

### Course Outline

**COURSE:** JFT 140                      **DIVISION:** 50                      **ALSO LISTED AS:**

**TERM EFFECTIVE:** Fall 2017                      **Curriculum Approval Date:** 11/28/2016

**SHORT TITLE:** FIRE BEHAVIOR AND COMBUSTION

**LONG TITLE:** Fire Behavior and Combustion

<u>Units</u>	<u>Number of Weeks</u>	<u>Type</u>	<u>Contact Hours/Week</u>	<u>Total Contact Hours</u>
3	18	Lecture:	3	54
		Lab:	0	0
		Other:	0	0
		Total:	3	54

**COURSE DESCRIPTION:**

This course explores the theories and fundamentals of how and why fires start, spread, and are controlled.

**PREREQUISITES:**

**COREQUISITES:**

**CREDIT STATUS:** D - Credit - Degree Applicable

**GRADING MODES**

L - Standard Letter Grade

**REPEATABILITY:** N - Course may not be repeated

**SCHEDULE TYPES:**

02 - Lecture and/or discussion

**STUDENT LEARNING OUTCOMES:**

By the end of this course, a student should:

1. Identify the fundamental theories of fire behavior and combustion.

Measure of assessment: Written Exam, Class Discussion

Year assessed, or planned year of assessment: 2017

Semester: Fall

2. Define the basic terms and concepts associated with the chemistry and dynamics of fire.

Measure of assessment: Written Exam

Year assessed, or planned year of assessment: 2017

Semester: Fall

3. Differentiate between the various types of extinguishing agents.

Measure of assessment: Written Exam, Class Discussion

Year assessed, or planned year of assessment: 2017

Semester: Fall

## **CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS**

Curriculum Approval Date: 11/28/2016

I. Introduction

A. Matter and Energy

B. The Atom and its Parts

C. Chemical Symbols

D. Molecules

E. Energy and Work

F. Forms of Energy

G. Transformation of Energy

H. Laws of Energy

II. Units of Measurements

A. International (SI) Systems of Measurement

B. English Units of Measurement

III. Chemical Reactions

A. Physical States of Matter

B. Compounds and Mixtures

C. Solutions and Solvents

D. Process of Reactions

IV. Fire and the Physical World

A. Characteristics of Fire

B. Characteristics of Solids

C. Characteristics of Liquids

D. Characteristics of Gases

V. Heat and its Effects

A. Production and Measurement of Heat

B. Different Kinds of Heat

VI. Properties of Solid Materials

A. Common Combustible Solids

B. Plastic and Polymers

C. Combustible Metals

D. Combustible Dust

VII. Common Flammable Liquids and Gases

A. General Properties of Gases

B. The Gas Laws

C. Classification of Gases

D. Compressed Gases

VIII. Fire Behavior

A. Stages of Fire

B. Fire Phenomena

1. Flashover

- 2. Backdraft
- 3. Rollover
- 4. Flameover
- C. Fire Plumes
- IX. Fire Extinguishment
  - A. The Combustion Process
  - B. The Character of Flame
  - C. Fire Extinguishment
- X. Extinguishing Agents
  - A. Water
  - B. Foams and Wetting Agents
  - C. Inert Gas Extinguishing Agents
  - D. Halogenated Extinguishing Agents
  - E. Dry Chemical Extinguishing Agents
  - F. Dry Powder Extinguishing Agents
- XI. Hazards by Classification Types
  - A. Hazards of Explosives
  - B. Hazards of Compressed and Liquefied Gases
  - C. Hazards of Flammable and Combustible Liquids
  - D. Hazards of Flammable Solids
  - E. Hazards of Oxidizing Agents
  - F. Hazards of Poisons
  - G. Hazards of Radioactive Substances
  - H. Hazards of Corrosives

**METHODS OF INSTRUCTION:**

Lecture Discussion Audio/Visual Aid

**METHODS OF EVALUATION:**

Writing assignments

Percent of total grade: 30.00 %

Written Homework Assignments

Objective examinations

Percent of total grade: 70.00 %

Quizzes, Exam

**OUT OF CLASS ASSIGNMENTS:**

Assignment Description: Written assignment regarding the physical and chemical properties of fire.

Assignment Description: Read Class Text

**REPRESENTATIVE TEXTBOOKS:**

Required Representative Textbooks

Richard G. Gann, Raymond Friedman. Principles of Fire Behavior and Combustion. Jones and Bartlett, 2016.

ISBN: 978-1284136111

Reading Level of Text, Grade: 12 Verified by: Doug Achterman

**ARTICULATION and CERTIFICATE INFORMATION**

Associate Degree:  
CSU GE:  
IGETC:  
CSU TRANSFER:  
Transferable CSU, effective 201770  
UC TRANSFER:  
Not Transferable

**SUPPLEMENTAL DATA:**

Basic Skills: N  
Classification: Y  
Noncredit Category: Y  
Cooperative Education:  
Program Status: 1 Program Applicable  
Special Class Status: N  
CAN:  
CAN Sequence:  
CSU Crosswalk Course Department: JFT  
CSU Crosswalk Course Number: 140  
Prior to College Level: Y  
Non Credit Enhanced Funding: N  
Funding Agency Code: Y  
In-Service: N  
Occupational Course: C  
Maximum Hours: 3  
Minimum Hours: 3  
Course Control Number:  
Sports/Physical Education Course: N  
Taxonomy of Program: 213300