www.usfa.fema.gov/applications/publications](http://www.usfa.fema.gov/applications/publications)

Lessons Learned Information Sharing:
[http://www.llis.dhs.gov/member/secure/index.cfm](http://www.llis.dhs.gov/member/secure/index.cfm)

Topical Fire Research Series:
[http://www.usfa.fema.gov/research](http://www.usfa.fema.gov/research)

Learning Resource Center:
[http://www.lrc.fema.gov](http://www.lrc.fema.gov)

**National Institute for Standards and Technology**


Lessons Learned Information Sharing:
[http://www.llis.dhs.gov/member/secure/index.cfm](http://www.llis.dhs.gov/member/secure/index.cfm)


**References**

*Building Construction for the Fire Service,* Francis Brammigan, NFPA, 1992

*Building Construction Related to the Fire Service,* Fire Protection Publications

* Collapse of Burning Buildings,* Vincent Dunn, Pennwell, 1988

*Strategic and Tactical Considerations on the Fire Ground (and Instructor’s Guide),* James Smith, Brady-Prentice Hall

*Strategic and Tactical Considerations on the Fire Ground Study Guide,* James Smith, Trafford Press

**Society of Fire Protection Engineers:**

**Current Events/News**

[http://www.firehouse.com](http://www.firehouse.com)

[http://www.fireengineering.com](http://www.fireengineering.com)

[http://www.withthecommand.com](http://www.withthecommand.com)

**Assessment:**

Students will be evaluated for mastery of learning objectives by methods of evaluation to be determined by the instructor.

**Points of Contact:**

Ralph DeLaOssa, Long Beach City College, Long Beach, California (562) 938-4338, rdelaossa@lbcc.edu
Course Outline

Building Construction for Fire Protection

I. Introduction
   A. History of Building Construction
   B. Governmental Functions, Building and Fire Codes
   C. Fire Risks and Fire Protection
   D. Fire Loss Management and Life Safety
   E. Pre-fire Planning and Fire Suppression Strategies

II. Principles of Construction
   A. Terminology and Definitions
   B. Building and Occupancy Classifications
   C. Characteristics of Building Materials
   D. Types and Characteristics of Fire Loads
   E. Effects of Energy Conservation

III. Building Construction
        A. Structural Members
           1. Definitions, Descriptions and Carrying Capacities
           2. Effects of Loads
        B. Structural Design and Construction Methods
        C. System Failures

IV. Principles of Fire Resistance
    A. Standards of Construction
    B. Fire Intensity and Duration
    C. Theory vs. Reality

V. Fire Behavior vs. Building Construction
    A. Flame Spread
    B. Smoke and Fire Containment
       1. Construction and Suppression Systems
       2. HVAC Systems
       3. Rack Storage
Combustible

VI. Wood Construction
   A. Definition and Elements of Construction
   B. Types of Construction
   C. Fire Stopping and Fire Retardants
   D. Modifications/Code Compliance

VII. Ordinary Construction
   A. Definitions and Elements of Construction
   B. Structural Stability and Fire Barriers
   C. Modifications/Code Compliance

VIII. Collapse

VIII. Ventilation

Non-Combustible

IX. Steel Construction
   A. Definitions and Elements of Construction
   B. Structural Stability, Fire Resistance and Fire Protection of Elements
   C. Modifications/Code Compliance

X. Concrete Construction
   A. Definitions and Elements of Construction
   B. Structural Stability and Fire Resistance
   C. Modifications/Code Compliance

XI. High Rise Construction
   A. Early vs. Modern Construction
   B. Vertical and Horizontal Extension of Fire and Smoke
   C. Fire Protection and Suppression
   D. Elevators
   E. Atriums/Lobbies
   F. Modifications/Code Compliance

XII. Collapse

XIV. Ventilation
Fire Behavior and Combustion

Course Description: This course explores the theories and fundamentals of how and why fires start, spread, and how they are controlled.

Prerequisite: None.

Outcomes:
1. Identify physical properties of the three states of matter.
2. Categorize the components of fire.
3. Recall the physical and chemical properties of fire.
4. Describe and apply the process of burning.
5. Define and use basic terms and concepts associated with the chemistry and dynamics of fire.
6. Describe the dynamics of fire.
7. Discuss various materials and their relationship to fires as fuel.
8. Demonstrate knowledge of the characteristics of water as a fire suppression agent.
9. Articulate other suppression agents and strategies.
10. Compare other methods and techniques of fire extinguishments.

Available Text: 
NFPA Handbook (CD-ROM licensing agreement available)

Supporting References/Research for Faculty and Students:
U.S. Fire Administration
Publications: http://www.usfa.fema.gov/applications/publications/pubs_main.cfm
See Arson, Fire Protection, Wildfire
Research Reports: http://www.usfa.fema.gov/dhtml/inside-usfa/r_reports.cfm
Learning Resource Center: http://www.usfa.fema.gov/dhtml/inside-usfa/lrc.cfm
Supporting References/Research for Faculty and Students:

National Institute for Standards and Technology

References

  http://www.interfire.org/
- Society of Fire Protection Engineers:
  http://www.pentoncmg.com/sfpe/index.html

Current Events/News

http://www.firehouse.com/
http://www.fireengineering.com/
http://www.withthecommand.com/

Assessment:

Students will be evaluated for mastery of learning objectives by methods of evaluation to be determined by the instructor.

