

# National Fire Academy FESHE Model Curriculum Associate's (Non-Core)

Reviewed May 2019



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## Legal Aspects of Emergency Services (C0270)

### Course Description

This course will address the Federal, State, and local laws that regulate emergency services and include a review of national standards, regulations, and consensus standards.

### Prerequisites

None

### Course Outcomes

Upon completion of this course, you will be able to:

1. Define the different types of laws.
2. Discuss Federal, State, and local laws and liabilities applicable to emergency services.
3. Explain the purpose of national codes and standards.
4. Discuss applicable court decisions that have influenced emergency services.
5. Recognize the legal issues and concerns affecting emergency services.

### Course Objective

Upon completion of this course, you will be able to analyze Federal, State, and local laws and consensus standards as they pertain to the fire service.

### Available Texts

Antonellis, P. J. (2012). *Labor relations for the fire service*. Tulsa, OK: PennWell Books. ISBN: 9781593702847. <http://www.PennWellbooks.com/shop-fire-books-videos/labor-relations-for-the-fire-service/>

Bennett, L. T. (2017). *Fire service law* (2nd ed.). Long Grove, IL: Waveland Press. ISBN: 978-1-4786-3397-6, <http://www.waveland.com/browse.php?t=708>

Varone, J. C. (2014). *Legal considerations for fire & emergency services* (3rd ed.). Tulsa, OK: PennWell Books. ISBN10 1-59370-347-3, <http://www.PennWellbooks.com/fire-rescue/leadership-management/legal-considerations-for-fire-emergency-services-3rd-edition/>

West, G. (2018). *Legal aspects of emergency services*. Burlington, MA: Jones & Bartlett Learning. ISBN: 9781284068276. <https://www.psglearning.com/catalog/productdetails/9781284068276>

## **Supporting References/Research for Faculty and Students**

**U.S. Fire Administration (USFA) Publications:** <http://www.usfa.fema.gov/applications/publications> (See Arson, Fire Data, Fire Protection, Fire Service Operations, Hazardous materials, Health and Safety, Wildfires).

**Applied Research:** Agency Research: <http://www.usfa.fema.gov>

**Research Reports:** <http://www.usfa.fema.gov>

**Technical Reports:** <http://www.usfa.fema.gov/applications/publications>

**Topical Fire Research Series:** <http://www.usfa.fema.gov/research>

**Learning Resource Center:** <http://www.lrc.fema.gov>

**National Institute for Standards and Technology (NIST):** <http://www.fire.nist.gov> (see Publications, FIREDOC (under Publications)).

## **Lessons Learned Information Sharing**

- <http://www.llis.dhs.gov/member/secure/index.cfm>
- <http://www.usfa.fema.gov/applications/publications/techreps.cfm>

## **References**

Garner, B. A. (2009). *Black's law dictionary* (9th ed.). Eagan, MN: West.

Hogan, L. J. (2000). *Legal aspects of the fire service* (3rd ed.). Amlex.

*Legal briefings for fire chiefs*. (n.d.). Boston, MA: Quinlan Publishing.

American Bar Association (2006). *Guide to workplace law* (2nd ed.). New York, NY: Random House Publishing.

## **Assessment**

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

## Course Outline

- I. The Legal System of the United States
  - A. Foundations
  - B. U.S. Constitution
  
- II. Civil Versus 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 versus Fire Code
  - D. Civil Versus Criminal
- IX. Mutual Aid
- X. Hazardous Materials
- XI. Volunteers/Contracts A. At-will Doctrine
- XII. Arson

## **Principles of Fire and Emergency Service Administration (C0272)**

### **Course Description**

This course introduces the student to the organization and management of a fire and emergency services department and the relationship of government agencies to the fire service. Emphasis is placed on fire and emergency service ethics and leadership from the perspective of the company officer.

### **Prerequisites**

Principles of Emergency Services.

### **Course Outcomes**

Upon completion of this course, you will be able to:

1. Acknowledge career development opportunities and strategies for success.
2. Recognize the need for effective communication skills, both written and verbal.
3. Identify and explain the concepts of span and control, effective delegation, and division of labor.
4. Select and implement the appropriate disciplinary action based upon an employee's conduct.
5. Explain the history of management and supervision methods and procedures.
6. Discuss the various levels of leadership, roles, and responsibilities within the organization.
7. Describe the traits of effective versus ineffective management styles.
8. Identify the importance of ethics as it relates to fire and emergency services.
9. Identify the roles of the National Incident Management System (NIMS) and Incident Management System (ICS).

## Course Objectives

Upon completion of this course, you will be able to:

1. Describe the basic theories of public sector management.
2. Recognize the importance of ethics and communication skills.
3. Articulate and demonstrate the importance of the public policy process, responsibility, and authority.

