

<b>Name:</b>	<i>Fire Investigation II</i>
<b>Course Description:</b>	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.
<b>Prerequisite:</b>	<i>Fire Investigation I</i>
<b>Outcomes:</b>	<ol style="list-style-type: none"> <li>1. Explain the rule of law as it pertains to arrest, search and seizure procedures and their application to fire investigations.</li> <li>2. Recognize and interpret fire scenes common to various types of fires.</li> <li>3. Describe the chemistry of combustion and the relationship of atoms, elements, compounds, and organic compounds on fire.</li> <li>4. Explain the nature and behavior of fire including the effects of heat.</li> <li>5. Explain and identify the combustion properties of liquids, gases and solid fuels.</li> <li>6. Identify and explain electrical causes of fires.</li> <li>7. List and explain the procedures for lifting fingerprints, evidence collection and preservation.</li> <li>8. List and identify the make-up and use of incendiary devices, explosives, and bombs.</li> <li>9. List the procedures for documenting fire scenes, including sketching, photography, and report writing.</li> <li>10. Analyze fire-related deaths and injuries and describe methods of documentation.</li> <li>11. Identify the techniques for interviewing and questioning suspects and subjects.</li> <li>12. Explain the role of the fire investigator in courtroom proceedings including courtroom demeanor and testifying.</li> <li>13. Identify and list the sources and technology available for fire investigations.</li> <li>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.</li> </ol>

<b>Available Texts:</b>	<i>Kirk's Fire Investigation</i> ; John Dehaan, Brady, <i>User's Manual for NFPA 921</i> , NFPA, 5 <sup>th</sup> Ed., 2002
<b>Supporting References/Research for Faculty and Students:</b>	<p><b>U.S. Fire Administration</b>  Publications: <a href="http://www.usfa.fema.gov/applications/publications">http://www.usfa.fema.gov/applications/publications</a>  See Arson, Fire Data, Fire Protection, Fire Service Operations, Hazardous Materials, Health and Safety, Wildfire  <u>Applied Research:</u>  <a href="http://www.usfa.fema.gov">http://www.usfa.fema.gov</a>  <u>Research Reports:</u>  <a href="http://www.usfa.fema.gov/research">http://www.usfa.fema.gov/research</a>  <u>Technical Reports:</u>  <a href="http://www.usfa.fema.gov/applications/publications/browse.cfm?mc=29">http://www.usfa.fema.gov/applications/publications/browse.cfm?mc=29</a>  <u>Lessons Learned Information Sharing:</u>  <a href="http://www.llis.dhs.gov/member/secure/index.cfm">http://www.llis.dhs.gov/member/secure/index.cfm</a>  <u>Topical Fire Research Series:</u>  <a href="http://www.usfa.fema.gov">http://www.usfa.fema.gov</a>  <u>Learning Resource Center:</u>  <a href="http://www.lcr.fema.gov">http://www.lcr.fema.gov</a></p> <p><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)</p> <p><b>References</b>  <u>Lessons Learned Information Sharing:</u>  <a href="http://www.llis.dhs.gov/member/secure/index.cfm">http://www.llis.dhs.gov/member/secure/index.cfm</a>  <a href="http://www.interfire.org">http://www.interfire.org</a>  <i>Analysis and Interpretation of Fire Scene Evidence</i>; Jose Amirall, 2004  <i>Fire and Arson Scene Evidence: A Guide for Public Safety Personnel</i>; U.S. Department of Justice Office of Justice Programs  <i>Forensic Fire Scene Reconstruction</i>; David Icove, Brady, 2003  <i>Handbook of Forensic Services</i>, U.S. Department of Justice, Federal Bureau of Investigation  <i>NFPA 901 Standard Classifications for Incident Reporting and Fire Protection Data</i>, NFPA  <i>NFPA 921 Guide for Fire and Explosion Investigations</i>, NFPA  <i>Passenger Vehicle Identification Manual</i>, National Insurance Crime Bureau Inc.</p> <p><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>
<b>Assessment:</b>	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](mailto:Laperez@nmsu.edu)

Ralph De La Ossa, Long Beach Community College, California  
(562) 938-4338, [rdelaossa@lbcc.edu](mailto:rdelaossa@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