



Open Water Rescue Boat Operator — Large Vessel

Course Plan

Course Details

- Description:** This course provides classroom instruction and practical application to develop competency for open-water rescue boat operations. The course is designed specifically for open-water environments and is not appropriate for environments with river and flood or surf environments. Upon completion, the student will be capable of operating large rescue boats (recommended length 18 to 40 feet or operational equivalent).
- Designed For:** Public-safety members with open-water surface 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:** It is recommended that students have completed the OSFM Open Water Rescuer - Basic (or equivalent) and Open Water Rescue Boat Operator—Small Vessel courses prior to taking this course. If students have not taken Open Water Rescuer - Basic, it is recommended that they have completed the requirements of the Authority Having Jurisdiction (AHJ) swim test that meets or exceeds the International Association of Dive Rescue Specialists (IADRS) Annual Watermanship Test.
- Standard:** Completion of all activities
- Hours:** Lecture: 8 hours 45 minutes
Activities: 31 hours 15 minutes
- Hours (Total):** 40 hours
- Maximum Class Size:** 24
- Instructor/Student Ratio:** 1:4 for practical application portions
- Restrictions:** Students must possess the physical ability to conduct self-rescue on a rescue boat.

Required Resources

Instructor Resources

To teach this course, instructors need:

- Small-Boat Seamanship Manual, 2006, McGraw Hill Education, ISBN: 9780071468824 (or current edition)
- Water Rescue: Principles and Practice to NFPA 1006 and 1670: Surface, Swiftwater, Dive, Ice, Surf, and Flood, second edition, 2017, Jones & Bartlett Learning, ISBN: 9781284042054 (or current edition)
- [Identify any other resources the instructor needs in order to deliver the course, including, but not limited to: maps, training exercises, assessment tools, or codes and standards.]

Online Instructor Resources

The following instructor resources are available online at

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

- Open Water Rescue Boat Operator—Large Vessel Course Plan
- [This list could include activities, student supplements, assessment tools, etc.]

Student Resources

To participate in this course, students need:

- Individual water rescue PPE (PFD and appropriate outer layers)
- Small-Boat Seamanship Manual, 2006, McGraw Hill Education, ISBN: 9780071468824 (or current edition)
- Water Rescue: Principles and Practice to NFPA 1006 and 1670: Surface, Swiftwater, Dive, Ice, Surf, and Flood, second edition, 2017, Jones & Bartlett Learning, ISBN: 9781284042054 (or current edition)
- [Identify everything the students need in order to participate in the course. This could include books and other documents, materials, equipment, etc.]

Facilities, Equipment, and Personnel

The instructor must evaluate the seaworthiness and safety of participating vessels, as well as their compatibility, operating characteristics, and performance, to ensure all are capable of operating in the planned environment. Using vessels of incompatible performance will make it challenging to complete course objectives within the recommended timeframe.

The following facilities and equipment are required to deliver this course:

Facilities

- Classroom

Large Vessel Boat Operator

- Boat ramp with dock
- Open water environment
- Jet Dock, if available

Equipment

- Rescue boat with tow vehicle (recommended 1:4 resource/student ratio)
- Rescue boats (recommended 1:4 resource/student ratio)
- Water-rescue mannequins

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 are the students' goals, and expected outcomes, for the course?

Activities

1. Student introductions and summary of their department's Water Rescue program.

Unit 2: Pre- and Postoperational Considerations

Topic 2-1: Identifying Large-Rescue-Boat Capabilities and Limitations

Terminal Learning Objective

In a classroom setting, without the aid of reference and given a variety of boats or visual aids, the student will identify the inherent capabilities and limitations of large rescue boats in the open-water environment.

Large Vessel Boat Operator

Enabling Learning Objectives

1. Identify advantages of a large rescue boat
 - Rough-water handling
 - Crew fatigue
 - Capacity
 - Durability
 - Electronics
2. Identify the disadvantages of a large rescue boat
 - Cost
 - Training requirements
 - Draft

Discussion Questions

1. What affects the suitability of a large rescue boat to the operating environment?
2. What are your prior experiences with boats?
3. In operational risk management, what are your go/no-go guidelines?

Activities

1. To be determined by the instructor.

Instructor Notes

1. The instructor should emphasize the various types of rescue boats used in the AHJ and their suitability for different responses.

Topic 2-2: Identifying Large-Rescue-Boat Components and Nomenclature

Terminal Learning Objective

At the end of this topic, given a variety of boats or visual aids, the student will identify the components of a large rescue boat and describe them using the appropriate nomenclature.

