

### Course Outline

**COURSE:** JFT 113                      **DIVISION:** 50                      **ALSO LISTED AS:**

**TERM EFFECTIVE:** Spring 2021                      **CURRICULUM APPROVAL DATE:** 12/08/2020

**SHORT TITLE:** ROPE RESCUE AWARENESS/OP

**LONG TITLE:**

<u>Units</u>	<u>Number of Weeks</u>	<u>Type</u>	<u>Contact Hours/Week</u>	<u>Total Contact Hours</u>
1	18	Lecture:	.5	9
		Lab:	1.77	31.86
		Other:	0	0
		Total:	2.27	40.86

**COURSE DESCRIPTION:**

This course provides information on low-angle and high-angle rescue, familiarizing participants with operation of simple, complex, and compound rope rescue systems in the low and high angle environment. **PREREQUISITE:** Fire Fighter I or equivalent.

**PREREQUISITES:**

CAPP JFT 113 Requisite

**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

04 - Laboratory/Studio/Activity

## **STUDENT LEARNING OUTCOMES:**

By the end of this course, a student should:

1. Given life safety rope and other auxiliary rope rescue equipment, the student will be able to construct a multiple-point anchor system, so that the chosen anchor system fits the incident needs, the system strength meets or exceeds the expected load and does not interfere with rescue operations, equipment is visually inspected prior to being put in service, the nearest anchor point that will support the load is chosen, the anchor system is system safety checked prior to being placed into service, the integrity of the system is maintained throughout the operation, and weight will be distributed between more than one anchor point.
2. Given rescue personnel, an established rope rescue system, a load to be moved, and an anchor system, the student will be able to assist a team in operation of the haul line of a rope mechanical advantage system raising operation, so that the movement is controlled; a reset is accomplished; the load can be held in place when needed; commands are followed in direction of the operation; and potential problems are identified, communicated, and managed.
3. Demonstrate knots, bends, and hitches, so that the knots are dressed, recognizable, and backed up as required.

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

Curriculum Approval Date: 12/08/2020

LECTURE CONTI. Rope Rescue Awareness (9 hours)

- A. The need for support resources
- B. Incident Hazards and Initiating Isolation Procedures
- C. The Needed Resources for a Rescue Incident
- D. Initiating a Discipline-Specific Search
- E. Performing Ground Support Operations for Helicopter Activities
- F. Initiating Triage of Victims
- G. Assisting a Team in Operation of the Haul Line

Because of the integrated nature of the lab/lecture method of instruction, the content for both lecture and lab are infused in all subjects.

LAB CONTENTS:

II. Rope Rescue Operations

A. Sizing Up a Rescue Incident (1 hour)

1. Assessing types of reference materials and their uses
2. Elements of an action plan and related information
3. Relationship of size-up to the incident management system
4. Information-gathering techniques and how that information is used in the size-up process
5. Technical rescue reference materials
6. Search parameters

B. Inspecting and Maintaining Personal Protective Equipment (1 hour)

1. Functions, construction, and operation of PPE
2. Record keeping systems
3. Requirements and procedures for cleaning, sanitizing, and infectious disease control
4. Maintenance procedures and use of provided assembly and disassembly tools

C. Inspecting and Maintaining Rescue Equipment (1 hour)

1. Functions and operations of rescue equipment
2. Selection and use of maintenance tools
3. Replacement protocol and procedures
4. Complete logs and records

D. Demonstrating Knots, Bends, and Hitches (1 hour)

1. Knot efficiency
2. Rope construction
3. Tying representative knots, bends, and hitches for the following purposes:
  - ? End-of-line loop
  - ? Midline loop
  - ? Securing rope around desired objects
  - ? Joining rope or webbing ends together
  - ? Gripping rope

E. Constructing a Single-Point Anchor System (1 hour)

1. Application of knots
2. Rigging systems and principles
3. Describing system safety check procedures
4. Rope and webbing construction
5. Rope rescue equipment applications and limitations
6. Select equipment
7. Anchor points for required strength, location, and surface contour

F. Constructing a Multiple-Point Anchor System (2 hours)

1. The relationship of angles to forces created in the rigging of multiple-point anchor systems
2. Safety issues in choosing anchor points
3. System safety check methods that allow for visual and physical assessment of system components
4. Methods to evaluate the system during operations
5. Weight distribution issues and methods
6. Knots, bends, and hitches and their applications
7. Selection and inspection criteria for hardware and software
8. Formulas needed to calculate safety factors for load distribution
9. Concepts of static loads versus dynamic loads
10. Determining incident needs as related to choosing anchor systems
11. Select effective knots
12. Determining expected loads
13. Incident operations as related to interference concerns and setup
14. Choosing anchor points
15. Performing a system safety check
16. Evaluating system components for compromised integrity

