



# COURSE INFORMATION AND REQUIRED MATERIALS

**PO Box 944246, Sacramento, CA 94244-2460**

**Course: Rescue Systems 1: Basic Rescue Skills (2010)  
CFSTES**

**Hours:** 40 (Five 8-Hour Days)

**Designed For:** All emergency response personnel

**Description:** Key topics include: Team organization, rescue, and environmental considerations, use of ropes, knots rigging and pulley systems, descending, rappelling, and belaying tools and techniques, subsurface rescue techniques, use of cribbing, wedges, cutting/prying and hydraulic tools, use of fire service ladders in specialized rescue situations, and day and night simulated rescue exercises.

**Prerequisites:** Low Angle Rope Rescue Operations, Fire Fighter I or equivalent training

**Certification:** Under development

**Class Size:** 48

**Student/Instructor:** Ratios:

- 1-Module Site: 12/1 (12 total students) with 1 Primary Instructor.
- 2-Module Site: 12/1 (24 total students) with 2 Primary Instructors.
- 3-Module Site: 12/1 (36 total students) with 3 Primary and 1 Senior Instructor.
- 4-Module Site: 12/1 (48 total students) with 4 Primary and 1 Senior Instructor.

**Restrictions:** This course can only be delivered at a State Fire Training approved site.

REQUIRED STUDENT MATERIALS	EDITION	VENDORS
▪ Student Manual	2010	SFT
REQUIRED INSTRUCTOR MATERIALS		
▪ Instructor CD (PowerPoint Slides included)	2010	SFT
▪ Student Manual	2010	SFT

VENDORS		
SFT	State Fire Training Bookstore, PO Box 944246, Sacramento 94244 <a href="http://www.fire.ca.gov">www.fire.ca.gov</a>	916-445-8158

<b>RESCUE SYSTEMS 1 COURSE OUTLINE</b>
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**Topic 1: Introduction To The California Urban Search & and Rescue System. 1 Hour**

**Scope:** This chapter serves as an introduction to the California Urban Search and Rescue System.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be familiar with the requirements for the California Urban Search and Rescue (US&R) Basic and Light Operational Levels. The manipulative portion of the course concentrates on techniques to operate safely and effectively at structural collapse incidents involving the collapse or failure of light frame construction and basic rope rescue situations. The course uses the most innovative and progressive procedures being employed today, while maximizing rescue operation efficiency with minimal equipment and personnel. The Urban Search and Rescue Operational System Description includes; four different levels of operational capability, training, and equipment. Additional urban search and rescue multidisciplinary resources are also identified. The document uses the Incident Command System (ICS) to apply common terminology and resource management practices to provide supervision and control of essential functions at incidents that involve technically demanding rescue operations.

**Enabling Learning Objectives (ELO):**

1. Describe the history and objectives of the Rescue Systems 1 course.
2. Describe the California Urban Search and Rescue System.
3. Describe the relevant components of the ICS-US&R 120-1 Operational System.
4. Identify the five general construction categories.

**Topic 1-2: Rescue Operations. 1 Hour**

**Scope:** This chapter serves as an introduction to rescue operations.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be familiar with a structural collapse incident that presents the rescuer with a multitude of hazards and problems and uses the four phases of structural collapse rescue. Hazards can come from the structure itself, the surrounding area, and unsafe procedures used by the rescue team. Rescuer safety must be a priority stressed before, during, and after the incident by all personnel at the incident.

**Enabling Learning Objectives (ELO):**

1. Describe the four phases of structural collapse rescue.
2. Describe the checklist for the management of a structural collapse incident.
3. Describe US&R search.
4. Describe the search marking system.

**Topic 1-3: US&R Safety and Medical Care for Victims. 1 Hour**

**Scope:** This chapter serves as an introduction to US&R Safety and Medical Care for Victims.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be familiar with a structural collapse incident that can cause multiple victim injuries in a variety of ways and locations. Using some basic medical care and safety procedures during the rescue operations will greatly assist in providing the most victims with best possible chance for recovery.

**Enabling Learning Objectives (ELO):**

1. Describe the general hazards of a structural collapse.
2. Describe four general types of building construction hazards.
3. Describe four types of collapse patterns.
4. Describe the necessary personal protective equipment to use during an incident.
5. Identify the safety and medical considerations to take during an incident.
6. Describe the injuries associated with a structural collapse.
7. Describe basic infectious disease precautions to take during an incident.