Enabling Learning Objectives

1. Identify hull components of a large rescue boat, such as:
 - Bow, stern, port, and starboard
 - Sponson tubes/foam collar
 - Gunwales
 - Transom
 - Bilge plugs
 - Trim tabs
2. Identify components of a large rescue boat, such as:
 - Rigging
 - Deck hardware
 - Lifelines
3. Identify electronic components, such as:
 - Antennas
 - Radios
 - AIS

Large Vessel Boat Operator

- GPS
- Lights
 - Running lights
 - Anchor light
 - Spot lights
 - Emergency lighting
- Bilge pump
- Battery systems
- 4. Identify propulsion (motor) components, such as:
 - Kill switch w/lanyard
 - Transom saver/motor latches
 - Fuel lines
 - Fuel tanks
 - Fuel/water separator
- 5. Identify components of a trailer, such as:
 - Hitch types/sizes
 - Trailer electrical connection
 - Bearings
 - Winch
 - Bunks/rollers
 - Tie downs

Discussion Questions

1. What are the differences between large and small rescue boats?

Activities

1. To be determined by the instructor

Instructor Notes

1. Instructor should direct students to identify various components and then reinforce the use of proper nomenclature in the field, quizzing students on various components.

Topic 2-3: Identifying Large-Rescue-Boat Equipment

Terminal Learning Objective

At the end of this topic, given a variety of large-rescue-boat equipment, the student will identify the equipment carried on a rescue boat and describe the purpose.

Enabling Learning Objectives

1. Identify rescue boat equipment of the AHJ, including but not limited to:
 - Paddles
 - Towing bridle
 - Compass
 - Handheld lights
 - Anchor, rode, and chain
2. Identify rescue equipment of the AHJ, including but not limited to:

Large Vessel Boat Operator

- Throw bag
- Rescue tube/can
- Portable radio
- Blanket
- Spare PFDs
- Knife
- First Aid/EMS
 - Waterproof container
 - Space blanket
- Helmets

Discussion Questions

1. What are the differences between boat equipment and rescue equipment?
2. What rescue equipment do boats in your AHJ carry?

Activities

1. To be determined by the instructor

Instructor Notes

1. The instructor may choose to teach this topic in the classroom or in the field.

Topic 2-4: Demonstrating Awareness of Basic Safety Considerations

Terminal Learning Objective

At the end of this topic, given a simulated emergency, the student will demonstrate awareness of basic safety considerations associated with large rescue-boat operations.

Enabling Learning Objectives

1. Identify the different types of U.S. Coast Guard (USCG)-approved PFDs and their applications
 - Inflatable
 - Swiftwater
 - Individual day and night emergency signaling requirements
 - Other
2. Describe self-survival considerations
 - Float plan
 - Crew overboard
 - Crew and passenger accountability
 - Dewatering emergency
 - On-board fire prevention, extinguishment, and control
 - Damage control procedures
 - Mayday procedures
 - Emergency signaling
 - Emergency anchoring
 - Abandon ship
3. Describe agency-specific PPE

Large Vessel Boat Operator

- Uniform and clothing selection for exposure considerations

Discussion Questions

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

Activities

1. The instructor must create an activity simulating an emergency while underway.

Instructor Notes

1. The instructor should give consideration to recreating simulated emergencies in the field throughout the course.
2. The instructor should consider using rescue-boat near-miss, close-call case studies.

Topic 2-5: Demonstrating Pre- and Postoperational Checks

Terminal Learning Objective

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

Enabling Learning Objectives

1. Demonstrate trailer inspection
2. Demonstrate hull inspection
3. Demonstrate how to inspect a motor mount
4. Demonstrate how to service a motor
 - Fuel line and connectors inspection
 - Oil level check
 - Spark plug inspection
 - Propeller inspection
 - Use of impeller intake flush device
 - Use of bypass flush connection
 - Fuel additives
5. Demonstrate weekly/monthly service and inspection
6. Demonstrate underway troubleshooting

Discussion Questions

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

Activities

1. The instructor must create an activity simulating an underway mechanical casualty requiring troubleshooting.

Instructor Notes

1. The activity needs to be relevant to the platform, the AHJ, the students' abilities, and operating environment.

Topic 2-6: Demonstrating Trailering Considerations

Terminal Learning Objective

At the end of the topic, given a rescue boat, tow vehicle, and trailer, the student will demonstrate critical elements of trailering boats.

Enabling Learning Objectives

1. Describe safety factors associated with trailering operations
 - Pretrip inspection
 - Trailer connections and lights
 - Rescue boat secured properly
 - Rescue boat equipment secured
 - Use of backers
 - Road travel considerations
 - Speed
2. Demonstrate safe backing fundamentals of a trailered boat
3. Describe trailer positioning for launch/recovery
 - Boat ramp etiquette

Discussion Questions

1. What are your agency's trailering considerations?

Activities

1. To be determined by the instructor

Instructor Notes

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

Unit 3: Basic Boat Handling

Topic 3-1: Demonstrating Trailering

Terminal Learning Objective

At the end of this topic, given a rescue boat, tow vehicles, and trailer, the student will demonstrate pulling and backing a trailered rescue boat.

Enabling Learning Objectives

1. Demonstrate a pretravel inspection
2. Demonstrate road travel
3. Demonstrate backing

Discussion Questions

1. What risks are involved in trailering and launching a boat?

Activities

1. The instructor must create an activity directing students to complete a cone obstacle course with a trailer and tow vehicle. (As applicable to the AHJ)

Instructor Notes

1. If this topic does not pertain to the AHJ, the instructor can cover it in the classroom.

Topic 3-2: Demonstrating the Operation of a Large Rescue Boat

Terminal Learning Objective

At the end of this topic, given a large rescue boat, the student will demonstrate the operation of a rescue boat.

