



# COURSE INFORMATION AND REQUIRED MATERIALS

PO Box 944246, Sacramento CA 94244-2460

**Course:** Fire-Rescue Vessel Operation FSTEP

**Hours:** 40

**Designed For:** Emergency response personnel working on fire/rescue vessels within a marine environment.

**Description:** The course is a basic introduction to operating emergency response vessels. Key elements include introduction to marine terminology, vessel construction, charting and plotting a course, basic seamanship and piloting. Course work provides an understanding of aids to navigation and interpretation of local charts. Additional areas of instruction include vessel safety, crew operations, and the use of electronic instruments. Course work emphasizes manipulative instruction. Students are guided through a series of skills that allow them to operate their vessels safely, in a variety of conditions. Instruction includes understanding vessel propulsion systems and troubleshooting on board emergencies.

**Prerequisites:** None

**Certification:** None

**Class Size:** 20

**Student to Instructor Ratio:** 5 students to 1 instructor classroom

3 students to 1 instructor per training vessel

1 lead instructor

**Restrictions:** All training vessels should be inspected prior to every class. Each vessel shall have all required safety equipment including a personal floatation device for every member on board as per CFR/ United States Coast Guard.

REQUIRED STUDENT MATERIALS	EDITION	VENDORS
▪ Published text under evaluation		
▪ Rules of the Road, USCG		
REQUIRED INSTRUCTOR MATERIALS	EDITION	VENDORS
▪ Instructor CD		SFT
▪ Charts		
▪ Charting tools ( 1 set for every 3 students)		
▪ Ropes, cleats and marine hardware		
▪ Training vessel fully equipped with electronic navigation systems, radio and radar: 1 per every 4 students		

VENDORS		
SFT	State Fire Training Bookstore (916-445-8158)	<a href="http://sft.fire.ca.gov">http://sft.fire.ca.gov</a>

## Fire-Rescue Vessel Operation

### TOPIC 1: COURSE ADMINISTRATION

**Topic 1.1 Orientation and Administration** ..... 0:40 Classroom

### TOPIC 2: BASIC BOATING

**Topic 2.1 Marine Terminology in the Marine Environment:** ..... 1:30 Classroom

**Scope:** This chapter introduces the vocabulary that is inherent in the marine environment. Reinforcing the need for proper terminology is paramount for the safe operation of their vessels.

**Terminal Learning Objectives (TLO):** By the end of the unit, the student will understand the need for the use of proper terminology in the marine environment. The use of proper terminology when conversing with seasoned mariners greatly increases the student's credibility. Students will recognize the importance of using proper terminology to give clear and concise instructions and the need to interpret basic instructions given to them throughout the course.

**Enabling Learning Objectives (ELO):** The student shall:

1. Describe the need for proper marine terminology
2. Demonstrate the correlation of giving concise directions using the proper marine terminology and the safe operation of motor vessels
3. Apply proper terminology in their conversations during the course operations



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**Topic 2.2 Marine Terminology Shipboard Nomenclature** ..... 1:00 Classroom

**Scope:** This chapter discusses the terms and nomenclature associated with ships and smaller vessels.

**Terminal Learning Objectives (TLO):** Student s will learn a broad list of terms and names of various vessels and their parts. Instruction will cover the structures, components and nomenclature of both small and large vessels.

**Enabling Learning Objectives (ELO):** The student shall:

- 1. Identify vessel types
- 2. Describe various structural components in both large and small vessels
- 3. Describe various hull types

**Topic 2-3 Marine Terminology: Basic Boating and Seamanship** ..... 1:00 Classroom

**Scope:** Introduction to terms that is specific to the operation of a vessel. Terms that describes the movement and placement of the vessel and the environment that the vessel travels through.

**Terminal Learning Objectives (TLO):** The student will learn about the various conditions within the marine environment that affect the small boat operator. Terms that cover tides, currents and weather that affects the mariner will be covered. Additionally, they will learn the physical conditions (axis of movement) that affect the vessel's operation and the movement of other vessels that the operator will encounter.

**Enabling Learning Objectives (ELO):** The student shall:

- 1. Describe the terms that affect the movement of the vessel relative to tides, currents and marine conditions.
- 2. Describe the terms that are relative to the direct movement that the vessels makes including yaw, pitch and other movements while underway.
- 3. Describe terms that provide information of a vessel in correlation to other vessels, land and sea conditions.

