



COURSE OUTLINE : FIRE 102

D Credit – Degree Applicable

COURSE ID 001482

Cyclical Review: MAY 2021

COURSE DISCIPLINE : FIRE

COURSE NUMBER : 102

COURSE TITLE (FULL) : Fire Behavior And Combustion

COURSE TITLE (SHORT) : Fire Behavior & Combustion

CALIFORNIA STATE UNIVERSITY SYSTEM C-ID : FIRE 140 X – Fire Behavior and Combustion

ACADEMIC SENATE DISCIPLINE: Fire Technology

CATALOG DESCRIPTION

FIRE 102 explores the theories and fundamentals of how and why fires start, spread, and are controlled.

Total Lecture Units:3.00

Total Laboratory Units: 0.00

Total Course Units: 3.00

Total Lecture Hours:54.00

Total Laboratory Hours: 0.00

Total Laboratory Hours To Be Arranged: 0.00

Total Contact Hours: 54.00

Total Out-of-Class Hours: 108.00

Recommended Preparation: ENGL 100 or ESL 151.



ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	ESL	151	Reading And Composition V	employ basic library research techniques;	Yes
2	ENGL	100	Writing Workshop	write a summary of a contemporary article or story with correct citation techniques;	Yes

EXIT STANDARDS

- 1 describe the basic laws differentiating matter and energy;
- 2 identify basic chemical symbols used when writing chemical formulas;
- 3 explain the three physical states of matter and how each is affected by fire;
- 4 identify various methods and techniques of extinguishing fires based on development of the flame;
- 5 compare and contrast flashover and back draft in a compartment fire.
- 6 demonstrate the characteristics of water as a fire suppression agent

STUDENT LEARNING OUTCOMES

- 1 identify the fundamental theories of fire behavior and combustion;
- 2 describe suppression agents and strategies for fire extinguishment
- 3 explain basic terminology and the phenomena of fire chemistry.

COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	Introduction to chemistry <ul style="list-style-type: none"> • Units of measurement • Fire science terminology • Fire by-products • Fire triangle (Air/Fuel/Heat) • Fire combustion process 	7	0	7



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2	<p>Evolution of Fire Science</p> <ul style="list-style-type: none"> • Fire chain of combustion • Fuels needed • Historic Fires • Hazards by classification types 	7	0	7
3	<p>Heat Transfer</p> <ul style="list-style-type: none"> • Direct flame contact • Conduction • Convection • Radiation 	9	0	9
4	<p>Ignition</p> <ul style="list-style-type: none"> • Sources of ignition • Patterns • Common flammable liquids and gases • Properties of solid materials and products 	7	0	7
5	<p>Flame Spread</p> <ul style="list-style-type: none"> • Fire Plumes • Products of combustion • Materials as fuel related to fire 	12	0	12
6	<p>Compartment Fires</p> <ul style="list-style-type: none"> • Basement Fires • Vehicles, boats and plane fires • Room and Contents 	9	0	9
7	<p>Fire Analysis</p> <ul style="list-style-type: none"> • Components of fire • Physical and chemical properties of fire • Burning processes • Chemistry and dynamics of fire 	3	0	3
				54



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OUT OF CLASS ASSIGNMENTS

- 1 Homework (e.g. answering questions about fire terminology)
- 2 Individual projects. (e.g. short essay on the sources of ignition)
- 3 Group projects (e.g. presentation on the dangers of heat transfer modes)

METHODS OF EVALUATION

- 1 Midterm examination
- 2 Final examination

METHODS OF INSTRUCTION

- Lecture
- Laboratory
- Studio
- Discussion
- Multimedia
- Tutorial
- Independent Study
- Collaboratory Learning
- Demonstration
- Field Activities (Trips)
- Guest Speakers
- Presentations

TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	ISBN	Date
Principles of Fire Behavior and Combustion	Required	Jones and Bartlett Learning	4	Print	Richard G. Gann	978-1284136111	2016