## Available Texts

- Bruegman, R. R., & Lindsey, J. T. (2009). *Fire administration I*. New York, NY: Pearson. ISBN-10: 0-13-172084-8; ISBN-13: 978-0-13-172084-8. <http://www.bradybooks.com/store/product.aspx?isbn=0131720848>
- IFSTA. (2014). *Fire and emergency services company officer* (5th ed.). Stillwater, OK: Fire Protection Publications. ISBN: 978-0-87939-564-3, <https://www.ifsta.org/shop/fire-and-emergency-services-company-officer-5th/36530>
- Rausch, E., & Carter, H. R. (2017). *Management in the fire service* (5th ed.). Burlington, MA: Jones & Barlett Learning. ISBN: 9781449690786. <https://www.psglearning.com/catalog/productdetails/9781449690786>
- Smeby, L. C., Jr. (2014). *Fire and emergency services administration: Management and leadership practices* (2nd ed.). Burlington, MA: Jones & Barlett Learning. ISBN: 9781449605834. <https://www.psglearning.com/fire/science/productdetails/9781449605834>
- Smoke, C. H. (2010). *Company officer* (3rd ed.). Clifton Park, NY: Delmar, Cengage Learning. ISBN10: 1-4354-2725-4, ISBN13: 978-1-4354-2725-9, <http://www.cengagebrain.com/shop/isbn/978-1-435427259>
- Ward, M. J. (2015). *Fire officer: Principles and practice* (3rd ed.). Burlington, MA: Jones & Barlett Learning. ISBN: 9781284068368. <https://www.psglearning.com/catalog/productdetails/9781284068368>



## **Supporting References/Research for Faculty and Students**

**U.S. Fire Administration (USFA) Publications:** <http://www.usfa.fema.gov/applications/publications> (See Arson, Fire Data, Fire Protection, Fire Service Operations, Hazardous materials, Health and Safety, Wildfires).

**Applied Research:** Agency Research: <http://www.usfa.fema.gov>

**Research Reports:** <http://www.usfa.fema.gov>

**Technical Reports:** <http://www.usfa.fema.gov/applications/publications>

**Topical Fire Research Series:** <http://www.usfa.fema.gov/research>

**Learning Resource Center:** <http://www.lrc.fema.gov>

**National Institute for Standards and Technology (NIST):** <http://www.fire.nist.gov> (see Publications, FIREDOC (under Publications)).

## **Lessons Learned Information Sharing**

- <http://www.llis.dhs.gov/member/secure/index.cfm>
- <http://www.usfa.fema.gov/applications/publications/techreps.cfm>

## **References**

Grant, N. K., & Hoover, D. H. (1994). *Fire service administration*. Burlington, MA: Jones & Bartlett Learning.

Marinucci, R. A. (2015). *The fire chief's handbook* (7th ed.). Tulsa, OK: PennWell Books.

NFPA. (2014). *Standard for fire officer professional qualifications* (Standard No. 1021). Retrieved from [www.nfpa.org](http://www.nfpa.org)

NFPA. (2018). *Standard on fire department occupational safety, health, and wellness program*. (Standard No. 1500). Retrieved from [www.nfpa.org](http://www.nfpa.org)

## **Assessment**

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

## Course Outline

- 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 Protection Hydraulics and Water Supply (C0277)**

### **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 solve water supply problems.

### **Prerequisites**

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

### **Course Outcomes**

Upon completion of this unit, you will be able to:

1. Apply the application of mathematics and physics to the movement of water in fire suppression activities.
2. Identify 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, both at rest and in motion.
5. List and describe the various types of water distribution systems.
6. Discuss the various types of fire pumps.

### **Course Objectives**

The students will:

Upon completion of this unit, you will be able to:

1. Apply water hydraulic principles.
2. Demonstrate knowledge of water hydraulics as it relates to fire protection.

## Available Texts

- Cote, A. E. (Ed.). (2008). *Fire protection handbook, volumes I and II* (20th ed.). National Fire Protection Association. <https://www.constructionbook.com/store/product/fire-protection-handbook-20th-edition>
- Crapo, W. F. (2017). *Fire protection hydraulics and water supply* (3rd ed.). Burlington, MA: Jones & Bartlett Learning. ISBN: 9781284058529. <https://www.psglearning.com/catalog/productdetails/9781284058529>
- IAFC & NFPA. (2011). *Fire service pump operator: Principles and practice*. Sudbury, MA: Jones & Bartlett Publishers. <https://www.psglearning.com/catalog/productdetails/9781284026917>
- Mahoney, E., & Hannig, B. (2013). *Fire department hydraulics* (3rd ed.). New York, NY: Pearson. ISBN-10: 0-13-257715-1; ISBN-13: 978-0-13-257715-1. <http://www.bradybooks.com/store/product.aspx?isbn=9780132577151>
- Richman, H., Persson, S., & NFPA. (2008). *Engine company fireground operations* (3rd ed.). Sudbury, MA: Jones & Bartlett Publishers. ISBN: 9780763744953. <https://www.psglearning.com/catalog/productdetails/9780763744953>
- Richman, H. (2008). *Ladder company fireground operations* (3rd ed.). Sudbury, MA: Jones & Bartlett Publishers. ISBN-13: 978-0763744960; ISBN-10: 0763744964. <http://www.jblearning.com/catalog/9780763744960/>
- Sturtevant, T. (2005). *Introduction to fire pump operations* (2nd ed.). Clifton Park, NY: Delmar, Cengage Learning. ISBN10: 0-7668-5452-3; ISBN13: 978-0-7668-5452-9. <http://www.cengagebrain.com/shop/isbn/9780766854529>
- Sykes, H., & Sturtevant, T. B. (2012). *Fire apparatus operator: Pumper* (3rd ed.). Clifton Park, NY: Delmar, Cengage Learning. ISBN10: 1-4354-3862-0; ISBN13: 978-1-4354-3862-0. <http://www.cengagebrain.com/shop/isbn/97811435438620>
- Wieder, M. (2010). *Fire service hydraulics and water supply* (2nd ed.). Stillwater, OK: Fire Protection Publications. <https://www.ifsta.org/shop/hydraulics-and-water-supply-2nd-ed/36724>

## **Supporting References/Research for Faculty and Students**

**U.S. Fire Administration (USFA) Publications:** <http://www.usfa.fema.gov/applications/publications> (See Arson, Fire Data, Fire Protection, Fire Service Operations, Hazardous materials, Health and Safety, Wildfires).

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**Research Reports:** <http://www.usfa.fema.gov>

**Technical Reports:** <http://www.usfa.fema.gov/applications/publications>

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**Learning Resource Center:** <http://www.lrc.fema.gov>

**National Institute for Standards and Technology (NIST):** <http://www.fire.nist.gov> (see Publications, FIREDOC (under Publications)).

## **Lessons Learned Information Sharing**

- <http://www.llis.dhs.gov/member/secure/index.cfm>
- <http://www.usfa.fema.gov/applications/publications/techreps.cfm>

## **References**

Crapo, W. (2007). *Hydraulics for firefighting* (2nd ed.). Clifton Park, NY: Delmar, Cengage Learning.

Erven, L. W. (1972). *Techniques of fire hydraulics*. Glencoe Press.

IFSTA. (2015). *Pumping apparatus driver/operator handbook* (3rd. ed.). Stillwater, OK: Fire Protection Publications.

Isman, W. E. (1984). *Fire service pump operator's handbook*. Tulsa, OK: PennWell Books.

Sylvia, D. (1984). *Fire service hydraulics* (2nd ed.). Edited by James F. Casey. Tulsa, OK: PennWell Books.

## **Assessment**

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

## Course Outline

- 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



## **Occupational Safety and Health for Emergency Services (C0278)**

### **Course Description**

This course introduces the basic concepts of occupational health and safety as it relates to emergency service organizations. Topics include risk and hazard evaluation and control procedures for emergency service organizations.

### **Prerequisites**

None

### **Course Outcomes**

Upon completion of this course, you will be able to:

1. Describe the history of occupational health and safety.
2. Identify occupational health and safety programs for industry and emergency services today.
3. Compare the difference between standards and regulations.
4. List and describe the components of risk identification, risk evaluation, and incident management.
5. Describe the relevance for safety in the work place, including the importance of PPE.
6. Apply the knowledge of an effective safety plan to pre-incident planning, response, and training activities.
7. Explain the components of an accountability system in emergency service operations.
8. Discuss the need for, and the process used for, post-incident analysis.
9. Describe the components and value of critical incident management programs.
10. Describe the responsibilities of individual responders, supervisors, Safety Officers, and Incident Commanders, safety program managers, safety committees, and fire department managers as they relate to health and safety programs.
11. Describe the components of a wellness/fitness plan.
12. Identify and analyze the major causes involved in line-of-duty firefighter deaths related to health, wellness, fitness, and vehicle operations.

## Course Objectives

Upon completion of this course, you will be able to:

1. Understand the significance of occupational health and safety.
2. Describe and analyze the components of risk identification, risk evaluation, and incident management.