G. Conducting a System Safety Check (1 hour)

1. System safety check procedures
2. Construction and operation of rope rescue systems and their individual components
3. Principles of rigging
4. Inspecting rope rescue system components for damage
5. Assessing a rope rescue system for configuration

H. Placing Edge Protection (1 hour)

1. Materials and devices that can be used to protect ropes or webbing from sharp or abrasive edges
2. Fall prevention or protection measures
3. Protective devices for rope and webbing

I. Constructing a Belay System (1 hour)

1. Capabilities and limitations of various belay devices
2. Application of knots, bends, and hitches; rigging principles; and system safety check procedures
3. Construct a belay system

4. Tie knots, bends, and hitches
5. Perform rigging
- J. Operating a Belay System (1 hour)
  1. Application and use of belay devices
  2. Proper operation of belay systems in conjunction with lowering and raising operations
  3. Operational commands
  4. Operate a belay system
- K. Belaying a Falling Load (.5 hour)
  1. Effective emergency operation of belay devices to arrest falls
  2. Operating procedures
  3. Recognizing and arrest a falling load
- L. Constructing a Fixed Rope System (.5 hour)
  1. Rigging principles
  2. Selecting effective knots, bends, and hitches
  3. Calculate expected loads
  4. Perform a system safety check
- M. Descending a Fixed Rope (1 hour)
  1. Task-specific selection criteria for life safety harnesses and systems for descending a fixed rope
  2. The design, intended purpose, and operation of descent control devices utilized
  3. Making the attachment of the descent control device to the rope and life safety harness
  4. Maneuver around existing environment and system-specific obstacles
- N. Constructing a Lowering System (.5 hour)
  1. Capabilities and limitations of various descent control devices
  2. Application of knots, bends, and hitches; rigging principles; and system safety check procedures
  3. Attach to descent control device, anchor system, and load
- O. Operating and Directing a Lowering and a Raising System (2 hours)
  1. Application and use of descent control devices
  2. Capabilities and limitations of various lowering systems in a low- and high-angle environment
  3. Operation of lowering systems in a low- and high-angle environment
  4. Operation of raising systems in a low- and high-angle environment
  5. Operate a lowering and a raising system
  6. Manage movement of the load in a low- and high-angle environment
  7. Identify safety concerns in a low- and high-angle environment
  8. Perform a system safety check
- P. Constructing a Simple Rope Mechanical Advantage System (1 hour)
  1. Principles of mechanical advantage
  2. Application of knots, bends, and hitches
  3. System safety check procedures
  4. Tying knots, bends, and hitches
  5. Choose and rig systems
  6. Attaching the mechanical advantage system to the anchor system and load
  7. Performing a system safety check
- Q. Operating and Directing a Team in Operating a Simple Rope Mechanical Advantage System (.5 hour)
  1. Capabilities and limitations of various simple rope mechanical advantage systems and low-angle and high-angle raising operations
  2. Operate and direct a team in the operation of a simple rope mechanical advantage system in a low-angle and a high-angle

raising operation

R. Constructing a Compound Rope Mechanical Advantage System (1 hour)

1. Incident needs as related to choosing compound rope systems
2. Elements of efficient design for compound rope systems
3. Methods for reducing excessive force to system components
4. Methods of evaluating system components for compromised integrity
5. Tie knots, bends, and hitches
6. Calculate expected loads
7. Evaluate incident operations as related to interference concerns and setups
8. Perform a system safety check

S. Constructing a Complex Rope Mechanical Advantage System (1 hour)

1. Elements of efficient design for complex rope systems
2. Methods for reducing excessive force to system components
3. Rigging principles
4. Determine incident needs as related to choosing complex rope systems
5. Calculate expected loads
6. Evaluate incident operations as related to interference concerns and setups
7. Perform a system safety check
8. Evaluate system components for compromised integrity

T. Operating and Directing the Operation of a Compound Rope Mechanical Advantage System (2 hours)

1. Methods to determine incident needs
2. Rope commands
3. Procedures for continued evaluation of system components for compromised integrity
4. Methods for controlling a load's movement
5. Evaluate incident operations as related to interference concerns
6. Complete a system safety check
7. Continually evaluate system components for compromised integrity
8. Operate the compound rope mechanical advantage system
9. Direct personnel
10. Communicate commands
11. Analyze system efficiency
12. Manage load movement
13. Identify concerns

U. Operating and Directing the Operation of a Complex Rope Mechanical Advantage System (2 hours)

1. Methods to determine incident needs
2. Methods for controlling a load's movement
3. Evaluate incident operations as related to interference concerns
4. Continually evaluate system components for compromised integrity
5. Operate a complex rope mechanical advantage system
6. Direct personnel
7. Communicate commands
8. Analyze system efficiency
9. Manage load movement