Enabling Learning Objectives

1. Identify safety issues associated with operating a boat
2. Demonstrate motor manipulation
 - Use of gears
 - Use of throttle
 - Use of steering inputs
 - Use of motor trim
 - Use of weight distribution
3. Demonstrate station keeping
4. Demonstrate approaching a stationary object
5. Demonstrate the use of dewatering equipment (e.g., bilge pump)

Discussion Questions

1. What factors influence the drift rates of a boat?
2. What forces affect boat handling?

Activities

1. The instructor must create an activity directing students to perform basic station keeping and motor manipulation.

Instructor Notes

1. Instructor should select an operating area with minimal traffic, wind, and tide considerations (a controlled environment).

Topic 3-3: Demonstrating Jet Dock Use

Terminal Learning Objective

At the end of this topic, given a rescue boat and a Jet Dock-style dock, the student will demonstrate launching and recovering the vessel from the dock, identify equipment used to secure the vessel to the dock, and identify preventative maintenance requirement.

Enabling Learning Objectives

1. Demonstrate the ability to safely launch the vessel from the dock
 - Cast off lines
 - Use auxiliary winch to aid in launching
 - Trim motors to allow vessel to launch
2. Demonstrate the ability to safely recover the vessel to the dock
 - Position vessel appropriately for placement onto dock
 - Describe any safety concerns
 - Recover vessel to identified position for a “safety pause”
 - Trim motors and recover vessel onto the dock
 - Secure vessel onto dock using lines and auxiliary winch

Large Vessel Boat Operator

3. Demonstrate the ability to identify specific equipment used to secure the vessel to the dock
 - Demonstrate port and starboard line tie-offs
 - Use auxiliary winch
 - Consider weather conditions
4. Demonstrate the the ability to identify maintenance needs that prevent safe dock use
 - Secure guidance tubes
 - Ensure adequate buoyancy of flotation equipment
 - Secure tie-offs and auxiliary winch

Discussion Questions

1. What is the main benefit of performing a “safety pause” while recovering the vessel onto the dock?

Activities

1. The instructor must create an activity directing students to launch and recover a rescue boat from a Jet Dock-style dock.

Instructor Notes

1. An agency-specific boat lift may be used if no Jet Dock-style dock is available. If this topic does not pertain to the AHJ, the instructor can cover it in the classroom.

Topic 3-4: Demonstrating Launching and Recovering

Terminal Learning Objective

At the end of this topic, given a large rescue boat and a Jet Dock or a tow vehicle with trailer, the student will demonstrate the ability to safely launch and recover a rescue boat from a towed trailer or Jet Dock.

Enabling Learning Objectives

1. Demonstrate launching a boat from a trailer or Jet Dock
 - Launch preparations
 - Crew position during backing and launch
 - Motor manipulation
2. Demonstrate recovery of a boat from a trailer or Jet Dock
 - Recovery preparations
 - Motor manipulation
 - Crew position during recovery

Discussion Questions

1. How do wind and current influence launching and recovering a boat?

Activities

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

Instructor Notes

1. If this topic does not pertain to the AHJ, the instructor can cover it in the classroom.

Topic 3-5: Demonstrating Docking

Terminal Learning Objective

At the end of this topic, given a large rescue boat and a dock, the student will demonstrate maneuvering and docking a rescue boat.

Enabling Learning Objectives

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

Discussion Questions

1. What are safety considerations for an untrained crewmember or passenger?

Activities

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

Instructor Notes

1. Harbor etiquette is paramount and must be discussed and reinforced prior to this topic.
2. Prior to starting this topic, the instructor must ensure the dock location has been determined and confirmed. Coordinate with the marina or harbor staff prior to beginning activities.

Unit 4: Rules of the Road, Weather, Tides, and Maintenance

Topic 4-1: Identifying Rules and Regulations Governing Vessel Operation in Navigable Waters

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 local waters.

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 rights 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 requirements of directional aids to navigation and how they relate to rights of way
 - Locations

Large Vessel Boat Operator

- Shapes, numbers, and colors
- Meanings
- Hazards

Discussion Questions

1. How is right of way determined on navigable waterways in the United States?
2. How is a rescue boat classified regarding vessel type when determining right of way?
3. Which rules and regulations apply to your operational area?

Activities

1. The instructor must prepare an activity simulating a number of right-of-way scenarios.

Instructor Notes

1. The student will be aware of how to determine the rights of way for vessels and be able to apply the required procedures to address situations that the student may experience, thereby enabling them to prevent collisions and provide an orderly system to protect the lives and safety of passengers and crew.
2. In California there are two governing bodies, the USCG and The California Harbors and Navigation Code.
3. The instructor should reinforce these learning objectives on an ongoing basis throughout the field activities.

Topic 4-2: Identifying Tidal Conditions

Terminal Learning Objective

At the end of this topic, given a data source, the student will identify tidal conditions and how they affect local waters and local marine conditions.

