



DEPARTMENT OF FORESTRY AND FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
State Fire Training Division
P.O. Box 944246
SACRAMENTO, CA 94244-2460
(916) 568-2911
Website: www.fire.ca.gov



Date: April 9, 2021

To: State Board of Fire Services
Statewide Training and Education Advisory Committee

From: Chris Fowler, Deputy State Fire Marshal III, Supervisor

SUBJECT/AGENDA ACTION ITEM:

Rope Rescue, Rescue Systems, River and Flood Rescue, and Structural Collapse Updates

Recommended Actions:

Approve FSTEP Course Updates and Retirements

Background Information:

In 2020, State Fire Training (SFT) implemented the new Rope Rescue Awareness/Operations and Rope Rescue Technician courses. The Structural Collapse Technician curriculum development cadres are delayed due to the COVID-19 restrictions. This delay has created unintended consequences with the December 2021 retirement of Rescue Systems 1: Rope Rescue (Module 1) and Ladder Rescue Systems (Module 3)

Analysis/Summary of Issue:

The retirement for Rescue Systems 1, 2, and 3 will be updated to **TBD**, with the final date included in the Structural Collapse Technician Implementation Plan. The anticipated retirement date is now December 2022. The Structural Collapse Technician curriculum development is a priority for SFT. Due to the course complexities, the Cadre Leads and Technical Editors have recommended that this cadre meet in-person. Depending on public health restrictions, the intent is to schedule the cadres in May-June and October-November 2021.

The Rope Rescue Technician (2017) prerequisites have been updated to allow students who have legacy SFT classes into the course. The revised prerequisites are:

- Rope Rescue Awareness/Operations; or
- *Low Angle Rope Rescue Operational and Rescue Systems 1*

The River and Flood Rescue Technician and River and Flood Rescue Boat Technician prerequisites have been updated. The revised prerequisites are:

- *Low Angle Rope Rescue Operational or Rope Rescue Awareness/Operations*



ROPE RESCUE AWARENESS/OPERATIONS AND ROPE RESCUE TECHNICIAN Curriculum Implementation Plan

Updated: May 2021

OVERVIEW

This document is intended to provide information for all State Fire Training (SFT) stakeholders on new curriculum titled Rope Rescue Awareness/Operations (2017) and Rope Rescue Technician (2017). Historically, Rescue Systems 1 and Rescue Systems 2 has been delivered through SFT’s curriculum under the Fire Service Training and Education Program (FSTEP). Stakeholders including FEMA, Office of Emergency Services (OES), FIRESCOPE, SFT representatives, and local emergency rescue response resources were consulted to discuss updating rescue curriculum and coming into alignment with the National Fire Protection Association standards. This alignment was identified to keep FEMA, OES-State Agency Task Force, FIRESCOPE, SFT representatives, and local emergency rescue resources able to deploy while meeting the minimum standards as identified in NFPA, state and federal guidelines.

IMPLEMENTATION

SFT recognizes that many candidates and agencies are vested in the current Low Angle Rope Rescue Operational (2007), Rope Rescue Technician (2013), Rescue Systems 1 Rope Rescue (Module 1), Rescue Systems 1 Ladder Rescue Systems (Module 3), therefore, the existing curriculum will be available for delivery during the transition period.

Rope Rescue Awareness/Operations (2017) Available September 1, 2020

Rope Rescue Technician (2017) Available September 1, 2020

New Curriculum	Hours
Rope Rescue Awareness/Operations (2017)	40 Hours
Rope Rescue Technician (2017)	40 Hours

Rope Rescue Technician (2013) Curriculum..... Phase out December 31, 2021
Effective December 31, 2021, Rope Rescue Technician (2013) curriculum will be retired.

Rescue Systems 1: Rope Rescue (Module 1) Curriculum..... TBD
Rescue Systems 1: Rope Rescue (Module 1) curriculum will be retired once the new Structural Collapse course plans are developed by State Fire Training.

Rescue Systems 1: Rope Rescue (Module 3) Curriculum..... TBD
Effective December 31, 2021, Rescue Systems 1: Ladder Rescue Systems (Module 3) curriculum will be retired once the new Structural Collapse course plans are developed by State Fire Training.

INSTRUCTOR REQUIREMENTS

Instructor Registration Available September 1, 2020

Existing Instructors

Due to the significant changes in both the NFPA standards, curriculum and the requirements to instruct, existing instructors will need to meet the requirements listed below.

Rope Rescue Awareness/Operations

To teach the Rope Rescue Awareness/Operations (2017) course you must meet the following:

- SFT Registered Instructors for:
 - Low Angle Rope Rescue Operational (2007); **AND**
 - Rescue Systems 1: Rope Rescue (Module 1)*; **AND**
 - Rescue Systems 1: Ladder Rescue Systems (Module 3)*
- SFT Course Completion:
 - Rope Rescue Technician (2013); **OR**
 - Rope Rescue Technician (2017)

SFT Registered Instructors for Rope Rescue Technician (2013)* will be authorized to instruct Rope Rescue Awareness/Operations (2017).

Rope Rescue Technician

SFT Registered Instructors for Rope Rescue Technician (2013)* will be authorized to instruct Rope Rescue Technician (2017).

*Note: SFT Registered Instructors must be in good standing and meet the Maintenance Requirement listed in the State Fire Training Procedures Manual:

- Section 6.7.17.9: A Registered Rescue Systems Primary Instructor shall teach at least two SFT Rescue Systems courses every four years.
- Section 6.7.20.10: A Registered Rope Rescue Technician Primary Instructor shall teach at least two SFT Rope Rescue Technician courses every four years.

FEMA Rope Rescue Instructors

SFT is developing a process for FEMA Rope Rescue Lead/Adjunct Instructors to become a SFT Rope Rescue Instructor. FEMA Rope Rescue Lead/ Adjunct Instructors will need to meet the following requirements:

- Required to be a SFT Registered Instructor in good standing
- Letter of experience from approved signature authority or designee (see below)
 - Held the rank of Fire Fighter and/or performed rescue duties within a Recognized Fire Agency in California for a minimum of three (3) years.
- Not required to complete the Rope Rescue Task Books or meet the education requirements as they have been fulfilled through the FEMA system.
- Documentation of applicant's FEMA Rope Rescue Lead/Adjunct instructor status in good standing (SFT is finalizing what documents will be accepted).

New Instructors

Rope Rescue Awareness/Operations

New instructors for the Rope Rescue Awareness/Operations (2017) shall meet the SFT requirements for Registered Primary Instructors, and in addition will be required to complete the following:

- Rope Rescue Awareness/Operations Training (one of the following)
 - Rope Rescue Awareness/Operations (2017) course completion
 - Low Angle Rope Rescue Operational **AND** Rescue Systems 1 course completions
- Rope Rescue Technician (2013 or 2017) course completion
- Rope Recue Awareness/Operations Instructor Task Book (2017)
- Letter of experience from approved signature authority or designee
 - Held the rank of Fire Fighter and/or performed rescue duties within a Recognized Fire Agency in California for a minimum of three (3) years.
- IS-100, IS-200, IS-700 and IS-800 (SFT, CAL FIRE, FEMA, NWCG)

Rope Rescue Technician

New instructors for the Rope Rescue Technician (2017) shall meet the SFT requirements for Registered Primary Instructors, and in addition will be required to complete the following:

- Rope Rescue Awareness/Operations Training (one of the following)
 - Rope Rescue Awareness/Operations (2017) course completion
 - Low Angle Rope Rescue Operational **AND** Rescue Systems 1 course completions
- Rope Rescue Technician (2013 or 2017) course completion
- Rope Recue Technician Instructor Task Book (2017)
- Letter of experience from approved signature authority or designee (see below)
 - Held the rank of Fire Fighter and/or performed rescue duties within a Recognized Fire Agency in California for a minimum of three (3) years.
- IS-100, IS-200, IS-700 and IS-800 (SFT, CAL FIRE, FEMA, NWCG)

Currency Requirement

To maintain Primary Instructor status, the Instructor shall deliver an approved SFT Rope Rescue Awareness/Operations (2017) course or Rope Rescue Technician (2017) course once every three (3) years. For those instructors not meeting the currency requirement, the Instructor shall either work under an approved qualified instructor or take the course. A letter or ICS 225 shall be submitted to update the qualifications.

POTENTIAL AGENCY IMPACTS

Fire agencies desiring to utilize the course completion as a requirement for their recruitment/promotion activities should review the curriculum and certification requirements to ensure that all agency training needs are being met. After review, Fire Agencies should update their job specifications and recruitment documentation to reflect these new courses and requirements.

Accredited Regional Training Programs (ARTP), Accredited Local Academies (ALA), community colleges and all other local delivery venues should review the curriculum and seek approval from their curriculum committee / program sponsor, as appropriate. ARTPs should review the new ECFO curriculum and discuss potential impacts with their advisory committees.



Rope Rescue Technician (2017) Course Plan

Course Details

- Description:** This course provides information on high-angle rescue, familiarizing participants with operation of simple, complex, and compound rope rescue systems in the high-angle environment.
- Designed For:** All fire service and allied emergency response personnel
- Prerequisites:** Rope Rescue Awareness/Operations; or
Low Angle Rope Rescue Operational and Rescue Systems 1
- Standard:** Attend entire course. Complete all activities and any formative tests. Complete all summative tests with a minimum score of 80%.
- Hours:** Lecture: 7:45
Activities: 31:15
Testing: 1:00
- Hours (Total):** 40:00
- Maximum Class Size:** 24
- Instructor Level:** Primary
- Instructor/Student Ratio:** 24:1 lecture, 6:1 high-angle activities
- Restrictions:** Training site meets site requirements and equipment standards
- SFT Designation:** FSTEP

Required Resources

Instructor Resources

To teach this course, instructors need:

- Manuals for artificial high-directionals
- Rope Rescue Manual, current edition, CMC Rescue, Inc., ISBN: 978-009845878-5 (applies to 2017 edition) (available as hard copy, online, or as an app)
- The Essential Technical Rescue Field Operations Guide (DRR), current edition, by Tom Pendley, Desert Rescue Research, ISBN: 978-0-692-90153-3 (applies to 2017 edition) (available as hard copy, and app, or online)
- NFPA 1670, 1006, 1983, 1858

Online Instructor Resources

The following instructor resources are available online at

<https://osfm.fire.ca.gov/divisions/state-fire-training/fstep-curriculum/>:

- Operational checklist
- California Code of Regulations, Title 8, Section 1670 Personal Fall Protection (dir.ca.gov)
- California Code of Regulations, Title 8, Section 3270.1 Use of Rope Access Equipment (dir.ca.gov)
- Skills list

Student Resources

To participate in this course, students need:

- Any textbooks selected by the instructor
- Helmet, gloves, eye protection, and any other safety equipment required by the AHJ
- Student materials such as paper, pens, pencils

To participate in this course, students may need:

- Knee pads

Facilities and Equipment

The following facilities are required to deliver this course:

- Structure, 20 feet minimum height with working roof that is of sound and safe engineering design
- Area to demonstrate and practice skills (rescue knots, rescue/victim packaging, anchors, and rope systems)
- All high angle evolutions performed in an environment in which the load is predominately supported by the rope rescue system
- A minimum vertical distance of 10 to 20 feet
- A minimum required ascending distance of 10 to 20 feet

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- A minimum horizontal travel distance of 20 feet and vertical height of 20 feet measured from the ground to loaded midspan is required for horizontal load movement activities
- An obstacle to negotiate while ascending and descending
- An obstacle to negotiate during lowering and raising operations
- An edge problem to be negotiated during the litter tender activities

The following equipment is required to deliver this course:

Note: All equipment must be NFPA compliant or purpose-designed (i.e., prusiks). Given changing technologies, instructor may choose to bring and demonstrate additional equipment or update these items with equipment that meets the same requirements.

