

**Course Outline**

**COURSE:** JFT 134                      **DIVISION:** 50                      **ALSO LISTED AS:**

**TERM EFFECTIVE:** Spring 2014                      **CURRICULUM APPROVAL DATE:** 10/28/2013

**SHORT TITLE:** FIRING OPERATIONS

**LONG TITLE:** Firing Operations Firing Methods

<u>Units</u>	<u>Number of Weeks</u>	<u>Type</u>	<u>Contact Hours/Week</u>	<u>Total Contact Hours</u>
.5 TO 2	18	Lecture:	.45	8.1
		Lab:	1.38 TO 4.1	24.84 TO 73.8
		Other:	0	0
		Total:	1.83 TO 4.1	32.94 TO 73.8

**COURSE DESCRIPTION:**

The course will provide knowledge and skills needed to develop and implement defensive firing operations. The course will cover advanced defensive firing techniques and provide awareness of offensive firing techniques and planning. Students completing this course with substantial firing experience will be able to implement offensive firing plans. **PREREQUISITE:** Fire Fighter I or Equivalent.

**PREREQUISITES:**

**COREQUISITES:**

**CREDIT STATUS:** D - Credit - Degree Applicable

**GRADING MODES**

P - Pass/No Pass

**REPEATABILITY:** N - Course may not be repeated

**SCHEDULE TYPES:**

02 - Lecture and/or discussion

03 - Lecture/Laboratory

04 - Laboratory/Studio/Activity

**STUDENT LEARNING OUTCOMES:**

1. Identify the duties and responsibilities associated with conducting safe firing operations.

Measure: Written Exam

PLO:

ILO: 2,3

GE-LO:

Year Assessed: 2013

2. Demonstrate proper communications and coordination when conducting firing operations.

Measure: Performance

PLO:

ILO: 1, 2

GE-LO:

Year Assessed: 2013

3. Apply proper firing techniques and applied fire behavior.

Measure: Demonstration

PLO:

ILO: 1,2

GE-LO:

Year Assessed: 2013

4. Develop and implement a written firing plan.

Measure: Written Exam

PLO:

ILO: 2,3

GE-LO:

Year Assessed: 2013

5. Conduct a field firing operation using advanced techniques.

Measure: Performance

PLO:

ILO: 1,2

GE-LO:

Year Assessed: 2013

6. Demonstrate how to properly use a very pistol, flare launcher, and hand thrown flares.

Measure: Performance

PLO:

ILO: 1,2

GE-LO:

Year Assessed: 2013

7. Demonstrate proper firing techniques through live fire exercise.

Measure: Demonstration

PLO:

ILO: 1,2

GE-LO:

Year Assessed: 2013

## **CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS**

Curriculum Approval Date: 10/28/2013

1 Hours

Content: Duties and Responsibilities

I. Authority

- A. Public Resources Code 4426
- B. Health and Safety Code 13055
- C. Incident Authority

II. Legal Issues

- A. Liability
  - 1. Labor Code 6423 and 6425
  - B. Risk vs. benefit
    - 1. Injury
    - 2. Property Damage
  - C. Terms
    - 1. Burnout
    - 2. Backfire
- III. Organization of a Firing Operation
  - A. Supervisor (NWCG Firing Boss)
  - B. Firing Team
  - C. Firing Group
  - D. Firing Operations Plan
  - E. Group Organization
- IV. Personnel Management

A. Safety

- 1. LCES  
Lookouts, Communication, Escape Routes, Safety Zones

B. Personnel briefing

C. Logistical Needs

- 1. Selecting and ordering equipment

V. Reconnaissance and Size-Up

A. Fuels

B. Weather

C. Additional Information Sources

D. Topography

E. Ingress and egress

F. Problem Areas

Student Performance Objectives (SPO): Student will apply knowledge of the duties and responsibilities of a Firing Supervisor during verbal and written quiz.

Out-of-Class Assignments: Reading Assignment

1 Hours

Content: Firing Techniques as Applied Fire Behavior

I. Types of Firing Strategies and Their Characteristics "Backfire VS Burnout"

A. Backfire

B. Burnout

II. Developing Burned Zones

A. A primary objective in firing is to remove flammable fuels by creating a burned zone along desired perimeter outside of the fires edge.

III. Present and Predicted Fire Behavior Influences

A. Fire Behavior will determine/influence the following:

1. Firing technique
2. Fire intensity
3. Rate of firing
4. Required depth of burn zone
5. Resource needs
6. Control issues
7. Timing/burn window
8. Success or failure

B. Fire behavior factors to consider

C. Topography

D. Weather

IV. Fire Behavior as it Relates to Basic Firing Patterns

A. The three types of fire spread are

1. Head
2. Backing Fire
3. Flanking Fire

B. Firing patterns include one or more of the three types of fire spread

C. Patterns are described by orientation relative to the control line

V. Regulating Fire Intensity

A. General Principles of fire intensity control

B. Reducing fire intensity

C. To increase fire intensity

D. Match firing time to desired environmental conditions

E. Your fire should be hot enough to achieve desired results within the time frames available without losing control

VI. Controlling Air Flow In The Fire Area

A. In-drafts created by the fire

B. Air flow in the fire area has three main contributors

C. Ambient wind can shift the in-draft effect, create turbulence, and extend the spotting zone

VII. Predicting the Potential for Spot Fires

A. Probability of ignition (PI)

B. Fire brand sources and production

Student Performance Objectives (SPO): Observe fire behavior relating to firing operations, methods and patterns during the live fire exercise.

