

**J. Sargeant Reynolds Community College
Course Content Summary**

Course Prefix and Number: FST 110

Credits: 3

Course Title: Fire Behavior and Combustion

Course Description: Explores the theories and fundamentals of how and why fires start, spread, and how they are controlled. (Usually offered in fall only.) Lecture 3 hours per week.

General Course Purpose:

Course Prerequisites and Co-requisites:

None

Student Learning Outcomes:

Upon completing the course, the student will be able to

- a. Identify physical properties of the three states of matter;
- b. Categorize the components of fire;
- c. Recall the physical and chemical properties of fire;
- d. Describe and apply the process of burning;
- e. Define and use basic terms and concepts associated with the chemistry and dynamics of fire;
- f. Describe the dynamics of fire;
- g. Discuss various materials and their relationship to fires as fuel;
- h. Demonstrate knowledge of the characteristics of water as a fire suppression agent;
- i. Articulate other suppression agents and strategies;
- j. Compare other methods and techniques of fire extinguishments; and
- k. Identify and analyze the major causes involved in line of duty firefighter deaths related to structural and wild land firefighting, training and research, and the reduction of emergency risks and accidents.

Major Topics to Be Included:

- a. Physical properties of the three states of matter
- b. Components of fire
- c. Physical and chemical properties of fire
- d. Process of burning
- e. Terms and concepts associated with the chemistry and dynamics of fire
- f. Dynamics of fire
- g. Materials and their relationship to fires as fuel
- h. Characteristics of water as a fire suppression agent
- i. Other suppression agents and strategies
- j. Methods and techniques of fire extinguishments
- k. Major causes involved in line of duty firefighter deaths related to structural and wild land firefighting, training and research, and the reduction of emergency risks and accidents

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