



5055 Santa Teresa Blvd
Gilroy, CA 95023

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

Out of Class Hrs: 108.00

Total Learning Hrs: 162.00

COURSE DESCRIPTION:

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

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.

COURSE CONTENT:

Curriculum Approval Date: 06/28/2021

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

COURSE CONTENT(CONTINUED):

- 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

Not Transferable

UC TRANSFER:

Not Transferable

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: CCC000639186

Sports/Physical Education Course: N

Taxonomy of Program: 213300