Points of Contact:

Terry Koeper, Crafton Hills College, California
(909) 389-3261, tkoeper@craftonhills.edu
Course Outline

Fire Behavior and Combustion

I. Introduction
   A. Matter and Energy
   B. The Atom and its Parts
   C. Chemical Symbols
   D. Molecules
   E. Energy and Work
   F. Forms of Energy
   G. Transformation of Energy
   H. Laws of Energy

II. Units of Measurements
   A. International (SI) Systems of Measurement
   B. English Units of Measurement

III. Chemical Reactions
   A. Physical States of Matter
   B. Compounds and Mixtures
   C. Solutions and Solvents
   D. Process of Reactions

IV. Fire and the Physical World
   A. Characteristics of Fire
   B. Characteristics of Solids
   C. Characteristics of Liquids
   D. Characteristics of Gases

V. Heat and its Effects
   A. Production and Measurement of Heat
   B. Different Kinds of Heat

VI. Properties of Solids Materials
   A. Common Combustible Solids
   B. Plastic and Polymers
   C. Combustible Metals
   D. Combustible Dust
VII. Common Flammable Liquids and Gases
   A. General Properties of Gases
   B. The Gas Laws
   C. Classification of Gases
   D. Compressed Gases

VIII. Fire Behavior
   A. Stages of Fire
   B. Fire Phenomena
      1. Flashover
      2. Backdraft
      3. Rollover
      4. Flamethrower
   C. Fire Plumes

IX. Fire Extinguishment
   A. The Combustion Process
   B. The Character of Flame
   C. Fire Extinguishment

X. Extinguishing Agents
   A. Water
   B. Foams and Wetting Agents
   C. Inert Gas Extinguishing Agents
   D. Halogenated Extinguishing Agents
   E. Dry Chemical Extinguishing Agents
   F. Dry Powder Extinguishing Agents

XI. Hazards by Classification Types
   A. Hazards of Explosives
   B. Hazards of Compressed and Liquefied Gases
   C. Hazards of Flammable and Combustible Liquids
   D. Hazards of Flammable Solids
   E. Hazards of Oxidizing Agents
   F. Hazards of Poisons
   G. Hazards of Radioactive Substances
   H. Hazards of Corrosives
Fire Prevention

Course Description: This course provides fundamental information regarding the history and philosophy of fire prevention, organization and operation of a fire prevention bureau, use 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.

Prerequisite: None.

Outcomes:
1. Define the national fire problem and main issues relating thereto.
2. Recognize the need, responsibilities, and importance of fire prevention as part of an overall mix of fire protection.
3. Recognize the need, responsibilities, and importance of fire prevention organizations.
4. Review minimum professional qualifications at the state and national level for Fire Inspector, Fire Investigator, and Public Educator.
5. Define the elements of a plan review program.
6. Identify the laws, rules, codes, and other regulations relevant to fire protection of the authority having jurisdiction.
7. Discuss training programs for fire prevention.
8. Design media programs.
9. Discuss the major programs for public education.

Available Texts:
- *Introduction to Fire Prevention*; James Robertson, Fire Engineering, 2004
- *Introduction to Fire Prevention*; Brady, 2005
- *NFPA Fire Protection Handbook* (NFPA CD-ROM licensing agreement available)
- *Principles of Fire Protection*; David Diamantes, 2004
Supporting References/Research for Faculty and Students:

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http://www.usfa.fema.gov/dhtml/inside-usfa/r_reports.cfm
Technical Reports:
http://www.usfa.fema.gov/applications/publications/techreps.cfm
Topical Fire Research Series:
http://www.usfa.fema.gov/dhtml/inside-usfa/tfrs.cfm
Learning Resource Center:
http://www.usfa.fema.gov/dhtml/inside-usfa/lrc.cfm

National Institute for Standards and Technology

References
Fire Prevention Applications; Brett Lacey, Paul Valentine, Fire Protection Publications, 2005
http://www.homefiresprinkler.org/
Society of Fire Protection Engineers:
http://www.pentoncmg.com/sfpe/index.html

Current Events/News
http://www.firehouse.com/
http://www.fireengineering.com/
http://www.withthecommand.com/

Assessment:
Students will be evaluated for mastery of learning objectives by methods of evaluation to be determined by the instructor.

Point(s) of Contact:
Judith Kuleta, Bellevue Community College, Washington (425) 564-2515,
jkuleta@bcc.ctc.edu
Course Outline

Fire Prevention

I. History and Development of Fire Prevention

   Fire Prevention Organizations
   A. Public
   B. Federal
   C. State
   D. Private

II. Organization of a Fire Prevention Bureau

   A. Functions
   B. Fire Prevention Duties and Responsibilities
   C. Fire Prevention Tools of the Trade

III. Building Codes and Fire Prevention

   A. Model Building Codes
   B. Other Codes

IV. Fire Codes and Fire Prevention

V. Structural Elements

VI. Inspection Procedures

VII. Identification of Hazards

   A. Common vs. Special Hazards
   B. Hazard Types
   C. Non-structural Hazards
   D. Deficiencies in Fire Protection Equipment and Systems

VIII. Abatement and Mitigation of Hazards

IX. Fire Investigation

X. Public Fire Safety Education

XI. Plan Review

XII. Report Preparation and Record Keeping
Fire Protection Hydraulics and Water Supply

Course Description: This course provides a foundation of theoretical knowledge in order to understand the principles of the use of water in fire protection and to apply hydraulic principles to analyze and to solve water supply problems.

Prerequisite: Demonstration of a competency in high school level algebra or the equivalent.

Outcomes:
1. Apply the application of mathematics and physics to the movement of water in fire suppression activities.
2. Comprehend the design principles of fire service pumping apparatus.
3. Analyze community fire flow demand criteria.
4. Demonstrate, through problem solving, a thorough understanding of the principles of forces that affect water at rest and in motion.

Available Texts:
Fire Protection Hydraulics and Water Supply Analysis; Pat Brock, Fire Protection Publications, 2005
Fire Protection Handbook; NFPA
Fire Service Hydraulics and Water Supply; Mike Wieder, IFSTA/Fire Protection Publications, 2004
Introduction to Fire Pumps; Thomas Sturtevant, Thomson, 2004

Supporting References/Research for Faculty and Students:
U.S. Fire Administration
Publications: http://www.usfa.fema.gov/applications/publications/pubs_main.cfm
See Fire Protection, Fire Administration, Fire Service Operations, Wildfire
Research Reports: http://www.usfa.fema.gov/dhtml/inside-usfa/r_reports.cfm
Learning Resource Center: http://www.usfa.fema.gov/dhtml/inside-usfa/lrc.cfm
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<tr>
<td><em>Fire Service Hydraulics</em>; James Casey, Pennwell, 2nd Ed. 1984</td>
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<tr>
<td><em>Fire Service Pump Operators Handbook</em>; Warren Isman, Pennwell 1984</td>
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<td><em>Hydraulics for Firefighting</em>; William Crapo, Thomson, 2001</td>
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<td><em>Techniques of Fire Hydraulics</em>; Lawrence Erven, Glencoe Fire Service Series, 1972</td>
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<td>(909) 389-3261, <a href="mailto:tkoeper@craftonhills.edu">tkoeper@craftonhills.edu</a></td>
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Course Outline