**Topic 2-4 Weather, Tides, Currents** ..... 1:00 Classroom

**Scope:** The chapter introduces the effects of weather, tides and currents on the operation of vessels

**Terminal Learning Objectives (TLO):** Students will have a working understanding of the effects of weather, tides and currents as they affect the operation of small vessels. Instruction will enable the student to identify unstable weather patterns and go/no go situations to safely plan operations. The student will be able to anticipate the effects of tidal changes to properly secure their vessels and to recognize tidal influence while piloting.

**Enabling Learning Objectives (ELO):** The student shall:

- 1. Identify various weather patterns that will impact vessel operators
- 2. Demonstrate knowledge of the effects of tides and currents
- 3. Identify environmental situations that affect the safety of vessel operations

**Topic 2-5 Vessel Inspection** ..... 1:30 Classroom / Field

**Scope:** Introduces the student to the equipment on board his assigned training boat

**Terminal Learning Objectives (TLO):** The student will be able to follow equipment checks to understand the start up and shut down procedures of their vessel. The check will also introduce them to all safety equipment, navigational and electronic equipment found on board a vessel. The checklist will serve as an example of checklists each student would utilize as a pilot.

**Enabling Training Objectives (ELO):** The student shall:

- 1. Conduct safety inspection of mariner's vessel prior to embarkation or operations
- 2. Follow procedural checklists to safely operate vessel.

**Topic 2-6 Line Handling and Seamanship** ..... 1:00 Classroom / Field



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**Scope:** Covers various types of lines and knots and their uses.

**Terminal Learning Objectives (TLO):** The student will be familiar with a variety of lines normally found on vessels and other applications within the marine environment. Student will also learn how to tie a series of knots and how those knots assist in the operation of their boats.

**Enabling Learning Objectives (ELO):** The student shall:

1. Tie a variety of knots
2. Describe differences between various line types, sizes and their uses
3. Understand the application of various knots to the functional needs of the vessel.

**Topic 2-7 Securing Vessels** ..... 1:20 Field

**Scope:** Provides manipulative application of the lines and knots learned in Topic 2-6

**Terminal Learning Objective (TLO):** Student will learn techniques to properly secure their vessels to docks, wharves and other vessels. The student will incorporate line handling skills with procedures that vary based on given conditions of tide, currents, and a variety of other vessels. Student will be able to assemble lines and ground tackle needed to anchor vessel.

**Enabling Learning Objectives (ELO):** The student shall:

1. Demonstrate how to secure vessel to pier or wharf
2. Demonstrate assembling various anchors and ground tackle needed to anchor vessel
3. Demonstrate procedures required to secure their vessel to another vessel.
4. Demonstrate the applications of various knots to secure equipment found on vessel
5. Demonstrate proper procedures to set and retrieve an anchor.

### TOPIC 3: NAVIGATION

**Topic 3-1 Charting** ..... 4:00 Classroom

**Scope:** Provide instruction for student to utilize charts to safely navigate their vessel.

**Terminal Learning Objectives (TLO):** At the end of this topic the student will be able work off a nautical chart to identify their location and the location of other points of references, then how to plan and chart a course to various locations. The student will understand the importance of precise planning to successfully and safely navigate from point A to point B. They will gain an understanding of the information found on nautical charts including but not limited to scale, distance, depth, aids to navigation, navigational markings, and other aides to mariners. Student will work directly off of nautical charts and record their information then transfer that information onto electronic navigation equipment. Students will work with various navigational tools required to plot a course directly onto a chart.

**Enabling Learning Objectives (ELO):**

1. Identify markings, notes and scale found on a nautical chart.
2. Describe the scale, distances and differences pertaining to latitude and longitude.
3. Demonstrate how to measure and record distance between various points
4. Demonstrate how to find the latitude and longitude of locations on a chart.
5. Describe the relationship of time, distance and speed to navigate to a destination.
6. Demonstrate the use of nautical tools to work off a chart.
7. Describe the relationship between true and magnetic north.
8. Demonstrate the difference between deviation and variation as it applies to navigation.
9. Demonstrate the use of dead reckoning to confirm a charted course.

**Topic 3-2 Aids to Navigation** ..... 1:00 Classroom

**Scope:** Provide instruction to allow student to identify and use aids to navigation to operate vessel safely.

**Terminal Learning Objectives (TLO):** This topic is designed to guide the student through the use of aids to navigation as recognized by the United States Coast Guard for the protection of passage by mariners. This includes



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but not limited to physical and electronic aides, publications and notices, buoys and day markers, lights and shape, sounds, signals and markers that should be used by the boat operator to safely navigate.