Out-of-Class Assignments: Reading assignment

3 Hours

Content: Conducting Firing Operations

I. Planning

A. Written firing plan

B. Elements of a formal firing plan

C. Safety

1. Ensure the firing operation does not :

- a) Jeopardize the safety of personnel conducting the firing operation
- b) Adversely affect suppression forces in the area

II. Resources Required

A. Basic functions of the firing operation include:

1. Lookout(s)/intelligence gathering

- 2. Ignition; the lighters and their supplies
- 3. Holding and fuel bed preparation; engines, dozers, crews
- B. Supplemental resources include:
  - 1. Staging of additional firing / holding resources
  - 2. Equipment for extended Mop-up commitments
- III. Guidelines for Estimating Firing Rates
  - A. Developing burn zone
  - B. Set-up times
  - C. Drip torch productions
- IV. Line-Based Firing
  - A. Conduct line-based firing from completed control or wet-lines
  - B. Direction of progress of overall firing operation
  - C. Anchor points / check lines
- V. Prepare the Fuel Bed
  - A. Concentrations of fuel near the control line may need treatment
  - B. Minimize the source of firebrands
  - C. Remove and/or isolate snags
  - D. Treat the base of live trees that should not be damaged
  - E. Other treatments to enhance control of the firing operation
- VI. Accelerating the Firing Operation
  - A. To ensure the it is completed in the time available
- VII. Problems in the Fire Environment
  - A. Firing through saddles or reversals of slopes
  - B. Firing in bottoms of steep canyons
  - C. Firing in brush fields
  - D. Firing in timber
  - E. Adverse fuel conditions
  - F. Adverse weather conditions
- VIII. Dealing with Unfavorable Control Line Configuration and Location
  - A. Firing abrupt bends and corners
  - B. Problem with lines running across slope
  - C. Switchbacks
- IX. Dealing with Common Operational Problems
  - A. Firing operation outruns holding forces
  - B. Holding-force problems
  - C. Poor accessibility and coordination due to heavy fuels or steep terrain
- X. Firing Involving Structures, Improvements and Life Threats
  - A. Firing around structures
  - B. High-voltage power lines
  - C. LPG tanks
  - D. Threats to others
- XI. Ongoing Evaluation
  - A. Changing weather
  - B. Changing fire behavior
  - C. Multiple stripes can become unnecessary
  - D. Holding is becoming more difficult
  - E. Post firing operation after action review
- XII. Class exercises

A. Little Wildcat Incident

### XIII. Summary

A. To be safe and effective

Student Performance Objectives (SPO): Identify proper methods of conducting a firing operation during class exercises.

Out-of-Class Assignments: Reading Assignment

Hours

Content: Firing Equipment

I. Hand Held Firing Devices

A. Fusees

B. Drip torch

C. Terra Torch or power flame thrower

II. Projected Aerial Devices

A. Very Pistol

B. FireQuick Flare Launcher

III. Ignition Devices Used with Aircraft

A. Helitorch

B. Premo Mark III Plastic Sphere Dispenser or Aerial Ignition Device

Student Performance Objectives (SPO): Confirm knowledge of the various types of firing devices commonly used and identify the characteristics and operation of the devices, safety precautions, and hazardous guidelines. Demonstrate competency in the use of FireQuick devices, drip torch and fusee.

#### ASSIGNMENT:

Out-of-Class Assignments: Reading assignment

Hours

Content: Case Studies

I. Materials Needed

A. Paradise Exercise

B. Sadler Fire Entrapment Investigation

C. Skill Sheets

Student Performance Objectives (SPO): Identify critical information related to firing operations. Case studies allow us to learn from past incidents.

Out-of-Class Assignments: Reading assignment Content: Written Exam

#### **METHODS OF INSTRUCTION:**

Skills Demonstration, Lecture, Scenario Training

#### **METHODS OF EVALUATION:**

CATEGORY 1 - The types of writing assignments required:

Percent range of total grade: 0 % to %

If this is a degree applicable course, but substantial writing assignments are NOT appropriate, indicate reason:

Course primarily involves skill demonstration or problem solving

CATEGORY 2 - The problem-solving assignments required:

Percent range of total grade: 20 % to 30 %

Field Work

Other: Skills Exam

CATEGORY 3 - The types of skill demonstrations required:

Percent range of total grade: 50 % to 90 %

Class Performance/s

Field Work

Performance Exams

CATEGORY 4 - The types of objective examinations used in the course:

Percent range of total grade: 30 % to 50 %

Other: Skills Demonstration

### **REPRESENTATIVE TEXTBOOKS:**

Required:

CalFire, Firing Operations Firing Methods, California Department of Forestry and Fire Protection Training and Education, 2013.

### **ARTICULATION and CERTIFICATE INFORMATION**

Associate Degree:

CSU GE:

IGETC:

CSU TRANSFER:

Transferable CSU, effective 201430

UC TRANSFER:

Not Transferable

### **SUPPLEMENTAL DATA:**

Basic Skills: N

Classification: Y

Noncredit Category: Y

Cooperative Education:

Program Status: 2 Stand-alone

Special Class Status: N

CAN:

CAN Sequence:

CSU Crosswalk Course Department: JFT

CSU Crosswalk Course Number: 134

Prior to College Level: Y

Non Credit Enhanced Funding: N

Funding Agency Code: Y

In-Service: Y

Occupational Course: C

Maximum Hours: 2

Minimum Hours: .5

Course Control Number:

Sports/Physical Education Course: N

Taxonomy of Program: 213300