**Topic 1-4: US&R Planning and Preparation. 1 Hour**

**Scope:** This chapter serves as an introduction to US&R planning and preparation.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be familiar with structural collapse incident organization and management. If an effective system to direct and control the large volume of personnel, equipment, and arriving resources is not in place, the person in charge will be overwhelmed. The order in which specific functions and tasks are performed will be vital to the effectiveness of mitigating the search and rescue structural collapse incident. Planning is probably the single most important function for an effective response to structural collapse incidents. Proper planning will identify the legal authority and responsibility for specific actions, develop a vulnerability and hazard assessment, and identify resources, response coordination, training, and budgetary needs.

**Enabling Learning Objectives (ELO):**

1. Describe the legal authority and responsibility for US&R.
2. Describe the development of a vulnerability and hazard assessment.
3. Identify resources for a US&R incident.
4. Describe effective response coordination.
5. Describe the training needed for local resources.
6. Describe budgetary needs during a US&R incident.
7. Describe the ICS, SEMS, and NIMS as they relate to a US&R incident.
8. Describe the communications necessary for a US&R incident.
9. Describe scene control.
10. Describe federal and state resources.

**Topic 2-1: Rescue Knots and Hitches. 30 Minutes**

**Scope:** This chapter serves as a review of rescue knots and hitches learned in the prerequisite Low Angle Rope Rescue Operational course.

**Terminal Objective:** The student will be able to identify and properly tie all Rescue Knots and Hitches.

**Enabling Objectives:**

1. Demonstrate learned knowledge, skills, and abilities from prerequisite Low Angle Rope Rescue Operational (LARRO) course.
2. Demonstrate how to tie the six required knots.
3. Demonstrate how to tie the four RS-I required knots.

**Topic 2-2: Anchor Systems. 30 Minutes**

**Scope:** This chapter serves as a review of Anchor Systems learned in the prerequisite Low Angle Rope Rescue Operational course.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be aware of anchor selection and anchor system construction required for Rescue Systems 1 skills.

**Enabling Learning Objectives (ELO):**

1. Describe considerations when selecting anchors.
2. Describe the types of anchors.
3. Demonstrate how to form a single loop, double loop, locking girth hitch (lark's foot).
4. Demonstrate how to form a single and double loop basket sling (three bight).
5. Demonstrate how to form a single and multi-loop anchor sling.
6. Demonstrate how to form a wrap three pull two anchor sling.
7. Demonstrate sling anchor attachments: pre-tied.
8. Demonstrate single sling anchor attachments: open.

**Topic 2-3: Rescuer and Ambulatory Victim Packaging. 30 Minutes**

**Scope:** This chapter serves as a review of Rescuer and Ambulatory Victim Packaging learned in the prerequisite Low Angle Rope Rescue Operational (LARRO) course and will introduce and provide instruction on additional knowledge and skills that may be required for Rescue Systems 1 skills.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be aware of how to properly package rescuers and victims to safely and effectively complete a rope rescue operation.

**Enabling Learning Objectives (ELO):**

1. Describe rescue harnesses and rescuer packaging.
2. Demonstrate how to don a Class III harness.
3. Demonstrate how to package a victim in a commercial victim harness.
4. Demonstrate how to package a victim in a Hasty Pelvic harness.

**Topic 2-4: System Attachments and Fall Restraint. 30 Minutes**

**Scope:** This chapter serves as a review of System Attachments and Fall Restraint learned in the prerequisite Low Angle Rope Rescue Operational (LARRO) course and will introduce and provide instruction on additional fall restraint knowledge and skills that may be required for Rescue Systems 1 skills.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be aware of several methods of system attachments for rescuers and victims.

**Enabling Learning Objectives (ELO):**

1. Describe system attachments.
2. Demonstrate how to attach a rescuer to a rope rescue system.
3. Demonstrate how to attach an ambulatory victim to a rope rescue system.
4. Demonstrate how to attach a rescue litter vertically to a rope rescue system.
5. Demonstrate how to attach a rescue litter horizontally to a rope rescue system.
6. Demonstrate how to tend a rescue litter.
7. Demonstrate how to attach a rescuer to a fall restraint system.

**Topic 2-5: Belay/Safety Line Systems. 30 Minutes**

**Scope:** This chapter serves as a review of Belay/Safety Lines learned in the prerequisite Low Angle Rope Rescue Operational (LARRO) course and will introduce and provide instruction on additional knowledge and skills that may be required for Rescue Systems 1 skills.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be aware of the importance of using a backup line to catch the load in the event of a failure of the main line.

**Enabling Learning Objectives (ELO):**

1. Define key points regarding the operation of a belay/safety line system.
2. Demonstrate belay/safety line configurations.
3. Demonstrate lowering operations—basic configuration.
4. Demonstrate retrieval operations—basic configuration.
5. Describe system variations.

