



## COURSE OUTLINE FALL 2008

<u>FIR 107</u>	<u>Fire Prevention and Code Enforcement I</u>
<b>Course Number</b>	<b>Course Title</b>
<u>5</u>	<u>4 Lecture/ 2 Laboratory Hours</u>
<b>Credits</b>	<b>Hours: lecture/laboratory/other (specify)</b>

### **Catalog description:**

This course acquaints the student with the history, theory and practice of fire prevention and code enforcement. Topics include relevant codes, recognition of fire hazards, and implementation of an inspection program. This program meets the 90 hour requirement for eligibility to take the national BOCA Fire Inspector I examination. Successfully passing the examination leads to the New Jersey Division of Fire Safety Fire Inspector certification.

**Prerequisites:** None

**Corequisites:** None

**Is course New or Modified?** No

### **Required texts/other materials:**

*IFSTA Fire Protection and Code Enforcement, 6<sup>th</sup> edition – Fire Protection Publications*

**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/pubs\\_main.cfm](http://www.usfa.fema.gov/applications/publications/pubs_main.cfm)

Applied Research: <http://www.usfa.fema.gov/dhtml/inside-usfa/research.cfm>

Research Reports: [http://www.usfa.fema.gov/dhtml/inside-usfa/r\\_reports.cfm](http://www.usfa.fema.gov/dhtml/inside-usfa/r_reports.cfm)

Technical Reports: <http://www.usfa.fema.gov/applications/publications/techreps.cfm>

Topical Fire Research Series: <http://www.usfa.fema.gov/dhtml/inside-usfa/tfrs.cfm>

Learning Resource Center: <http://www.usfa.fema.gov/dhtml/inside-usfa/lrc.cfm>

#### **National Institute for Standards and Technology**

<http://www.fire.nist.gov>: Fire Tests/Data, Software/Models, Publications, FIREDOC (under Publications)

#### **References**

New Jersey Uniform Fire Safety Act NJSA 52:27D-192.

New Jersey Uniform Fire Code NJAC 5:70-1 et seq.

BOCA National Fire Code Commentary/1996

BOCA National Building Code Commentary/1996

NFPA Standard 1041 Fire Prevention Inspector

NFPA Inspection Manual, 7<sup>th</sup> ed.  
NFPA Fire Protection Handbook, 18<sup>th</sup> ed.

**Other learning resources:** (Describe any other student learning resources that are specific to this course, including any special tutoring or study group support, learning system software, etc.)

- FEMA Learning Resource Center: <http://www.lrc.fema.gov>
- **Current Events/News**
  - <http://www.firehouse.com/>
  - <http://www.fireengineering.com/>
  - <http://www.withthecommand.com/>

**Course goals:**

***The student will be able to:***

- Have an understanding and appreciation for the important role that fire codes, building codes and code enforcement officials play in terms of public safety.
- Understand the basic principles of life safety for buildings required by the New Jersey Uniform Fire Code and other life safety codes.
- Be familiar with the content and format of the New Jersey Uniform Fire Code with the goal of having the capability of using these codes as reference tools for building inspections.
- Recognize and identify a protected means of egress from a building for the buildings occupants, fire resistance and fire resistant materials and construction, and classification of structures.
- Have the fundamental knowledge, skills, and abilities to effectively and confidently conduct a systematic building fire safety inspection.
- Identify the inherent risks in buildings that lack complete active and passive fire protection.
- To present to the student the fire prevention code and building code requirements for most the most common occupancies: residential, apartment, mercantile, commercial, industrial, health care facilities and hotels.
- Pass the BOCA Fire Inspector I examination.

**Course-specific General Education Core Competencies and Goals.**

**General Education Knowledge Goals**

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

**Mathematics.** Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems related to occupancy loads, hydraulics and other fire protection concepts.

**Social Science.** Students will use theories and concepts to understand human behavior as well as social and political institutions. Students will gain an appreciation of the impact that code enforcement plays in the protection of society.

**History.** Students will understand historical events and the significance that these events played in the development of fire prevention codes, standards and practices.

**Ethical Reasoning and Action.** Students will understand ethical issues and situations as related to fire safety and fire protection.

### **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 and applying it to inspection scenarios and hazard identification/mitigation.

