

FIRE102 : Fire Behavior And Combustion

General Information

| | |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Author: | <ul style="list-style-type: none">Tracy Rickman |
| Course Code (CB01) : | FIRE102 |
| Course Title (CB02) : | Fire Behavior And Combustion |
| Department: | FIRE |
| Proposal Start: | Spring 2025 |
| TOP Code (CB03) : | (2133.00) Fire Technology |
| CIP Code: | (43.0201) Fire Prevention and Safety Technology/Technician. |
| SAM Code (CB09) : | Clearly Occupational |
| Distance Education Approved: | No |
| Will this course be taught asynchronously?: | No |
| Course Control Number (CB00) : | CCC000091302 |
| Curriculum Committee Approval Date: | 05/22/2024 |
| Board of Trustees Approval Date: | 07/16/2024 |
| Last Cyclical Review Date: | 05/22/2024 |
| Course Description and Course Note: | FIRE 102 introduces the student to fire behavior and emergency response at the scene of all types of fires. This course explores the theories and fundamentals of how and why fires start, spread, and are controlled. |
| Justification: | Mandatory Revision |
| Academic Career: | <ul style="list-style-type: none">Credit |
| Mode of Delivery: | |
| Author: | <ul style="list-style-type: none">Tracy Rickman |
| Course Family: | |

Academic Senate Discipline

| | |
|-----------------------|-----------------------------------------------------------------|
| Primary Discipline: | <ul style="list-style-type: none">Fire Technology |
| Alternate Discipline: | No value |
| Alternate Discipline: | No value |

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

- Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

General Education and C-ID

General Education Status (CB25)

Not Applicable

Transferability

Transferable to CSU only

Transferability Status

Approved

| C-ID | Area | Status | Approval Date | Comparable Course |
|------|----------------|----------|---------------|-------------------------------------------|
| FIRE | Fire Tehnology | Approved | 08/31/2020 | FIRE 140 X - Fire Behavior and Combustion |

Units and Hours

Summary

| | |
|----------------------------------------------|-----|
| Minimum Credit Units (CB07) | 3 |
| Maximum Credit Units (CB06) | 3 |
| Total Course In-Class (Contact) Hours | 54 |
| Total Course Out-of-Class Hours | 108 |
| Total Student Learning Hours | 162 |

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Variable Credit Course

Funding Agency Category (CB23)

Not Applicable.

Cooperative Work Experience

Education Status (CB10)

Weekly Student Hours

| | In Class | Out of Class |
|------------------|----------|--------------|
| Lecture Hours | 3 | 6 |
| Laboratory Hours | 0 | 0 |
| Studio Hours | 0 | 0 |

Course Student Hours

| | |
|----------------------------------------|-----|
| Course Duration (Weeks) | 18 |
| Hours per unit divisor | 54 |
| Course In-Class (Contact) Hours | |
| Lecture | 54 |
| Laboratory | 0 |
| Studio | 0 |
| Total | 54 |
| Course Out-of-Class Hours | |
| Lecture | 108 |

| | |
|--------------|-----|
| Laboratory | 0 |
| Studio | 0 |
| Total | 108 |

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

| Activity Name | Type | In Class | Out of Class |
|---------------|----------|----------|--------------|
| No Value | No Value | No Value | No Value |

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Advisory

ESL151 - Reading And Composition V

Objectives

- Organize fully-developed essays in both expository and argumentative modes.
- Employ basic library research techniques.

OR

Advisory

ENGL101 - Introduction to College Reading and Composition

Objectives

- Develop varied and flexible strategies for generating, drafting, and revising essays.
- Write timed, in-class essays exhibiting acceptable college-level control of mechanics, organization, development, and coherence.

Entry Standards

Entry Standards

Course Limitations

Cross Listed or Equivalent Course

Specifications

Methods of Instruction

Methods of Instruction Discussion

Methods of Instruction Lecture

Methods of Instruction Presentations

Methods of Instruction Guest Speakers

Out of Class Assignments

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

Methods of Evaluation

Exam/Quiz/Test

Exam/Quiz/Test

Rationale

Midterm examination

Final examination

Textbook Rationale

No Value

Textbooks

Author

Title

Publisher

Date

ISBN

Other Instructional Materials (i.e. OER, handouts)

No Value

Materials Fee

No value

Learning Outcomes and Objectives**Course Objectives**

Describe the basic laws differentiating matter and energy.