Item	Size Description	Number	Notes
Anchor plate		6	
Anchor straps		Optional	
Apparatus, fire (large)	Large	Optional	
Backboard, long		Optional	
Descent control device used by the AHJ		8	
Carabiner (locking)		80	
Commercial Class III harness (variety of sizes)		12	
Commercial victim seat harness		2	
Commercial victim chest harness		2	
Cord	8mm x 33'	Optional	
Edge protection		Based on Facility Needs	Edge protection can be manufactured (rope rollers, etc) or improvised (split fire hose, etc). There shall be adequate amounts of edge protection available for concurrent running scenarios.
Edge roller		Optional	
Ascenders		4	While Gibbs Ascenders™ are acceptable, handled ascenders are preferred.
Ladder 24'		Based on Facility Needs	

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Ladder 14'		Based on Facility Needs	
Double bypass lanyards		Optional	
Litter wheel		Optional	
Load-releasing device		6	Commercial or field assembled (with webbing or cordelette) complete with general use carabiners. These carabiners are in addition to the amounts specified under the carabiner and prusik categories.
Kernmantle rope	150'	6	
Kernmantle rope	20'	4	
Picket, steel	1"x4'	Optional	
Prusik loop	Short	20	
Prusik loop	Long	20	
Pulley: standard	2" or 4"	8	
Pulley: prusik minding	2" or 4"	8	All 16 can be prusik minding
Pulley: double	2" or 4"	2	
Pulley: knot passing		1	
Rescue litter		2	
Litter bridle		2	Commercial or field assembled complete with carabiners and prusiks; if field assembled, carabiners and prusiks are in addition to the numbers specified under the carabiner and prusik categories. Must include an attachment point for the litter tender.
Rescue mannequin		Optional	
Sledgehammer	8–10 lb.	Optional	
Spider straps		Optional	
Tie rope	15'	24	
Webbing, blue tubular	1"x15'	24	
Webbing, green tubular	1"x5'	12	

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Webbing, orange tubular	1"x20'	24	
Webbing, yellow tubular	1"x12'	12	
Pick off strap		2	
Etriers		2	Can be commercial or field assembled from one-inch tubular webbing.
Mini MA system		Optional	
Artificial high-directional		1	Can be a commercial or improvised high-directional made of 4x4 lumber. One artificial high-directional per station.
Swivels		Optional	

Unit 1: Introduction

Topic 1-1: Orientation and Administration

Terminal Learning Objective

At the end of this topic, a student will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, resources, evaluation methods, and participation requirements in the course syllabus.

Enabling Learning Objectives

1. Identify facility requirements
 - Restroom locations
 - Food locations
 - Smoking locations
 - Emergency procedures
2. Identify classroom requirements
 - Start and end times
 - Breaks
 - Electronic device policies
 - Special needs and accommodations
 - Other requirements as applicable
3. Review course syllabus
 - Course objectives
 - Calendar of events
 - Course requirements
 - Student evaluation process
 - Assignments
 - Activities
 - Required student resources
 - Class participation requirements

Discussion Questions

1. What is a formative test? What is a summative test?

Activities

1. To be determined by the instructor.

Unit 2: Rope Rescue Technician

Topic 2-1: Evaluating a Scenario and Constructing Tensioned Anchor Systems

Terminal Learning Objective

At the end of this topic, given a variety of scenarios, a rope rescue system, and a variety of materials from within the AHJ, a student will be able to evaluate the needs of the scenario and construct a variety of tensioned anchor systems.

Enabling Learning Objectives

1. Describe system safety factors, critical angles, and force multipliers for a variety of tensioned anchor systems, such as:
 - Pretensioned back ties
 - Front ties
 - Focused floating anchors
2. Describe types of and uses for a variety of tensioned anchor systems
3. Construct a variety of tensioned anchors

Discussion Questions

1. What is the purpose of a focused floating anchor?
2. When might you need to use a pretensioned back tie?
3. Why would a back tie be pretensioned?

Activities

1. The instructor must create an activity directing students to construct a variety of tensioned anchor systems and assess the safety factors, critical angles, and force multipliers.

Instructor Notes

1. The instructor should heavily emphasize anchor angles.

CTS Guide Reference: CTS 3-9

Topic 2-2: Ascending a Fixed Rope

Terminal Learning Objective

At the end of this topic, given an anchored fixed rope system, a specified minimum distance for the rescuer, a system to allow ascent of a fixed rope, a structure, a belay system, a life safety harness worn by the person ascending, and PPE, the student will be able to ascend a fixed rope in a high-angle environment, so that the person ascending is secured to the fixed rope in a manner that will not allow him or her to fall; the person ascending is attached to the rope by means of an ascent control device(s) with at least two points of contact; injury to the person ascending is minimized; the person ascending can stop at any point on the fixed rope and rest suspended by his or her harness; the system will not be stressed to the point of failure; the person ascending can convert his or her ascending system to a descending system; obstacles are negotiated; the system is suitable for the site; and the objective is reached.

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Enabling Learning Objectives

1. Identify task-specific selection criteria for life safety harnesses and systems for ascending a fixed rope
2. Describe PPE selection criteria
3. Describe design and intended purpose of ascent control devices utilized
4. Explain rigging principles
5. Describe techniques for ascending in high-angle environments
6. Describe converting ascending systems to descending systems
7. Describe common hazards posed by harness use
8. Select and use harness, a system for ascending a fixed rope, and PPE for common environments
9. Attach the rescuer to the rope rescue system
10. Configure ascent control devices to form a system for ascending a fixed rope
11. Make connections to the ascending system
12. Maneuver around existing environment and system-specific obstacles
13. Convert the ascending system to a descending system while suspended from the fixed rope
14. Evaluate surroundings for potential hazards

Discussion Questions

1. What ascending system(s) do(es) your AHJ use?
2. What methods are used in your AHJ to convert the ascending system to a descending system?

Activities

1. The instructor must create an activity directing students to ascend a minimum required distance and negotiate obstacles in a high-angle environment.

Instructor Notes

1. The instructor must use contingency anchors on all fixed ropes.
2. The descent from this initial ascension does not meet the next standard. Students must complete a separate descent as part of the next topic (Topic 2-3).

CTS Guide Reference: CTS 2-13

Topic 2-3: Descending a Fixed Rope

Terminal Learning Objective

At the end of this topic, given an anchored fixed-rope system, a specified minimum travel distance for the rescuer, a system to allow descent of a fixed rope, a belay system, a life safety harness worn by the person descending, and PPE, the student will be able to descend a fixed rope in a high-angle environment, so that the person descending is attached to the fixed rope in a manner that will not allow him or her to fall; the person descending is attached to the rope by means of a descent control device; the speed of descent is controlled; injury to the person descending is minimized; the person descending can stop at any point on the fixed rope and rest suspended by his or her harness; the system will not be

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stressed to the point of failure; the system is suitable for the site; and the objective is reached.

Enabling Learning Objectives

1. Identify task-specific selection criteria for life safety harnesses and systems for descending a fixed rope
2. Describe PPE selection criteria
3. Describe the design, intended purpose, and operation of descent control devices utilized
4. Describe safe rigging principles and techniques for high-angle environments
5. Identify common hazards posed by harness use
6. Select and use harness, a system for descending a fixed rope, and PPE for common environments
7. Attach the rescuer to the rope rescue system
8. Make attachment of the descent control device to the rope and life safety harness
9. Operate the descent control device
10. Maneuver around existing environment and system-specific obstacles
11. Evaluate surroundings for potential hazards

Discussion Questions

1. What descending system(s) do(es) your AHJ use?
2. What is the difference between an autostop descender and a manual descender?

Activities

1. The instructor must create an activity directing students to descend a minimum required distance and negotiate obstacles in a high-angle environment.

Instructor Notes

1. The instructor must use contingency anchors on all fixed ropes.
2. If the students have covered this topic at the operations level, it need not be retaught.

CTS Guide Reference: CTS 2-14

Topic 2-4: Escaping from a Malfunctioning Device

Terminal Learning Objective

At the end of this topic, given an anchored fixed-rope system with a simulated malfunctioning descent control device, a system to allow escape from the malfunctioning device, a belay system, a life safety harness worn by the person descending, and PPE, the student will be able to demonstrate the ability to escape from a jammed or malfunctioning device during a fixed rope descent in a high-angle environment, so that the person descending is attached to the fixed rope in a manner that will not allow him or her to fall; the person descending is attached to the rope by means of a descent control device; the means for escape will allow the rescuer to escape either upward or downward from the malfunctioning descent control device; injury potential to the rescuer is minimized; the system will not be stressed to the point of failure; the system is suitable for the site; and the objective is reached.

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Enabling Learning Objectives

1. Identify task-specific selection criteria for escape equipment and methods used for escape from a malfunctioning descent control device
2. Identify PPE selection criteria
3. Describe the design, intended purpose, and operation of escape systems utilized
4. Explain rigging principles
5. Describe techniques for escaping a jammed device in high-angle environments
6. Describe common hazards posed by malfunctioning descent control devices
7. Select and use harness, a system for escaping a malfunctioning descent control device, and PPE for common environments
8. Attach the rescuer to the rope rescue system
9. Make attachment of the descent control device to the rope and life safety harness
10. Attach and operate the escape system to remove the rescuer from the malfunctioning descent control device while maintaining patent attachment to the fixed rope and belay
11. Use the escape system to maneuver upward or downward from the malfunctioning descent control device
12. Evaluate surroundings for potential hazards

Discussion Questions

1. What is a possible cause of a jammed device?
2. What additional equipment is needed for self-rescue in this scenario?

Activities

1. The instructor must create an activity directing students to escape from a jammed or malfunctioning device.

Instructor Notes

1. The activity in this topic may be combined with other activities, such as descending.

CTS Guide Reference: CTS 2-15

Topic 2-5: Evaluating a Scenario and Constructing and Employing a High-Directional

Terminal Learning Objective

At the end of this topic, given a variety of scenarios, a rope rescue system, and a variety of materials from within the AHJ, a student will be able to evaluate the needs of the scenario and construct and employ a natural, structural, or artificial high-directional.

Enabling Learning Objectives

1. Describe types of and uses for high-directionals
2. Describe forces associated with high-directionals
3. Identify the type of high-directional needed for different scenarios
4. Construct and use a high-directional

Discussion Questions

1. What tools and materials could be used to construct a high-directional?
2. What is a resultant?

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Activities

1. The instructor must create an activity directing students to construct a high-directional.

Instructor Notes

1. Refer to Rescue Techniques in the CMC Rope Rescue Manual.
2. Refer to the DRR section entitled Artificial High-Directional.
3. Refer to manuals for artificial high-directionals.
4. The instructor may choose to have a static display of a high-directional prior to the activity, have the students deconstruct it, and then have them reconstruct their own.

CTS Guide Reference: CTS 3-10

Topic 2-6 Directing a Team in Operating a Rope Rescue System to Remove a Stranded Victim

Terminal Learning Objective

At the end of this topic, given a victim stranded on or clinging to a feature and a means of removal of the victim to the ground or other safe area, a student will be able to direct a team in the operation of a rope rescue system to remove a victim stranded on or clinging to a natural or manmade feature in a high-angle environment, so that risks to victims and rescuers are minimized, injury to the victim is minimized, the means of attachment to the rope rescue system is maintained, and the victim is removed and brought to a safe area for transfer to EMS.

Enabling Learning Objectives

1. Describe system safety check protocol
2. Describe techniques and systems for safe transfer of stranded victims from a natural or manmade feature
3. Describe various techniques for handling stranded victims without inducing a fall
4. Reduce hazards for rescuers and victims
5. Determine condition of the stranded victim
6. Select and construct systems for rapid removal of stranded victims from natural or manmade features
7. Manage operation of the selected system
8. Determine specialized equipment needs for victim movement

Discussion Questions

1. What are the differences between a team-based and a rescuer-based pickoff?
2. Why would you choose one or the other?
3. What victim packaging options are used by your AHJ?

Activities

1. The instructor must create an activity having students perform a pickoff of a stranded or clinging victim.

Instructor Notes

1. None

CTS Guide Reference: CTS 3-1

Topic 2-7: Directing a Team in Operating a Rope Rescue System to Remove a Suspended Victim

Terminal Learning Objective

At the end of this topic, given a victim suspended by a harness attached to anchored rope or webbing, systems for removal of the victim from the rope or webbing, and a means of removal of the victim to the ground or other safe area, a student will be able to direct a team in the operation of a rope rescue system to remove a victim suspended from rope or webbing in a high-angle environment, so that risks to victims and rescuers are minimized, injury to the victim is minimized, the means of attachment to the rope rescue system is maintained, the victim is removed from the rope or webbing, and the victim is brought to a safe area for transfer to EMS.

Enabling Learning Objectives

1. Describe system safety check protocol
2. Describe techniques and systems for safe transfer of suspended victims from an existing anchored rope or webbing to a rope rescue system
3. Identify various techniques for handling suspended victims
4. Describe principles of suspension-induced injuries
5. Reduce hazards for rescuers and victims
6. Determine condition of the suspended victim
7. Select and construct systems for rapid removal of victims from lanyards or rope or webbing
8. Manage operation of the selected system
9. Determine specialized equipment needs for victim movement

Discussion Questions

1. What is suspension trauma?
2. What are the differences between a team-based and a rescuer-based pickoff?
3. Why would you choose one or the other?