**Enabling Learning Objectives (ELO):**

1. Describe various buoys, nuns, and day markers
2. Describe sound and light signals and shapes
3. Describe other recognized Aids to Navigation

**Topic 3-3 Navigation: Rules of the Road**..... 1:00 Classroom

**Scope:** This topic introduces the student to an overview of the navigational rules under the International Regulations for the Prevention of Collision at Sea (COLREGS) and the United States Inland Rules (INLAND RULES) that govern the safe operation of a vessel in navigable waters.

**Terminal Learning Objectives (TLO):** At the end of this topic the student will be aware of the differences between COLREGS and INLAND rules as they apply to the mariner operating in local waters. The student will be able to apply required procedures to address situations that the student may experience, thereby enabling them to prevent collisions and provide an orderly system to protect life and safety of passengers and crew.

**Enabling Learning Objectives (ELO):** The student shall:

1. Describe the differences between COLREGS and INLAND rules.
2. Describe exceptions to application of Rules of the Road

**Topic 3-4 Navigation Rules of the Road: Piloting**..... 1:00 Classroom

**Scope:** This topic covers Parts A and B, rules 1 through 19 of the Navigation Rules for International and Inland Waters, United States Coast Guard

**Terminal Learning Objectives (TLO):** At the end of this topic the student will have a working knowledge of the Rules of the Road from Rule 1 to Rule 19.

**Enabling Learning Objectives (ELO):** The student shall:

1. Describe the application of the Rules of the Road, Rule 1
2. Describe the responsibilities of the mariner as outlined in Rule 2
3. Demonstrate knowledge of the general definitions in Rule 3
4. Demonstrate knowledge of Section 1, Conduct of Vessels in any condition of Visibility, Rules 4 through 10
5. Demonstrate knowledge of Section II, Conduct of Vessels in Sight of One Another, Rules 11 through 19.

**Topic 3-5 Navigation Rules of the Road: Signals and Lights**..... 1:00 Classroom

**Scope:** This topic covers Parts C, D and E, Rules 20 through 38 of the Navigation Rules for International and Inland Waters, United States Coast Guard.

**Terminal Learning Objectives (TLO):** At the end of this topic the student will have a working knowledge of the Rules of the Road from Rule 20 to Rule 38 as described in the Navigation Rules, International and Inland. These rules cover Lights and Shapes, Sound and Light Signals, and Exemptions.

**Enabling Learning Objectives (ELO):** The student shall:

1. Describe the application and definitions of lights and shapes
2. Describe the specifications for the visibility of lights
3. Describe the use of lights on power driven and sailing vessels
4. Describe the use of lights while towing and pushing
5. Describe the use of lights by fishing vessels
6. Describe the use of lights by vessels not under command or restricted in their ability to maneuver or constrained by draft.
7. Describe the use of lights by vessels that are anchored or vessels aground.

**Topic 3-6 Navigation: Rules of the Road: Application Exercises** ..... 01:00 Classroom



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**Scope:** This topic brings the rules explained in topics 3-3, 3-4. And 3-5 and applies them to various piloting scenarios.

**Terminal Learning Objectives (TLO):** At the end of this topic the student will be familiar with Rules of the Road by examining a series of exercises and applying the proper rule.

**Enabling Learning Objectives (ELO):** The student shall:  
1. Demonstrate the ability to apply the proper rule to a given situation

### TOPIC 4: VESSEL OPERATION

**4-1 Vessel Inspection** ..... 1:00 Field

**Scope:** This topic introduces the student the procedures to inspect his vessel prior to operations.  
**Terminal Learning Objective (TLO):** At the end of this topic the student will be able to follow a check list to inspect the vessel to ensure all safety equipment is available, that all equipment is ready for service and any other conditions that would make the vessel unfit for service.

**Enabling Learning Objectives (ELO):** The student shall:  
1. Demonstrate the ability to recognize the fitness of the vessel and its equipment.  
2. Demonstrate the ability to follow a procedural checklist to document vessel readiness.

**4-2 Maneuvering** ..... 1:30 Field

**Scope:** This topic introduces the student to the basic control operations of the vessel.  
**Terminal Learning Objective (TLO):** At the end of this topic the student will be able to operate the vessel from casting lines, following a given course and returning safely to secure the vessel back at the dock.