Enabling Learning Objectives

1. Demonstrate knowledge of the effect of tides
 - Tidal changes
 - High tide and low tide (flood, ebb, and slack tide)
 - Water depth changes
 - Movement of water/tidal currents
2. Determine tidal change frequency, duration, and variation by referencing a tide chart
 - Tide charts
 - Internet-based tidal reference sites
3. Describe the effects tidal changes on rescue boat operation
 - Effects of tidal generated currents
 - Low tide – draft limitations

Discussion Questions

1. At what tide are depth soundings on a nautical chart given?
2. How can tides be estimated by observation of shoreline conditions?
3. How does tide affect your launching and recovery decisions?

Activities

1. The instructor must create an activity directing students to identify tidal change frequency, duration, and variation in the local area.

Large Vessel Boat Operator

Instructor Notes

None

Topic 4-3: Identifying Weather Conditions and Their Impacts

Terminal Learning Objective

At the end of this topic, given a simulated surface-water rescue environment, the student will identify weather conditions and describe how they affect local waters and local marine conditions.

Enabling Learning Objectives

1. Describe the effect of weather on a rescue boat
 - Wind
 - Sea state
 - Adverse weather patterns or severe storms
2. Demonstrate locating current and weather forecasts
 - Television
 - Radio
 - Internet
 - Marine radio
 - Weather radio
 - USCG Marine Information Broadcasts (MIBs)
3. Demonstrate locating current and anticipated sea-state conditions
 - Internet
 - Weather radio
 - Marine radio
 - USCG Marine Information Broadcasts (MIBs)
4. Describe the sea-state limitation for the AHJ's rescue boat
 - Manufacturer's recommendations
 - Department-specific standard operating procedures or guidelines (SOPs or SOGs)
 - Other agencies' SOPs or SOGs

Discussion Questions

1. How do microclimates affect operational decisions?
2. What sources can be referenced for weather forecasts?
3. What aspect of weather has the greatest effect on large rescue boat operations?
4. What are go/no-go criteria for your rescue boat and crew?

Activities

1. The instructor must create an activity directing students to listen to Marine Information Broadcasts and identify local conditions associated with risk analysis and management.

Instructor Notes

1. The instructor may choose to have students bring in local weather forecasts for the next day.

Topic 4-4: Identifying Motor Maintenance Requirements

Large Vessel Boat Operator

Terminal Learning Objective

At the end of this topic, given a large rescue boat, the student will identify motor maintenance requirements necessary for operational readiness.

Enabling Learning Objectives

1. Identify equipment needed to perform motor maintenance
 - Tools
 - Reference materials
 - Fluids and replacement parts
2. Describe maintenance requirements for general use
 - After routine use
 - Monthly
 - Annually

Discussion Questions

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

Activities

1. To be determined by the instructor

Instructor Notes

1. The instructor should discuss the effects of different water types (e.g., salt, different pH, turbid, containing harmful organisms) on the motor when appropriate.

Topic 4-5: Identifying Considerations for Near-Shore Operations

Terminal Learning Objective

At the end of this topic, given a large rescue boat and a near-shore environment, the student will identify the unique aspects of operating a large rescue boat in near-shore areas.

Enabling Learning Objectives

1. Identify the considerations of operating within a marina
 - Speed limits
 - Vessel traffic
 - Identifying aids to navigation
 - Protected entrances and exits
 - Tidal influences on launching and recovering
2. Identify near-shore hazards to operating a rescue boat
 - Water depth
 - Tidal or wave action
 - Natural hazards
 - Humanmade hazards
3. Describe equipment for operating in near-shore environments
 - Navigational charts
 - Depth sounder
 - Depth stick
 - Watermarks (shore)

Large Vessel Boat Operator

Discussion Questions

1. Why is it important to identify the tidal conditions prior to operating a rescue boat in a near-shore environment?
2. What is your vessel's depth sounder calibrated to?
3. What are boat-positioning considerations in shallow water (bow to or stern to)?

Activities

1. The instructor must create an activity directing students to identify the depth using multiple means.

Instructor Notes

None

Topic 4-6: Describing Navigation Techniques for a Maritime Environment

Terminal Learning Objective

At the end of this topic, given a navigational plan including a variety of tools and equipment, the student will describe a variety of techniques to navigate through a maritime environment.

Enabling Learning Objectives

1. Identify various means of maritime navigation
 - Maritime charts
 - Compasses
 - Chart plotters
 - Electronic devices with mapping capabilities
2. Describe coastal piloting
 - Use of chart and navigation tools
 - Development of a navigation plan
 - Compass bearings to known landmarks
 - Navigation by identification of known landmarks
3. Describe aids to navigation
 - Identify locations and meanings
 - Uses for navigating into and out of protected channels
 - Hazard identification
 - USCG notice to mariners

Discussion Questions

1. How are aids to navigation numbered when returning to port?
2. What are the limitations of solely relying on dead reckoning for navigation?
3. What are the benefits of knowing how to chart?

Activities

1. The instructor must create an activity directing students to determine the latitude and longitude of a given point and to define a point given latitude and longitude.