Activities

1. The instructor must create an activity having students perform a pickoff of a suspended victim.

Instructor Notes

1. For safety reasons, do not leave a live simulated victim suspended for five minutes or longer.

CTS Guide Reference: CTS 3-2

Topic 2-8: Performing the Transfer and Movement of a Suspended Victim While Suspended

Terminal Learning Objective

At the end of this topic, given a rope rescue system, a specified minimum travel distance for the victim, victim transfer systems, and specialized equipment necessary for the environment, while suspended from a rope rescue system a student will be able to perform

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the transfer and movement of a victim suspended from rope or webbing in a high-angle environment to a separate rope rescue lowering or raising system, so that risks to victims and rescuers are minimized; undesirable victim movement during the transfer is minimized; the means of attachment to the rope rescue system is maintained; the victim is removed from the static line and lowered or raised to a stable surface; victim positioning is managed to reduce adverse effects associated with suspension-induced injuries; selected specialized equipment facilitates efficient victim movement; and the victim can be transported to the local EMS provider.

Enabling Learning Objectives

1. Describe system safety check protocol
2. Identify task-specific selection criteria for victim transfer systems
3. Describe various physical and psychological victim management techniques
4. Select PPE
5. Identify design characteristics and intended purpose of various transfer systems
6. Describe rigging principles
7. Describe causes and effects of suspension-induced injuries
8. Identify methods to minimize common environmental hazards created in high-angle environments
9. Reduce hazards for rescuers and victims
10. Choose victim transfer systems, select and use PPE
11. Perform a transfer of the victim from a static line to the lowering or raising system
12. Determine specialized equipment needs for victim movement

Discussion Questions

1. How can you transfer a victim to the rescue system without shockloading?
2. What are different methods of victim transfer?

Activities

1. The instructor must create an activity having students perform a transfer of and move a suspended victim.

Instructor Notes

1. This topic may be combined with the prior topic, Directing a Team in Operating a Rope Rescue System to Remove a Suspended Victim.

CTS Guide Reference: CTS 3-3

Topic 2-9: Performing the Activities of a Litter Tender in a High-Angle Operation

Terminal Learning Objective

At the end of this topic, given a rope rescue system, a specified minimum travel distance for the litter and litter tender, life safety harnesses, litters, bridles, and specialized equipment necessary for the environment, a student will be able to perform the activities of a litter tender in a high-angle lowering or raising operation, so that risks to victims and rescuers are minimized, the means of attachment to the rope rescue system is secure, and the travel path is negotiated while minimizing risks to equipment or persons.

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Enabling Learning Objectives

1. Describe system safety check protocol
2. Identify task-specific selection criteria for life safety harnesses
3. Select PPE
4. Describe variations in litter design and intended purpose
5. Describe high-angle litter attachment principles
6. Describe techniques and practices for high-angle environments
7. Describe common hazards imposed by the various structures and terrain
8. Select and use rescuer harness and PPE for common environments
9. Attach the life safety harness to the rope rescue system
10. Maneuver the litter past obstacles or natural structural features
11. Manage the litter while attached to the rope rescue system
12. Demonstrate tender's vertical positioning independent of litter during transit
13. Evaluate surroundings for potential hazards

Discussion Questions

1. What methods can the litter tender use to attach to the litter?
2. Why might a litter tender be required?

Activities

1. The instructor must create an activity directing students to tend the litter, including having them position themselves above and below the litter.

Instructor Notes

1. The intent for ELO 11 is to ensure students demonstrate positioning themselves above and below the litter to negotiate obstacles or perform a litter scoop.

CTS Guide Reference: CTS 3-4

Topic 2-10: Participating as a Member of a Team in Constructing a Horizontal Rope Rescue System

Terminal Learning Objective

At the end of this topic, given rescue personnel, life safety rope, rope rescue equipment, and a suitable anchor capable of supporting the load, a student will be able to participate as a member of a team in the construction of a rope rescue system intended to move a suspended rescue load along a horizontal path to avoid an obstacle, so that personnel assignments are made and clearly communicated; the system constructed can accommodate the load; tension applied within the system will not exceed the rated capacity of any of its components' parts; a system safety check is performed; movement of the load is efficient; and loads can be held in place or moved with minimal effort over the required distance

Enabling Learning Objectives

1. Determine incident needs as related to operation of a system
2. Describe capabilities and limitations of various systems (including capacity ratings)
3. Describe methods for limiting excessive force to system components
4. Evaluate incident site as related to hazards and obstacle negotiation

Rope Rescue Technician

5. Describe rigging principles
6. Describe system safety check protocol
7. Identify common personnel assignments and duties
8. Identify common and critical operational commands
9. Identify common problems and ways to minimize these problems during construction
10. Determine incident needs as related to construction of a system
11. Evaluate an incident site as related to hazards and setup
12. Identify the obstacles or voids to be negotiated
13. Select a system for defined task
14. Perform system safety checks
15. Use rigging principles that will limit excessive force to system components
16. Communicate with personnel

Discussion Questions

1. What are the different systems used for horizontal movement?
2. What does your AHJ use?

Activities

1. To be determined by instructor.

Instructor Notes

1. This topic is intended to include, but is not restricted to, systems such as high lines, two-rope offsets, deflection, tracking, and guiding lines.
2. Activity 2-11 covers this topic and the next.

CTS Guide Reference: CTS 3-5

Topic 2-11: Directing a Team in Operating a Rope Rescue System to Move a Suspended Load Horizontally

Terminal Learning Objective

At the end of this topic, given rescue personnel, an established system, a target for the load, a load to be moved, and PPE, a student will be able to direct a team in the operation of a rope system to move a suspended rescue load along a horizontal path, so that the movement is controlled; the load is held in place when needed; operating methods do not stress the system to the point of failure; personnel assignments are made; tasks are communicated; and potential problems are identified, communicated, and managed.

Enabling Learning Objectives

1. Determine incident needs as related to the operation of a system
2. Describe capabilities and limitations of various systems
3. Evaluate incident site as related to hazards and obstacle negotiation
4. Describe system safety check protocol
5. Describe procedures to evaluate system components for compromised integrity
6. Identify common personnel assignments and duties
7. Identify common and critical operational commands
8. Identify common problems and ways to minimize or manage those problems
9. Describe ways to increase the efficiency of load movement

Rope Rescue Technician

10. Determine incident needs
11. Select personnel
12. Communicate with personnel
13. Evaluate system components for compromised integrity
14. Perform a system safety check
15. Manage movement of the load
16. Evaluate for any potential problems

Discussion Questions

1. What are some communication challenges in operating horizontal rope rescue systems?
2. How can forces change during the operation of a horizontal rope rescue system?

Activities

1. The instructor must create an activity directing students to construct a rope rescue system and move a suspended rescue load along a horizontal path.

Instructor Notes

1. The activity for this topic and the prior topic are combined into one.
2. The instructor must consider additional safety measures while operating a horizontal rope rescue system. Refer to instructor resources.

CTS Guide Reference: CTS 1-6

Topic 2-12: Climbing and Traversing Using Climbing Aids

Terminal Learning Objective

At the end of this topic, given a specified minimum travel distance, the equipment used by the agency and a task that reflects the anticipated rescue environment, a student will be able to climb and traverse natural features or manmade structures that require the use of climbing aids, positioning equipment, or fall prevention systems to prevent the fall or unwanted movement of the rescuer, so that the objective is achieved, the rescuer can perform the required task, and fall prevention is maintained.

Enabling Learning Objectives

1. Describe system safety check protocol
2. Describe application and limitations of climbing, positioning, and fall prevention systems, including horizontal lifelines
3. Describe the fall factor for and risks associated with different systems used by the AHJ
4. Describe equipment used by the AHJ
5. Perform system safety checks
6. Climb vertical or near-vertical paths using the surfaces provided by the environment or climbing aids used by the agency
7. Transition horizontally between structural elements and the rescue system
8. Use positioning equipment to support the weight of the rescuer in a vertical or near-vertical environment permitting the rescuer to perform a task

Discussion Questions

1. What climbing aids does your AHJ use?
2. What are some methods to reduce impact force during protected climbing?

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Activities

1. The instructor must create an activity directing students to climb and traverse natural features or manmade structures that require the use of climbing aids, positioning equipment, or fall prevention systems.

Instructor Notes

1. The line that students are climbing on must have the ability to lower the students to a safe location in the event of an emergency.
2. Refer to NFPA 1006 (2017) 4.3.3 for information on ELO #7.

CTS Guide Reference: CTS 3-7

Topic 2-13: Interacting with a Person in Emotional or Psychological Crisis

Terminal Learning Objective

At the end of this topic, given an environment consistent with the mission of the agency, the policies and procedures of the organization, and a person in a crisis scenario, a student will be able to interact with a person at height who is in an emotional or psychological crisis, so that the condition is recognized and communicated to the team, the rescuer is prevented from harm, and the actions of the rescuer do not escalate the incident.

Enabling Learning Objectives

1. Describe system safety check protocol
2. Describe indicators of a person in emotional crisis
3. Identify typical triggers that can cause individuals to become agitated or anxious
4. Describe methods of interacting to prevent harm to the rescuer and the subject
5. Identify best practices to deescalate incidents involving persons in crisis
6. Describe crisis-intervention resources of the AHJ
7. Perform system safety checks
8. Methods of approach that minimize the risk to the rescuer from subjects whose psychological or emotional state is unknown
9. Interview techniques that provide insight to the motives and state of mind of the subject
10. Communicating and interacting with the subject in a manner that does not escalate the incident

Discussion Questions

1. What are your AHJ's protocols for managing emotional or psychological crises?
2. What are some local or national resources for dealing with emotional or psychological crises?

Activities

1. To be determined by the instructor.

Instructor Notes

1. Focus on minimizing risk to responders and the AHJ's resources and protocols.
2. This is a good time to discuss fall factors and ensuring your system is appropriate for the situation.
3. Instructor may refer to:

Rope Rescue Technician

- National Alliance of Mental Illness “How to Help Someone in Crisis”:
<https://www.nami.org/Blogs/NAMI-Blog/September-2017/How-to-Help-Someone-in-Crisis>
- Suicide Prevention Resource Center: <https://www.sprc.org/settings/first-responders>
- SAMHSA “Psychological First Aid for First Responders”:
<https://store.samhsa.gov/system/files/nmh05-0210.pdf>

CTS Guide Reference: CTS 3-8

Rope Rescue Technician

Time Table

Segment	Lecture Time	Activity Time	Total Unit Time
Unit 1: Introduction			
Topic 1-1: Orientation and Administration			
Lecture	1:00		
Activity 1-1: To be determined by instructor		0:00	
Unit 1 Totals	1:00	0:00	1:00
Unit 2: [Unit Title]			
Topic 2-1: Evaluating a Scenario and Constructing Tensioned Anchor Systems			
Lecture	0:15		
Activity 2-1: Constructing and Assessing Tensioned Anchor Systems		1:45	
Topic 2-2: Ascending a Fixed Rope			
Lecture	0:15		
Activity 2-2: Ascending a Fixed Rope		3:45	
Topic 2-3: Descending a Fixed Rope			
Lecture	0:15		
Activity 2-3: Descending a Fixed Rope		2:15	
Topic 2-4: Escaping from a Malfunctioning Device			
Lecture	0:15		
Activity 2-4: Escaping from a Malfunctioning Device		2:45	
Topic 2-5: Evaluating a Scenario and Constructing and Employing a High-Directional			
Lecture	1:00		
Activity 2-5: Constructing a High-Directional		3:00	
Topic 2-6: Directing a Team in Operating a Rope Rescue System to Remove a Stranded Victim			
Lecture	0:15		
Activity 2-6: Performing a Pickoff of a Stranded Victim		2:00	
Topic 2-7: Directing a Team in Operating a Rope Rescue System to Remove a Suspended Victim			
Lecture	0:15		

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Segment	Lecture Time	Activity Time	Total Unit Time
Activity 2-7: Performing a Pickoff of a Suspended Victim		2:00	
Topic 2-8: Performing the Transfer and Movement of a Suspended Victim While Suspended			
Lecture	0:15		
Activity 2-8: Transferring and Moving a Suspended Victim		1:15	
Topic 2-9: Performing the Activities of a Litter Tender in a High-Angle Operation			
Lecture	0:30		
Activity 2-9: Tending the Litter		3:30	
Topic 2-10: Participating as a Member of a Team in Constructing a Horizontal Rope Rescue System			
Lecture	1:00		
Activity 2-10: To be determined by instructor.		0:00	
Topic 2-11: Directing a Team in Operating a Rope Rescue System to Move a Suspended Load Horizontally			
Lecture	1:00		
Activity 2-11: Constructing a System and Moving a Suspended Load		6:00	
Topic 2-12: Climbing, Ascending, Descending, and Traversing Using Climbing Aids			
Lecture	1:00		
Activity 2-12: Climbing, Ascending, Descending, and Traversing Using Climbing Aids		3:00	
Topic 2-13: Interacting with a Person in Emotional or Psychological Crisis			
Lecture	0:30		
Activity 2-13: To be determined by instructor		0:00	
Unit 3 Totals	6:45	31:15	38:00
Lecture, Activity, and Unit Totals:	7:45	31:15	39:00