V. Negotiating an Edge While Attached to a Rope Rescue System (1 hour)

1. techniques and practices for negotiating existing projections and edges along the travel path while suspended from

operating rope-based lowering and raising mechanical advantage systems and common hazards imposed by those

projections and edges

2. Select and use harness and PPE for common environments

3. Attach the rescuer to the rope rescue system

4. Maneuver across existing projections and an edge along the travel path

5. Evaluate surroundings for potential hazards

W. Accessing, Assessing, Stabilizing, Packaging, and Transferring Victims (1 hour)

1. Victim and scene assessment methods

2. Victim treatment, immobilization, and packaging methods

3. Medical information management and communication methods

4. Use victim immobilization, packaging, and treatment methods

5. Provide victim transfer reports, both verbally and in written format

X. Operating and Directing a Litter-Lowering and Litter-Raising System in a Low-Angle Environment (1 hour)

1. The application and use of lowering and mechanical advantage system in the low-angle environment

2. The capabilities and limitations of various lowering and mechanical advantage systems in a low-angle environment

3. Litter-tender functions and limitations in the low-angle environment

4. The management of a litter in a low-angle environment during raises and lowers

5. Analyze system efficiency

6. Manage movement of the litter in a low-angle environment

7. Safety concerns in a low-angle litter operation

8. Perform a system safety check

Y. Operating as a Litter Tender (1 hour)

1. Task-specific selection criteria for life safety harnesses

2. Low-angle litter attachment principles

3. Techniques and practices for low-angle environments

4. Common hazards imposed by the terrain

5. Select and use harness and PPE for common environments

6. Attach the rescuer to the rope rescue system

7. Maneuver across the terrain

Z. Directing a Litter-Lowering or Litter-Raising Operation in a High-Angle Environment (1 hour)

1. The application and use of lowering and mechanical advantage system in the high angle environment

2. Capabilities and limitations of various lowering and mechanical advantage systems in a high-angle environment

3. Litter positioning options (vertical and horizontal)

4. Manage movement of the litter in a high-angle environment

5. Identify safety concerns in a high-angle environment

AA. Selecting, Constructing, and Using Travel Restrictions (1 hour)

1. Select an anchor

2. Constructing an adjustable travel restriction system

3. Attaching a rescuer to a travel restriction system

4. Using travel restriction in a low-angle and a high-angle environment

AB. Constructing and Operating Ladder Rescue Systems (1 hour)

1. Describe the components and operational functions of the seven ladder systems

- Moving ladder slide
- Ladder slide
- Exterior leaning ladder
- Interior leaning ladder
- Cantilever ladder

- Ladder gin
  - Ladder A frame
2. The components and operational functions of the mechanical advantage system used in a ladder rescue system
  3. Safety considerations for ladder rescue systems
  4. Construct and operate ladder rescue systems
- AC. Terminating a Technical Rescue Operation (1 hour)
1. Incident command functions and resources
  2. Hazard identification and risk management strategies
  3. Logistics and resource management
  4. Personnel accountability systems
  5. Recognize hazards
  6. Analyze risk

**METHODS OF INSTRUCTION:**

Lecture Skills / Lab

**OUT OF CLASS ASSIGNMENTS:**

Required Outside Hours: 18

Assignment Description:

Reading assignments daily

**METHODS OF EVALUATION:**

Skill demonstrations

Percent of total grade: 80.00 %

Performance in learning activities and skills to be evaluated by State Fire Instructor using State Fire Training standards

Objective examinations

Percent of total grade: 20.00 %

Written Exam to be graded by State Fire Training Instructor.

**REPRESENTATIVE TEXTBOOKS:**

Fundamentals of Technical Rescue. Jones and Bartlett, 2017.

ISBN: 978-0-7637-3837-2

Reading Level of Text, Grade: 12

State Fire Training . Rope Rescue Manual . CMC Rescue ,2017.

ISBN: 978-009845878-5

Reading Level of Text, Grade: 12

Tom Pendley, Desert Rescue Research. The Essential Technical Rescue Field Operations Guide. Desert Rescue Research, 2017.

ISBN: 978-0-692-90153-3

Reading Level of Text, Grade: 12

**ARTICULATION and CERTIFICATE INFORMATION**

Associate Degree:

CSU GE:

IGETC:

CSU TRANSFER:

Transferable CSU, effective 202130

UC TRANSFER:

Not Transferable

**SUPPLEMENTAL DATA:**

Basic Skills: N

Classification: Y

Noncredit Category: Y

Cooperative Education: N

Program Status: 1 Program Applicable

Special Class Status: N

CAN:

CAN Sequence:

CSU Crosswalk Course Department:

CSU Crosswalk Course Number:

Prior to College Level: Y

Non Credit Enhanced Funding: N

Funding Agency Code:

In-Service: N

Occupational Course: C

Maximum Hours:

Minimum Hours:

Course Control Number: CCC000620698

Sports/Physical Education Course: N

Taxonomy of Program: 213300