## Available Texts

Angle, J. S. (2012). *Occupational safety and health in the emergency service* (3rd ed.). Clifton Park, NY: Delmar, Cengage Learning. ISBN: 9781439057506.  
<https://www.firebooks.com/products/occupational-safety-and-health-in-the-emergency-services-3rd-edition>

Bruni, J. (2012). *Occupational health and safety for the fire service*. New York, NY: Pearson. ISBN-10: 0-13-283005-1; ISBN-13: 978-0-13-283005-8. <http://www.bradybooks.com/store/product.aspx?isbn=0132830051>

Dodson, D. W. (2015). *Fire department incident safety officer* (3rd ed.). Burlington, MA: Jones & Bartlett Learning. ISBN: 9781284041958. <https://www.firebooks.com/products/fire-department-incident-safety-officer-3rd-ed>

Foley, S. N. (2003). *Resources for fire department occupational safety and health*. Burlington, MA: Jones & Bartlett Learning. ISBN: 9780877654865. <https://www.firebooks.com/products/resources-for-fire-department-occupational-safety-and-health>

IFSTA. (2010). *Occupational safety, health, and wellness* (3rd ed.). Stillwater, OK: Fire Protection Publications. ISBN: 978-0-87939-388-5. <https://www.ifsta.org/shop/occupational-safety-health-and-wellness-3rd-ed/37212>

## Supporting References/Research for Faculty and Students

**U.S. Fire Administration (USFA) Publications:** <http://www.usfa.fema.gov/applications/publications> (See Arson, Fire Data, Fire Protection, Fire Service Operations, Hazardous materials, Health and Safety, Wildfires).

**Applied Research:** Agency Research: <http://www.usfa.fema.gov>

**Research Reports:** <http://www.usfa.fema.gov>

**Technical Reports:** <http://www.usfa.fema.gov/applications/publications>

**Topical Fire Research Series:** <http://www.usfa.fema.gov/research>

**Learning Resource Center:** <http://www.lrc.fema.gov>

**National Institute for Standards and Technology (NIST):** <http://www.fire.nist.gov> (see Publications, FIREDOC (under Publications)).

### **Lessons Learned Information Sharing**

- 1500, 1521, 1561 and 1581
- <http://www.llis.dhs.gov/member/secure/index.cfm>
- <http://www.usfa.fema.gov/applications/publications/techreps.cfm>

### **References**

Chikerotis, S. (2006). *Firefighters from the heart: True stories and lessons learned*. Clifton Park, NY: Delmar, Cengage Learning.

Dickinson, E. V., & Wieder, M. A. (2003). *Emergency incident rehabilitation* (2nd ed.). Upper Saddle River, NJ: Prentice Hall.

Dodson, D. W. (2015). *Fire department incident safety officer* (3rd ed.). Burlington, MA: Jones & Bartlett Learning. ISBN: 9781284041958. <https://www.firebooks.com/products/fire-department-incident-safety-officer-3rd-ed>

Kipp, J. D., & Loflin, M. E. (1996). *Emergency incident risk management: A safety & health perspective*. Hoboken, NJ: Wiley.

Sachs, G. M. (2001). *The fire and EMS department safety officer*. Upper Saddle River, NJ: Prentice Hall.

### **Assessment**

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

### **Course Outline**

- I. Introduction
  - A. History of Occupational Safety and Health in Industry
  - B. History of Occupational Safety and Health in Emergency Service Organizations
  - C. Identification of Safety Problems
  - D. Review of National Injury Statistics
  - E. National, State, and Private Organizations Involved with Occupational Safety and Health

- II. Safety-Related Regulations and Standards
  - A. Regulations versus Standards
  - B. Federal Regulations Pertaining to Occupational Safety and Health
  - C. NFPA Standards Pertaining to Occupational Safety and Health
  
- III. Risk Management
  - A. Risk Evaluation
  - B. Risk Control
  
- IV. Safety Program Development and Management
  - A. Essential Elements
  - B. Setting Goals and Objectives
  - C. Cost/Benefit Analysis
  - D. Training
  - E. Developing Standard Operating Procedures
  - F. Collecting Data
  - G. Publishing Health and Safety Information
  - H. Evaluating the Results
  
- V. Employee Fitness/Wellness Programs
  - A. Hazards Faced
  - B. Organizational Development
  - C. Employee Acceptance
  - D. Medical Examinations
  - E. Physical Fitness
  
- VI. Pre-Incident Safety
  - A. Hazards Faced
  - B. Station Safety
  - C. Apparatus Safety
  - D. Response Safety
  - E. Pre-Incident Planning
  
- VII. Safety at Fire Emergencies
  - A. Hazards Faced
  - B. Incident Priorities and Safety
  - C. Incident Management Systems
  - D. Accountability
  - E. Rapid Intervention
  - F. Rehabilitation

VIII. Safety at EMS Emergencies

- A. Hazards Faced
- B. Infection Control
- C. Personal Protective Equipment
- D. Incident Management Systems
- E. Scene Safety

IX. Safety at Specialized Incidents

- A. Hazards Faced
- B. Safety at Hazardous Materials Incidents
- C. Safety at Technical Rescue Incidents
- D. Safety at Terrorism Incidents
- E. Safety at Natural Disasters

X. Post-Incident Safety Management

- A. Incident Termination
- B. Post-Incident Analysis
- C. Critical Incident Stress Management

XI. Personal Roles

- A. Individuals
- B. Supervisors
- C. Managers
- D. Incident Commanders
- E. Safety Officers
- F. Safety Program Managers
- G. Safety Committees

XII. Making It Happen

- A. Determining, Measuring, and Showcasing the Benefits
- B. Selling Management
- C. Selling Employees

## **Strategy and Tactics (C0279)**

### **Course Description**

This course provides the principles of fire ground control through utilization of personnel, equipment, and extinguishing agents.