Rope Rescue Technician

Course Totals

Total Lecture Time (LT)	7:45
Total Activity Time (AT)	31:15
Total Testing Time (TT)	1:00
Total Course Time	40:00



River and Flood Rescue Boat Technician (2019)

Course Plan

Course Details

- Description:** This course prepares participants to demonstrate motorized boat competency in dynamic water rescue. It will familiarize participants with the dynamic water environment, give them hands-on experience, and prepare them to safely execute simple to complex rescue techniques.
- Designed For:** Public safety members with river and flood rescue responsibilities
- Authority:** Office of the State Fire Marshal
NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications (2017)
NFPA 1670 Standard for Operations and Training for Technical Search and Rescue Incidents (2017)
- Prerequisites:** State Fire Training River and Flood Water Rescue Technician
ICS 200 or 200b Initial Attack Incident Commander (online or in-person)
Low-Angle Rope Rescue Operational or Rope Rescue Awareness/Operations
It is recommended that students have completed the OSFM Open Water Rescuer - Basic (or equivalent) course prior to taking this course. If students have not taken Open Water Rescuer - Basic, it is recommended that they pass the authority having jurisdiction's (AHJ's) swim test that meets or exceeds the International Association of Dive Rescue Specialists (IADRS) Annual Watermanship Test.
- Corequisites:** None
- Standard:** Complete all activities
- Hours:** Lecture: 12:30
Activities: 27:30
- Hours (Total):** 40:00
- Maximum Class Size:** 24
- Instructor Level:** Primary

- Instructor/Student Ratio:** Lecture: 1 primary instructor per 24 students
Demonstrations: 1 primary instructor per 24 students
Activities/Skills: 1 primary instructor + enough primary instructors to maintain a 1:5 primary instructor/skills coach ratio + enough skills coaches to maintain a 1:5 ratio of skills coach/student ratio.
- Restrictions:** Students must possess the physical ability to conduct self-rescue on a rescue boat.
- SFT Designation:** FSTEP

Required Resources

Instructor Resources

To teach this course, instructors need:

- NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications (2017)
- NFPA 1670 Standard for Operations and Training for Technical Search and Rescue Incidents (2017)
- Water Rescue, Principles and Practice to NFPA 1006 and 1670: Surface, Swiftwater, Dive, Ice, Surf, and Flood (2019) Jones & Bartlett Learning, ISBN: 978128404205
- ICS-SF-SAR-020-1, Swiftwater/Flood Search and Rescue Recommended Training, Skills, and Equipment List (current edition)
<https://firescope.caloes.ca.gov/ICS%20Documents/ICS-SF-SAR-020-1.pdf>
- ICS-US&R 120-2, Swiftwater/Flood Search and Rescue Operational Systems Description and Law Enforcement Mutual Aid Plan (current edition)
- ICS-US&R 120-1, Urban Search & Rescue Operation System Description (current edition)
- ICS 420-1, Field Operations Guide (current edition)
- DOT-ERG Emergency Response Guidebook (current edition)
- CAL-OES Water Rescue River Flood Technician (current edition)
- FEMA, NIMS 508: Swiftwater/Flood Search and Rescue Team
- FEMA, NIMS 509: Swiftwater/Flood Rescue Technician

Online Instructor Resources

The following instructor resources are available online at <https://osfm.fire.ca.gov/divisions/state-fire-training/fstep-curriculum/>

- The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act):
[Stafford Act Link](#)

- ICS-SF-SAR-020-1, Swiftwater/Flood Search and Rescue Recommended Training, Skills, and Equipment List (current edition):
<https://firescope.caloes.ca.gov/ICS%20Documents/ICS-SF-SAR-020-1.pdf>
- ICS-US&R 120-2, Swiftwater/Flood Search and Rescue Operational Systems Description and Law Enforcement Mutual Aid Plan (current edition):
<https://firescope.caloes.ca.gov/ICS%20Documents/ICS-USAR-120-2.pdf>
- ICS-US&R 120-1, Urban Search & Rescue Operation System Description (current edition):
<https://firescope.caloes.ca.gov/ICS%20Documents/ICS-USR-120-1.pdf>
- ICS 420-1, Field Operations Guide (current edition): <https://firescope.caloes.ca.gov/fog-manual>
- Department of Transportation Emergency Response Guidebook (ERG) (current edition)
[DOT ERG Manual](#)
- State Fire Training River and Flood Water Rescue Technician (current edition)
- FEMA, NIMS 508: Swiftwater/Flood Search and Rescue Team
- FEMA, NIMS 509: Swiftwater/Flood Rescue Technician

Student Resources

To participate in this course, instructor may require students to use:

- [Water Rescue, Principles and Practice to NFPA 1006 and 1670: Surface, Swiftwater, Dive, Ice, Surf, and Flood](#) (2019) Jones & Bartlett Learning, ISBN: 978128404205

To participate in this course, students need:

- CAL-OES [River and Flood Motorized Boat Technician](#) (current edition)
- Personal protective equipment mandated by instructor
- Completed a National Association of State Boating Law Administrators (NASBLA) State-approved boater safety education examination approved by California State Parks Division of Boating and Waterways: [California Boater Card](#)

Facilities, Equipment, and Personnel

The following facilities, equipment, or personnel are required to deliver this course:

Facilities

- Classroom of adequate size and capability (audio/visual aids) to support classroom training
- Wash areas
- Bathrooms
- Rehabilitation area
- Safe and adequate parking
- Boat ramp and dock

- Dynamic water environment

Site Requirements

- The requesting agency assumes all responsibility, liability, and maintenance for the engineering design, strength, stability, and adequacy of all props including anchor points and tie offs.
- The requesting agency further assumes all responsibility, liability, and maintenance for all tools, equipment, and supplies used at the site for the delivery of River Flood Rescue Boat Technician classes. This includes, but is not limited to, props, ropes, rescue hardware and software.
- Before conducting any training in the water, you as the instructor are responsible for ensuring the safety of everyone involved in the training exercise.
- Students should never be put into a position where they must act as the sole rescuers of other students. The very fact that they are taking your class, implies that their level of knowledge is not sufficient to operate without direct supervision.
- You should arrive early at the training site to conduct an assessment of conditions. The should consist of a moving body of water suitable for safe water rescue training. It should consist of a moving body of water suitable for safe rescue training of a minimum of class I or II. The body of water should be no more complex than a class III and should provide a means for safe and effective rescue of both students and instructors. There should be suitable water depth and consistency to perform all required tasks. The bank of the body of water should provide a safe means of ingress and egress. The area of training must be thoroughly familiar to the instructors and all hazards identified and mitigated. You need to scout the training area for hazards such as strainers, sweepers, exposed rebar or other debris that could snag a student. You should assess the area for foot and body entrapment hazards such as underwater ledges and submerged debris and logs. The training area should be preplanned for where the “no go” zone is located. You should have an idea of what the projected water levels should be, and if the waterway is influenced by dam release or prone to sudden changes due to hydroelectric activities or precipitation. Ideally the training area should offer a variety of water features, so you may take the students through all the skills. The area may have a rapid current and with wave trains. Areas with large holes or other dangerous currents should be avoided. You must always be in a position to rescue your students. Drill, simulations or training areas where students cannot be rapidly rescued are not suitable and must be avoided.
- There are several websites that will assist with monitoring water flows. The weather needs to be monitored for potential impact on water flows.
- Be cautious when training in small waterways and creeks. These bodies of water do not usually carry heavy flows of water and often are strainer choked and full of debris. Do a complete and comprehensive survey before training in these bodies of water.

- Irrigation canals and any man-made dams must also be carefully scrutinized. These structures often have debris such as rebar and rip rap in them that are hazardous to swimmers. They can also have rapidly changing water levels.
- Low head dams are extremely hazardous and should never be used for training purposes. They offer no way out, and rescue is difficult at best. Training in and around them is inviting disaster.

Equipment

- 1 first aid kit (AHJ) BLS minimum
- Inflatable rescue boats (IRBs), maximum 1:4 resource/student ratio (It is recommended that spares are available in case of damage during class.)
- Outboard motors with prop guards for IRBs, minimum one for each boat, minimum 25hp, maximum 40hp with fuel cells and fuel lines (It is recommended that spares are available in case of damage during class.)
- Minimum one jon boat
- Outboard motor for jon boat 15hp minimum to 25 hp maximum
- 24 paddles
- 6 towing bridles
- 6 compasses
- Minimum of 2 GPS units (It is recommended to have 1 per boat.)
- 12 righting lines (flip lines)
- 6 throw bags minimum
- 6 waterproof hand lights
- 2 VHF portable marine radios minimum (It is recommended to have 1 per boat.)
- 6 rescue tubes / cans
- Red, green, white snap lights or battery-powered lights for night operations / navigation lights
- Recommended water-rescue mannequins for use in water activities
- 8 buoys minimum, with adequate line and anchors for the depth of water
- Adequate straps for securing equipment to boats
- Adequate equipment bags to secure equipment in boats during operation

Unit 1: Introduction

Topic 1-1: Orientation and Administration

Terminal Learning Objective

At the end of this topic, a student will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, resources, evaluation methods, and participation requirements in the course syllabus.

Enabling Learning Objectives

1. Identify facility requirements
 - Restroom locations
 - Food locations
 - Smoking locations
 - Emergency procedures
2. Identify classroom requirements
 - Start and end times
 - Breaks
 - Electronic device policies
 - Special needs and accommodations
 - Other requirements as applicable
3. Review course syllabus
 - Course objectives
 - Calendar of events
 - Course requirements
 - Student evaluation process
 - Assignments
 - Activities
 - Required student resources
 - Class participation requirements

Discussion Questions

1. To be determined by the instructor

Activities

1. To be determined by the instructor

Unit 2: River and Flood Rescue Review

Topic 2-1: Describing Hydrology and Identifying Travel Paths in Dynamic Water

Terminal Learning Objective

At the end of this topic, given a variety of water environments, a student will be able to describe dynamic hydrology as it relates to rivers, channels, and floods and identify travel paths and hazards.

Enabling Learning Objectives

1. Describe the forces of dynamic water
2. Describe how to determine current speed
3. Describe how to determine cubic feet of water per second in a given river or channel
4. Describe river orientation
5. Identify river or channel features created by moving water
6. Describe the classification of rivers
7. Define the following terms:
 - Upstream
 - Downstream
 - River right
 - River left
 - Volume (cubic feet per second)
 - Laminar flow
 - Helical flow
 - Eddies
 - Eddy line
 - Strainers
 - Sieves
 - Pillows
 - Upstream and downstream
 - Low-head dam
 - Hole
 - Smiling/closed
 - Frowning/open
 - Hydraulic
 - Standing waves (haystacks)
 - Aerated water
 - Current vector
8. Describe techniques used to navigate dynamic water and identify travel paths and hazards

Discussion Questions

1. How does cubic feet per second (cfs) impact water hydrology?

Activities

1. The instructor must create an activity directing students to identify hydrologic features and identify travel paths and hazards.

Instructor Notes

1. If the topic is taught in a classroom, it is recommended that the instructor use videos among the visual aids.

Topic 2-2: Describing the Components of Managing a River-Flood Rescue Incident

Terminal Learning Objective

At the end of this topic, given a variety of river-flood rescue scenarios, the standards, and the policies and procedures of the AHJ, a student will be able to manage a river-flood rescue incident.

Enabling Learning Objectives

1. Describe the scope and practice and standards
2. Describe rescue priorities
 - Low to high risk
 - Rescue versus recovery
3. Describe legal considerations and practices
4. Describe the relevant components of the Incident Command System
5. Describe FIRESCOPE ICS-US&R 120-1 and 120-2 Operational System Description
6. Describe the actions taken to terminate and demobilize an incident
7. Demonstrate the practical application of the incident management system, including demobilization and termination of the incident

Discussion Questions

1. When is it appropriate to control or modify the control zones?
2. What are some key ICS positions?

Activities

1. The instructor must create an activity directing students to review an incident action plan (IAP).
2. The instructor must create an activity directing students to organize and manage a rescue incident, including demobilization and termination.