**Topic 2-6: Rappelling / Descending. 2.5 Hours**

**Scope:** This chapter serves as a review of Rappelling techniques and safety learned in the prerequisite Low Angle Rope Rescue Operational (LARRO) course and will introduce and provide instruction on additional knowledge and skills that may be required for Rescue Systems 1 skills.

**TERMINAL OBJECTIVE:**

The student will be able construct and operate rope rescue descending systems.

**ENABLING OBJECTIVES:**

1. Describe descending techniques.
2. Demonstrate how to construct a fixed line for a rappelling
3. Demonstrate how to reeve a Figure Eight descender and brake bar rack.
4. Demonstrate a rappel and lock-off using a Figure Eight descender and brake bar rack.
5. Demonstrate a rappel using a Figure Eight descender and brake bar rack with a high and low anchor point.

**Topic 2-7: Lower and Raise Main Line Systems. 4 Hours**

**Scope:** This chapter serves as a review for lowering and raising main line systems learned in the prerequisite Low Angle Rope Rescue Operational (LARRO) course and will introduce and provide instruction on additional knowledge and skills that may be required for Rescue Systems 1 skills.

**Terminal Objective (TLO):** At the end of this chapter, the student will be able to demonstrate how to raise and lower Main Line Systems

**Enabling Objectives (ELO):**

1. Describe rope rescue lowering and raising systems.
2. Demonstrate how to operate a lowering system.
3. Demonstrate how to convert a lowering system to a raising system with a 3:1 and a 5:1 inline— RPM.
4. Demonstrate how to convert a lowering system to a raising system with a 3:1 or 5:1 in-line with directional pulley.
5. Demonstrate how to construct a 3:1 and 5:1 mechanical advantage (MA) system.
6. Demonstrate how to construct a 3:1 and 5:1 pig rig.
7. Demonstrate how to convert a lowering system to a raising system with a 3:1 and 5:1 pig rig.
8. Incorporate single person load / two person load and non-ambulatory victim into multiple lower / raise evolutions

**Topic 3-1: Introduction to Lifting and Moving Heavy Objects. 6 Hours**

**Scope:** This chapter serves as an introduction to Lifting and Moving Heavy Objects.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be familiar with the unit objectives in order to develop the proper size-up, techniques, and safety considerations when attempting to lift, roll, or move heavy objects. Heavy objects are unforgiving and will cause severe, permanent injuries or death when performed incorrectly.

**Enabling Learning Objectives (ELO):**

1. Describe tool types, capabilities, and safety considerations when lifting heavy objects.
2. Describe three different types of jacks, their operating principles, and safety precautions.
3. Describe the appropriate personal protective equipment, safety and medical precautions.
4. Describe rescue team positions.
5. Describe determining the weight of structural components.
6. Describe moving heavy objects.
7. Demonstrate raising, stabilizing, rotating, and lowering a single heavy object.
8. Demonstrate raising, stabilizing, moving, and lowering multiple heavy objects.
9. Demonstrate raising, stabilizing, moving, and lowering multiple heavy objects while safely managing and extricating a victim from under the objects.

**Topic 4-1: Introduction to Breaking and Breaching. 4 Hours**

**Scope:** This chapter serves as an introduction to Breaking and Breaching.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be familiar with a structural collapse incident that requires breaking and breaching operations to gain access, remove debris, or release an entrapped victim. Breaking and breaching operations discussed in this course will focus on light-frame construction materials, such as wood and light-gauge metals, unreinforced masonry such as brick veneer, and reinforced masonry such as a cinder block wall.

**Enabling Learning Objectives (ELO):**

1. Describe tool types, capabilities, and safety considerations when breaking and breaching.
2. Describe light-frame structure design and construction materials.
3. Describe the appropriate personal protective equipment, safety medical precautions.
4. Describe breaking and breaching operations including shape and size of breaching openings.
5. Describe breaking and breaching operations in other general construction categories.

**Topic 5-1: Ladder Rescue Systems. 8 Hours**

**Scope:** This chapter serves as an introduction to Ladder Rescue Systems.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be familiar with the skills and techniques to move patients from a low place to a high place, a high place to a low place, or across uneven terrain. Rescuers will use fire service ladders and rope rescue equipment to build systems to accomplish this transport quickly and safely.

**Enabling Learning Objectives (ELO):**

1. Describe the components and operational functions of the seven ladder systems:
  - a. Moving ladder slide
  - b. Ladder slide
  - c. Exterior leaning ladder
  - d. Interior leaning ladder
  - e. Cantilever ladder
  - f. Ladder gin
  - g. Ladder "A" frame
2. Describe the components and operational functions of the mechanical advantage system used in a ladder rescue system.

