

J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: FST 230

Credits: 3

Course Title: Fire Investigation

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. Lecture 3 hours per week.

General Course Purpose: This course is designed for career or volunteer members of a municipal fire department. A minimum of five years' experience before enrolling in the course is recommended. This course provides a foundation on fire investigation for the fire investigator to build on to advance their knowledge of fire investigation.

Course Prerequisites and Co-requisites:

None

Student Learning Outcomes:

Upon completing the course, the student will be able to

- a. 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;
- b. Define criminal law and explain the constitutional amendments (4th, 5th, 6th, 8th, and 14th) as they apply to fire investigations;
- c. Analyze the precedents set by constitutional law case studies that have affected fire investigations;
- d. Define and explain the common terms used in fire investigations;
- e. Describe the basic elements of fire dynamics and how they affect cause determination, including fire behavior, characteristics of fuels, and methods of heat transfer;
- f. Analyze the relationship of building construction on fire investigations, including types of construction, construction, and finish materials;
- g. Evaluate fire protection systems and building services and discuss how their installation affects the ignition of fires in buildings;
- h. Discuss the basic principles of electricity;
- i. Explain the role of the fire investigator in recognizing health and safety concerns, including potential hazardous materials awareness;
- j. Describe fire scene investigations and the process of conducting investigations using the scientific method;
- k. Explain how an investigator determines the point of origin in a room;
- l. Identify the types of fire causes and differentiate between accidental and incendiary causes;
- m. Describe and explain the basic procedures used for investigating vehicle fires;
- n. Identify the characteristics of arson and common motives of the fire setter; and
- o. Identify and analyze the causes of firefighter deaths in the line of duty related to structural and wildland firefighting, training and research, and reduction of emergency risks and accidents.

Major Topics to Be Included:

- a. Responsibilities of the fire department when responding to the scene of a fire, including the possibility of incendiary devices often encountered
- b. Criminal law and the constitutional amendments (4th, 5th, 6th, 8th, 14th) as they apply to fire investigations
- c. Precedents set by constitutional law case studies
- d. Common terms used in fire investigations
- e. Fire dynamics and how they affect cause determination including fire behavior, characteristics of fuels, and methods of heat transfer
- f. Relationship of building construction on fire investigations, including types of construction, construction, and finish materials
- g. Fire protection systems and building services and how their installation affects the ignition of fires in buildings
- h. Principles of electricity
- i. Health and safety concerns, including hazardous materials awareness
- j. Scientific method in fire scene investigations
- k. Determining a fire's point of origin
- l. Types of fire causes
- m. Investigating vehicle fires
- n. Arson
- o. 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

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