Instructor Notes

1. The incidents may be simulated.
2. The instructor will continually refer students to the IAP throughout the course.
3. Refer to ICS-SF-SAR-020-1, Swiftwater/Flood Search and Rescue Recommended Training, Skills, and Equipment List (current edition).

Topic 2-3: Evaluating Hazards, Identifying Current Vectors, and Locating Safety Zones

Terminal Learning Objective

At the end of this topic, given a variety of water environments, a student will be able to evaluate hazards in moving water, identify current vectors for navigation, and locate safety zones.

Enabling Learning Objectives

1. Identify and describe hazards associated with river and flood rescue
2. Identify current vectors for navigation
3. Identify areas and features that are safe zones in dynamic water environments

Discussion Questions

1. Where are safe zones typically located?
2. When assessing a waterway, what are the most dangerous hazards?

Activities

1. The instructor must create an activity directing students to provide a safety briefing describing the hazards present.

Instructor Notes

1. If the topic is taught in a classroom, it is recommended that the instructor use videos among the visual aids.

Topic 2-4: Swimming and Navigating Dynamic Water

Terminal Learning Objective

At the end of this topic, given a variety of water environments, a student will be able to swim and navigate dynamic water.

Enabling Learning Objectives

1. Assess the hydrology and hazards of the environment prior to entering the water
2. Identify travel paths and hazards
3. Demonstrate swim techniques used to navigate dynamic water

Discussion Questions

1. What safety concerns must be identified prior to getting in the water?
2. How can currents help or hinder the swimmer's efforts?

Activities

1. The instructor must create an activity directing students to swim and navigate dynamic water.

Instructor Notes

1. The instructor must familiarize themselves with the environment and its hazards before this activity.

Topic 2-5: Identifying Rules and Regulations Governing Vessel Operation

Terminal Learning Objective

At the end of this topic, given a simulated surface-water rescue environment, the student will identify the navigation rules and regulations that govern operation of a vessel in navigable waters and how they apply to the rescue boat operator in the AHJ.

Enabling Learning Objectives

1. Describe the navigation rules and regulations that govern operation of a vessel in navigable waters
 - Overview
 - Applicable regions and waterways

- Governing bodies or enforcement agencies
- 2. Determine right of way for various types of vessels based on the navigation rules and regulations that govern operation of a vessel in navigable waters
- 3. Describe the requirements for a variety of directional aids to navigation:
 - Locations
 - Shapes, numbers, and colors
 - Meanings
 - Hazards
- 4. Describe how directional aids assist in navigation and determine right of way

Discussion Questions

1. How is right of way determined on navigable waterways in the United States?
2. How do you determine right of way for various types of vessels?
3. Which rules and regulations apply to your operational area?

Activities

2. To be determined by instructor.

Instructor Notes

1. At the end of this topic, the student will know how to determine the right of way for vessels and be able to apply the required procedures to address various situations they may encounter, enabling them to prevent collisions and organize a system to protect the lives and safety of passengers and crew.
2. In California, there are two governing bodies, USCG and The California Harbors and Navigation Code.
3. The instructor should reinforce these learning objectives on an ongoing basis throughout the field activities.

Unit 3: Communications and Navigation

Topic 3-1: Communicating with Other First Responders and USCG

Terminal Learning Objective

At the end of this topic, given a variety of marine communication devices, the student will communicate with other first responders and USCG.

Enabling Learning Objectives

1. Identify various means of marine communication
 - Hand signals
 - Flares
 - Emergency position-indicating radio beacon (EPIRB)
 - Personnel-locating beacon (PLB)
 - Marine band radio
 - Radio specific to the AHJ
2. Describe the applicable marine radio options
 - Describe common marine frequencies and their uses

- VHF versus UHF and fire department radios
 - International Hail and Distress Channel (VHF Marine 16)
3. Describe communication procedures specific to USCG
 - Pan-pan
 - Sécurité
 - Mayday
 4. Demonstrate marine communication methods

Discussion Questions

1. What are the differences between pan-pan, sécurité, and mayday?

Activities

1. The instructor must create an activity directing students to demonstrate various marine communication methods.

Instructor Notes

1. Instructor should teach radio etiquette, terminology, and procedures.

Topic 3-2: Describing Navigational Aids and Devices

Terminal Learning Objective

At the end of this topic, given a rescue boat, the student will describe and use a variety of navigational aids and devices.

Enabling Learning Objectives

1. Describe various navigation devices
 - Compass
 - Electronic devices (can include chart plotters and GPS devices)
2. Describe aids to navigation
 - Locations, types, and meanings of navigational aids
 - Use of navigational aids to maneuver into and out of protected channels
 - Hazard identification
3. Demonstrate the use of navigational aids and devices

Discussion Questions

1. What is dead reckoning in navigation?
2. What is red, right, returning in reference to navigational aids?

Activities

1. The instructor must create an activity for students to describe and use a variety of navigational aids and devices.

Instructor Notes

1. If using a GPS, ensure all students are using the same data.
2. The instructor may choose to set up a course using buoys for students to perform the activity on.

Unit 4: Boat Trailing

Topic 4-1: Describing Critical Trailing Elements

Terminal Learning Objective

At the end of the topic, given a motorized river and flood rescue boat, tow vehicle, and trailer, the student will describe critical elements of trailing boats.

Enabling Learning Objectives

1. Describe safety factors associated with trailing operations
 - Pretrip inspection
 - Trailer connections and lights
 - Rescue boat secured
 - Rescue boat equipment secured
 - Use of backers
 - Road travel considerations
 - Speed
2. Describe safe backing fundamentals of a trailed boat
 - Ensure a pretravel inspection is completed
 - Describe road travel
 - Describe backing
3. Describe trailer positioning for launch and recovery
 - Boat ramp etiquette
4. Describe unimproved launches
5. Identify components of a trailer, such as:
 - Hitch types and sizes
 - Trailer electrical connection
 - Bearings
 - Winch
 - Bunks and rollers
 - Tie downs

Discussion Questions

1. What are your agency's trailing policies?
2. What risks are involved in trailing and launching a boat?

Activities

1. To be determined by the instructor or AHJ.

Instructor Notes

1. The instructor should consider using boat-ramp etiquette case studies.

Unit 5: Boat Components and Terminology

Topic 5-1: Describing and Assembling Rescue Boat Components

Terminal Learning Objective

At the end of this topic, given a variety of boats or visual aids, the student will describe the components of a small rescue boat and demonstrate how to assemble the components of a rescue boat.

Enabling Learning Objectives

1. Identify types and construction of rescue boats, such as:
 - Aluminum
 - Inflatable
 - Other
2. Identify hull design and components of a rescue boat, such as:
 - Bow, stern, port, and starboard
 - Gunwale tubes and valves, as applicable
 - Transom
 - Drain plugs or scuppers
 - Hydrodynamics
3. Identify components of a rescue boat, such as:
 - Rigging
 - Lifelines
4. Identify propulsion (motor) components, such as:
 - Kill switch with lanyard
 - Transom saver and motor latches
 - Fuel lines
 - Fuel tanks
5. Demonstrate how to assemble the components of a rescue boat

Discussion Questions

1. What are the differences between motorized inflatable rescue boats and jon boats?

Activities

1. The instructor must create an activity directing students to build boats, reinforcing the proper boat terminology throughout.

Instructor Notes

1. None

Topic 5-2: Describing Equipment and Demonstrating Equipping the Boat

Terminal Learning Objective

At the end of this topic, given a small rescue boat and a variety of equipment, the student will identify the boat and rescue equipment needed, describe the equipment's purpose, and demonstrate equipping the boat.

Enabling Learning Objectives

1. Identify and describe the rescue boat equipment of the AHJ, including but not limited to:
 - Paddles
 - Towing bridle
 - Compass
 - Righting line
 - Bow or painter line
 - Handheld lights
 - Anchor
 - Patch kit
2. Identify and describe the rescue equipment of the AHJ, including but not limited to:
 - Throw bag
 - Rescue tube or can
 - Portable radio
 - GPS
 - Spare personal flotation devices (PFDs) for victims
 - Knife
 - First Aid/EMS
 - Waterproof container
 - Space blanket
 - Helmets
 - Wheel Kits

Discussion Questions

1. What are the differences between boat equipment and rescue equipment?
2. What rescue equipment do boats in your AHJ carry?
3. What steps do you take to keep your equipment dry?

Activities

1. The instructor must create an activity directing students to equip boats with boat and rescue equipment.

Instructor Notes

1. The instructor may choose to teach this topic in the classroom or in the field.
2. Refer to ICS-SF-SAR-020-1, Swiftwater/Flood Search and Rescue Recommended Training, Skills, and Equipment List (current edition).

Topic 5-3: Describing Safety Considerations and Rescuing a Crew Member

Terminal Learning Objective

At the end of this topic, given a simulated emergency, the student will describe basic safety considerations associated with motorized river and flood rescue-boat operations and demonstrate rescuing a crew member overboard.

Enabling Learning Objectives

1. Identify the different types of U.S. Coast Guard (USCG)-approved PFDs and their applications

- Types 1 through 5
 - Other
2. Describe self-survival considerations
 - Crew overboard
 - Crew and passenger accountability
 - Dewatering emergency
 - Individual day and night emergency signaling requirements
 3. Describe agency-specific PPE
 - Uniform and clothing selection for exposure considerations
 4. Demonstrate self-survival considerations
 - Crew overboard
 - Crew and passenger accountability
 - Dewatering emergency
 - Individual day and night emergency signaling requirements
 5. Demonstrate techniques for rescuing a crew member overboard

Discussion Questions

1. Describe AHJ-specific PPE considerations and guidelines for water-rescue incidents.
2. What immediate notifications should be made and what actions performed in the event of a crew-overboard emergency?
3. What are the benefits of seat assignments and preassigning roles and responsibilities for basic emergency procedures?
4. What PPE should be used for a water-based rescue to minimize exposure?
5. What land-based PPE is not appropriate for water-based rescue?

Activities

1. The instructor must create an activity simulating a crew member overboard who must self-rescue.
2. The instructor must create an activity simulating a crew member overboard who must be rescued by boat operator.

Instructor Notes

1. The activities require each student to play each role.
2. The instructor should create simulated emergencies in the field throughout the course.
3. The instructor should consider using motorized river and flood rescue boat near-miss or close-call case studies.

Topic 5-4: Demonstrating Pre- and Postoperational Checks

Terminal Learning Objective

At the end of this topic, given a variety of motorized river and flood rescue boats, the student will demonstrate pre- and postoperational checks.

Enabling Learning Objectives

1. Demonstrate trailer inspection
2. Demonstrate boat inspection
3. Demonstrate how to inspect transom bolts and bracket

4. Demonstrate how to inspect a motor:
 - Inspect fuel line and connectors
 - Check oil level
 - Inspect propeller
 - Inspect propeller guard, as applicable
 - Use impeller intake flush device
 - Use bypass flush connection
 - Use various fuel additives and nonethanol fuel
 - Use diagnostic equipment

5. Discuss engine warning systems

Discussion Questions

1. What are your agency's preventative maintenance service schedules?

Activities

1. The instructor must create an activity where students demonstrate a pre- and posttrip operational check.

Instructor Notes

1. The activity needs to be relevant to the type of IRB, the AHJ, the students' abilities, and the operating environment.
2. The students must perform a pre- and postoperational check each day.

Topic 5-5: Performing Motor Maintenance

Terminal Learning Objective

At the end of this topic, given a motorized river and flood rescue boat, the student will perform motor maintenance for operational readiness.

Enabling Learning Objectives

1. Identify equipment needed to perform motor maintenance
 - Tools
 - Reference materials
 - Fluids and replacement parts
 - Diagnostics equipment
2. Describe maintenance requirements for general use
 - After routine use
 - Monthly
 - Annually
3. Demonstrate how to service a motor
 - Inspect fuel line and connectors
 - Check oil level check
 - Spark plug inspection and indexing
 - Inspect propeller inspection
 - Inspect propeller guard, as applicable

- Use impeller intake flush device
- Use bypass flush connection
- Use fuel additives and nonethanol fuel diagnostics equipment

Discussion Questions

1. What are your AHJ's requirements for motor maintenance?
2. What are the manufacturer's requirements for motor maintenance?

Activities

1. The instructor must create an activity directing students to perform motor maintenance.

Instructor Notes

1. The instructor should discuss the effects of different water conditions (e.g., salt, pH level, turbidity, or containing harmful organisms) on the motor.

Unit 6: Basic Boat Handling

Topic 6-1: Demonstrating Launching and Recovering

Terminal Learning Objective

At the end of this topic, given a motorized river and flood rescue boat and a tow vehicle with trailer, the student will demonstrate launching and recovering a rescue boat.