Instructor Notes

1. The charts used should be current and specific to the area of operations. There should be one chart per boat.

Unit 5: Intermediate Boat Handling

Topic 5-1: Navigating a Predetermined Course

Terminal Learning Objectives

At the end of this topic, given a boat and a known position, the student will navigate a predetermined course.

Enabling Learning Objectives

1. Demonstrate course planning
 - Identify course
2. Identifying course considerations
 - Identify and mitigate hazards
 - Estimate current and predicted water depths
 - Identify current and forecasted weather conditions and sea state
 - Other vessel traffic
3. Demonstrate navigation of the course

Discussion Questions

1. How can you determine safety considerations prior to attempting the exercise?
2. What is the estimated duration to the final destination?
3. What are the impacts of microclimates along the course?

Activities

1. The instructor must create an activity directing students to plan the course and then execute the tasks identified above.

Instructor Notes

1. The instructor must run the course prior to directing students to do so. Course duration should be predetermined by the instructor.

Topic 5-2: Operating the Vessel and Demonstrating Station Keeping

Terminal Learning Objective

At the end of this topic, given a boat and a stationary object, the student will operate the vessel and demonstrate station keeping in open water.

Enabling Learning Objectives

1. Demonstrate navigating to a predetermined stationary object in open water
2. Demonstrate station keeping
 - Determine the effects of wind and current
 - Maintain the position for a predetermined period of time

Discussion Questions

1. What are the benefits of maintaining or holding station?
2. What is the easiest way to hold station?
3. What are some challenging conditions for attempting to hold station?
4. What is the forecasted prevailing force?

Large Vessel Boat Operator

Activities

1. The instructor must create an activity directing students to demonstrate station keeping in dynamic conditions.

Instructor Notes

1. The instructor should include approaching a stationary object with or against prevailing forces.
2. Dynamic conditions are recommended.

Topic 5-3: Operating in Shallow Water

Terminal Learning Objective

At the end of this topic, given a vessel and a shallow-water environment, the student will operate the vessel in shallow water.

Enabling Learning Objective

1. Demonstrate estimating water depths for a predetermined area
 - Navigational charts
 - Tide tables
2. Demonstrate determining water depths from the rescue boat
 - Shore water lines
 - Visualizing
 - Depth stick
 - Depth finder
 - Chart plotter
3. Demonstrate maneuvering the vessel in shallow water
 - Draft limitation
 - Motor operation to reduce draft – trimming
 - Beaching

Discussion Questions

1. What techniques can be used to free a vessel that has run aground?
2. How does bottom composition impact shallow-water operations?

Activities

1. The instructor must create an activity directing students to estimate and determine water depths and maneuver the vessel in shallow water.

Instructor Notes

1. Beaching is specific to AHJ and vessel limitations.

Unit 6: Communications, Navigation, and Local Area Orientation

Topic 6-1: Communicating in the Maritime Environment

Terminal Learning Objective

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

Large Vessel Boat Operator

Enabling Learning Objectives

1. Identify various means of marine communication
 - Marine radios
 - Agency-specific radios
 - Cellular telephones
 - Hand signals
 - Flares
 - Voice amplifying devices
 - Emergency position-indicating radio beacon (EPIRB)
 - Personnel-locating beacon (PLB)
2. Describe the applicable marine radio options
 - Portable versus mobile
 - Limitations (power, battery life, durability, channel limitations)
 - Environmental effects on transmitting and receiving clarity
3. Describe common marine frequencies and their uses
 - VHF versus UHF and fire department radios
 - International Hail and Distress Channel (VHF Marine 16)
 - How to communicate with other mariners
4. Describe communication procedures specific to the USCG
 - USCG radio terminology and communication procedures
 - USCG asset radio designators
 - How to relay emergency information to USCG
 - PAN-PAN

Discussion Questions

1. How can a rescue boat operator contact the USCG if needed?
2. How can rescue boat operators monitor calls for assistance from mariners?

Activities

1. To be determined by the instructor

Instructor Notes

1. Instructor should address local USCG radio etiquette, terminology, and procedures.

Topic 6-2: Developing a Navigation Plan

Terminal Learning Objective

At the end of this topic, given a variety of navigational tools and equipment, the student will develop a navigation plan.

Enabling Learning Objectives

1. Identify the tools required to develop a navigation plan
 - Maritime chart
 - Dividers
 - Parallel rule
 - Speed wheel

Large Vessel Boat Operator

2. Identify the units of measure used to develop a navigation plan
 - Magnetic versus true north
 - Compass rose
 - Nautical miles versus statute miles
 - Knots versus miles per hour
 - Feet versus fathoms
 - Common latitude/longitude formats and conversions

Discussion Questions

1. What are some route planning considerations?
2. What latitude/longitude formats are applicable to your AHJ?
3. How do you convert latitude/longitude formats?

Activities

1. The instructor must create an activity directing students to convert latitude and longitude into a variety of formats.
2. The instructor must create an activity directing students to develop a navigation plan involving eight way points.
3. The instructor must create an activity directing students to calculate speed/time/distance equations.

Instructor Notes

1. The instructor must bring in a full set of charting tools and charts for each boat and develop worksheets for calculations.

