

FIP 132
BUILDING CONSTRUCTION

COURSE DESCRIPTION:

Prerequisites: None

Corequisites: None

This course covers the principles and practices related to various types of building construction, including residential and commercial, as impacted by fire conditions. Topics includes types of construction and related elements, fire-resistive aspects of construction materials, building codes, collapse, and other related topics, Upon completion, students should be able to understand and recognize various types of construction and their positive or negative aspects as related to fire conditions. Course Hours Per Week: Class, 3. Semester Hours Credit, 3.

COURSE OBJECTIVES:

Upon completion of this course, the student will be able to:

- a. Classify structures by their construction type and materials.
- b. Determine building loads and types support.
- c. Categorize wood construction by its characteristics.
- d. Identify fire hazards of wood construction.
- e. Categorize ordinary construction by its characteristics
- f. Identify the fire hazards of ordinary construction.
- g. Recognize the features of industrial construction.
- h. Determine fire hazards of industrial construction.
- i. Identify the standards for fire resistance.
- j. Recognize concrete construction characteristics.
- k. Determine fire hazards of a concrete construction building
- l. Recognize steel construction characteristics.
- m. Determine fire hazards of steel constructed buildings.
- n. Recognizes truss characteristics

OUTLINE OF INSTRUCTION:

- I. Principles of construction
 - a. Definitions of loads
 - b. Characteristics of materials
 - c. Applying forces to materials
 - d. Structural elements
 - e. Columns
 - f. Walls
 - g. Roofs
 - h. Foundations
 - i. Connections
- II. Wood construction

- a. Types of wood building construction
 - b. Firestopping
 - c. Wood as a building material
 - d. Engineered wood
 - e. Siding
 - f. Heavy timber construction
 - g. Advantages and disadvantages
 - h. Imitation timber
- III. Ordinary construction
- a. Characteristics of ordinary construction
 - b. Problems of ordinary construction
 - c. Structural stability of masonry walls
 - d. Interior structured stability
 - e. Void spaces
 - f. Risk analysis
 - g. Mill construction
- IV. Apartments and other protected structures
- a. Characteristics of apartments
 - b. Fire department problems
 - c. Protected combustible construction
 - d. Fire walls
- V. Principles of fire resistance
- a. Early fire tests
 - b. Fire-resistance testing
 - c. Preplanning
- VI. Steel construction
- a. Fire characteristics
 - b. Steel as a construction material
 - c. Overcoming the negative fire characteristics of steel
 - d. Metal deck roof fire problems
 - e. Fire walls
 - f. Types of protection of steel structures
- VII. Concrete construction
- a. Concrete structures
 - b. Concrete structural elements
 - c. Collapse during construction
 - d. Fire problems of concrete building under construction
 - e. Fire problems in finished buildings
- VIII. Fire growth
- a. Examples of fire growth
 - b. Industry opposition
 - c. Fire loads
 - d. Regulations

- e. Control or rapid fire growth
- f. Testing and rating materials
- IX. Smoke and fire containment
 - a. Smoke
 - b. Containment of fire
 - c. Public education
- X. High-rise construction
 - a. Classifications of high-rise buildings
 - b. General problems and hazards with high rises
 - c. Smoke movement in high-rise buildings
 - d. Fire load and flame spread
- XI. Trusses
 - a. Characteristics of trusses
 - b. Problems with trusses
 - c. Types of trusses
- XII. Automatic sprinklers
 - a. Types of sprinkler systems
 - b. Opposition to sprinklers
 - c. Inspections
- XIII. Rack storage
 - a. Warehouse fire problems
 - b. Fire defenses
 - c. Fire department actions

REQUIRED TEXTBOOKS AND MATERIALS:

Text to be selected by instructor.

STATEMENT FOR STUDENTS WITH DISABILITIES:

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 919-536-7207, ext. 1413 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1209.