Enabling Learning Objectives

1. Demonstrate launching a boat from a trailer
 - Launch preparations
 - Crew position during backing and launch
 - Motor manipulation
2. Demonstrate recovery of a boat to a trailer
 - Recovery preparations
 - Motor manipulation
 - Crew position during recovery
3. Demonstrate anchoring in a dynamic water environment

Discussion Questions

1. How do environmental conditions influence launching and recovering a boat?
2. What factors need to be considered when anchoring in a dynamic water environment?

Activities

1. The instructor must create an activity directing students to launch and recover a rescue boat.

Instructor Notes

1. None

Topic 6-2: Operating a Rescue Boat and Demonstrating Crew Positions

Terminal Learning Objective

At the end of this topic, given a motorized river and flood rescue boat, the student will operate a rescue boat and demonstrate crew positions.

Enabling Learning Objectives

1. Demonstrate crew positions
 - Operator
 - Bowman
 - Rescue swimmer
2. Describe safety issues associated with operating a boat
3. Demonstrate righting a flipped boat
4. Demonstrate paddling skills
5. Demonstrate motor-up operations
6. Demonstrate motor manipulation
 - Use of gears
 - Use of throttle
 - Use of tiller
 - Use of motor trim
 - Weight distribution
7. Demonstrate approaching a stationary object
8. Demonstrate beaching operations
9. Demonstrate techniques for starting motors
10. Demonstrate the use of dewatering equipment if applicable

Discussion Questions

1. What environmental factors influence the drift rates of a boat?
2. What forces affect boat handling? What about positive or negative attitude?

Activities

1. The instructor must create an activity directing students to perform basic boat handling using paddles only.
2. The instructor must create an activity directing students to flip overturned boats.
3. The instructor must create an activity directing students to perform basic boat handling techniques under motorized power to include wide turns, ferry slalom, turns around objects, and hovering.

Instructor Notes

1. None

Topic 6-3: Maneuvering and Docking

Terminal Learning Objective

At the end of this topic, given a motorized river and flood rescue boat and a dock, the student will maneuver and dock the boat.

Enabling Learning Objectives

1. Identify safety considerations when docking a boat
2. Demonstrate motor manipulation while docking
3. Demonstrate docking
 - Preparation of docking lines
 - Allowance for wind and current

- Tying off

Discussion Questions

1. What are safety considerations for a crewmember or passenger?
2. What are pinch points?

Activities

1. The instructor must create an activity directing students to maneuver the boat and dock to the port and starboard sides.

Instructor Notes

1. Boating etiquette is paramount and must be discussed and reinforced prior to this topic.
2. Prior to starting this topic, the instructor must determine and confirm the dock location. Coordinate with the marina or harbor staff prior to beginning activities per AHJ policies.

Unit 7: Advanced Boat Handling

Topic 7-1: Operating in Dynamic Water

Terminal Learning Objective

At the end of this topic, given a motorized river and flood rescue boat, the student will operate a rescue boat in dynamic water, demonstrating advanced boat handling and rescue techniques and rescue equipment use.

Enabling Learning Objectives

1. Describe and demonstrate peel turns
2. Describe and demonstrate J turns
3. Describe and demonstrate a controlled ferry between two objects
4. Describe and demonstrate a slalom at a controlled planning
5. Describe and demonstrate contact rescue
 - Maintain boat in a positive attitude
 - Medical considerations
 - Conscious victim
 - Unconscious victim
6. Describe and demonstrate deploying “go rescuer”
7. Describe and demonstrate transferring members between rescue boats while underway
8. Describe and demonstrate pinning a boat on a fixed object
9. Describe and demonstrate hovering drills
10. Describe and demonstrate throw-bag deployments from a boat
11. Describe and demonstrate how to perform a subject pickup
12. Demonstrate navigating to a predetermined stationary object in open water
13. Demonstrate station keeping in dynamic water

Discussion Questions

1. What are the hazards of operating around people in the water?
2. What are some methods for avoiding contact with the watercraft’s propulsion elements?

3. What are considerations for shallow-water operations?
4. What are considerations when in close proximity to other vessels, docks, piers, and bridges while avoiding associated hazards?
5. What would be an operational situation requiring the transfer of members or victims?

Activities

1. The instructor must create an activity directing students to demonstrate all the ELOs in dynamic water conditions.

Instructor Notes

1. Perform contact rescues with mannequins or simulating objects.
2. The demonstration of transfer of members may be limited by AHJ policies and procedures.

Topic 7-2: Towing a Rescue Boat

Terminal Learning Objective

At the end of this topic the student, given two boats, will demonstrate towing a disabled boat with a rescue boat.

Enabling Learning Objectives

1. Describe safety considerations for towing boats
 - Environmental conditions
 - Size of towing boat versus size of boat to be towed
 - Towing equipment available
 - Connection points
2. Demonstrate conducting a stern tow
3. Demonstrate conducting an alongside tow

Discussion Questions

1. What are the safety considerations for towing a boat?
2. What are the differences between emergency and nonemergency towing?
3. What are the differences between rescue versus salvage?
4. What does a towing bridle consist of?
5. What is shock loading, and how do you prevent it?

Activities

1. The instructor must create an activity directing students to tow a disabled boat.

Instructor Notes

1. Use situational awareness during a towing operation, which is high-risk.

Topic 7-3: Managing and Performing a Search

Terminal Learning Objective

At the end of this topic, given a variety of dynamic water emergencies, a student will be able to manage and perform a victim search in different environments.

Enabling Learning Objectives

1. Identify the required resources for performing a search
2. Describe how GPS units and various map applications can assist with victim searches
3. Describe search fundamentals
 - Time Last Seen (TLS)
 - Place Last Seen (PLS)
 - Probability of Detection (POD)
4. Describe witness management
5. Identify different tools used for searches
6. Describe the three general categories of water search operations
 - Aquatic Wide Area Search
 - River Search
 - Flood Basin
7. Describe reconnaissance, hasty (rapid), primary, and secondary searches
8. Perform reconnaissance, hasty (rapid), primary, and secondary searches
9. Demonstrate coordination of multivessel rescue activities
10. Demonstrate communicating actions to a shore-based incident commander
11. Demonstrate mitigating the simulated scenario
12. Describe the transfer of victims to shore-based responders

Discussion Questions

1. What are the differences between the types of searches?
2. What are the elements required for an effective preplan?
3. What are specific safety considerations during incidents with multiple responding vessels?
4. What are specific safety considerations during night searches?
5. What are the most effective methods of communication between vessels?

Activities

1. The instructor must create an activity directing students to manage and perform a variety of searches.
2. The instructor must create an activity directing students to perform a night search.

Instructor Notes

1. The types of searches are delineated in FIRESCOPE ICS-USAR 120-1.
2. The different types of searches may be land based or water based.
3. One night search is highly recommended.
4. The instructor should encourage the use of GPS or map applications during search drills.
5. The instructor may have the students evaluate the IAP from earlier in the course as well as maps or other documents.

Time Table			
Segment	Lecture Time	Activity Time	Total Unit Time
Unit 1: Introduction			
Topic 1-1: Orientation and Administration			
Lecture	1:00		
Activity 1-1: To be determined by instructor		0:00	
Unit 1 Totals	1:00	0:00	1:00
Unit 2: River and Flood Rescue Review			
Topic 2-1: Describing Hydrology and Identifying Travel Paths in Dynamic Water			
Lecture	0:15		
Activity 2-1: Identifying Hydrologic Features and Hazards and Travel Paths		0:30	
Topic 2-2: Describing the Components of Managing a Water Rescue Incident			
Lecture	0:30		
Activity 2-1a: Reviewing an IAP		0:15	
Activity 2-1b: Organizing and Managing an Incident		0:15	
Topic 2-3: Evaluating Hazards, Identifying Safe Current Vectors, and Locating Safety Zones			
Lecture	0:30		
Activity 2-3: Providing a Safety Briefing		0:30	
Topic 2-4: Swimming and Navigating Dynamic Water			
Lecture	0:30		
Activity 2-4: Swimming and Navigating Dynamic Water		1:00	
Topic 2-5: Identifying Rules and Regulations Governing Vessel Operation			
Lecture	0:30		
Activity 2-5: To be determined by instructor		0:00	
Unit 2 Totals	2:15	2:30	4:45
Unit 3: Communications and Navigation			
Topic 3-1: Communicating with Other First Responders and USCG			
Lecture	0:30		

Segment	Lecture Time	Activity Time	Total Unit Time
Activity 3-1: Demonstrating Marine Communications		0:30	
Topic 3-2: Describing and Using Navigational Aids and Devices			
Lecture	0:30		
Activity 3-2: Describing and Using Navigational Aids and Devices		1:00	
Unit 3 Totals	1:00	1:30	2:30
Unit 4: Boat Trailing			
Topic 4-1: Describing Critical Trailing Elements			
Lecture	0:30		
Activity 4-1: To be determined by instructor		0:00	
Unit 4 Totals	0:30	0:00	0:30
Unit 5: Boat Components and Terminology			
Topic 5-1: Describing and Assembling Rescue Boat Components			
Lecture	1:00		
Activity 5-1: Assembling Boats		1:00	
Topic 5-2: Describing Equipment and Demonstrating Equipping the Boat			
Lecture	0:30		
Activity 5-2: Equipping Boats		0:30	
Topic 5-3: Describing Basic Safety Considerations and Rescuing a Crew Member			
Lecture	0:30		
Activity 5-3a: Self-Rescuing Crew Members		1:00	
Activity 5-3b: Operator Rescuing Crew Members		1:00	
Topic 5-4: Demonstrating Pre- and Postoperational Checks			
Lecture	0:30		
Activity 5-4: Demonstrating Operational Checks		1:00	
Topic 5-5: Performing Motor Maintenance			
Lecture	0:45		

Segment	Lecture Time	Activity Time	Total Unit Time
Activity 5-5: Performing Motor Maintenance		1:00	
Unit 5 Totals	3:15	5:30	8:45
Unit 6: Basic Boat Handling			
Topic 6-1: Demonstrating Launching and Recovering			
Lecture	0:30		
Activity 6-1: Launching and Recovering a Rescue Boat		1:00	
Topic 6-2: Operating a Rescue Boat and Demonstrating Crew Positions			
Lecture	0:30		
Activity 6-2a: Basic Boat Handling with Paddles		1:00	
Activity 6-2b: Flipping Overturned Boats		1:00	
Activity 6-2c: Basic Boat Handling with Motors		2:00	
Topic 6-3: Maneuvering and Docking			
Lecture	0:30		
Activity 6-3: Maneuvering and Docking the Boat		1:00	
Unit 6 Totals	1:30	6:00	7:30
Unit 7: Advanced Boat Handling			
Topic 7-1: Operating in Dynamic Water			
Lecture	2:00		
Activity 6-1: Operating in Dynamic Water		8:00	
Topic 7-2: Towing a Rescue Boat			
Lecture	0:30		
Activity 7-2: Towing a Disabled Boat		1:00	
Topic 7-3: Managing and Performing a Search			
Lecture	0:30		
Activity 7-3a: Managing and Performing a Search		1:00	
Activity 7-3b: Performing a Night Search		2:00	
Unit 7 Totals	3:00	12:00	15:00
Lecture, Activity, and Unit Totals:	12:30	27:30	40:00

Course Totals

Segment Type	Time
Total Lecture Time (LT)	12:30
Total Activity Time (AT)	27:30
Total Course Time	40:00

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Cadre Participants

Billy Milligan, Firefighter, Riverside City Fire Department

Aide Barbat, Battalion Chief, San Diego Fire Rescue

Patrick Costamagna, Captain, Sacramento Fire Department

John Brenner, Retired Captain, Sacramento Fire Department

James Colston, Battalion Chief, San Marcos Fire Department

Robb Eichelberger, Lifeguard Sergeant San Diego Fire Rescue

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River and Flood Rescue Technician

Course Plan

Course Details

Description:	This course provides preparation for participants to demonstrate competency in dynamic water rescue. It will familiarize participants with the dynamic water environment and experience and prepare them to safely execute simple to complex rescue techniques.
Designed For:	Public safety members with river and flood rescue responsibilities
Authority:	Office of the State Fire Marshal <u>NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications (2017)</u> <u>NFPA 1670 Standard for Operations and Training for Technical Search and Rescue Incidents (2017)</u>
Prerequisites:	Low-Angle Rope Rescue Operations (LARRO, 2010) or Rope Rescue Awareness/Operations; and Incident Command Systems 200 (Basic ICS); and State Fire Training Auto Extrication (1996), SFT Vehicle Extrication (2015), or AHJ equivalent
Corequisites:	None
Standard:	Complete all activities
Hours:	Lecture: 10:00 Activities: 30:00
Hours (Total):	40:00
Maximum Class Size:	24
Instructor Level:	Primary
Instructor/Student Ratio:	Lecture: 1 primary instructor per 24 students Demonstrations: 1 primary instructor per 24 students

Activities/Skills: 1 primary instructor + enough primary instructors to maintain a 1:5 primary instructor/skills coach ratio + enough skills coaches to maintain a 1:5 ratio of skills coach/student ratio.