Fire Protection Hydraulics and Water Supply

I. Water as an extinguishing agent
   A. Physical properties
   B. Terms and definitions

II. Math review
   A. Fractions
   B. Ratios, proportions, and percentage
   C. Powers and roots

III. Water at rest
   A. Basic principles of hydrostatics
      1. Pressure and force
      2. Six principles of fluid pressure
      3. Pressure as a function of height and density
      4. Atmospheric pressure
   B. Measuring devices for static pressure

IV. Water in motion
   A. Basic principles of hydrokinetics
   B. Measuring devices for measuring flow
   C. Relationship of discharge velocity, orifice size, and flow

V. Water distribution systems
   A. Water sources
   B. Public water distribution systems
   C. Private water distribution systems
   D. Friction loss in piping systems
   E. Fire hydrants and flow testing

VI. Fire Pumps
   A. Pump theory
   B. Pump classifications
   C. Priming systems
   D. Pump capacity
   E. Pump gauges and control devices
   F. Testing fire pumps
VII. Fire streams

A. Calculating fire flow requirements
B. Effective horizontal and vertical reach
C. Appliances for nozzles
D. Performance of smooth-bore and combination nozzles
E. Hand-held lines
F. Master streams
G. Nozzle pressures and reaction
H. Water hammer and cavitations

VIII. Friction loss

A. Factors affecting friction loss
B. Maximum efficient flow in fire hose
C. Calculating friction loss in fire hose
D. Friction loss in appliances
E. Reducing friction loss

IX. Engine pressures

Factors affecting engine pressure

X. Standpipe and sprinkler systems

A. Standpipe systems
   1. Classifications
   2. Components
   3. Supplying Standpipe Systems

B. Sprinkler systems
   1. Classifications
   2. Components
   3. Supplying sprinkler systems
Fire Protection Systems

Course Description: This course provides information relating to the features of design and operation of fire alarm systems, water-based fire suppression systems, special hazard fire suppression systems, water supply for fire protection and portable fire extinguishers.

Prerequisite: High School algebra and FESHE core courses or equivalent

Outcomes:
1. Explain the benefits of fire protection systems in various types of structures.
2. Describe the basic elements of a public water supply system including sources, distribution networks, piping and hydrants.
3. Explain why water is a widely used extinguishing agent and describe how water extinguishes fires.
4. Identify the different types and components of sprinkler, standpipe and foam systems.
5. Define the benefits of residential sprinkler legislation.
6. Identify five different types of non-water based fire suppression systems and describe how these systems extinguish fire.
7. Describe the basic components of a fire alarm system.
8. Identify three different types of detectors and explain how they detect fire.
9. Describe the hazards of smoke and list the four factors that can influence smoke movement in a building.
10. Recognize the appropriate application of the different types of sprinklers.
11. Explain the operation and appropriate application for the different types of portable fire extinguishing systems.
12. Identify and analyze the causes involved in the line of duty firefighter deaths related to structural and wildland firefighting, training and research and the reduction of emergency risks and accidents.
Available Texts:
- Fire Protection Handbook, NFPA
- Operation of Fire Protection Systems; NFPA 1981

Supporting References/Research for Faculty and Students:
- U.S. Fire Administration Publications: http://www.usfa.fema.gov/applications/publications
- See Fire Protection, Fire Service Operations
- Applied Research:
  http://www.usfa.fema.gov
- Research Reports:
  http://www.usfa.fema.gov/research
- Technical Reports:
  http://www.usfa.fema.gov/applications/publications/browse.cfm?mc=29
- Topical Fire Research Series:
  http://www.usfa.fema.gov
- Learning Resource Center:
  http://www.lrc.fema.gov

National Institute for Standards and Technology
http://www.fire.nist.gov: Fire Tests/Data, Software/Models,
  Publications, FIREDOC (under Publications)

References
- Design of Special Hazard and Fire Alarm System; Robert Gagnon, Thomson 1997
- Design of Special Hazard and Fire Alarm System; Robert Gagnon, Delmar 1998
- Design of Water Based Fire Protection Systems; Robert Gagnon, Thomson 1996
- Design of Water Based Fire Protection Systems; Robert Gagnon, Delmar 1997
- Fire Suppression and Detection Systems; John Bryan, MacMillan Publishing
- Private Fire Protection and Detection; Fire Protection Publication 2001

Lessons Learned Information Sharing:
http://www.llis.dhs.gov/member/secure/index.cfm
http://www.homefiresprinkler.org
Society of Fire Protection Engineers:
http://www.pentoncmg.com/sfpe/index.html

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Course Outline

Fire Protection Systems

I. Introduction to Fire Protection Systems
   A. The role fire protection systems play in protecting the life, safety and welfare of the general public and firefighters
   B. Overview of the different types of fire protection systems
   C. The role of codes & standards in fire protection system design

II. Water Supply Systems for Fire Protection Systems
   A. Sources of fire protection water supply
   B. Distribution networks
   C. Piping
   D. Hydrants
   E. Utility company interface with the fire department

III. Water-based fire suppression systems
   A. Properties of water
      1. Water as an effective extinguishing agent
      2. How water extinguishes fire
   B. Sprinkler Systems
      1. Types of systems & applications
      2. Types of sprinklers & applications
      3. Piping, valves, hangers & alarm devices
      4. Fire department operations in buildings with sprinkler systems
   C. Residential sprinkler systems
   D. Standpipe systems
      1. Types & applications
      2. Fire department operations in buildings with standpipes
   E. Foam systems
   F. Water mist systems
   G. Fire pumps
      1. Types
      2. Components
      3. Operation
      4. Fire pump curves

IV. Non-water-based fire suppression systems
   A. Carbon dioxide systems
      1. Applications
      2. Extinguishing properties
3. System components
   B. Halogenated systems
      1. Halon 1301 and the environment
      2. Halon alternatives
      3. Extinguishing properties
      4. System components
   C. Dry/Wet Chemical Extinguishing systems
      1. Extinguishing properties
      2. Applications
      3. UL 300

V. Fire alarm systems
   A. Components
   B. Types of fire alarm systems
   C. Detectors
      1. Smoke
      2. Heat
      3. Flame
   D. Audible/visual devices
   E. Alarm monitoring
   F. Testing & maintenance of fire alarm systems

VI. Smoke management systems
   A. Hazards of smoke
   B. Smoke movement in buildings
   C. Types of smoke management systems
   D. Firefighter operations in buildings with smoke management systems

VII. Portable fire extinguishers
   A. Types & applications
   B. Selection
   C. Placement
   D. Maintenance
   E. Portable fire extinguisher operations
Principles of Emergency Services

Course Description: This course provides an overview to fire protection; career opportunities in fire protection and related fields; philosophy and history of fire protection/service; 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 fire strategy and tactics.

