



COURSE OUTLINE FALL 2008

FIR 211
Course Number

3
Credits

Fire Investigation II
Course Title

Lecture/Practical
Hours: lecture/laboratory/other (specify)

Catalog description:

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

Prerequisites: FIR 206 Fire Investigation

Corequisites: None

Required texts/other materials:

Kirk's Fire Investigation, John DeHaan, Brady Publishing
NFPA Standard #921 Fire Guide for Fire and Explosion Investigations, National Fire Protection Association

Last revised: n/a

Course coordinator: Scott Loh, 799-3245 (Dempster Center), lohs@mccc.edu

Information resources:

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.lcr.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> or <http://www.interfire.org>
- *Fire and Arson Scene Evidence: A Guide for Public Safety Personnel*; U.S. Department of Justice Office of Justice Programs
- *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
- *Passenger Vehicle Identification Manual*, National Insurance Crime Bureau Inc.

Current Events/News

- <http://www.firehouse.com>
- <http://www.fireengineering.com>
- <http://www.withthecommand.com>

Other learning resources:

Software

- *InterFire, Interactive Virtual reality Fire Investigation*, distributed by Bureau of Alcohol Tobacco and Firearms and the United States Fire Administration

Course goals:

The student will be able to:

- Explain the rule of law as it pertains to arrest, search and seizure procedures and their application to fire investigations.
- Recognize and interpret fire scenes common to various types of fires.
- Describe the chemistry of combustion and the relationship of atoms, elements, compounds, and organic compounds of fire
- Explain the nature and behavior of fire including the effects of heat.
- Explain and identify the combustion properties of liquids, gases and solid fuels.
- Identify and explain electrical causes of fires.
- List and explain the procedures for lifting fingerprints, evidence collection and preservation.
- List and identify the make-up and use of incendiary devices, explosives, and bombs.
- List the procedures for documenting fire scenes, including sketching, photography, and report writing.
- Analyze fire-related deaths and injuries and describe methods of documentation.
- Identify the techniques for interviewing and questioning suspects and subjects.
- Explain the role of the fire investigator in courtroom proceedings including courtroom demeanor and testifying.

- Identify and list the sources and technology available for fire investigations.
- 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.

Course-specific General Education Core Competencies and Goals.

General Education Knowledge Goals

Communication. Students will communicate effectively in both speech and writing.

Social Science. Students will use social science theories and concepts to analyze human behavior and social and political institutions and to act as responsible citizens.

History. Students will understand historical events and movements in World, Western, non-Western or American societies and assess their subsequent significance.

Diversity. Students will understand the importance of a global perspective and culturally diverse peoples.

Ethical Reasoning and Action. Students will understand ethical issues and situations.

MCCC Core Skills

Written and Oral Communication in English. Students will communicate effectively in speech and writing, and demonstrate proficiency in reading.

Critical Thinking and Problem-solving. Students will use critical thinking and problem solving skills in analyzing information.

Ethical Decision-Making. Students will recognize, analyze and assess ethical issues and situations.

Information Literacy. Students will recognize when information is needed and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.

Collaboration and Cooperation. Students will develop the interpersonal skills required for effective performance in group situations.

Intra-Cultural and Inter-Cultural Responsibility. Students will demonstrate an awareness of the responsibilities of intelligent citizenship in a diverse and pluralistic society, and will demonstrate cultural, global, and environmental awareness.

Units of study in detail.

- I. ***Rule of Law:*** The student shall explain the rule of law as it pertains to arrest, search and seizure procedures and their application to fire investigation
 - A. Arrest Procedures
 - B. Search and Seizure
 - C. Warrant Searches

- II. ***Interpretations of Fire Scenes:*** The student will recognize and interpret fire scenes common to various types of fires
 - A. Structure Fires
 - B. Vehicle Fires
 - C. Ship Fires
 - D. Explosions
 - E. Wildland Fires
 - F. Hazardous Materials Fires

- III. ***Chemistry of Combustion:*** The student will describe the chemistry of combustion and the relationship of atoms, elements, compounds and organic compounds of fire
 - A. Atoms
 - B. Elements

- C. Compounds
 - D. Organic Compounds
- IV. **Behavior of Fire:** The student will explain the nature and behavior of fire including the effects of heat
- A. Heat
 - B. Flame Plumes
 - C. Sequence of a Room Fire
 - D. Effects of Environmental Conditions
- V. **Combustion Properties:** The student will explain and identify the combustion properties of liquids, gases, and solid fuels
- A. Liquids
 - B. Gases
 - C. Solids
- VI. **Electrical Causes of Fires:** The student will identify and explain electrical causes of fires
- A. Wiring Systems
 - B. Ignition Sources
 - C. Investigation of Fires
- VII. **Collection of evidence:** The student will list and explain the procedures for lifting fingerprints, evidence collecting and preservation
- A. Photography Procedures
 - B. Sketching Procedures and Techniques:
 - C. Fingerprint Lifting and Collection Techniques
 - D. Preservation of Evidence
- VIII. **Incendiary Systems:** The student will list and identify the make up and use of incendiary devices, explosives and bombs
- A. Basic Incendiary Devices
 - B. Explosives
 - C. Bombs
- IX. **Documentation of Fire Scene:** The student will list and demonstrate the procedures for documenting fire scenes, including sketching photography and report writing.
- 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:** The student will analyze fire related deaths and injuries and describe methods of documentation
- A. Homicide Fire Investigation
 - B. Scene Security
 - C. Scene Examination and Search
 - D. Scene Documentation
 - E. Autopsy Report

- XI. **Interview Techniques:** The student will identify the techniques for interviewing and questioning suspects and subjects
- A. Interviewing
 - B. Questioning
 - C. Advising of Rights
 - D. Exceptions to the Rule
 - E. Waiver of Rights
- XII. **Courtroom Demeanor:** The student will explain the role of the fire investigator in courtroom proceedings including courtroom demeanor and testifying
- A. Court Procedures
 - B. Pre-trial Preparation
 - C. Trial Exhibits
 - D. Physical Appearance
 - E. Testifying
 - F. Court Decisions
- XIII. **Sources of Information:** The student will identify and list the sources and technology available to fire investigators
- A. Local
 - B. State
 - C. Federal
 - D. Website
- XIV. **Fire Investigation:** The student will, as part of a group, demonstrate the investigation and documentation skills developed through this course by determining the cause of a fire set as part of the instructional process.
- XV. **Courtroom testimony:** The student, as a representative of a group, will, using skills developed through this course, offer testimony concerning the fire investigation conducted in Unit XIV in a mock courtroom setting

Evaluation of student learning:

Students will be evaluated for mastery of learning objectives by methods of evaluation to be determined by the instructor. Periodic tests or quizzes as well as a final exam may be utilized. Other methods such as a research or group projects are encouraged.

Academic Integrity Statement:

Mercer County Community College and the Fire Science program are committed to Academic Integrity -- the honest, fair and continuing pursuit of knowledge, free from fraud or deception. This implies that students are expected to be responsible for their own work, and that faculty and academic support services staff members will take reasonable precautions to prevent the opportunity for academic dishonesty. The Fire Science program affirms its support of the Academic Integrity Policy as printed in the Student handbook and approved by the College Board of Trustees March 18, 2004.