Identify basic chemical symbols used when writing chemical formulas.

Explain the three physical states of matter and how each is affected by fire.

Identify various methods and techniques of extinguishing fires based on development of the flame.

Compare and contrast flashover and back draft in a compartment fire.

Demonstrate the characteristics of water as a fire suppression agent.

SLOs**Explain basic terminology and the phenomena of fire chemistry.**

Expected Outcome Performance: 70.0

ILOs

Core ILOs

Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.

Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.

*FIRE*Verdugo Recruit Fire
Academy

Discuss the skills required for fire prevention techniques; discuss the aspects of fire behavior

*FIRE*Fire Technology - A.S.
Degree Major

discuss the aspects of fire behavior.

*FIRE*Fire Technology -
Certificate

discuss the aspects of fire behavior.

FIRE discuss the aspects of fire behavior.
Verdugo Fire Academy -
Certificate

Identify the fundamental theories of fire behavior and combustion.

Expected Outcome Performance: 70.0

ILOs
Core ILOs Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.

Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.

FIRE Discuss the skills required for fire prevention techniques; discuss the aspects of fire behavior
Verdugo Recruit Fire
Academy

FIRE discuss the aspects of fire behavior.
Fire Technology - A.S.
Degree Major

FIRE discuss the aspects of fire behavior.
Verdugo Fire Academy -
Certificate

FIRE discuss the aspects of fire behavior.
Fire Technology -
Certificate

Describe suppression agents and strategies for fire extinguishment.

Expected Outcome Performance: 70.0

ILOs
Core ILOs Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.

Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.

FIRE Discuss the skills required for fire prevention techniques; discuss the aspects of fire behavior
Verdugo Recruit Fire
Academy

FIRE discuss the aspects of fire behavior.
Fire Technology - A.S.
Degree Major discuss the skills required for the use of equipment used in fire protection.

FIRE discuss the aspects of fire behavior.
Fire Technology -
Certificate

FIRE discuss the aspects of fire behavior.
Verdugo Fire Academy -
Certificate

Additional SLO Information

Does this proposal include revisions that might improve student attainment of course learning outcomes?

No

Is this proposal submitted in response to learning outcomes assessment data?

No

If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.

No Value

SLO Evidence

No Value

Course Content

Lecture Content

Introduction to Chemistry (7 Hours)

- Units of measurement Fire science terminology
- Fire by-products Fire triangle (Air/Fuel/Heat)
- Fire combustion process

Evolution of Fire Science (7 Hours)

- Fire chain of combustion
- Fuels needed Historic
- Fires Hazards by classification types

Heat Transfer (9 Hours)

- Direct flame contact
- Conduction
- Convection
- Radiation

Ignition (7 Hours)

- Sources of ignition
- Patterns
- Common flammable liquids and gases
- Properties of solid materials and products

Flame Spread (12 Hours)

- Fire Plumes
- Products of combustion
- Materials as fuel related to fire

Compartment Fire (9 Hours)

- Basement Fires
- Vehicles,
- boats and plane fires
- Room and Contents

Fire Analysis Components of Fire (3 Hours)

- Physical and chemical properties of fire
- Burning processes
- Chemistry and dynamics of fire

Total Hours: 54

Additional Information

Is this course proposed for GCC Major or General Education Graduation requirement? If yes, indicate which requirement in the two areas provided below.

No

GCC Major Requirements

No Value

GCC General Education Graduation Requirements

No Value

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Resources

Did you contact your departmental library liaison?

No

If yes, who is your departmental library liaison?

No Value

Did you contact the DEIA liaison?

No

Were there any DEIA changes made to this outline?

No

If yes, in what areas were these changes made:

No Value

Will any additional resources be needed for this course? (Click all that apply)

- No

If additional resources are needed, add a brief description and cost in the box provided.

No Value