

Course Outline

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

TERM EFFECTIVE: Fall 2021 **CURRICULUM APPROVAL DATE:** 06/28/2021

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

05 - Hybrid

71 - Dist. Ed Internet Simultaneous

72 - Dist. Ed Internet Delayed

STUDENT LEARNING OUTCOMES:

By the end of this course, a student should:

1. Identify the fundamental theories of fire behavior and combustion.
2. Define the basic terms and concepts associated with the chemistry and dynamics of fire.

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

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Introduction - 2 hours

- 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 -2 hours

- A. International (SI) Systems of Measurement
- B. English Units of Measurement

III. Chemical Reactions - 4 hours

- A. Physical States of Matter
- B. Compounds and Mixtures
- C. Solutions and Solvents
- D. Process of Reactions

IV. Fire and the Physical World - 8 hours

- A. Characteristics of Fire
- B. Characteristics of Solids
- C. Characteristics of Liquids
- D. Characteristics of Gases
- V. Heat and its Effects - 4 hours

- A. Production and Measurement of Heat
- B. Different Kinds of Heat

VI. Properties of Solid Materials - 4 hours

- A. Common Combustible Solids
- B. Plastic and Polymers
- C. Combustible Metals
- D. Combustible Dust

VII. Common Flammable Liquids and Gases - 4 hours

- A. General Properties of Gases
- B. The Gas Laws
- C. Classification of Gases
- D. Compressed Gases

VIII. Fire Behavior - 12 hours

- A. Stages of Fire
- B. Fire Phenomena
 1. Flashover
 2. Backdraft

- 3. Rollover
- 4. Flameover
- C. Fire Plumes
- IX. Fire Extinguishment -8 hours
 - A. The Combustion Process
 - B. The Character of Flame
 - C. Fire Extinguishment
- X. Extinguishing Agents - 4 hours
 - 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 - 2 hours
 - 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 and written reports, utilizing web conferencing tools and the College provided LMS.

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours: 54

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

Required Outside Hours: 54

Assignment Description:

Reading assignments from textbook and instructor handouts

METHODS OF EVALUATION:

Writing assignments

Percent of total grade: 30.00 %

Written Homework Assignments

Objective examinations

Percent of total grade: 70.00 %

Quizzes, Exam

REPRESENTATIVE TEXTBOOKS:

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

This is the most current copy approved from National Fire Protection Association NFPA.

ISBN: 978-1284136111

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

Required Other Texts and Materials

Instructor Handouts and manual 2020

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:

Prior to College Level: Y

Non Credit Enhanced Funding: N

Funding Agency Code: Y

In-Service: N

Occupational Course: C

Maximum Hours:

Minimum Hours:

Course Control Number: CCC000578298

Sports/Physical Education Course: N

Taxonomy of Program: 213300