Topic 6-3: Using an Electronic Chart Plotter

Terminal Learning Objective

At the end of this topic, given an electronic navigation device, the student will demonstrate the use of an electronic chart plotter.

Enabling Learning Objectives

1. Identify the capabilities of a chart plotter
 - Maritime charts
 - Current speed and direction
 - Tides
2. Identify the settings used on a chart plotter
 - Magnetic versus true north
 - Compass rose
 - Nautical miles versus statute miles
 - Knots versus miles per hour
 - Feet versus fathoms
 - Common latitude/longitude formats and conversions
 - Heads up versus north up
 - Day versus night display
3. Build a route using the waypoints developed in Topic 6-2
 - Follow route

Large Vessel Boat Operator

- Advance waypoint
 - Restart route
4. Demonstrate ability to use the man overboard (MOB) button
 - Set a MOB alert
 - Navigate to a MOB point
 - Clear a MOB point

Discussion Questions

1. What are your AHJ's specific chart plotter models?
2. What are their capabilities?

Activities

1. The instructor must create an activity directing students to use their chart plotting equipment.

Instructor Notes

1. This topic will be reinforced on an ongoing basis throughout the field activities.

Topic 6-4: Analyzing the Local Marine Environment

Terminal Learning Objective

At the end of this topic, given the local marine environment and the maritime reference materials applicable to the AHJ, the student will gather and analyze information on the environment for risk management.

Enabling Learning Objectives

1. Identify resources that can assist in local area orientation
 - Navigational charts
 - USGS Charts
 - Interviews with local maritime subject matter experts
2. Describe components of the local marine environment
 - Launch points
 - Recovery points
 - Depth of local waters
 - Heavily trafficked areas/lanes
 - Hazards
 - Landmarks for dead reckoning
 - Recreational areas
 - Sailing clubs
 - Kite boarders/windsurfers

Discussion Questions

1. What are some of the benefits of identifying numerous access points in the local marine environment?
2. What kinds of subject matter experts might be consulted for gaining situational awareness and hazard assessment?
3. What are hazards and operational considerations for your AHJ?

Large Vessel Boat Operator

Activities

1. To be determined by the instructor

Instructor Notes

None

Unit 7: Advanced Boat Handling

Topic 7-1: Operating in Close Proximity to Other Vessels

Terminal Learning Objective

At the end of this topic, given multiple vessels, the student will operate in close proximity to other vessels while operating under the effects of environmental conditions.

Enabling Learning Objectives

1. Identify operational planning elements to coordinate with other vessels
 - Group travel patterns
 - Describe any safety concerns
 - Assess hazards
 - Estimate water depths
 - Assess environmental conditions
2. Demonstrate maneuvering the vessel
 - Establish a stand-on vessel, maintaining speed and course
 - Approach and depart from other vessels while underway
 - Transfer members or victims between vessels while underway

Discussion Questions

1. What safety considerations must be taken into account prior to operating in close proximity to other vessels?
2. What would be an operational situation requiring the transfer of members or victims?

Activities

1. The instructor must create an activity directing students to come alongside a vessel underway with the intent to transfer members or victims.

Instructor Notes

1. This activity may be limited by AHJ policies and procedures and the availability of a suitable platform.

Topic 7-2: Operating in Proximity to Docks, Piers, and Bridges

Terminal Learning Objective

At the end of this topic, given a vessel and an environment with docks, piers, and bridges, the student will operate the vessel in close proximity to docks, piers, and bridges while operating under the effects of environmental conditions.

Enabling Learning Objectives

1. Identify special considerations when operating in proximity to:
 - Marina dock

Large Vessel Boat Operator

- Launch ramp
 - Fishing pier
 - Abandoned pier or dock
2. Demonstrate operating in close proximity to docks, piers, and bridges while avoiding associated hazards

Discussion Questions

1. How do environmental conditions affect operation in proximity to docks, piers, and bridges (e.g., water dynamics, current, overhead obstructions)?

Activities

1. The instructor must create an activity directing students to operate in close proximity to docks, piers, and bridges while avoiding associated hazards.

Instructor Notes

1. Staffed bridges may present special communications needs.

Topic 7-3: Towing

Terminal Learning Objective

At the end of this topic the student, given two vessels of similar size, will demonstrate towing small boats.

Enabling Learning Objectives

1. Discuss safety considerations for towing
 - Conditions
 - Size of towing boat vs. size of boat to be towed
 - Equipment available
 - Need for the tow
2. Demonstrate the ability to conduct a stern tow
3. Demonstrate the ability to conduct an alongside tow
4. Demonstrate docking a towed vessel

Discussion Questions

1. What are safety considerations when towing a vessel?
2. What are examples of emergency situations that require towing?
3. What are differences between emergency and nonemergency towing?

Activities

1. The instructor must create an activity directing students to assess, tow, and dock a disabled vessel.

Instructor Notes

1. The activity must be conducted in protected (calm) waters with minimal boat traffic.
2. Refer to the current edition of *Small-Boat Seamanship Manual*, "Towing"

Topic 7-4: Recovering a Victim

Terminal Learning Objective

At the end of this topic, given a vessel, rescue adjuncts, and a victim, the student will demonstrate recovering a victim from the water.