Prerequisite: None.

Outcomes:

1. Describe and discuss the components of the history and philosophy of the modern day fire service.

2. 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.

3. Differentiate between fire service training and education; fire protection certificate program and a fire service degree program; and explain the value of education in the fire service.

4. List and describe the major organizations that provide emergency response service and illustrate how they interrelate.

5. Identify fire protection and emergency-service careers in both the public and in the private sector.

6. Synthesize the role of national, state and local support organizations in fire protection and emergency services.

7. Discuss and describe the scope, purpose, and organizational structure of fire and emergency services.

8. Describe the common types of fire and emergency services facilities, equipment, and apparatus.

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

10. Identify and explain the components of fire prevention including code enforcement, public information, and public and private fire protection systems.
Available Texts:  
*Fire Protection Handbook*, NFPA (CDROM available)  
*Firefighters Handbook*, Thomson 2004

Supporting References/Research for Faculty and Students:

**U.S. Fire Administration**
Publications:  
http://www.usfa.fema.gov/applications/publications/pubs_main.cfm  
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Research Reports:  
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Technical Reports:  
http://www.usfa.fema.gov/applications/publications/techreps.cfm  
Topical Fire Research Series:  
http://www.usfa.fema.gov/dhtml/inside-usfa/tfrs.cfm  
Learning Resource Center:  
http://www.usfa.fema.gov/dhtml/inside-usfa/lrc.cfm

**National Institute for Standards and Technology**  
http://www.fire.nist.gov: Fire Tests/Data, Software/Models,  
Publications, FIREDOC (under Publications)

**References**  
NIMS - This should be included in all or several management courses  
*Organizing for Fire and Rescue Services*; Arthur Cote, NFPA, 2003  
*Smoke Your Interview*, Paul Lepore, Freeschool Publications, 2003  
*Strategic and Tactical Considerations on the Fire Ground (and Instructor's Guide)*; James Smith, Brady-Prentice Hall  
*Strategic and Tactical Considerations on the Fire Ground Study Guide*; James Smith, Trafford Press

**Current Events/News**  
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**Assessment:**  
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**Points of Contact:**  
Terry Koeper, Crafton Hills College, California, (909) 389-3261, tkoeper@craftonhills.edu
Course Outline

Principles of Emergency Services

I. Careers in the Fire Protection/Emergency Services
   A. Opportunities/Private, Industrial, Local, Municipal, State and Federal
   B. Pay, Hours of Duty, Benefits, Promotion and Retirement Qualifications
   C. Work Ethics and Human Relations Education and Training
      1. Certificates
      2. Degrees
   D. Selection Process

II. History
   A. Evolution of the Fire Protection
   B. The U.S. Fire Problem: Life and Property

III. Fire Prevention and Public Fire Education
   A. Fire Investigation
   B. Code Enforcement
   C. Public Education

IV. Scientific Terminology
   A. Fire Behavior
   B. Flammability and Characteristics of Solids, Liquids and Gases.

V. Building Design and Construction

VI. Fire Detection and Suppression Systems

VII. The Role of Public and Private Support Organizations
    A. Local
    B. State
    C. Federal and National
    D. International

VIII. Fire and Emergency Services Equipment and Facilities

IX. Management
    A. Emergency Operations
    B. Organizational Structure of Fire and Emergency Services
Introduction to Fire and Emergency Services Administration

Course Description: This course introduces the student to the organization and management of a fire department and the relationship of government agencies to the fire service. Emphasis on fire service leadership from the perspective of the company officer.

Prerequisite: Principles of Emergency Services

Outcomes:
1. Identify career development opportunities and strategies for success.
2. Explain the need for effective communication skills both written and verbal.
3. Articulate the concepts of span and control, effective delegation and division of labor.
4. Recognize appropriate appraising and disciplinary actions and the impact on employee behavior.
5. Examine the history and development of management and supervision.
6. Evaluate methods of managing available resources.
7. Identify roles and responsibilities of leaders in organizations.
8. Compare and contrast the traits of effective versus ineffective supervision and management styles.
9. Identify and assess safety needs for both emergency and non-emergency situations.
10. Identify the importance of ethics as they apply to supervisors.
11. Identify the role of a company officer in Incident Command System (ICS).
12. Describe the benefits of documentation.
13. Identify and analyze the major causes involved in line of duty firefighter deaths related to health, wellness, fitness and vehicle operations.
Suggested Student Texts:

- *Company Officer*; Clinton Smoke, Thomson, 2005
- *Fire & Emergency Services*; Jones & Bartlett, 2006
- *The Chief Officer*; Brady, 2005

Supporting References/Research for Faculty and Students:

- **U.S. Fire Administration**
  - Publications: [http://www.usfa.fema.gov/applications/publications](http://www.usfa.fema.gov/applications/publications)
  - See EMS, Fire Safety and Public Education, Fire Administration, Fire Service Operations, Health and Safety
  - Research Reports: [http://www.usfa.fema.gov/research](http://www.usfa.fema.gov/research)