**Enabling Learning Objectives (ELO):** The students shall:  
1. Demonstrate the ability to maneuver the vessel safely.  
2. Demonstrate the ability to follow maneuvering orders as directed by the instructor.

**4-3 Towing Operations** ..... 2:00 Field

**Scope:** This topic prepares the student to conduct the basic towing operations needed in both emergency and non-emergency operations.

**Terminal Learning Objectives (TLO):** At the end of this topic the student will be able to operate his/her vessel as a tow and as the vessel being towed.

**Enabling Learning Objectives (ELO):** The student shall:  
1. Demonstrate the ability to secure tow lines properly.  
2. Demonstrate the proper procedures for towing another vessel.  
3. Demonstrate the proper procedures for being towed by another vessel.

**4-4 Radio Operations** ..... 0:20 Classroom

**Scope:** This topic introduces the student to the functions and operations of the marine radio and to properly communicate during routine and emergency operations.

**Terminal Learning Objectives (TLO):** At the end of this topic the student will be able to communicate with other mariners in emergency and non-emergency situations, using the marine radio.

**Enabling Learning Objectives (ELO):** The student shall:  
1. Energize, adjust and transmit using a standard marine radio.  
2. Understand and copy messages transmitted on marine radio bands.  
3. Demonstrate the procedures to dispatch emergency information in the case of a Mayday situation.  
4. Demonstrate the ability to relay emergency information to both mariners and the United States Coast Guard.



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**4-5 Anchoring** ..... 2:00 Field

**Scope:** This unit introduces the student to anchor systems and the proper procedures to deploy and retrieve an anchor.

**Terminal Learning Objectives (TLO):** At the end of this topic the student shall properly and safely, set and retrieve an anchor.

- Enabling Learning Objectives (ELO):** The student shall:
1. Identify the proper anchor for the vessel
  2. Assemble an anchoring system.
  3. Deploy and set the vessel's anchor.
  4. Retrieve and secure an anchor back on the vessel.

### TOPIC 5: ONBOARD EMERGENCIES

**Topic 5-1 Medical Emergencies** ..... :15 Classroom

**Scope:** This topic identifies medical emergencies that are inherent in the marine environment. Medical emergencies that occur underway require procedures be implemented to seek immediate assistance from outside resources. The master of the vessel must plan and prepare to manage medical emergencies underway. This topic does not attempt to instruct the student in basic or advanced life support treatment.

**Terminal Learning Objectives (TLO):** At the end of this topic the student will be able to implement emergencies procedures to acquire medical assistance as rapidly as possible through outside resources.

- Enabling Learning Objectives (ELO):** The student shall:
1. Demonstrate the ability to contact the United States Coast Guard or other emergency responders while underway.
  2. Demonstrate the ability to rapidly give location, course and heading to emergency responders.

**Topic 5-2 Propulsion Emergencies**..... :15 Classroom

**Scope:** This topic identifies a variety of emergencies that can occur with the vessels propulsion system and reviews procedures to mitigate those emergencies underway.

**Terminal Learning Objectives (TLO):** At the end of this topic the student will be able to recognize a variety of propulsion and implement procedures and manage those types of emergencies.

- Enabling Learning Objectives (ELO):** The student shall:
1. Demonstrate the ability to identify propulsion emergencies
  2. Demonstrate procedures to correct various propulsion

**Topic 5-3 Flooding**..... :15 Classroom

**Scope:** This topic introduces to the student to procedure needed to mitigate flooding emergencies on board a vessel.

**Terminal Learning Objectives (TLO):** At the end of this topic the student will be able control minor flooding on board their vessel.

- Enabling Learning Objectives (ELO):** The student shall:
1. Locate areas on the vessel prone to flooding emergencies
  2. Decrease or stop on board flooding by initiating a variety of procedures based on the severity of the flooding.

**Topic 5-4 Fire Emergencies**..... :15 Classroom\Field

**Scope:** This topic instructs the student how to control small fires on board their vessel.



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**Terminal Learning Objectives (TLO):** At the end of this topic the student will be able to control small fires by using portable fire extinguishers.