### **Prerequisites**

Principles of Emergency Services (C0272)

### **Course Outcomes**

Upon completion of this course, you will be able to:

1. Discuss fire behavior as it relates to strategies and tactics.
2. Explain the main components of pre-fire planning, and identify steps needed for a pre-fire plan review.
3. Identify the basics of building construction and how they interrelate to pre-fire planning, strategy, and tactics.
4. Describe the steps taken during size-up.
5. Examine the significance of fire ground communications.
6. Identify the roles of the National Incident Management System (NIMS) and Incident Management System (ICS) as it relates to strategy and tactics.
7. Demonstrate the various roles and responsibilities in ICS/NIMS.

### **Course Objectives**

Upon completion of this course, you will be able to:

1. Create a strategy, and implement appropriate tactics.
2. Possess a working knowledge and execution of ICS/NIMS at the incident.

## Available Texts

- Angle, J. S., Gala, M. F., Jr., Harlow, D., Lombardo, W. B., & Maciuba, C. M. (2015). *Firefighting strategies and tactics* (3rd ed.). Burlington, MA: Jones & Bartlett Learning. ISBN: 9781284116007. <https://www.psglearning.com/catalog/productdetails/9781284116007>
- Avillo, A. (2008). *Fireground strategies* (2nd ed.). Tulsa, OK: PennWell Books. ISBN-10: 1593701594; ISBN-13: 978-1593701598. <https://www.amazon.com/Fireground-Strategies-Anthony-Avillo/dp/1593701594>
- IFSTA. (2017). *Structural fire fighting: Initial response strategy and tactics* (2nd ed.). Stillwater, OK: Fire Protection Publications. ISBN: 978-0-87939-623-7. <https://www.ifsta.org/shop/structural-fire-fighting-initial-response-strategy-and-tactics-2nd-edition/36180>
- Klaene, B. J. (2016). *Structural firefighting: Strategy and tactics* (3rd ed.). Burlington, MA: Jones & Bartlett Learning. ISBN: 9781449642396. <https://www.psglearning.com/catalog/productdetails/9781449642396>
- Smith, J. P. (2012). *Strategic & tactical considerations on the fireground* (3rd ed.). New York, NY: Pearson. ISBN-10: 0-13-283006-X; ISBN-13: 978-0-13-283006-5. <http://www.bradybooks.com/store/product.aspx?isbn=013283006X>

## Supporting References/Research for Faculty and Students

**U.S. Fire Administration (USFA) Publications:** <http://www.usfa.fema.gov/applications/publications> (See Arson, Fire Data, Fire Protection, Fire Service Operations, Hazardous materials, Health and Safety, Wildfires).

**Applied Research:** Agency Research: <http://www.usfa.fema.gov>

**Research Reports:** <http://www.usfa.fema.gov>

**Technical Reports:** <http://www.usfa.fema.gov/applications/publications>

**Topical Fire Research Series:** <http://www.usfa.fema.gov/research>

**Learning Resource Center:** <http://www.lrc.fema.gov>

**National Institute for Standards and Technology (NIST):** <http://www.fire.nist.gov> (see Publications, FIREDOC (under Publications)).

## Lessons Learned Information Sharing

- <http://www.llis.dhs.gov/member/secure/index.cfm>
- <http://www.usfa.fema.gov/applications/publications/techreps.cfm>

## References

- Brunacini, A. V. (2002). *Fire command: The essentials of local IMS* (2nd ed.). National Fire Protection Association.
- Coleman, J. F. (1997). *Incident management for the street-smart fire officer*. Tulsa, OK: PennWell Books.
- Coleman, J. F. (2001). *Managing major fires*. Tulsa, OK: PennWell Books.
- Dodson, D. W. (2015). *Fire department incident safety officer* (3rd ed.). Burlington, MA: Jones & Bartlett Learning.
- Dunn, V. (1999). *Command and control of fires and emergencies*. Tulsa, OK: PennWell Books.
- Klaene, B. J. (2016). *Structural firefighting: Strategy and tactics* (3rd ed.). Burlington, MA: Jones & Bartlett Learning.
- Norman, J. (1998). *Fire officer's handbook of tactics* (2nd ed.). Tulsa, OK: PennWell Books.
- Smalley, J. C. (2005). *Protecting life and property from wildfire*. Burlington, MA: Jones & Bartlett Learning.
- Smith, J. P. (2011). *Strategic & tactical considerations on the fireground study guide* (3rd ed.). Victoria, British Columbia: Trafford Press.
- Smith, M. (2011). *Building construction methods and materials for the fire service* (2nd ed.). New York, NY: Pearson.