- **National Institute for Standards and Technology**

References

- *Chief Fire Officer’s Desk Reference*; This is for Fire Administration
- *Fire Chiefs Handbook*; Penwell
- *Fire Service Administration*; Nancy Grant & David Hoover, NFPA, 1994
- *Fire Service Administration*; Nancy Grant & David Hoover, NFPA, 1993
- *NFPA 1500*
- *NFPA 1021*
- *NIMS* – This should be included in all or several management courses
  - Lessons Learned Information Sharing: [http://www.llis.dhs.gov/member/secure/index.cfm](http://www.llis.dhs.gov/member/secure/index.cfm)

Current Events/News

- [http://www.firehouse.com](http://www.firehouse.com)
- [http://www.fireengineering.com](http://www.fireengineering.com)
- [http://www.withthecommand.com](http://www.withthecommand.com)

Assessment:

Students will be evaluated for mastery of learning objectives by methods of evaluation to be determined by the instructor.
Points of Contact: Larry Perez, Dona Ana Community College, New Mexico, (505) 527-7746, laperez@nmsu.edu
Judith Kuleta, Bellevue Community College, Washington (425) 564-2515, jkuleta@bcc.cte.edu
Course Outline

Introduction to Fire and Emergency Services Administration

I. New challenges and opportunities
   A. Duties
   B. National Standards
   C. Career Opportunities
   D. Education and Training

II. Communication Process
   A. Verbal
   B. Written
   C. Active Listening Skills

III. Management Principles
   A. Span of Control
   B. Delegation/Division of Labor
   C. Unity of Command
   D. Chain of Command
   E. Organizational Structure

IV. Tools for Employee Development
   A. Evaluation and Appraisal of Employees
   B. Rewards and Motivation
   C. Progressive System of Discipline
   D. Grievance Procedures

V. Management and Supervision
   A. Theories
   B. History

VI. Managing Resources for Emergency and Non-emergency
   A. Equipment
   B. Personnel
   C. Time

VII. Leadership
   A. Managers
   B. Leaders
   C. Roles and Responsibilities
VIII. Supervision and Management
   A. Styles
   B. Traits
   C. Effectiveness

IX. Safety Assessment
   A. Non-Emergency
   B. Emergency

X. Ethics
   A. Harassment
   B. Conflict of Interest
   C. Public Trust
   D. Code of Ethics
   E. Diversity
   F. Morality

XI. Incident Management System
   A. Duties and Responsibilities
   B. Transfer of Command

XII. Records Management
    A. Formal Documentation
    B. Informal Documentation
Fire Investigation 1

Course Description: This course is intended to provide the student with the fundamentals and technical knowledge needed for proper fire scene interpretations, including recognizing and conducting origin and cause, preservation of evidence and documentation, scene security, motives of the firesetter, and types of fire causes.

Prerequisite: *Principles of Emergency Services, Building Construction for Fire Protection, Fire Behavior and Combustion or Instructor approval*

Outcomes:

14. Identify and explain the responsibilities of the fire department from a firefighter’s perspective when responding to the scene of a fire, including the possibility of incendiary devices often encountered.

15. Define criminal law and explain the constitutional amendments (4th, 5th, 6th, 8th, 14th) as they apply to fire investigations.

16. Analyze the precedents set by constitutional law case studies that have affected fire investigations.

17. Define and explain the common terms used in fire investigations.

18. Describe the basic elements of fire dynamics and how they affect cause determination including fire behavior, characteristics of fuels and methods of heat transfer.

19. Analyze the relationship of building construction on fire investigations including types of construction, construction and finish materials.

20. Evaluate fire protection systems and building services and discuss how their installation affects the ignition of fires in buildings.

21. Discuss the basic principles of electricity.

22. Explain the role of the fire investigator in recognizing health and safety concerns including potential hazardous materials awareness.

23. Describe fire scene investigations and the process of conducting investigations using the scientific method.

24. Explain how an investigator determines the point of origin in a room.
25. Identify the types of fire causes and differentiate between accidental and incendiary causes.

26. Describe and explain the basic procedures used for investigating vehicle fires.

27. Identify the characteristics of arson and common motives of the firesetter.

28. Identify and analyze the causes involved in line of duty firefighter deaths related to structural and wildland firefighting, training and research and the reduction of emergency risks and accidents.


Supporting References/Research for Faculty and Students:  
U.S. Fire Administration  
Publications:  
http://www.usfa.fema.gov/applications/publications

Applied Research:  
http://www.usfa.fema.gov

Research Reports:  
http://www.usfa.fema.gov/research

Technical Reports:  
http://www.usfa.fema.gov/applications/publications/browse.cfm?mc=29

Topical Fire Research Series:  
http://www.usfa.fema.gov

Learning Resource Center:  
http://www.lrc.fema.gov

National Institute for Standards and Technology  

References  
Lessons Learned Information Sharing:  
http://www.lliis.dhs.gov/member/secure/index.cfm
http://www.firearson.com
http://www.interfire.org/

*Fire Investigator*, Fire Protection Publications  
*Forensic Fire Scene Reconstruction*, David Icove, Brady, 2003  
*NFPA 1033 Standard for Professional Qualifications for Fire Investigations*  
*NFPA 921, Guide for Fire and Explosion Investigations*
*Practical Fire and Arson Investigating*, David Redsicker, 2nd Ed., 1996

**Current Events/News**

http://www.firehouse.com  
http://www.fireengineering.com  
http://www.withthecommand.com

**Assessment:**

Students will be evaluated for mastery of learning objectives by methods of evaluation to be determined by the instructor.

