



El Camino College
COURSE OUTLINE OF RECORD – Official

Subject:	FTEC
Course Number:	170
Descriptive Title:	Wildland Fire Behavior
Division:	Health Sciences and Athletics
Department:	Fire and Emergency Technology
Course Disciplines:	Fire Technology
Catalog Description:	This course provides students with information and presentations to understand basic wildland fire behavior, wildland fire predictions, and wildland fire behavior models. This information is then used to understand wildland fire behavior decision-making for firefighters based on the science of fire behavior and the weather's influence on topography and fuels during pyrolysis of a wildland fire.
Prerequisite:	
Co-requisite:	
Recommended Preparation:	English C1000 or C1000H
Enrollment Limitation:	
Hours Lecture (per week):	3
Hours Laboratory (per week):	0
Outside Study Hours:	6
Total Course Hours:	54
Course Units:	3
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	
Transfer UC:	No
Effective Date:	
General Education ECC:	
Term:	
Other:	
CSU GE:	
Term:	
Other:	
IGETC:	
Term:	
Other:	

Student Learning Outcomes:	Upon the completion of this course, students will be able to: 1. Describe the Wildland Fire Environment Triangle and how it influences fire behavior. 2. Identify the Seven Wildland Fire Environmental Factors that must be monitored to maintain a safe working environment during fire conditions. 3. Explain how Weather combined with Topography and Fuels can lead to Extreme Fire Behavior.
Course Objectives:	1. Analyze the combining influences that affect wildland fire behavior. 2. Describe the necessity to monitor fire behavior. 3. Explain the severe wildland fire environmental factors. 4. Explain the how to predict wildland fire behavior. 5. Employ a common language for fire protection. 6. Explain various communication methods. 7. Understand when fire behavior is increasing. 8. Explain how weather conditions affect fire behavior. 9. Understand how fuel load affect fire behavior. 10. Explain the affects does topography have on fire behavior.
Major Topics:	I. Wildland Fire Orientation (Lecture, 4 Hours) A. Fire Behavior Terminology and Principles B. Fire Tactics and Strategy C. Combining Weather, Fuels, and Topography D. Wildland Fire Environment Triangle II. Topography (Lecture, 6 Hours) A. Topographic Map Features B. Cardinal Directions C. Map and Compass Use D. Basic Land Navigation E. Slope and Aspect F. Hazardous Features G. Topographic Influences on Fire Behavior III. Fuels (Lecture, 6 Hours) A. Fuels Definitions B. Grass C. Grass-Shrub D. Shrub E. Timber- Understory F. Timber Litter G. Slash-Blowdown H. Heavy Timber A. Time Lag Concepts J. Dead Fuels

K. Live Fuels

IV. Weather (Lecture 6 Hours)

- A. Predictions
- B. Predictive Services
- C. NOAA
- D. NWCG
- E. NIFC
- F. National Situation Report

V. Atmospheric Stability (Lecture, 8 Hours)

- A. Stability
- B. Visual Indicators of a Stable Atmosphere
- C. Nighttime Inversion Layers
- D. Thermal Belts
- E. Subsidence Inversion
- F. Visual Indicators of an Unstable Atmosphere
- G. Indicators of Weather Fronts
- H. Atmospheric Pressure
- I. Relative Humidity
- J. Dew Point

VI. Winds (Lecture, 8 Hours)

- A. Wind Direction
- B. Characteristics of Winds
- C. Cloud Formations
- D. Cloud Identification
- E. Wind Effects on Wildland Fire
- F. General Winds
- G. Local Winds
- H. Slope Winds
- A. Valley Winds
- J. Sea and Land Breezes
- K. Foehn Winds

VII. Fire Weather Observations (Lecture, 8 Hours)

- A. Digital Weather Meters

	B. Belt Weather Kit C. Anemometer D. Sling Psychrometer E. Relative Humidity and Dew Point Charts F. Elevation, Slope, and Aspect Influence VIII. Extreme Fire Behavior (Lecture, 8 Hours) A. Seven Fire Environment Factors B. Fuel Characteristics C. Fuel Moisture D. Fuel Temperature E. Topography and Terrain F. Winds, Fronts, and Thunderstorms G. Atmospheric Stability Influences H. Erratic Fire Behavior A. Extreme Wildland Fire Situations <i>TOTAL = 54 Lecture Hours</i>
Total Lecture Hours:	54
Total Laboratory Hours:	0
Total Hours:	54
Primary Method of Evaluation:	1) Substantial writing assignments
Typical Assignment Using Primary Method of Evaluation:	In a two-page paper explain the different types of fuels that would be found in a wildland setting and how does this affect fire behavior. Describe the various things that a wildland firefighter would encounter and what concerns would they have on the fire ground.
Critical Thinking Assignment 1:	Utilizing the National Oceanic and Atmospheric Agency (NOAA) weather information provided, write a report that includes wildland fire weather hazards and watchouts. Be sure to include the current and expected weather situation and how it will affect firefighters engaged on with the firefight.
Critical Thinking Assignment 2:	Describe how Foehn Winds are created with weather, topography, and fuels to rapidly fan flames of a wildland fire. Identify the five most common Foehn winds are geographic location in the United States.
Other Evaluation Methods:	Completion, Embedded Questions, Essay Exams, Homework Problems, Matching Items, Multiple Choice, Quizzes, Reading Reports, Term or Other Papers, True/False, Written Homework
If Other:	
Instructional Methods:	Discussion, Group Activities, Guest Speakers, Lecture, Multimedia presentations, Role play/simulation
If other:	
Work Outside of Class:	Answer questions, Required reading, Study
If Other:	

Up-To-Date Representative Texts:	National Wildfire Coordinating Group (NWCG) Guide to Fire Weather Forecasts, United States Department of Agriculture (USDA) Forest Service (FS), NWCG PMS 425, 2021. A Guide for Application of Meteorological Information to Forest Fire Control Operations, United States Department of Agriculture (USDA) Forest Service (FS), Handbook 360: NWCG PMS 425-1, May 1970. Discipline Standard. (Textbook is most current USDA Handbook used for current Wildland Firefighters in the industry as the concepts of basic weather, topography and fuels has not changed over time).
Alternative Texts:	
Required Supplementary Readings:	
Other Required Materials:	
Requisite	
Category	
Requisite course:	
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	
Requisite Skill and Matching skill(s): Bold the requisite skill(s). if applicable	
Requisite course:	ENGL C1000 or ENGL C1000H
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	Reading and Composition ENGL C1000 - Read and apply critical-thinking skills to numerous published articles and to college-level, book-length works for the purpose of writing and discussion. ENGL C1000 - Compose coherent, multi-paragraph, thesis-driven essays with logical and appropriate supporting ideas, including in-text citations.
Requisite Skill:	
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). if applicable	
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	

Course Created by:	Ryan Carey
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Effective Term:	FA 2026