## 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.



## Course Outline

- I. Fire Chemistry Terms and Concepts
  - A. Heat Transfer
  - B. Principle Fire Characteristics of Materials
  - C. Fire Classifications
  
- II. Extinguishing Equipment
  - A. Extinguishing Equipment
  - B. Fire Apparatus
  - C. Personnel Requirement
  
- III. Visual Perception
  - A. Pre-Planning
  - B. Size-Up
  
- IV. Pre-Fire Planning
  - A. Concept
  - B. Phases
  - C. Methods
  - D. Format
  - E. Occupancy Classifications
  - F. Building Types
  
- V. Basic Divisions of Tactics
  - A. Size-Up
    - 1. Facts
    - 2. Probabilities
    - 3. Own Situation
    - 4. Decision
    - 5. Plan of Operation
  
- VI. Rescue
  - A. Life Safety Problems of Fire
  - B. Determination of Life Hazard
  - C. Rescue Resources and Operations
  
- VII. Exposures
  - A. Principle Contributing Factors
  - B. Exposure Protection Operations

VIII. Confinement

- A. Fire Separations
- B. Fire Loading
- C. Built-In Protection
- D. Operations

IX. Ventilation

- A. Relationship to Objectives
- B. Equipment
- C. Roof Types
- D. Methods

X. Salvage

- A. Relationship to Objectives
- B. Equipment
- C. Operations during Fire
- D. Operations after Fire

## **Hazardous Materials Chemistry (C0282)**

### **Course Description**

This course provides basic chemistry relating to the categories of hazardous materials including recognition, identification, reactivity, and health hazards encountered by emergency services.

### **Prerequisites**

None

### **Course Outcomes**

Upon completion of this course, you will be able to:

1. Identify and describe the common elements of the Periodic Table.
2. Distinguish between elements, compounds, and mixtures.
3. Explain the difference between ionic and covalent bonding.
4. Define the basic chemistry involved with common hydrocarbon derivatives.
5. Describe the basic chemical and physical properties of gases, liquids, and solids.
6. Discuss the nine U.S. Department of Transportation hazard classes and their respective divisions.
7. Demonstrate the utilization of guidebooks, MSDS, and other reference materials to determine an initial course of action.

### **Course Objectives**

Upon completion of this course, you will be able to:

1. Demonstrate a basic understanding of hazardous materials chemistry.
2. Demonstrate proficiency in the use of DOT guidebooks.

## Available Texts

Bevelacqua, A., & Norman, L. A. (2019). *Hazardous materials chemistry* (3rd ed.). Burlington, MA: Jones & Bartlett Learning. ISBN: 9781284041996. <https://www.psglearning.com/catalog/productdetails/9781284041996>

Meyer, E. (2014). *Chemistry of hazardous materials* (6th ed.). New York, NY: Pearson. Print ISBN: 9780133146882, 013314688X, eText ISBN: 9780133799552, 0133799557, <https://www.pearson.com/us/higher-education/program/Meyer-Chemistry-of-Hazardous-Materials-6th-Edition/PGM131783.html>

## Supporting References/Research for Faculty and Students

**U.S. Fire Administration (USFA) Publications:** <http://www.usfa.fema.gov/applications/publications> (See Arson, Fire Data, Fire Protection, Fire Service Operations, Hazardous materials, Health and Safety, Wildfires).

**Applied Research:** Agency Research: <http://www.usfa.fema.gov>

**Research Reports:** <http://www.usfa.fema.gov>

**Technical Reports:** <http://www.usfa.fema.gov/applications/publications>

**Topical Fire Research Series:** <http://www.usfa.fema.gov/research>

**Learning Resource Center:** <http://www.lrc.fema.gov>

**National Institute for Standards and Technology (NIST):** <http://www.fire.nist.gov> or <http://www.fire.nist.gov/aloft/> (see Publications, FIREDOC (under Publications)).

## Lessons Learned Information Sharing

- <http://www.llis.dhs.gov/member/secure/index.cfm>
- <http://www.usfa.fema.gov/applications/publications/techreps.cfm>

## References

AAR. (2003). *Emergency action guides*. Association of American Railroads and the U.S. Bureau of Explosives.

Fire, F. L. (1987). *The common sense approach to hazardous materials*. Tulsa, OK: PennWell Books.

Lewis, R. J. (2008). *Hazardous chemicals desk reference* (6th ed.). Hoboken, NJ: Wiley.

NFPA (2010). *Fire protection guide to hazardous materials*. Clifton Park, NY: Delmar, Cengage Learning.

NIOSH (2005). *NIOSH pocket guide to chemical hazards*. Cincinnati, OH: Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health.