**Points of Contact:**

Larry Perez, Dona Ana Community College, New Mexico,  
(505) 527-7746, laperez@nmsu.edu  
Ralph De La Ossa, Long Beach Community College, Long Beach, CA, (562) 938-4338, rdelaossa@lbcc.edu
Course Outline

Fire Investigation I

I. Emergency Responder Responsibilities and Observations
   A. Responsibilities of the Fire Department
   B. Responsibilities of the Firefighter
   C. Responsibilities of the Fire Officer
   D. Observations When Approaching the Scene
   E. Observations Upon Arrival
   F. Observations During Firefighting Operations
   G. Identification of Incendiary Devices

II. Constitutional Law
   A. Criminal Law
   B. Constitutional Amendments

III. Case Studies
   A. Michigan v. Tyler
   B. Michigan v. Clifford
   C. Daubert Decision
   D. Benfield Decision
   E. Kuhmo/Carmichael Decision

IV. Fire Investigations Terminology
   A. Terms as They Apply to Structural Fires
   B. Terms as They Apply to Vehicle Fires
   C. Other Common Investigative Terms

V. Basic elements of Fire Dynamics
   A. Ignition
   B. Heat Transfer
   C. Flame Spread
   D. Burning Rate
   E. Fire Plumes
   F. Fire Analysis

VI. Building Construction
   A. Types of Construction
   B. Building Materials
   C. Building Components
VII. Fire Protection Systems
   A. Extinguishment Systems
   B. Detection Systems
   C. Signaling Systems
   D. Other Building Services

VIII. Basic Principles of Electricity
   A. Basic Electricity
   B. Wiring Systems
   C. Common Electrical Systems

IX. Health and Safety
   A. Methods of Identification
   B. Common Causes of Accidents
   C. Common Causes of Injuries

X. Fire Scene Investigations
   A. Examining the Fire Scene
   B. Securing the Fire Scene
   C. Documenting the Fire Scene
   D. Evidence Collection and Preservation
   E. Exterior Examination

XI. Determining Point of Origin
   A. Interior Examination
   B. Area of Origin
   C. Fire Patterns
   D. Other Indicators
   E. Scene Reconstruction
   F. Point of Origin

XII. Types of Fire Causes
   A. Accidental
   B. Natural
   C. Incendiary
   D. Undetermined
XIII. Vehicle Fires

A. Examination of Scene
B. Examination of Exterior
C. Examination of Driver and Passenger Areas
D. Examination of Engine Compartment
E. Examination of Fuel System
F. Examination of Electrical System

XIV. Firesetters

A. Characteristics of Arson
B. Common Motives
Fire Investigation II

Course Description: This course is intended to provide the student with advance technical knowledge on rule of law, fire scene analysis, fire behavior, evidence collection and preservation, scene documentation, case preparation and testifying.

Prerequisite: Fire Investigation I

Outcomes:

1. Explain the rule of law as it pertains to arrest, search and seizure procedures and their application to fire investigations.

2. Recognize and interpret fire scenes common to various types of fires.

3. Describe the chemistry of combustion and the relationship of atoms, elements, compounds, and organic compounds on fire.

4. Explain the nature and behavior of fire including the effects of heat.

5. Explain and identify the combustion properties of liquids, gases and solid fuels.

6. Identify and explain electrical causes of fires.

7. List and explain the procedures for lifting fingerprints, evidence collection and preservation.

8. List and identify the make-up and use of incendiary devices, explosives, and bombs.

9. List the procedures for documenting fire scenes, including sketching, photography, and report writing.

10. Analyze fire-related deaths and injuries and describe methods of documentation.

11. Identify the techniques for interviewing and questioning suspects and subjects.

12. Explain the role of the fire investigator in courtroom proceedings including courtroom demeanor and testifying.

13. Identify and list the sources and technology available for fire investigations.
14. Identify and analyze the causes involved in the line of duty firefighter deaths related to structural and wildland firefighting, training and research and the reduction of emergency risks and accidents.

Available Texts:

Kirk's Fire Investigation; John Dehuan, Brady,

Supporting References/Research for Faculty and Students:

U.S. Fire Administration
Publications: http://www.usfa.fema.gov/applications/publications
See Arson, Fire Data, Fire Protection, Fire Service Operations,
    Hazardous Materials, Health and Safety, Wildfire
Applied Research:
http://www.usfa.fema.gov
Research Reports:
http://www.usfa.fema.gov/research
Technical Reports:
http://www.usfa.fema.gov/applications/publications/browse.cfm?
mc =29
Lessons Learned Information Sharing:
http://www.llis.dhs.gov/member/secure/index.cfm
Topical Fire Research Series:
http://www.usfa.fema.gov
Learning Resource Center:
http://www.ler.fema.gov

National Institute for Standards and Technology
http://www.fire.nist.gov: Fire Tests/Data, Software/Models,
    Publications, FIREDOC (under Publications)

References
Lessons Learned Information Sharing:
http://www.llis.dhs.gov/member/secure/index.cfm
http://www.interfire.org
Analysis and Interpretation of Fire Scene Evidence; Jose Amirall,
    2004
Fire and Arson Scene Evidence: A Guide for Public Safety
    Personnel; U.S. Department of Justice Office of Justice Programs
Forensic Fire Scene Reconstruction; David Icove, Brady, 2003
Handbook of Forensic Services, U.S. Department of Justice, Federal
    Bureau of Investigation
NFPA 901 Standard Classifications for Incident Reporting and Fire
    Protection Data, NFPA
NFPA 921 Guide for Fire and Explosion Investigations, NFPA
    Bureau Inc.
Current Events/News
http://www.firehouse.com
http://www.fireengineering.com
http://www.withthecommand.com

Assessment: Students will be evaluated for mastery of learning objectives by methods of evaluation to be determined by the instructor.

Points of Contact: Larry Perez, Dona Ana Branch Community College, NM (505) 527-7746, Laperez@nmsu.edu
Ralph De La Ossa, Long Beach Community College, California (562) 938-4338, rdeolaossa@lbcc.edu
Course Outline

Fire Investigation II

I. Rule of Law
   A. Arrest Procedures
   B. Search and Seizure
   C. Warrant Searches

II. Interpretations of Fire Scenes
   A. Structure Fires
   B. Vehicle Fires
   C. Ship Fires
   D. Explosions
   E. Wildland Fires
   F. Hazardous Materials Fires

III. Chemistry of Combustion
   A. Atoms
   B. Elements
   C. Compounds
   D. Organic Compounds

IV. Behavior of Fire
   A. Heat
   B. Flame Plumes
   C. Sequence of a Room Fire
   D. Effects of Environmental Conditions

V. Combustion Properties
   A. Liquids
   B. Gases
   C. Solids

VI. Electrical Causes of Fires
   A. Wiring Systems
   B. Ignition Sources
   C. Investigation of Fires
VII. Collection of Evidence
   A. Photography Procedures
   B. Sketching Procedures and Techniques
   C. Fingerprint Lifting and Collection Techniques
   D. Preservation of Evidence

