

COURSE OUTLINE **Rope Rescue II**

Course Description

FS 142. Rope Rescue II. 1 hour credit. Prerequisites: FS 100, FS 140, and FS 141 with a C or better. This course will enable the student to recognize conditions requiring rope rescue by meeting National Fire Protection Association's Standard 1670, pertaining to rope rescue. The student will also be capable of hazard recognition, equipment use, and techniques necessary to operate at a rope rescue incident.

Course Relevance

This course is designed to meet the concepts covered in the National Fire Protection Association 1670, Standard on Operations and Training for Technical Search and Rescue Incidents. The student will learn complex rigging systems for employment in rescue and firefighting meeting the NFPA 1670 Standard Operations and Training Search and Rescue Incidents.

Required Materials

Frank, J. A. (1998). *Rope rescue manual*. (3rd ed.). Santa Barbara, CA: California Mountain Company, Ltd.

Learning Outcomes

The intention is for the student to be able to

1. Identify procedures for initiating the emergency response system where rope rescue is required
2. Identify procedures for carrying out site control and scene management
3. Recognize hazards associated with rope rescue and the procedures to mitigate these hazards
4. Identify and utilize of personal protective equipment assigned for use at a rope rescue incident

Primary Learning PACT Skills that will be DEVELOPED and/or documented in this course

Through the student's involvement in this course, he/she will develop his/her ability in the following primary PACT skill areas:

1. Critical Thinking
 - Through use of critical and analytical skills, the student will learn to gather data during an initial scene size up and determine the proper and safest course of action.
2. Field-Related Technology
 - The student will perform various rope rescue skills and techniques the student's proficiency will be assessed.

Secondary skills (developed but not documented):

- Problem Solving
- Communication
- Teamwork

Major Summative Assessment Task(s)

These learning outcomes and the primary Learning PACT skills will be demonstrated by

1. Performing a series of cognitive and psychomotor assessments to demonstrate proficiency in advanced rope rescue techniques by meeting the National Fire Protection Association's Standard 1670, pertaining to rope rescue
2. Executing site control and management on a scene requiring advanced rope rescue techniques

Course Content

- I. Themes – Key recurring concepts that run throughout this course:
 - A. Site control and scene management
- II. Issues – Key areas of conflict that must be understood in order to achieve the intended outcome:
 - A. Safety Issues in reference to personal, patient, and equipment
- III. Concepts – Key concepts that must be understood to address the issues:
 - A. Importance of safety concepts
- IV. Skills/Competencies – Actions that are essential to achieve the course outcomes:
 - A. Demonstrate the construction of load distributing anchor systems
 - B. Demonstrate the construction and use of common ascending systems
 - C. Demonstrate the construction and use of common lowering systems
 - D. Demonstrate the construction and use of high lines in a high-angle environment
 - E. Demonstrate proper methods for attending a patient and litter
 - F. Demonstrate the use of knot passing techniques

Learning Units

- I. Procedures for sizing-up existing and potential conditions
 - A. Scope, magnitude, and nature of the incident
 - B. Location, number, and condition of victims
 - C. Risk/ benefit analysis
 - D. Access to the scene
 - E. Environmental factors
 - F. Available and necessary resources
- II. Procedures for ensuring safety in rope rescue operations
 - A. Edge protection
 - B. Belays
 - C. Critical angles in rope systems
 - D. System stresses
 - E. Safety checks
- III. Procedures for establishing the need for, selecting, and placing edge protection

- A. Topographical conditions
 - B. Construction features
- IV. Procedures for selecting, using, and maintaining rope rescue equipment and rope rescue systems
- A. Emergency situation size up
 - B. Safe handling of equipment and ropes
- V. Procedures for configuring all knots, bends, or hitches
- A. Bowline
 - B. Figure-eight family of knots and bends
 - C. Grapevine or double fisherman's knot
 - D. Water knot
 - E. Barrel knot
- VI. Procedures for selecting anchor points and equipment to construct anchor systems
- A. Single point
 - B. Load-sharing multi point
 - C. Self-adjusting
- VII. Procedures for constructing and using single point anchor systems
- A. Tensionless
 - B. Two-bight
 - C. Multi-wrap
- VIII. Procedures for constructing and using multiple point, load sharing anchor
- A. Non-adjusting
 - B. Load distributing
- IX. Procedure for selecting, constructing and using a belay system
- A. Separate safety line
 - B. Bottom assisted belay
- X. Procedures for personnel to escape from jammed or otherwise malfunctioning ascent and descent control devices
- A. Identification of potential problems
 - B. Communication methods
- XI. Procedures for selecting, constructing and using a highline rope system
- A. Critical angles
 - B. Tensioning the high line
 - C. Components of a high line
 - D. Operating a high line
 - E. Track line

- XII. Procedures for selecting, constructing and using ascending rope systems
 - A. Tender system
 - B. Ascending
 - C. Rope walking systems

- XIII. Procedures for selecting, constructing and using a lowering system
 - A. Rappelling
 - B. Lowering systems

- XIV. Attaching a litter to a rope rescue system
 - A. Patient packaging methods
 - B. Utilizing a pelvic tie-off

- XV. Utilization of litter attendants
 - A. Horizontal transport
 - B. Vertical transport

- XVI. Selection, construction, and use of rope-based mechanical advantage systems
 - A. Benefits of a mechanical advantage system
 - B. Knot passing techniques
 - C. Moving pulleys
 - D. Advantage calculations

- XVII. Selection, construction, and use of raising systems
 - A. 2:1 Systems
 - B. 3:1 Systems (z-rig)
 - C. 4:1 Systems (tender litter lift)
 - D. 5:1 Systems
 - E. 6:1 Systems
 - F. 9:1 Systems

Learning Activities

The student will be engaged in both classroom interaction and field applications.

Grade Determination

The student will be evaluated through written exams, skill proficiency assessments, and other methods of evaluation at the discretion of the instructor.