Large Vessel Boat Operator

Enabling Learning Objectives

1. Identify considerations for direct or indirect recovery
 - Direct: boat to victim
 - Indirect: rescue adjunct or swimmer to victim
2. Demonstrate a safe approach to the victim, considering:
 - Wind
 - Current
 - Swimmer's motion
 - Motor manipulation
 - Controlling momentum
 - Motor neutral
 - When in proximity to the victim
3. Demonstrate use of rescue adjuncts
 - Throw bag
 - Life ring
 - Boat hook
4. Demonstrate assessing victim's condition
 - Head, neck, or back injury
 - Exposure
5. Demonstrate techniques to bring victim into boat
 - Stationary lift
6. Demonstrate communicating actions to a shore-based responder
 - Develop care plan
 - Develop transfer to ambulance plan

Discussion Questions

1. What are the safety considerations for operating a boat in proximity to persons in the water?
2. Under what conditions would you select direct or indirect recovery? Why?
3. What blind spots does your vessel have that might cause the operator to lose sight of the victim?

Activities

1. The instructor must create an activity directing students to assess and recover a victim from the water.

Instructor Notes

1. Best practice is to use water-rescue mannequins rather than live victims.
2. Instructor may refer to the current edition of *Small-Boat Seamanship Manual*, "Person in the Water Recovery."

Unit 8: Night Operations (Classroom)

Topic 8-1: Demonstrating Radar Use

Large Vessel Boat Operator

Terminal Learning Objective

At the end of this topic, given a vessel equipped with radar, the student will demonstrate the use of radar.

Enabling Learning Objectives

1. Describe radar operating principles
 - Height of antenna
 - Curvature of the earth
 - Power output
 - Duty cycle
 - Resolution
 - Effect of rain
 - Closely grouped target identification
 - Gain
 - Clutter
2. Describe target tracking
 - MARPA lists
 - Multiple target identification
 - AIS integration
 - Waypoint integration
3. Describe the ways in which radar can be used to aid in navigation
 - Distance to landmark
 - Low light operations
 - Vessel location
 - Radar beacons (RACON)
4. Demonstrate using radar to identify range to an object

Discussion Questions

1. How is using radar in daytime different than using it at night?
2. Does your electronic chart plotter have the ability to display radar overlay?
3. What is your contingency plan for radar failure during low-light or limited-visibility operations?

Activities

1. The instructor must create an activity directing students to present their agency-specific radar configurations.

Instructor Notes

1. The instructor must review Rule 5 and Rule 6 in the International Regulations for Preventing Collisions at Sea (COLREGS).

Topic 8-2: Describing Night and Low-Visibility Operations

Terminal Learning Objective

At the end of this topic, given a variety of simulated environments, the student will describe the differences between day and night or low-visibility operations.

Large Vessel Boat Operator

Enabling Learning Objectives

1. Identify differences between day and night or low-visibility operations
 - Visibility
 - Operating speeds
 - Communications limitations
 - Understanding navigational lights
 - Dead reckoning at night with illuminated objects
 - Agency limitations for rescue boat use at night or with low visibility
2. Describe equipment for night or low-visibility operations
 - Navigational lights
 - Searchlights
 - Light sticks
 - Signal flares
 - Sound-producing device
 - FLIR
 - Light-amplifying devices
3. Describe the search and rescue considerations for night or low-visibility operations
 - Pros and cons of using searchlights
 - Effects of motor noise on search ability

Discussion Questions

1. How can an rescue operator distinguish the direction of another vessel using running lights?
2. How do local considerations impact night or low-visibility operations?

Activities

1. To be determined by the instructor.

Instructor Notes

1. In preparation for Unit 9, the instructor must review accountability, safety, and lost-boat plan.

Topic 8-3: Developing Search Patterns

Terminal Learning Objective

At the end of this topic, given a variety of simulated scenarios, the student will demonstrate the development of search patterns in the maritime environment.

Enabling Learning Objectives

1. Describe search patterns used by local government agencies
 - Track line
 - Parallel
 - Expanding square
2. Demonstrate the ability to report search actions and SITREPS
 - SITREPS
 - SITREP number
 - Situation

Large Vessel Boat Operator

- Action taken
- Future plans
- Amplifying information
- Case status
- Search action reporting
 - Search pattern
 - Single or multiunit
 - Supplementary information
- 3. Explain additional factors to consider
 - Accuracy of datum
 - Size of search object
 - Time available
 - Number of resources available
 - Weather
 - Navigational ability of resources

Discussion Questions

1. What local resources are available to assist in search efforts?
2. What are the best practices in your home operational area?

Activities

1. To be determined by the instructor

Instructor Notes

1. The instructor may refer to the current edition of *Small-Boat Seamanship Manual*, "Search and Rescue."

Unit 9: Night Operations (Practical Application)

Topic 9-1: Developing Nighttime Search Patterns

Terminal Learning Objective

At the end of this topic, given a vessel and a nighttime search area, the student will demonstrate the development and execution of search patterns.

