

# BUTTE COLLEGE

## COURSE OUTLINE

### I. CATALOG DESCRIPTION

**FSC 4 - Fundamentals of Fire Behavior and Control**

**3 Unit(s)**

**Prerequisite(s):** NONE

**Recommended Prep:** Reading Level III; English Level III

**Transfer Status:** CSU

51 hours Lecture

This course introduces students to methods of science and concepts relating to mechanics, heat, electricity, atomic structure, formula and nomenclature of organic and inorganic compounds for the purpose of identification of dangerous reactions in emergency incidents. Emphasis is placed on basic principles, relationships and applications to fire protection.

### II. OBJECTIVES

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

- A. Explain the nature of matter and energy, including the laws that explain their behavior.
- B. Recognize and utilize terminology, definitions and basic principles of chemistry and physics, especially as they apply to the science of fire.
- C. Define heat and describe its sources, forms, methods of transfer and control, especially in fire situations.
- D. Utilize the understanding of the chemistry of fire to develop strategies for fire extinguishment.

### III. COURSE CONTENT

#### **A. Unit Titles/Suggested Time Schedule**

|                                     |  | Lecture |              |
|-------------------------------------|--|---------|--------------|
| <u>Topics</u>                       |  |         | <u>Hours</u> |
| 1. Introduction                     |  |         | 1.00         |
| 2. Matter                           |  |         | 5.50         |
| 3. Chemical Bonds                   |  |         | 4.50         |
| 4. Chemical Compounds               |  |         | 5.00         |
| 5. Changes in Matter                |  |         | 4.00         |
| 6. Energy and Matter                |  |         | 5.00         |
| 7. The Nature of Fire: Energy       |  |         | 4.00         |
| 8. Nature of Fire: Chemical Changes |  |         | 6.00         |
| 9. Oxidizing Agents                 |  |         | 3.00         |
| 10. Liquids and Gases               |  |         | 4.00         |
| 11. Carbon Compounds                |  |         | 7.00         |
| 12. Solids, Metals and Plastics     |  |         | 2.00         |
| Total Hours                         |  |         | 51.00        |

### IV. METHODS OF INSTRUCTION

A. Lecture

B. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture

- C. Demonstrations
- D. Multimedia Presentations
- E. Handout worksheets

## **V. METHODS OF EVALUATION**

- A. Quizzes
- B. Homework
- C. Written Examinations

## **VI. EXAMPLES OF ASSIGNMENTS**

### **A. Reading Assignments**

1. Read the chapter on hydrocarbons in the textbook, and be prepared to describe how the hazards and control methods of different classes of hydrocarbons are related to their structure.
2. Read the chapter on pressurized gases in the textbook, and be prepared to discuss how pressure, volume and temperature are related to pressurized gas hazards.

### **B. Writing Assignments**

1. With the understanding that there are six key properties of flammable liquids to be aware of when faced with a flammable liquid emergency, write a paragraph about each property describing it and why it is important.
2. Prepare an organized notebook containing written outlines for each class lecture.

### **C. Out-of-Class Assignments**

1. Research a fire or emergency situation that took place in an unusual environment, and be prepared to make a presentation to the class about the situation described.
2. Complete the assigned worksheet on hydrocarbons and be prepared to take a quiz in class.

## **VII. RECOMMENDED MATERIALS OF INSTRUCTION**

### **Textbooks:**

- A. Frank L. Fire. Common Sense Approach to Hazardous Materials. 3rd Edition. PennWell, Oklahoma, 2009.

### **Materials Other Than Textbooks:**

- A. Handouts

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