Restrictions: It is recommended that participants have completed the requirements of the authority having jurisdiction's (AHJ's) swim test.

SFT Designation: FSTEP

Required Resources

Instructor Resources

To teach this course, instructors need:

- NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications (2017)
- NFPA 1670 Standard for Operations and Training for Technical Search and Rescue Incidents (2017)
- Water Rescue, Principles and Practice to NFPA 1006 and 1670: Surface, Swiftwater, Dive, Ice, Surf, and Flood (2019) Jones & Bartlett Learning, ISBN: 978128404205
- ICS-SF-SAR-020-1, Swiftwater/Flood Search and Rescue Recommended Training, Skills, and Equipment List (current edition)
- ICS-US&R 120-2, Swiftwater/Flood Search and Rescue Operational Systems Description and Law Enforcement Mutual Aid Plan (current edition)
- ICS-US&R 120-1, Urban Search & Rescue Operation System Description (current edition)
- ICS 420-1, Field Operations Guide (current edition)
- DOT-ERG Emergency Response Guidebook (current edition)
- CAL-OES River Flood Rescue Technician (current edition)

Online Instructor Resources

The following instructor resources are available online at

<http://osfm.fire.ca.gov/training/SFTCurriculum>:

- The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act)
- ICS-SF-SAR-020-1, Swiftwater/Flood Search and Rescue Recommended Training, Skills, and Equipment List (current edition) <http://firescope.caloes.ca.gov/ics-usar/ICS-SF-SAR-020-1.pdf>
- ICS-US&R 120-2, Swiftwater/Flood Search and Rescue Operational Systems Description and Law Enforcement Mutual Aid Plan (current edition) <http://firescope.caloes.ca.gov/ics-usar/ICS-USAR-120-2.pdf>
- ICS-US&R 120-1, Urban Search & Rescue Operation System Description (current edition) <http://firescope.caloes.ca.gov/ics-usar/ICS-USR-120-1.pdf>
- ICS 420-1, Field Operations Guide (current edition) https://www.usfa.fema.gov/downloads/pdf/publications/field_operations_guide.pdf

- DOT-ERG Emergency Response Guidebook (current edition)
- CAL-OES River Flood Rescue Technician (current edition)

Student Resources

To participate in this course, instructor may require students to use:

- Water Rescue, Principles and Practice to NFPA 1006 and 1670: Surface, Swiftwater, Dive, Ice, Surf, and Flood (2019) Jones & Bartlett Learning, ISBN: 978128404205

To participate in this course, students need:

- CAL-OES River Flood Rescue Technician (current edition)
- Personal protective equipment mandated by instructor

Facilities, Equipment, and Personnel

The following facilities, equipment, or personnel are required to deliver this course:

Facilities

- Classroom of adequate size and capability (audio/visual aids) to support classroom training
- Wash areas
- Bathrooms
- Rehabilitation area
- Safe and adequate parking

Site Requirements

- The requesting agency assumes all responsibility, liability, and maintenance for the engineering design, strength, stability, and adequacy of all props including anchor points and tie offs.
- The requesting agency further assumes all responsibility, liability, and maintenance for all tools, equipment, and supplies used at the site for the delivery of RFRT classes. This includes, but is not limited to, props, ropes, rescue hardware and software.
- Before conducting any training in the water, you as the instructor are responsible for ensuring the safety of everyone involved in the training exercise.
- Students should never be put into a position where they must act as the sole rescuers of other students. The very fact that they are taking your class implies that their level of knowledge is not sufficient to operate without direct supervision.
- You should arrive early at the training site to conduct an assessment of conditions. This should consist of a moving body of water suitable for safe water rescue training. The body of water should be no more complex than a class III and should provide a means for safe and effective rescue of both students and instructors. There should be suitable

water depth and consistency to perform all required tasks. The bank of the body of water should provide a safe means of ingress and egress. The area of training must be thoroughly familiar to the instructors and all hazards identified and mitigated. You need to scout the training area for hazards such as strainers, sweepers, exposed rebar or other debris that could snag a student. You should assess the area for foot and body entrapment hazards such as underwater ledges and submerged debris and logs. The training area should be preplanned for where the “no go” zone is located. You should have an idea of what the projected water levels should be, and if the waterway is influenced by dam release or prone to sudden changes due to hydroelectric activities or precipitation. Ideally the training area should offer a variety of water features so you can take the students through all the skills. The area may have a rapid current and with wave trains. Areas with large holes or other dangerous currents should be avoided. You must always be in a position from which you can rescue your students. Drills, simulations, or training areas where students cannot be rapidly rescued are not suitable and must be avoided.

- There are several websites that will assist with monitoring water flows. The weather needs to be monitored for potential impact on water flows.
- Be cautious when training in small waterways and creeks. These bodies of water do not usually carry heavy flows of water and often are strainer choked and full of debris. Do a complete and comprehensive survey before training in these bodies of water.
- Irrigation canals and any manmade dams must also be carefully scrutinized. These structures often have debris such as rebar and rip rap in them that are hazardous to swimmers. They can also have rapidly changing water levels.
- Low Head Dams are extremely hazardous and should never be used for training purposes. They offer no way out, and rescue is difficult at best. Training in and around them is inviting disaster.

Equipment

Note: When class capacity will exceed 8 students, it is the responsibility of the lead primary instructor to facilitate and manage additional equipment needs based on site constraints and the ability to simultaneously conduct hands-on training with multiple groups and meet the curriculum requirements. The equipment list below is for each 8-student group.

- First aid equipment (AHJ) BLS minimum
- 1 Backboard (long)
- 8 Throw bags
- 4 Rescue boards
- 4 Fins (sets)
- 4 Rescue PFDs (type V, good operational condition)
- 2 Boats (inflatable raft or IRB, types used in AHJ), minimum 12' but ideally 14'
- 16 Paddles
- 2 Pike poles (6'–8')

- 1 Strainer (manmade or natural, must be safe)
- 4 Descent control devices (figure 8 plates, brake bar racks, 3D, and scarab are all acceptable)
- 40 Carabiners (locking)
- 2 Anchor plate
- Edge protection (manufactured or improvised)
- Mechanical rope ascenders (optional)
- 4 Load releasing devices (commercial or field-assembled from 1" tubular webbing)
- 4 Low stretch/static kernmantle rescue ropes 150' continuous minimum (12.5 mm)—two to three times the span of the gap
- 2 Low stretch/static kernmantle rescue ropes 20' (12.5 mm)
- Pickets, steel or equivalent (optional)
- Sledgehammer (optional)
- 10 Prusik loops, short (8mm)
- 10 Prusik loops, long (8mm)
- 6 Pulleys (Prussik minding)
- 1 Rescue litter
- 8 Webbing, green, 1" x 5'
- 8 Webbing, yellow, 1" x 12'
- 8 Webbing, blue, 1" x 15'
- 8 Webbing, orange, 1" x 20'
- Line capture device (optional)
- 1 Mechanical line throwing device
- Drone (optional)

Unit 1: Introduction

Topic 1-1: Orientation and Administration

Terminal Learning Objective

At the end of this topic, a student will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, resources, evaluation methods, and participation requirements in the course syllabus.

Enabling Learning Objectives

1. Identify facility requirements
 - Restroom locations
 - Food locations
 - Smoking locations
 - Emergency procedures
2. Identify classroom requirements
 - Start and end times
 - Breaks
 - Electronic device policies
 - Special needs and accommodations
 - Other requirements as applicable
3. Review course syllabus
 - Course objectives
 - Calendar of events
 - Course requirements
 - Student evaluation process
 - Assignments
 - Activities
 - Required student resources
 - Class participation requirements

Discussion Questions

1. To be determined by the instructor

Activities

1. To be determined by the instructor

Unit 2: River Flood Rescue

Topic 2-1: Managing a Water Rescue Incident

Terminal Learning Objective

At the end of this topic, given a variety of water rescue scenarios, the standards, and the policies and procedures of the AHJ, a student will be able to describe the components of managing a water rescue incident.

Enabling Learning Objectives

1. Describe the scope and practice and standards
2. Describe rescue priorities
 - Low to high risk
 - Rescue vs. recovery
3. Describe legal considerations and practices
4. Describe the relevant components of the Incident Command System
5. Describe FIRESCOPE ICS-US&R 120-1, 120-2, ICS-SF-SAR-020-1 Operational System Description
6. Describe the actions taken to terminate and demobilize an incident

Discussion Questions

1. When is it appropriate to control or modify the control zones?
2. What are some key ICS positions?
3. What needs to be done to

Activities

1. The instructor must create an activity directing students to review an incident action plan (IAP).
2. The instructor must create an activity directing students to organize and manage a rescue incident including demobilization and termination.

Instructor Notes

1. The instructor will continually refer students to the IAP throughout the course.

Topic 2-2: Describing Dynamic Hydrology

Terminal Learning Objective

At the end of this topic, given a variety of water environments, a student will be able to describe dynamic hydrology as it relates to rivers, channels, and floods.

Enabling Learning Objectives

2. Describe the forces of dynamic water
3. Describe how to determine current speed
4. Describe how to determine cubic feet of water per second in a given river/channel
5. Describe river orientation
6. Identify river/channel features created by moving water
7. Classify rivers
8. Define the following terms:
 - Upstream
 - Downstream
 - River right
 - River left
 - Volume (cubic feet per second)
 - Laminar flow
 - Helical flow

- Eddies
- Eddy line
- Strainers
 - Sieves
- Pillows
- Upstream and downstream
- Low-head dam
- Hole
 - Smiling/closed
 - Frowning/open
- Hydraulic
- Standing waves (haystacks)
- Aerated water
- Current vector

Discussion Questions

1. How does cubic feet per second (cfs) impact water hydrology?

Activities

1. The instructor must create an activity directing students to identify hydrologic features.

Instructor Notes

1. If the topic is taught in a classroom, it is recommended that the instructor use videos among the visual aids.

Topic 2-3: Evaluating Hazards and Identifying Safe Current Vectors and Safety Zones

Terminal Learning Objective

At the end of this topic, given a variety of water environments, a student will be able to evaluate hazards in moving water, identify safe current vectors for navigation, and locate safety zones.

Enabling Learning Objectives

1. Identify and describe hazards associated with river and flood rescue
2. Identify safe navigation current vectors
3. Identify areas and features that are safe zones in dynamic water environments

Discussion Questions

1. Where are safe zones typically located?
2. When assessing a waterway, what are the most dangerous hazards?

Activities

1. The instructor must create an activity directing students to provide a safety briefing describing the hazards present.

Instructor Notes

1. If the topic is taught in a classroom, it is recommended that the instructor use videos among the visual aids.

Topic 2-4: Managing and Performing a Victim Search

Terminal Learning Objective

At the end of this topic, given a dynamic water emergency, a student will be able to describe the management of and perform a victim search.

Enabling Learning Objectives

1. Describe search fundamentals
 - LAST
 - PLS
 - POD
2. Describe witness management
3. Identify different tools used for searches
4. Describe reconnaissance, hasty (rapid), primary, and secondary search
5. Perform reconnaissance, hasty (rapid), primary, and secondary searches

Discussion Questions

1. What are the differences between the types of searches?
2. What are the elements required for an effective preplan?

Activities

1. The instructor must create an activity directing students to participate in a variety of searches.

Instructor Notes

1. The types of searches are delineated in FIRESCOPE ICS-USAR 120-1.
2. The different types of searches may be land based or water based.
3. One night search is highly recommended.
4. The instructor may have the students evaluate the IAP from earlier in the course as well as maps or other documents.

Topic 2-5: Identifying and Managing a Victim

Terminal Learning Objective

At the end of this topic, given a dynamic water emergency, a student will be able to identify and manage a victim.

Enabling Learning Objectives

1. Describe victim behavior
2. Describe management of family and bystanders
3. Describe medical considerations
4. Demonstrate water rescue c-spine techniques
5. Demonstrate a contact swim with a combative victim
6. Demonstrate a towed swim with a victim

Discussion Questions

1. When does a victim become a patient?
2. What are some methods for handling a combative victim?
3. What are the contact swim priorities?
4. What are the options for and risks involved with immobilizing a patient?