VIII. Incendiary Systems
   A. Basic Incendiary Devices
   B. Explosives
   C. Bombs

IX. Documentation of Fire Scene
   A. Sketches
   B. Photographs
   C. Incident Reports
   D. Log Sheets
   E. Investigation Report
   F. Chain of Custody

X. Investigation of Fire-related Deaths and Injuries
   A. Homicide Fire Investigation
   B. Scene Security
   C. Scene Examination and Search
   D. Scene Documentation
   E. Autopsy Report

XI. Interview Techniques
   A. Interviewing
   B. Questioning
   C. Advising of Rights
   D. Exceptions to the Rule
   E. Waiver of Rights

XII. Courtroom Demeanor
    A. Court Procedures
    B. Pre-trial Preparation
    C. Trial Exhibits
    D. Physical Appearance
    E. Testifying
    F. Court Decisions
XIII. Court Decisions
   A. Daubert Decision
   B. Benfield Decision
   C. Kuhmo/Carmichael Decision

XIV. Sources of Information
   A. Local
   B. State
   C. Federal
   D. Website
Hazardous Materials Chemistry

Course Description: This course provides basic fire chemistry relating to the categories of hazardous materials including problems of recognition, reactivity, and health encountered by firefighters.

Prerequisite: None.

Outcomes:
1. Identify the common elements by their atomic symbols on the Periodic Table and demonstrate an understanding of why the table is organized into columns and groups.
2. Differentiate between elements, compounds and mixtures, and give examples of each.
3. Explain the difference between ionic and covalent bonding and be able to predict when each will occur.
4. Identify, name, and understand the basic chemistry involved with common hydrocarbon derivatives.
5. Comprehend the basic chemical and physical properties of gases, liquids and solids, and predict the behavior of a substance under adverse conditions.
6. Identify, name, and understand the basic chemistry and hazards involved with the nine U.S. Department of Transportation hazard classes and their divisions.
7. Analyze facility occupancy, transportation documents, shape and size of containers, and Material Safety Data Sheets (MSDS) to recognize the physical state and potential hazards of reactivity related to firefighter health and safety.
8. Demonstrate the ability to utilize guidebooks to determine an initial course of action for emergency responders.
9. Identify and analyze the causes involved in the line of duty firefighter deaths related to structural and wildland firefighting, training and research and the reduction of emergency risks and accidents.

Available Texts: Chemistry of Hazardous Materials; Eugene Meyer, Brady, 2005
Hazardous Materials Chemistry; Armando Bevelacqua, Thomson, 2001
Supporting References/Research for Faculty and Students:

U.S. Fire Administration
Publications:
http://www.usfa.fema.gov/applications/publications/
See Fire Service Operations, Hazardous Materials, Terrorism
Applied Research:
http://www.usfa.fema.gov
Research Reports:
http://www.usfa.fema.gov/research
Technical Reports:
http://www.usfa.fema.gov/applications/publications/browse.cfm?mc=29
Topical Fire Research Series:
http://www.usfa.fema.gov
Learning Resource Center:
http://www.lrc.fema.gov

National Institute for Standards and Technology
http://www.fine.nist.gov/aloft/

References
The Common Sense Approach to Hazardous Materials; Frank L. Fire,
Pennwell, 1987
North American Emergency Response Guidebook, U.S. Department of
Transportation
Hazardous Chemicals Desk Reference; Richard J. Lewis, Sr., John
Wiley and Sons, Inc.
Pocket Guide to Chemical Hazards, Center for Disease Control (CDC),
National Institute of Occupational Health and Safety (NIOSH)
Association (NFPA)
Emergency Action Guides, Association of American Railroads and the
U.S. Bureau of Explosives
Lessons Learned Information Sharing:
http://www.llis.dhs.gov/member/secure/index.cfm

Current Events/News
http://www.firehouse.com
http://www.fireengineering.com
http://www.withthecommand.com

Assessment:
Students will be evaluated for mastery of learning objectives by
methods of evaluation to be determined by the instructor.

Points of Contact: John F. Sullivan, Worcester Fire Department (508) 799-1827,
sullivanjf@ci.worcester.ma.us
Course Outline

Hazardous Materials Chemistry

I. Introduction
   A. General Characteristics of Hazardous Materials
   B. Hazardous Household Products
   C. Hazardous Substances in the Workplace
   D. Hazardous Materials in Transit
   E. Hazardous Materials within Communities
   F. NFPA System of Identifying Potential Hazards

II. Matter and Energy
   A. Matter and Energy Defined
   B. Common Units of Measurement
   C. Temperature, Pressure, and Volume Relationships
   D. Heat Transmission
   E. Understanding Fluid Principles

III. Chemical Forms of Matter
   A. Elements and Compounds
   B. Periodic Classification of Elements
   C. The Nature of Chemical Bonding
   D. Writing Chemical Formulas
   E. Naming Ionic and Covalent Compounds

IV. Principles of Chemical Reactions
   A. Types of Chemical Reactions
   B. Factors Affecting the Rate of Reaction
   C. Oxidation-Reduction Reactions
   D. Fire Extinguishing Agents

V. Chemistry of Some Common Elements
   A. Oxygen
   B. Hydrogen
   C. Fluorine
   D. Chlorine
   E. Phosphorus
   F. Sulfur
   G. Carbon
VI. Flammable Gases and Liquids

A. Flammability
B. General Hazards of Compressed Gases
C. Storage and Transport of Compressed Gases
D. General Hazards of Flammable Liquids
E. Storage and Transport of Flammable Liquids
F. Response to Flammable Gas and Liquid Emergencies

VII. Chemistry of Some Hazardous Organic Compounds

A. The Nature of Organic Compounds
B. Aliphatic Hydrocarbons
C. Aromatic Hydrocarbons
D. Functional Groups
E. Halogenated Hydrocarbons
F. Alcohols
G. Ethers
H. Aldehydes and Ketones
I. Organic Acids
J. Esters
K. Amines
L. Peroxo-Organic Compounds

VIII. Chemistry of Some Corrosive Materials

A. The Nature of Acids and Bases
B. The PH Scale
C. Acids and Bases as Corrosive Materials
D. Sulfuric Acid
E. Nitric Acid
F. Hydrochloric Acid
G. Perchloric Acid
H. Hydrofluoric Acid
I. Phosphoric Acid
J. Acetic Acid
K. Alkaline Metal Hydroxides
L. Response to Corrosive Material Emergencies