**Enabling Learning Objectives (ELO):** The student shall:

1. Discharge a portable extinguisher.
2. Explain procedures needed to control and report small fires.

### TOPIC 6: REGULATIONS

**Topic 6- 1 Regulations** ..... 0:15 Classroom

**Scope:** This topic reviews the Federal Code of Regulations as it applies to vessel operations.

**Terminal Learning Objectives (TLO):** At the end of this topic the student will have a working understanding of the Federal, State and Local regulations that cover the operations of a vessel.

**Enabling Learning Objectives (ELO):** The student shall:

1. Identify the regulations that are required for the operation of a vessel

**Topic 6-2 Boat Operator Legal Liability**.....0:15 Classroom

**Scope:** This topic identifies regulations that hold the vessel operator responsible for their actions

**Terminal Learning Objectives (TLO):** At the end of this topic the student will be knowledgeable the extent of their liability as a boat operator.

**Enabling Learning Objectives (ELO):** The student shall:

1. Discuss the personal and criminal liabilities that are inherent in the operating of a vessel.

### TOPIC 7: PILOTING

**Topic 7-1: Plotting a Course**..... 1:40 Classroom

**Scope:** This topic takes the charting procedures learned in Topic 3-1 and instructs the student how to plot a navigational course.

**Terminal Learning Objective (TLO):** At the end of this topic the student will be able to plot a planned course to and back from a known point using charts and associated tools.

**Enabling Learning Objectives (ELO):** The student shall:

1. Demonstrate the ability to determine the proper chart for a planned route
2. Demonstrate the ability to plot a course directly on a chart and identify waypoints.
3. Demonstrate the ability to determine speed, distance and time over a planned course.
4. Demonstrate the ability to plan a course that navigates safely around known hazards and navigational restrictions.

**Topic 7-2: Dead Reckoning** ..... 1:30 Classroom/Field

**Scope:** This topic instructs the student in confirming a plotted course through the use of dead reckoning procedures.

**Terminal Learning Objectives (TLO):** At the end of this topic the student will be able to use compass and known landmarks to confirm their course underway without the use of electronic navigational aids.

**Enabling Learning Objectives (ELO):** The student shall:

1. Demonstrate the ability to use a compass to shoot a bearing to known landmarks.
2. Demonstrate a working knowledge of time, speed and distance to determine course underway.
3. Demonstrate the ability to triangulate location from two or more known landmarks.

**Topic 7-3 Electronic Aids and Instruments**..... 1:30 Classroom / Field



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**Scope:** This topic introduces the student to a variety of electronic navigation aids including GPS, electronic plotter and radar. It will show the student how to take the plotted course that they set in the classroom and enter it into the systems allowing them to navigate using these aids.

**Terminal Learning Objectives (TLO):** At the end of this topic the student will be able to enter course waypoints into a GPS /Plotter, follow those waypoints to a determined location and return following the same waypoints returning. The student will also have a basic understanding how to operate a radar system of a vessel equipped with radar.

**Enabling Learning Objectives (ELO):** The student shall:

1. Demonstrate the ability to enter waypoints into a GPS /Plotter
2. Demonstrate the ability to follow a set of waypoints entered into the plotter.
3. Demonstrate a basic understanding and operation of a vessel's radar.
4. Demonstrate how to set gain, adjust filters, and set range and bearing on a radar system.

**Topic 7-4 Navigational Run of a Plotted Course** ..... 7:00 Field Deployment Exercise

**Scope:** The student brings all of the skills learned in previous topics and combines them to navigate from point A through a number of waypoints to Point B and back safely.

**Terminal Learning Objectives (TLO):** At the end of this topic the student will have combined all the skills taught throughout the course and use them to complete a plotted course safely.

**Enabling Learning Objectives (ELO):** The student shall:

1. Demonstrate the ability to prepare their boat to safely get underway.
2. Demonstrate the ability to operate the boat safely on a charted course.
3. Demonstrate the ability to follow a course with electronic navigational aids.
4. Demonstrate the ability to confirm course utilizing dead reckoning.
5. Demonstrate the ability to recognize navigational aids
6. Demonstrate the ability to follow Rules of the Road.
7. Demonstrate the ability to properly secure a vessel
8. Demonstrate the ability to properly set an anchor.
9. Demonstrate the ability to tow another vessel and to prepare their vessel to be towed by another vessel.
10. Demonstrate the ability to monitor their vessel's systems and to troubleshoot mechanical emergencies.

### TOPIC 8: COURSE ADMINISTRATION

#### Unit 8: Administrative

Task Book Review .....	:15 Classroom
Certifications and Graduation .....	:15 Classroom