U.S. Department of Transportation. (2016). *Emergency response guidebook*. U.S. Department of Transportation.

## **Assessment**

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

## **Course Outline**

### 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
  - C. Utilization of NFPA Fire Protection Guide to Hazardous Materials
  - D. Utilization of Bureau of Explosives Emergency Action Guides

## **Fire Investigation I (C0283)**

### **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 fire setter, and types of fire causes.

### **Prerequisites**

Principles of Emergency Services (C0273), Building Construction for Fire Protection (C0275), Fire Behavior and Combustion (C0276) or Instructor approval

### **Course Outcomes**

Upon completion of this course, you will be able to:

1. Demonstrate the importance of documentation, evidence collection, and scene security process needed for successful resolution.
2. Understand and demonstrate the process of conducting fire origin and cause investigation.
3. Identify the responsibilities of a firefighter when responding to the scene of a fire, including scene security and evidence preservation.
4. Describe the implications of constitutional amendments as they apply to fire investigations to include case law decisions that have affected fire investigations.
5. Define the common terms used in fire investigations.
6. Explain the basic elements fire dynamics, construction, and fire protection systems as to how they affect origin and cause determination.
7. Discuss the basic principles and identify cause and origin of fires.
8. Recognize potential health and safety hazards.



## Course Objectives

Upon completion of this course, you will be able to:

1. Demonstrate the importance of documentation, evidence collection, and scene security process needed for successful resolution.
2. Understand and demonstrate the process of conducting fire origin and cause.
3. Identify the processes of proper documentation.

## Available Texts

DeHann, J. D., & Icove, D. J. (2012). *Kirk's fire investigation* (7th ed.). New York, NY: Pearson. ISBN-10: 0-13-283000-0; ISBN-13: 978-0-13-283000-3. <http://www.bradybooks.com/store/product.aspx?isbn=0132830000>

IAAI, IAFC, & NFPA. (2019). *Fire investigator: Principles and practice to NFPA 921 and 1033* (5th ed.). Burlington, MA: Jones & Bartlett Learning. ISBN: 9781284140743. <https://www.psglearning.com/catalog/productdetails/9781284140743>

IAAI, &NFPA. (2004). *User's manual or NFPA 921* (2nd ed.). Sudbury, MA: Jones & Bartlett Publishers. ISBN-13: 978-0763744021; ISBN-10: 0763744026. <http://www.constructionbook.com/users-manual-for-nfpa-921-2nd-edition-921gd05/nfpa-standards/>

IFSTA. (2010). *Fire investigator* (2nd ed.). Stillwater, OK: Fire Protection Publications. ISBN: 978-0-87939-383-0. <https://www.ifsta.org/shop/fire-investigator-2nd-ed/36751>

IFSTA. (2013). *Introduction to fire origin and cause* (4th ed.). Stillwater, OK: Fire Protection Publications. ISBN: 978-0-87939-527-8. [https://www.ifsta.org/shop/search?search\\_block\\_form=introduction+to+fire+cause+and+origin+4th+edition](https://www.ifsta.org/shop/search?search_block_form=introduction+to+fire+cause+and+origin+4th+edition)

## Supporting References/Research for Faculty and Students

**U.S. Fire Administration (USFA) Publications:** <http://www.usfa.fema.gov/applications/publications> (See Arson, Fire Data, Fire Protection, Fire Service Operations, Hazardous materials, Health and Safety, Wildfires).

**Applied Research:** Agency Research: <http://www.usfa.fema.gov>

**Research Reports:** <http://www.usfa.fema.gov>

**Technical Reports:** <http://www.usfa.fema.gov/applications/publications>

**Topical Fire Research Series:** <http://www.usfa.fema.gov/research>

**Learning Resource Center:** <http://www.lrc.fema.gov>

**National Institute for Standards and Technology (NIST):** <http://www.fire.nist.gov> or  
<http://www.fire.nist.gov/aloft/> (see Publications, FIREDOC (under Publications)).

### **Lessons Learned Information Sharing**

- <http://www.llis.dhs.gov/member/secure/index.cfm>
- <http://www.firearson.com>
- <http://www.interfire.org/>

### **References**

Icove, D. J., DeHaan, J. D., & Haynes, G. A. (2003). *Forensic fire scene reconstruction*. Upper Saddle River, NJ: Prentice Hall.

IFSTA. (2010). *Fire investigator* (2nd ed.). Stillwater, OK: Fire Protection Publications.

NFPA. (2014). *Standard for professional qualifications for fire investigator*. (Standard No. 1033). Retrieved from [www.nfpa.org](http://www.nfpa.org)

NFPA. (2017). *Guide for fire and explosion investigations*. (Standard No. 921). Retrieved from [www.nfpa.org](http://www.nfpa.org)

Redsicker, D. R., & O'Connor, J. J. (1996). *Practical fire and arson investigation* (2nd ed.). Boca Raton, FL: CRC Press.

