

FIRE 72 Course Outline as of Fall 1991

CATALOG INFORMATION

Dept and Nbr: FIRE 72

Title: FIRE BEHAV/COMBUST

Full Title: Fire Behavior and Combustion

Last Reviewed: 9/10/2018

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	17.5	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly: FIRE 60A

**Catalog Description:**  
Theory and fundamentals of how fires start, spread, and are controlled. An in-depth study of fire chemistry and physics, fire characteristics of materials, extinguishing and fire control techniques.

**Prerequisites/Corequisites:**

**Recommended Preparation:**  
Eligibility for ENGL 100A or ENGL 100.

**Limits on Enrollment:**

**Schedule of Classes Information:**  
Description: State Core Course. Theory & fundamentals of how fires start, spread, & are controlled. An in-depth study of fire chemistry & physics, fire characteristics of materials, extinguishing & fire control techniques. (Grade Only)  
Prerequisites/Corequisites:  
Recommended: Eligibility for ENGL 100A or ENGL 100.  
Limits on Enrollment:  
Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>			Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>			Effective:	Inactive:
<b>IGETC:</b>	<b>Transfer Area</b>			Effective:	Inactive:
<b>CSU Transfer:</b>	Transferable	Effective:	Fall 1981	Inactive:	
<b>UC Transfer:</b>		Effective:		Inactive:	

**CID:**

**Certificate/Major Applicable:**

Certificate Applicable Course

## **COURSE CONTENT**

### **Outcomes and Objectives:**

1. Identify the difference between matter and energy.
2. Identify some of the terminology, definitions, and phenomena of chemistry.
3. Identify the basic laws of energy and mass.
4. Compare basic chemistry and chemistry as it relates to the science of fire.
5. Compare the difference between the English and International (SI System) Systems of Measurement.
6. Identify and demonstrate the universal fire service quantity elements.
7. Compare the three physical states of matter.
8. Identify how physical forces caused by fire can effect changes in the physical states of matter.
9. Identify the various testing methods for determining ignition temperature of solids, liquids, and gases.
10. Identify the difference between a compound, mixture, and a solution.
11. Identify the NFPA National fire Codes of combustible and flammable liquids.
12. Identify three factors that control heat evolution from fires.
13. Identify the various forms of heat and the methods of heat transfer.
14. List at least five chemical, electrical, and mechanical sources of heat.
15. Identify the ignition temperature, combustion properties, and smoke and toxic gases generated from burning common combustible solids, liquids, and gases.
16. Identify common polymer plastics and their combustion characteristics.
17. Compare common thermoplastics and thermosetting plastics.

18. Identify some common gases of importance in fire protection.

### Topics and Scope:

1. Introduction to the basic "stuff" of our world.
2. Units of measurements.
3. Chemical reactions.
4. Fire and the physical world.
5. Heat and its effects.
6. Properties of solid materials.
7. Common flammable liquids and gases.
8. Fire extinguishment.
9. Classification of fire and extinguishing agents.
10. Gas and halon extinguishing agents.
11. Department of Transportation hazard classes.
12. Introduction to placarding.
13. Introduction to labeling.
14. Hazards of chemicals.

A MORE DETAILED OUTLINE IS AVAILABLE IN THE DEPARTMENT.

### Assignment:

The student will:

1. Analyze a typical transportation load of hazardous materials, and determine the proper placarding, and determine incompatible loading.
2. Define in writing the physical properties of dangerous chemicals.
3. Explain, analyze, compare, and present the theory of fire and compare the applications of various extinguishment techniques.

### Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Written homework	Writing 10 - 20%
<b>Problem Solving:</b> Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.	
Homework problems, Quizzes, Exams	Problem solving 5 - 10%
<b>Skill Demonstrations:</b> All skill-based and physical demonstrations used for assessment purposes including skill performance exams.	
Class performances	Skill Demonstrations 5 - 10%

**Exams:** All forms of formal testing, other than skill performance exams.

Multiple choice, Completion

Exams  
25 - 80%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

None

Other Category  
0 - 0%

**Representative Textbooks and Materials:**

Required:

Quin Tiere, Principles of Fire Behavior, Delmar Thomson, 1998.