

<b>Name:</b>	<i>Fire Investigation I</i>
<b>Course Description:</b>	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.
<b>Prerequisite:</b>	<i>Fire Behavior and Combustion</i>
<b>Outcomes:</b>	<ol style="list-style-type: none"> <li>1. 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.</li> <li>2. Define criminal law and explain the constitutional amendments (4th, 5th, 6th, 8th, 14th) as they apply to fire investigations.</li> <li>3. Analyze the precedents set by constitutional law case studies that have affected fire investigations.</li> <li>4. Define and explain the common terms used in fire investigations.</li> <li>5. Describe the basic elements of fire dynamics and how they affect cause determination including fire behavior, characteristics of fuels and methods of heat transfer.</li> <li>6. Analyze the relationship of building construction on fire investigations including types of construction, construction and finish materials.</li> <li>7. Evaluate fire protection systems and building services and discuss how their installation affects the ignition of fires in buildings.</li> <li>8. Discuss the basic principles of electricity.</li> <li>9. Explain the role of the fire investigator in recognizing health and safety concerns including potential hazardous materials awareness.</li> <li>10. Describe fire scene investigations and the process of conducting investigations using the scientific method.</li> <li>11. Explain how an investigator determines the point of origin in a room.</li> <li>12. Identify the types of fire causes and differentiate between accidental and incendiary causes.</li> <li>13. Describe and explain the basic procedures used for investigating vehicle fires.</li> <li>14. Identify the characteristics of arson and common motives of the firesetter.</li> </ol>

<p><b>Suggested Student Texts:</b></p>	<p><i>Fire Investigator</i>, International Fire Service Training Association  <i>Introduction to Fire Origin and Cause</i>, International Fire Service Training Association  <i>Kirk's Fire Investigation</i>, John DeHaan, Brady-Prentice Hall  <i>NFPA 921, Guide for Fire and Explosion Investigations</i></p>
<p><b>Supporting References/Research for Faculty and Students:</b></p>	<p><b>U. S. Fire Administration</b>  Publications :  <a href="http://www.usfa.fema.gov/applications/publications/pubs_main.cfm">http://www.usfa.fema.gov/applications/publications/pubs_main.cfm</a>  See Arson, Fire Data, Fire Protection, Fire Service Operations, Hazardous Materials, Health and Safety, Wildfire  Applied Research:  <a href="http://www.usfa.fema.gov/dhtml/inside-usfa/research.cfm">http://www.usfa.fema.gov/dhtml/inside-usfa/research.cfm</a>  Research Reports:  <a href="http://www.usfa.fema.gov/dhtml/inside-usfa/r_reports.cfm">http://www.usfa.fema.gov/dhtml/inside-usfa/r_reports.cfm</a>  Technical Reports:  <a href="http://www.usfa.fema.gov/applications/publications/techreps.cfm">http://www.usfa.fema.gov/applications/publications/techreps.cfm</a>  Topical Fire Research Series:  <a href="http://www.usfa.fema.gov/dhtml/inside-usfa/tfrs.cfm">http://www.usfa.fema.gov/dhtml/inside-usfa/tfrs.cfm</a>  Learning Resource Center:  <a href="http://www.usfa.fema.gov/dhtml/inside-usfa/lrc.cfm">http://www.usfa.fema.gov/dhtml/inside-usfa/lrc.cfm</a>  <b>National Institute for Standards and Technology</b>  <a href="http://www.fire.nist.gov">http://www.fire.nist.gov</a>: Fire Tests/Data, Software/Models, Publications, FIREDOC (under Publications)  <b>References</b>  <a href="http://www.interfire.org/">http://www.interfire.org/</a>  <b>Current Events/News</b>  <a href="http://www.firehouse.com/">http://www.firehouse.com/</a>  <a href="http://www.fireengineering.com/">http://www.fireengineering.com/</a>  <a href="http://www.withthecommand.com/">http://www.withthecommand.com/</a></p>
<p><b>Assessment:</b></p>	<p>Students will be evaluated for mastery of learning objectives by methods of evaluation to be determined by the instructor.</p>
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## Course Outline

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### *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