IX. Chemistry of Some Water-Reactive Materials

A. The Nature of Water Reactive Materials
B. Alkali Metals
C. Combustible Metals
D. Metallic Hydrides
E. Metallic Phosphides
F. Metallic Carbides
X. U.S. Department of Transportation Hazard Classes and Their Divisions
   A. Identification of Hazardous Materials by Container Shape and Size
   B. Identification of Hazardous Materials by Transportation Placards
   C. Identification of Hazardous Materials by Shipping Documents
   D. Identification of Hazardous Materials by Material Safety Data Sheets (MSDS)

XI. Hazardous Materials in Fixed Facilities
   A. Identification of Hazardous Materials by Location and Occupancy
   B. Identification of Hazardous Materials by Container Shape and Size
   C. Identification of Hazardous Materials by NFPA 704 System
   D. Identification of Hazardous Materials by Material Safety Data Sheets (MSDS)

XII. Response Guidelines
   A. Utilization of North American Emergency Response Guidebook
   B. Utilization of NIOSH Pocket Guide to Chemical Hazards
   D. Utilization of Bureau of Explosives Emergency Action Guides
X. U.S. Department of Transportation Hazard Classes and Their Divisions

A. Identification of Hazardous Materials by Container Shape and Size
B. Identification of Hazardous Materials by Transportation Placards
C. Identification of Hazardous Materials by Shipping Documents
D. Identification of Hazardous Materials by Material Safety Data Sheets (MSDS)

XI. Hazardous Materials in Fixed Facilities

A. Identification of Hazardous Materials by Location and Occupancy
B. Identification of Hazardous Materials by Container Shape and Size
C. Identification of Hazardous Materials by NFPA 704 System
D. Identification of Hazardous Materials by Material Safety Data Sheets (MSDS)

XII. Response Guidelines

A. Utilization of North American Emergency Response Guidebook
B. Utilization of NIOSH Pocket Guide to Chemical Hazards
D. Utilization of Bureau of Explosives Emergency Action Guides
Legal Aspects of the Fire Service

Course Description: This course introduces the Federal, State, and local laws that regulate emergency services, national standards influencing emergency services, standard of care, tort, liability, and a review of relevant court cases.

Prerequisite: None.

Outcomes:
1. Define the different types of laws, explain their basic differences, and how the law functions in society.
2. Become familiar with federal, state, and local laws, which regulate or influence emergency services.
3. Explain the role and purpose of national codes and standards concerning their legal influence.
4. Become familiar with legal decisions that has or will affect the fire service.
5. Discuss the organization and legal structure of the fire department.
6. Define the liabilities of firefighters.
7. Recognize legal duties of emergency service members.
8. Discuss negligence in an emergency setting.
9. Define discrimination and identify areas of potential discrimination in the emergency service.
10. Identify, explain and discuss the legalities of entrance requirements, residency, grooming, and drug testing.
11. Discuss the scope of the civil rights act.
12. Discuss the parameters and explain the basic intent of the American Disabilities Act, Fair Labor Standards Act, and Family Medical Leave Act.
13. Explain the at-will doctrine.
14. Explain the purpose of labor and employment laws.
15. Identify and analyze the major causes involved in the line of duty firefighter deaths related to health, wellness, fitness and vehicle operations.
Available Texts:
- Fire and Emergency Law Casebook; Thomas D. Schneid, Thomson, 1996
- Fire Law; Thomas D. Schneid, Thomson, 1995
- Legal Aspects of the Fire Service; Lawrence Hogan, Amlex, 2000

Supporting References/Research for Faculty and Students:
- U.S. Fire Administration
  - Publications:
    http://www.usfa.fema.gov/applications/publications
  - See Arson, EMS, Fire Data, Fire Administration, Fire Service Operations, Health and Safety
  - Applied Research:
    http://www.usfa.fema.gov
  - Research Reports:
    http://www.usfa.fema.gov/research
  - Technical Reports:
    http://www.usfa.fema.gov/applications/publications/browse.cfm?me=29
  - Topical Fire Research Series:
    http://www.usfa.fema.gov
  - Learning Resource Center:
    http://www.lrc.fema.gov

National Institute for Standards and Technology

References
- Lessons Learned Information Sharing:
  http://www.llis.dhs.gov/member/secure/index.cfm
- Blacks Law Dictionary; Bryan Garner, West Group
- Legal Briefings for Fire Chiefs, Quinlan Publishing
- American Bar Association-Guide to Workplace Laws, Rights of Employees

Current Events/News
http://www.firechiefs.com
http://www.firehouse.com
http://www.fireengineering.com
http://www.withthecommand.com

Assessment:
Students will be evaluated for mastery of learning objectives by methods of evaluation to be determined by the instructor.

Points of Contact:
Travis Ford, Volunteer State Community College, C/O Nashville Fire Dept. (615) 862-5422, travis.ford@nashville.gov
Course Outline

Legal Aspects of the Emergency Services

I. The Legal System of the United States
   A. Foundations
   B. U.S. Constitution

II. Civil vs. Criminal
   A. Differences
   B. Lawsuits
   C. Punishments
   D. Burden of Proof

III. Tort Liability

IV. Negligence

V. Judicial System
   A. The Court System
   B. U.S. Supreme Court
   C. Special Courts
   D. Local Courts
   E. Penalties

VI. Federal Laws and the Fire Service
   A. Fair Labor Standards Act
   B. Americans with Disabilities Act
   C. Age Discrimination
   D. Civil Rights
   E. Sexual Harassment

VII. Employee Relations
   A. Physical Testing - Entrance Requirements
   B. Residency Requirements
   C. Grooming Standards
   D. Promotional Testing
   E. Psychological Examinations
   F. Polygraphs
VIII. Fire Prevention and Fire Codes

A. Fourth Amendment
B. Certifications
C. Building Code vs. Fire Code
D. Civil vs. Criminal

IX. Mutual Aid

X. Hazardous Materials

XI. Volunteers/Contracts

XII. Arson