**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 and continuing into the fire protection industry.

### **Units of study in detail**

- I. Introduction to Course
- II. History and Development of Fire Prevention
  - A. Fire Prevention Organizations
    1. Public
    2. Federal
    3. State
    4. Private
- III. Basic Fire Chemistry
- IV. Organization of a Fire Prevention Bureau
  - A. Functions
  - B. Fire Prevention Duties and Responsibilities
  - C. Fire Prevention Tools of the Trade
  - D. Legal Aspects of Fire Prevention
- V. Building Codes, Fire Prevention Codes and Fire Prevention Standards
  - A. N.J.S.A. Uniform Fire Safety Act Statues
  - B. Uniform Fire Code (UFC) Subchapter 1 & 2
  - C. State Fire Prevention Code Chapter 44
  - D. Difference between a code and a standard
  - E. When to apply referenced standards
  - F. How to apply NFPA reference standards
  - G. UCC Building Code BOCA-96 & IBC-2000
  - H. UFC-NJ Use Groups
  - I. Life Hazard Uses
  - J. Retrofit Code
    1. History of the Retrofit provisions
    2. NFPA Life Safety Code 101 background
    3. Relationship to the UCC
    4. When Retrofit applies
    5. Historic structures
    6. Fire protection plans
    7. Specific Subchapter 4 requirements
- VI. Building Construction & Plan Review
  - A. Types of construction BOCA Basic Building Code Chapter 6
  - B. Height and area limitations in the BOCA Basic Building Code Chapter 5
  - C. Fire resistance ratings
  - D. Methods of fire resistance rating BOCA Basic Building Code Chapter 7
  - E. Continuity of ratings
  - F. Truss construction concepts
  - G. Types of loads (dead, live, fuel)

- H. Load carrying design of beams and columns
- I. Recognizing deficiencies in construction
- J. Types of plans
  - 1. Site plans
  - 2. Foundation plans
  - 3. Plot plans
  - 4. Floor plans
  - 5. Architectural plans
  - 6. Electrical plans
  - 7. Mechanical plans
  - 8. Views (plan, elevation, sectional, detail)
  - 9. Sprinkler system plans
- VII. Inspection Procedures
  - A. Ethics and demeanor
  - B. Pre-inspection preparation
  - C. Right of entry and methods
  - D. Interviewing
  - E. Documentation methods
  - F. On-site record reviews
  - G. Sampling and testing
  - H. Report content
  - I. The inspector as a witness
  - J. Inspection Skills & Tools
    - 1. Types of inspections
    - 2. Purpose of inspections
    - 3. Applying the “Three Es” of fire prevention
    - 4. Inspection equipment and tools
    - 5. Inspector health and safety
    - 6. Issuing violation notices
- VIII. Water Based Fire Protection-Sprinklers, Standpipes, Water Supply, Fire Pumps
  - A. Fire sprinkler systems
  - B. Standpipe systems
  - C. Water supplies and testing
  - D. Fire pumps
  - E. Fire alarm systems
  - F. System monitoring
  - G. Hood protection systems
  - H. Smoke removal systems
  - I. Fire extinguishers
- IX. Fire Protection System Code Requirements
  - A. State Fire Prevention Code Chapter 5
  - B. BOCA Basic Building Code Chapter 10
  - C. NFPA 25, 231, 231C, 231D, 231E and 231F
  - D. Specific Operations
    - 1. UFC 5:70-3 Chapters 8 through 22
- X. Identification of Hazards
  - A. Common vs. Special Hazards
  - B. Hazard Types
  - C. Non-structural Hazards
  - D. Deficiencies in Fire Protection Equipment and Systems
  - E. Occupancy Loads/Mean of Egress
  - F. Hazardous Materials

1. Basic hazardous material chemistry
  2. Physical hazards (F-23 03.2) definitions and examples
  3. Health hazards (F-2303) definitions and examples
  4. Research materials and MSDS
  5. Relationship to NJDEP, USEPA, USDOT regulations
  6. Containment
  7. Discharges and local response protocols
  8. State Fire Prevention Code Chapter 23 Hazardous Materials
- XI. Abatement and Mitigation of Hazards
- XII. Fire Investigation
- A. Review duties of fire officials to investigate fires
  - B. Basic fire investigation techniques
  - C. Scene approach and documentation
  - D. Interviewing victims and witnesses
- XIII. Public Fire Safety Education
- XIV. Report Preparation and Record Keeping

**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.