### **Assessment**

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

### **Course Outline**

- 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. Fire Setters

- A. Characteristics of Arson
- B. Common Motives

## **Fire Investigation II (C0284)**

### **Course Description**

This course is intended to provide the student with advanced technical knowledge on the rule of law, fire scene analysis, fire behavior, evidence collection and preservation, scene documentation, case preparation, and courtroom testimony.

### **Prerequisites**

Fire Investigation I (C0238)

### **Course Outcomes**

Upon completion of this course, you will be able to:

1. Recognize the need for the use of the scientific method for investigations.
2. Explain the rule of law as it pertains to arrest, search, and seizure.
3. Describe the nature and behavior of fire as it relates to fire dynamics.
4. Analyze and determine the causes of fires and contributing factors.
5. Evaluate the use of incendiary devices, explosives, and bombs.
6. List the procedures for fire scene documentation, including sources and technology available for fire investigations.
7. Explain the role of the fire investigator in courtroom demeanor and testifying

### **Course Objectives**

Upon completion of this course, you will be able to:

1. Explain the significance of the rule of law.
2. Analyze fire cause.
3. Recognize the different classifications of arson.

## Available Texts

DeHann, J. D., & Icove, D. J. (2012). *Kirk's fire investigation* (7th ed.). New York, NY: Pearson. ISBN-10: 0-13-283000-0; ISBN-13: 978-0-13-283000-3. <http://www.bradybooks.com/store/product.aspx?isbn=0132830000>

IAAI, IAFC, & NFPA. (2019). *Fire investigator: Principles and practice to NFPA 921 and 1033* (5th ed.). Burlington, MA: Jones & Bartlett Learning. ISBN: 9781284140743. <https://www.psglearning.com/catalog/productdetails/9781284140743>

IAAI, &NFPA. (2004). *User's manual or NFPA 921* (2nd ed.). Sudbury, MA: Jones & Bartlett Publishers. ISBN-13: 978-0763744021; ISBN-10: 0763744026. <http://www.constructionbook.com/users-manual-for-nfpa-921-2nd-edition-921gd05/nfpa-standards/>

IFSTA. (2010). *Fire investigator* (2nd ed.). Stillwater, OK: Fire Protection Publications. ISBN: 978-0-87939-383-0. <https://www.ifsta.org/shop/fire-investigator-2nd-ed/36751>

IFSTA. (2013). *Introduction to fire origin and cause* (4th ed.). Stillwater, OK: Fire Protection Publications. ISBN: 978-0-87939-527-8. [https://www.ifsta.org/shop/search?search\\_block\\_form=introduction+to+fire+cause+and+origin+4th+edition](https://www.ifsta.org/shop/search?search_block_form=introduction+to+fire+cause+and+origin+4th+edition)

## Supporting References/Research for Faculty and Students

**U.S. Fire Administration (USFA) Publications:** <http://www.usfa.fema.gov/applications/publications> (See Arson, Fire Data, Fire Protection, Fire Service Operations, Hazardous materials, Health and Safety, Wildfires).

**Applied Research:** Agency Research: <http://www.usfa.fema.gov>

**Research Reports:** <http://www.usfa.fema.gov>

**Technical Reports:** <http://www.usfa.fema.gov/applications/publications>

**Topical Fire Research Series:** <http://www.usfa.fema.gov/research>

**Learning Resource Center:** <http://www.lrc.fema.gov>

**National Institute for Standards and Technology (NIST):** <http://www.fire.nist.gov> or <http://www.fire.nist.gov/aloft/> (see Publications, FIREDOC (under Publications)).

## Lessons Learned Information Sharing

- <http://www.llis.dhs.gov/member/secure/index.cfm>
- <http://www.firearson.com>

## References

- Almirall, J. R., & Furton, K. G. (Eds.). (2004). *Analysis and interpretation of fire scene evidence*. Boca Raton, FL: CRC Press.
- Icove, D. J., DeHaan, J. D., & Haynes, G. A. (2003). *Forensic fire scene reconstruction*. Upper Saddle River, NJ: Prentice Hall.
- NFPA. (2016). *Standard classifications for incident reporting and fire protection data*. (Standard No. 901). Retrieved from [www.nfpa.org](http://www.nfpa.org)
- NFPA. (2017). *Guide for fire and explosion investigations*. (Standard No. 921). Retrieved from [www.nfpa.org](http://www.nfpa.org)
- NICB. (2019). *Passenger vehicle identification manual*. National Insurance Crime Bureau.
- U.S. Department of Justice, Office of Justice Programs, National Institute of Justice. (2000). *Fire and arson scene evidence: A guide for public safety personnel*.
- Waggoner, K. (Ed.). (2007). *Handbook of forensic services*. Quantico, VI: FBI Laboratory.

## Assessment

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

## Course Outline

- 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