



COURSE OUTLINE FALL 2008

<u>FIR 206</u>	<u>Fire Investigation</u>
Course Number	Course Title
<u>3</u>	<u>3 Lecture Hours</u>
Credits	Hours: lecture/laboratory/other (specify)

Catalog description:

Provides the fundamental and technical knowledge needed for proper fire scene interpretations, including recognizing and conduction origin and cause, preservation of evidence and documentation, scene security, motives of the firesetter, and types of fire causes.

Prerequisites: None

Corequisites: None

Is course New or Modified? No

Required texts/other materials:

Kirk's Fire Investigation, John DeHaan, Pearson Prentice Hall Publishing
And
NFPA 921, Guide for Fire and Explosion Investigations

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>

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

Fire Investigator, Fire Protection Publications

Forensic Fire Scene Reconstruction, David Icove, Brady

Introduction to Fire Origin and Cause, Fire Protection Publications

Practical Fire and Arson Investigating, David Redsicker

NFPA 1033 Standard for Professional Qualifications for Fire Investigations

Other learning resources:

Lessons Learned Information Sharing:

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

<http://www.firearson.com>

<http://www.interfire.org/>

Current Events/News

<http://www.firehouse.com>

<http://www.fireengineering.com>

<http://www.withthecommand.com>

Course goals:

The student will be able to:

- 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.
- Define criminal law and explain the constitutional amendments (4th, 5th, 6th, 8th, 14th) as they apply to fire investigations.
- Analyze the precedents set by constitutional law case studies that have affected fire investigations.
- Define and explain the common terms used in fire investigations.
- Describe the basic elements of fire dynamics and how they affect cause determination including fire behavior, characteristics of fuels and methods of heat transfer.
- Analyze the relationship of building construction on fire investigations including types of construction, construction and finish materials.
- Evaluate fire protection systems and building services and discuss how their installation affects the ignition of fires in buildings.

- Discuss the basic principles of electricity.
- Explain the role of the fire investigator in recognizing health and safety concerns including potential hazardous materials awareness.
- Describe fire scene investigations and the process of conducting investigations using the scientific method.
- Explain how an investigator determines the point of origin in a room.
- Identify the types of fire causes and differentiate between accidental and incendiary causes.
- Describe and explain the basic procedures used for investigating vehicle fires.
- Identify the characteristics of arson and common motives of the firesetter.
- 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.

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. 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

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.