Modesto Junior College
Course Outline of Record
FSCI 304

I. OVERVIEW
   The following information will appear in the 2009 - 2010 catalog

   FSCI-304  Bldg Construction for Fire Protection  3 Units

   Prerequisite: Satisfactory completion of FSCI 301 with a minimum grade of C or better.

   Fundamentals of building construction as it relates to fire protection. Introduction to building materials and processes that are involved in the construction of structures. Provide students with the knowledge required to operate safely and effectively within residential or commercial buildings. Course is repeatable - three completions allowed. Field trips might be required. Course is applicable to the associate degree.

II. LEARNING CONTEXT
   Given the following learning context, the student who satisfactorily completes this course should be able to achieve the goals specified in Section III, Desired Learning:

   A. COURSE CONTENT

      1. Required Content:

         A. Loads and other forces on building
            1. Dead and live loads
            2. Stress and deformations
            3. Wind loads
            4. Snow loads
            5. Earthquakes, Hurricanes, and Tornadoes

         B. Plans and Codes
            1. Building codes and code development.
            2. International building codes (IBC)
            3. Code for one- and two-family dwelling (CABO)
            4. Fire resistance and flame spread
            5. Plans and blueprints

         C. Building Materials
            1. Stones
            2. Granite
            3. Limestone
            4. Sandstone
            5. Marble

         D. Masonry
            1. Clay Brick
            2. Concrete
            3. Mortar
            4. Masonry and Safety

         E. Steel
            1. Iron Manufacturing
            2. Steel-making processes

         F. Concrete Construction
            1. History
            2. Portland Cement
            3. Mixing
            4. Pouring or Placing
            5. Finishing
            6. Curing

         G. Building Components
            1. Foundations
2. Walls
3. Exterior Walls Coverings
4. Interior Wall Coverings
5. Roofs
6. Floors <br />
7. Ceilings
1. Suspended
8. Doors and Windows

H. Building Systems Residential
1. Plumbing
2. Drain Systems
3. Heating, Ventilation, and Cooling
4. Insulation
5. Electricity and Lighting

I. Commercial
1. Plumbing
2. Plumbing systems and materials
3. HVAC
4. Elevators

2. **Required Lab Content:**

   a. Photographs of Residential building under construction
      i. Identify construction material
      ii. Locate electrical components
      iii. Analyze building load.

   b. Photographs of Commercial buildings under construction
      i. Identify the building fire rating.
      ii. HVAC systems and power sources.

   c. Review the case history of building collapses.

3. **Recommended Content:**

   a. Building Construction Types
      i. Type I Construction
      ii. Fire rating
      iii. HVAC systems and smoke movement
      iv. Exterior Walls
      v. Roof assemblies

   b. Type II Construction
      i. Main Structural Members
      ii. Exterior Walls
iii. Roof assemblies

c. Type III Construction
d. Type IV Construction
e. Type V Construction

B. ENROLLMENT RESTRICTIONS

1. Prerequisites

Satisfactory completion of FSCI 301 with a minimum grade of C or better.

2. Requisite Skills

Before entering the course, the student will be able to:

a. Identify laws, occupational standards and minimum qualifications related to the fire service.
b. Explain fire service organization structure and its relationship to national, state and local government.
c. Identify the specialties within the fire service occupation.
d. Identify the basic concepts of fire behavior, chemistry and extinguishment.
e. Describe the role of education and certification programs.
f. Identify terminology specific to the fire service occupation.

C. HOURS AND UNITS

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D. METHODS OF INSTRUCTION (TYPICAL)

Instructors of the course might conduct the course using the following method:

1. Lecture
2. Group Work
3. Class discussions
4. Power Point presentations
5. Assigned readings
6. Demonstration
7. Weekly homework assignments.
8. Per term oral report on fire retardants and fire resistant buildings.

9. Reading assignments and reports from the "Final Report, City of Oklahoma, Federal Building Bombing.

E. ASSIGNMENTS (TYPICAL)

1. EVIDENCE OF APPROPRIATE WORKLOAD FOR COURSE UNITS
   Time spent on coursework in addition to hours of instruction (lecture hours)
   a. Weekly reading assignment from textbook, and study for quizzes.
   b. mid term paper at least 1 typewritten page, with illustration and/ or photos, explaining and depicting the framing stage of a residential occupancy under construction.
   c. Per term prepare one discussion pager of ten minutes on assigned component's of building construction material
   d. Term project is required. Two photographs, taken by the student, depicting a topic covered in the textbook will be submitted. One typewritten page will accompany each photograph. Explain why the topic you are depicting would be important to a firefighter.

2. EVIDENCE OF CRITICAL THINKING
   Assignments require the appropriate level of critical thinking
   a. Weekly quizzes on building construction will require the students to compare the types of material used in construction and how it is effected by heat and fire.
   b. Analyze the hazards and tactical consideration associated with the various types of building construction.
   c. Identify the principle structural components of buildings and demonstrate and understanding of the functions of each.
   d. Identify the indicators of potential structural failure and factors that contribute to failure as they relate to firefighter safety.

F. TEXTS AND OTHER READINGS (TYPICAL)

2. Other: Strategic and Tactical Considerations on the Fireground, 2nd Edition

III. DESIRED LEARNING

A. COURSE GOAL
   As a result of satisfactory completion of this course, the student should be prepared to:
   Examine all detailed subjects of building construction as it relates to firefighting tactics and strategy. Students will recognize the dangers of wood and steel trusses, and most importantly, examine collapse indicators of fire-resistive, Type I, and noncombustible, Type II construction.

B. STUDENT LEARNING GOALS
   Mastery of the following learning goals will enable the student to achieve the overall course goal.
   1. Required Learning Goals
Upon satisfactory completion of this course, the student will be able to:

a. Describe the differences between axial and eccentric loading
b. Discuss and define shear as it relates to public and firefighter safety.
c. Discuss the role of the NFPA, ASTM, and ANSI in code development.
d. Compare where you find the water and electrical systems in a building.
e. Describe the main differences in strength between steel, concrete, masonry, and wood.
f. Explain why stone is so unstable under fire conditions
g. Discuss roof pitch, span, and rise and why they are important.
h. Describe some similarities and differences of systems in residential and commercial structures.
i. Assess what are some of the dangers of using elevators in a burning building.
j. Discuss structural collapses that require a firefighter's response.
k. Discuss the responsibilities of the first arriving units.
l. Describe how building collapses contribute to fatalities.
m. Discuss what rapid intervention crews need to know about a building.

2. **Lab Learning Goals**

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

a. Analyze the hazards and tactical considerations associated with the various types of building construction.
b. Identify the principle structural components of buildings and demonstrate an understanding of the functions of each.
c. Differentiate between fire resistances and flame spread, and describe the testing procedures used to establish ratings for each.
d. Identify the indicators of potential structural failure and factors that contribute to failure as they relate to firefighter safety.
e. Explain the different loads and stresses that are placed on a building and their interrelationships.

IV. **METHODS OF ASSESSMENT (TYPICAL)**

A. **FORMATIVE ASSESSMENT**

1. Midterm test
2. Oral reports on building failures
3. Term paper on Case studies
4. Weekly quizzes based on reading assignments and class lectures
B. SUMMATIVE ASSESSMENT

1. Final Exam