# NorthWest Arkansas Community College Division of Health Professions/Fire Science

# **Course Number and Title**

FIRE 2033 Building Construction for the Fire Service

#### **Catalog Description**

This course covers the advantages and disadvantages of major structural materials, wood, masonry, steel and concrete. Fire problems of nonstructural elements with emphasis on fire characteristics and safety factors, as well as liabilities of code enforcement.

#### **Prerequisites**

None

# **Credit Hours/Contact Hours/Load Hours**

3/3/3

# **Target Audience/Transferability**

This course is designed for students desiring a career in the fire service or related areas, and for those already in a fire related profession seeking an overview of the field of building construction. Students working towards a two-year degree in fire science, as well as those planning to transfer to a four-year college, will benefit from this course.

### **Student Learning Outcomes**

- Demonstrate a basic understanding of building construction as it relates to firefighter safety, codes, fire prevention, and firefighting strategies and tactics.
- Classify major type of building construction based on NFPA 220.
- Analyze the hazards and possible tactical considerations associated with the types of construction.
- Explain the different loads and stresses placed on a building and they are interrelated.
- Identify the principle exterior and interior structural components of buildings and demonstrate understanding of the functions of each component.
- Differentiate between fire resistance and flame spread, and describe the testing procedures used to establish their ratings.
- Identify various systems and services found within a structure, and explain how they can affect flame spread and firefighting
  operations.
- Identify indicators of potential structural collapse throughout different construction phases, and describe how the relate to firefighter safety

## **Outline of Instruction**

- I. Basics of Building Construction
- II. Building Construction and the Fire Service
- III. Structural Fire resistance and Building Classifications
- IV. The Way Buildings are Constructed: Structural Design Features
- V. Building Systems
- VI. Fire Behavior and Building Construction
- VII. Structural Foundations
- VIII. Wood Construction
- IX. Masonry and Ordinary Construction
- X. Steel Construction
- XI. Concrete Construction
- XII. Roofs
- XIII. Special Structures and their Design Features
- XIV. Buildings Under Construction, Remodel, Expansion, Demolitions, and Hazards Each Phase Poses to Firefighters
- XV. Non-Fire Related Building Collapse

### Forms of Assessment

The student will successfully complete course four exams and a case study based on the required knowledge, ability to identify, and safety concerns of all construction types with a minimum cumulative grade of 70%.