Activities

1. The instructor must create an activity directing students to perform a contact swim, c-spine management, and a towed swim.

Instructor Notes

1. None

Topic 2-6: Describing and Using Multiple Communication Forms

Terminal Learning Objective

At the end of this topic, given an incident, whistles, and hand signals, a student will be able to describe and use multiple forms of communication used for dynamic water operations.

Enabling Learning Objectives

1. Describe the difficulties of communications in water rescue environment
2. Describe forms of communication and their use
3. Demonstrate forms of communication

Discussion Questions

1. What are the various hand signals or signaling devices?
2. What are barriers involved with each type of communication?

Activities

1. The instructor must create an activity directing students to demonstrate hand signal and whistle use.

Instructor Notes

1. The instructor should refer to the required text, CAL-OES [River Flood Rescue Technician](#).

Topic 2-7: Describing Floods, Hazards, and Evacuation Procedures

Terminal Learning Objective

At the end of this topic, given a variety of incidents, the ICS 420-1 Field Operations Guide, and the DOT-ERG, a student will be able to describe types and causes of floods and describe hazards and evacuation procedures associated with flood rescue operations.

Enabling Learning Objectives

1. Describe types of floods
2. Describe the evolution of a flood
3. Describe utility hazards in flood environments
4. Describe hazardous material exposure, protection, and decontamination
5. Describe flood search, rescue, and evacuation procedures
6. Describe management of pets and livestock

Discussion Questions

1. What types of floods are common in your jurisdiction?
2. What are common types of hazardous materials that a rescuer may be exposed to?
3. What is your AHJ's plan for dealing with household pets and service animals?

Activities

1. To be determined by instructor.

Instructor Notes

1. Decontamination procedures are described in FIREScope ICS-SF-SAR 020-1 .

Topic 2-8: Describing Rescue of Vehicle Occupants

Terminal Learning Objective

At the end of this topic, given a scenario involving a vehicle in dynamic water, a student will be able to describe the procedures and hazards associated with rescuing occupants.

Enabling Learning Objectives

1. Describe sizing up the factors and hazards relating to a vehicle in moving water
 - Velocity
 - Depth
 - Width
 - Bottom composition
 - Speed of car when it enters the water
 - Angle of car when it enters the water
 - Number and condition of occupants
 - Describe vehicle stability in dynamic water
2. Describe rescue considerations
 - In-water techniques
 - Shore-based techniques
3. Describe victim management

Discussion Questions

1. How would low- to high-risk rescue techniques apply in water vehicle rescue?
2. How do factors such as flow and bottom composition impact the incident?
3. How can removing victims affect vehicle stability?

Activities

1. The instructor must create an activity simulating a vehicle stranded in different moving water situations, directing students to rescue vehicle occupants.

Instructor Notes

1. None

Topic 2-9: Demonstrating Boat Rigging, Handling, Navigation, and Emergency Procedures

Terminal Learning Objective

At the end of this topic, given a nonmotorized rescue boat and equipment, a student will be able to describe and demonstrate rigging and basic handling of, navigation with, and emergency procedures for nonmotorized rescue boats.

Enabling Learning Objectives

1. Describe different types of nonmotorized rescue boats, including but not limited to:
 - Rafts
 - IRBs
 - Jon boats

2. Describe the components of a boat
3. Describe boat positions
4. Describe navigation options
5. Describe emergency procedures
 - Crew and victim retrieval
 - Parbuckling
 - Boat wraps
6. Demonstrate how to paddle and maneuver a boat
7. Demonstrate how to right a flipped boat
8. Demonstrate how to unwrap a pinned boat

Discussion Questions

1. What are the pros and cons of each type of rescue boat?

Activities

1. The instructor must create an activity directing students to demonstrate rigging, boat handling, navigation, and emergency procedures.

Instructor Notes

1. The instructor may choose to cover recreational boating accidents.

Topic 2-10: Using Personal Protective Equipment

Terminal Learning Objective

At the end of this topic, given personal protective equipment (PPE) and United States Coast Guard (USCG) standards for personal flotation devices (PFD), a student will be able to identify, don, doff, and maintain PPE for water rescue operations.

Enabling Learning Objectives

1. Describe the types and use of PPE
2. Describe USCG standards for PFD
3. Describe the different types of PFD
4. Describe donning and doffing of PPE
5. Demonstrate donning and doffing of PPE
6. Describe proper care and maintenance of PPE

Discussion Questions

1. What types of PPE are appropriate for different types of water environments?
2. How do you care for and maintain PPE?
3. What is the most important piece of PPE?

Activities

1. The instructor must create an activity directing students to select, don, doff, inspect, and demonstrate maintenance of PPE.
2. The instructor must create an activity directing students to perform a PPE check.

Instructor Notes

1. The instructor should ensure students know how to select the correct PPE for different tasks.

Topic 2-11: Operating Basic Rescue Equipment

Terminal Learning Objective

At the end of this topic, given rescue equipment, a victim, and a dynamic water environment, a student will be able to identify and operate basic equipment used for water rescue operations.

Enabling Learning Objectives

1. Describe the equipment used in water rescue
2. Describe the use and limitations of each type of equipment
3. Demonstrate the use of each piece of equipment
4. Deploy throw bag according to NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications (2017)
5. Describe safety considerations when using each piece of equipment
6. Describe maintenance and storage of each piece of equipment

Discussion Questions

1. What types of equipment are used in dynamic vs. static water conditions?
2. What are the differences of equipment carried between the different types of resources described by ICS FOG?

Activities

1. The instructor must create an activity directing students to select, inspect, and demonstrate the use and maintenance of water rescue equipment.
2. The instructor must create an activity directing students to perform throw bag drills in accordance with NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications (2017).

Instructor Notes

1. This topic must be conducted in a dynamic water environment.

Topic 2-12: Performing Dynamic Water Rescue Skills

Terminal Learning Objective

At the end of this topic, given a dynamic water environment, PPE, a victim, and rescue equipment, a student will be able to perform rescue skills.

Enabling Learning Objectives

1. Demonstrate how to swim in dynamic water
2. Describe the techniques used for water rescue incidents
3. Select the proper technique for each rescue situation
4. Describe and demonstrate rescue swimmer techniques
 - Basic swim
 - Ferry angle
 - Strainer
 - Eddy hopping
 - Surfing
5. Describe and demonstrate shallow water crossings
6. Describe and demonstrate use of quick release buckle systems (blowout drill)

7. Describe and demonstrate tethered swimmer operation
8. Describe and demonstrate board rescues
9. Describe and demonstrate foot and body entrapment rescue techniques

Discussion Questions

1. How do you select a rescue technique based on rescue priorities?

Activities

1. The instructor must create an activity directing students to perform a dynamic water rescue swim.
2. The instructor must create an activity directing students to demonstrate quick release buckle system use, tethered swimmer operations, shallow-water crossings, board rescues, and foot and body entrapment rescue techniques.
3. The instructor must create an activity directing students to navigate a strainer.

Instructor Notes

1. The instructor must ensure students perform all the tasks delineated in the enabling learning objectives.

Topic 2-13: Demonstrating Technical Rope Rescue Skills

Terminal Learning Objective

At the end of this topic, given a dynamic water environment, PPE, a victim, and rescue equipment, a student will be able to describe and perform technical rope rescue skills.

Enabling Learning Objectives

1. Describe the technical rope rescue systems used for dynamic water rescue incidents
 - Line-crossing equipment and techniques
2. Select the proper system for each rescue situation
3. Describe and demonstrate tethered boat techniques
 - Two-point
 - Other techniques
4. Describe and demonstrate the use of tension diagonal for victim retrieval
5. Describe and demonstrate the use of a rescue boat on highline systems

Discussion Questions

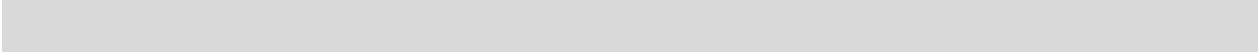
1. Under what circumstances would multiple tethered boat techniques be required?

Activities

1. The instructor must create an activity directing students to demonstrate a line crossing.
2. The instructor must create an activity directing students to demonstrate a tension diagonal.
3. The instructor must create an activity directing students to demonstrate boat-tether techniques.
4. The instructor must create an activity directing students to demonstrate a boat on a highline system.

Instructor Notes

1. The instructor must teach at least the two-point tether. If time allows, teach one-point, three-point, and/or four-point.

- 2. The instructor may choose to have students describe and demonstrate the use of a rescuer on highline systems.
- 

Time Table

Segment	Lecture Time	Activity Time	Total Unit Time
Unit 1: Introduction			
Topic 1-1: Orientation and Administration			
Lecture	0:30		
Activity 1-1: To be determined by the instructor		0:00	
Unit 1 Totals	0:30	0:00	0:30
Unit 2: River Flood Rescue			
Topic 2-1: Managing a Water Rescue Incident			
Lecture	0:45		
Activity 2-1a: Reviewing an IAP		0:30	
Activity 2-1b: Organizing and Managing an Incident		1:45	
Topic 2-2: Describing Dynamic Hydrology			
Lecture	0:45		
Activity 2-2: Identifying Hydrologic Features		0:30	
Topic 2-3: Evaluating Hazards and Identifying Safe Current Vectors and Safety Zones			
Lecture	0:45		
Activity 2-3: Providing a Safety Briefing		0:30	
Topic 2-4: Managing and Performing a Victim Search			
Lecture	0:30		
Activity 2-4: Searching		3:30	
Topic 2-5: Identifying and Managing a Victim			
Lecture	0:30		
Activity 2-5: Performing In-Water Victim Management		1:30	
Topic 2-6: Describing and Using Multiple Communication Forms			
Lecture	0:30		
Activity 2-6: Using Hand Signals and Whistles		0:15	
Topic 2-7: Describing Floods, Hazards, and Evacuation Procedures			
Lecture	0:40		

Segment	Lecture Time	Activity Time	Total Unit Time
Activity 2-7: To be determined by the instructor		0:00	
Topic 2-8: Describing Water Vehicle Rescue			
Lecture	0:40		
Activity 2-8: Rescuing Vehicle Occupants		2:00	
Topic 2-9: Demonstrating Boat Rigging, Handling, Navigation, and Emergency Procedures			
Lecture	0:45		
Activity 2-9: Demonstrating Rigging, Handling, Navigation, and Emergency Procedures		1:30	
Topic 2-10: Using Personal Protective Equipment			
Lecture	0:40		
Activity 2-10a: Using PPE		0:15	
Activity 2-10b: Safety Checks		0:15	
Topic 2-11: Operating Basic Rescue Equipment			
Lecture	0:40		
Activity 2-11a: Using Water Rescue Equipment		1:00	
Activity 2-11b: Performing Throw Bag Drills		1:00	
Topic 2-12: Performing Dynamic Water Rescue Skills			
Lecture	0:15		
Activity 2-12a: Performing Dynamic Rescue Swim		1:00	
Activity 2-12b: Demonstrating Dynamic Water Rescue Skills		4:00	
Activity 2-12c: Navigating a Strainer		1:00	
Topic 2-13: Demonstrating Technical Rope Rescue Skills			
Lecture	2:00		
Activity 2-13a: Performing Line Crossing		0:30	
Activity 2-13b: Demonstrating a Tension Diagonal		2:30	

Segment	Lecture Time	Activity Time	Total Unit Time
Activity 2-13c: Demonstrating Tethering Techniques		1:00	
Activity 2-13d: Demonstrating Highline Systems		5:00	
Unit 2 Totals	9:30	30:00	39:30
Lecture, Activity, and Unit Totals:	10:00	30:00	40:00

Course Totals

Total Lecture Time (LT)	10:00
Total Activity Time (AT)	30:00
Total Course Time	40:00

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Cadre Leadership

Kevin Conant

Cadre Leader

Fire Service Training Specialist III, State Fire Training

Joe Bunn

Cadre Leader

Fire Service Training Specialist III, State Fire Training

Laura Garwood

Cadre Editor

Sacramento State University

Cadre Participants

Aide Barbat

Battalion Chief, San Diego Fire Rescue

Zachary Boyd

Engineer, Kern County Fire Department

John Brenner

Retired Captain, Sacramento Fire Department

Paulo Brito

Engineer, San Jose Fire Department

James Colston

Battalion Chief, San Marcos Fire Department

Patrick Costamagna

Captain, Sacramento Fire Department

Robb Eichelberger

Lifeguard Sergeant San Diego Fire Rescue

Billy Milligan

Firefighter, Riverside City Fire Department

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