**Topic 6-1: Introduction to Structure Shoring Systems. 1 Hour**

**Scope:** This chapter serves as an introduction to Structural Shoring systems.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be familiar with the skills and techniques to stabilize compromised light-frame structures and safely operate around them.

**Enabling Learning Objectives (ELO):**

1. Describe the techniques to mitigate structure collapse hazards.
2. Describe the steps involved during shoring size-up.
3. Describe different shoring size-up considerations.
4. Describe the proper placement of shoring components.
5. Describe the positions, roles, and responsibilities of the Shoring Team.
6. Describe the different types of shoring systems.

**Topic 6-2: Introduction to Basic Tools and Equipment for Emergency Shoring Operations. 1 Hour**

**Scope:** This chapter serves as an introduction to Basic Tools and Equipment for Emergency Shoring Operations.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be familiar with basic tools and equipment needed to construct emergency shores.

**Enabling Learning Objectives (ELO):**

1. Describe the tools and equipment for emergency shoring operations, including design, use, limitations, and applications.
2. Describe the safety considerations related to shoring tools and equipment.

**Topic 6-3: Introduction to the Timber Spot Shore (Class I). 1 Hour**

**Scope:** This chapter serves as an introduction to the Timber Spot Shore.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be familiar with the skills and techniques required to construct timber spot shores.

**Enabling Learning Objectives (ELO):**

1. Describe the uses for timber spot shores.
2. Describe the components of timber spot shores.
3. Demonstrate the assembly procedures for timber spot shores.
4. Demonstrate the proper placement of shoring components.
5. Describe the evaluation and safety check process for timber spot shores.

**Topic 6-4: Introduction to the Two-Post Vertical Shore (Class II). 1 Hour**

**Scope:** This chapter serves as an introduction to the Two-Post Vertical Shore.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be familiar with the skills and techniques required to construct a two-post vertical shore.

**Enabling Learning Objectives (ELO):**

1. Describe the uses for a two-post vertical shore.
2. Describe the components of a two-post vertical shore.
3. Demonstrate the assembly procedures for a two-post vertical shore.
4. Demonstrate the proper placement of shoring components.
5. Describe the evaluation and safety check process for a two-post vertical shore.

**Topic 6-5: Introduction to the Horizontal Shore. 1 Hour**

**Scope:** This chapter serves as an introduction to the Horizontal Shore.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be familiar with the skills and techniques required to construct horizontal shores.

**Enabling Learning Objectives (ELO):**

1. Describe the uses for horizontal shores.
2. Describe the components of horizontal shores.
3. Demonstrate the assembly procedures for horizontal shores.
4. Demonstrate the proper placement of shoring components.
5. Describe the evaluation and safety check process for horizontal shores.

**Topic 6-6: Introduction to the Pre-Constructed Window and Door Shore. 1 Hour**

**Scope:** This chapter serves as an introduction to Window and Door Shores.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be familiar with the skills and techniques required to construct window and door shores.

**Enabling Learning Objectives (ELO):**

1. Describe the uses for window and door shores.
2. Describe the components of window and door shores.
3. Demonstrate the assembly procedures for window and door shores.
4. Demonstrate the proper placement of shoring components.
5. Describe the evaluation and safety check process for window and door shores.

**Topic 6-7: Introduction to the Sloped Surface Shore with Cribbing 1 Hour**

**Scope:** This chapter serves as an introduction to the Sloped Surface Shore with Cribbing.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be familiar with the skills and techniques for using cribbing in combination with a shoring system.

**Enabling Learning Objectives (ELO):**

1. Describe the need for shoring a sloped surface with cribbing.
2. Describe the components of a sloped surface shore with cribbing.
3. Demonstrate the assembly procedures for cribbing a sloped surface.
4. Describe the evaluation and safety check process.

**Topic 6-8: Introduction to the Split Sole Raker Shore System 1 Hour**

**Scope:** This chapter serves as an introduction to the Raker Shore.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be able to Construct a split shore

**Enabling Learning Objectives (ELO):**

1. Describe the uses for the split sole raker shore.
2. Describe the components of a raker shore system.
3. Demonstrate the assembly procedure for a raker shore system.
4. Demonstrate the proper placement of shoring components.
5. Describe the evaluation and safety check process for a raker shore system.

**Topic 6-9: Introduction to the Cutting Station 1 Hour**

**Scope:** This chapter serves as an introduction to the Cutting Station.

**Terminal Learning Objective (TLO):** At the end of this chapter, the student will be able to construct and safely operate a cutting station.

**Enabling Learning Objectives (ELO):**

1. Describe the uses for the cutting station.
2. Describe the design and components of the cutting station.
3. Describe the different applications for the cutting station.

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**Note: See current Course Information and Required Materials Manual for any updates or changes to this document.**