Enabling Learning Objectives

1. Demonstrate the execution of single-resource search patterns
 - Track line
 - Parallel
 - Expanding square
2. Demonstrate the execution of coordinated, multiunit search patterns
 - Track line
 - Parallel
3. Demonstrate reporting search actions and SITREPS
 - SITREPS
 - Sitrep number

Large Vessel Boat Operator

- Situation
- Action taken
- Future plans
- Amplifying information
- Case status
- Search action reporting
 - Search pattern
 - Single or multiunit
 - Supplementary information

Discussion Questions

1. What are the advantages and disadvantages of electronic navigation devices?
2. How do you determine proximity and scale of other vessels and landmarks at night?

Activities

1. The instructor must create an activity directing students to plan and conduct searches with given coordinates.

Instructor Notes

1. It is recommended that the instructor use inexpensive or expendable objects for the search and rescue exercise.
2. The instructor should consider the challenges of controlling multiple vessels underway at night.

Topic 9-2: Conducting an Organized Search

Terminal Learning Objective

At the end of this topic, given a vessel and a simulated search-and-rescue incident in a nighttime environment, a student will conduct an organized search.

Enabling Learning Objectives

1. Identify the required resources
2. Demonstrate coordination of multivessel rescue activities
3. Demonstrate communicating actions to a shore-based IC
4. Demonstrate mitigating the simulated scenario
5. Describe the transfer of victims to shore-based responders

Discussion Questions

1. What are specific safety considerations during low-light operations?
2. What are the most effective methods of communication between water and shore assets?

Activities

1. The instructor must create an activity directing students to mitigate a scenario with a simulated victim at night.

Instructor Notes

1. To meet the objectives of this topic, the scenario must be conducted on the water at night.

2. The instructor may consider integrating the use of pyrotechnic signaling devices with proper notification(s).

Unit 10: Dynamic Boat Handling

Topic 10-1: Operating in Dynamic Conditions

Terminal Learning Objective

At the end of this topic, given a vessel, the student will operate in a variety of increasingly complex dynamic conditions.

Enabling Learning Objectives

1. Demonstrate launching and recovering the vessel
 - Prepare for launch
 - Launch
 - Place rescue boat in service
2. Demonstrate operating in a variety of conditions
 - Docking
 - Coordinated searches
 - Station keeping
3. Demonstrate maneuvering the vessel
 - Consider hazards
 - Estimate water depths
 - Consider environmental conditions
4. Demonstrate advanced operator skills
 - Anchoring
 - Swimmer deployment
 - Swimmer recovery
 - Transfer members between rescue boats while underway
 - Operate in restricted areas

Discussion Questions

1. What are anchoring considerations? When would you use this skill?
2. What are transfer considerations in inclement weather?

Activities

1. The instructor must create an activity directing students to demonstrate the above skills in increasingly dynamic conditions.

Instructor Notes

1. The demonstration of transfer of members (ELO 4) may be limited by AHJ policies and procedures and the availability of a suitable platform.
2. Best practice is to use water-rescue mannequins rather than live victims.

Topic 10-2: Developing and Executing Search and Rescue Operations

Large Vessel Boat Operator

Terminal Learning Objective

At the end of this topic, given a vessel, a simulated emergency, and a search area, the student will develop and execute water-based search and rescue operations.

Enabling Learning Objectives

1. Identify the required resources
2. Demonstrate coordination of multivessel rescue activities
3. Demonstrate communicating actions to a shore-based IC
4. Demonstrate mitigating the simulated scenario
5. Describe the transfer of victims to shore-based responders

Discussion Questions

1. What are specific safety considerations during incidents with multiple responding vessels?
2. What are the most effective methods of communication between vessels?

Activities

1. The instructor must create an activity directing students to mitigate a scenario with a simulated victim.

Instructor Notes

1. The activity should build on the activity in Topic 9-2: Conducting an Organized Search.

Large Vessel Boat Operator

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: Student Introductions		0:30	
Unit 1 Totals	0:30	0:30	1:00
Unit 2: Pre and Postoperational Considerations			
Topic 2-1: Identifying Large Rescue Boat Capabilities and Limitations			
Lecture	0:20		
Activity 2-1: To be determined by instructor		0:00	
Topic 2-2: Identifying Large Rescue-Boat Components and Nomenclature			
Lecture	0:30		
Activity 2-2: To be determined by instructor		0:00	
Topic 2-3: Identifying Large Rescue Boat Equipment			
Lecture	0:10		
Activity 2-3: To be determined by instructor		0:00	
Topic 2-4: Demonstrating Awareness of Basic Safety Considerations			
Lecture	0:20		
Activity 2-4: Simulating an Emergency While Underway		0:10	
Topic 2-5: Demonstrating Pre- and Postoperational Checks			
Lecture	0:15		
Activity 2-5: Simulating an Underway Mechanical Casualty		0:10	
Topic 2-6: Demonstrating Trailering Considerations			
Lecture	0:15		
Activity 2-6: To be determined by instructor		0:00	

Large Vessel Boat Operator

Segment	Lecture Time	Activity Time	Total Unit Time
Unit 2 Totals	1:35	0:20	1:55
Unit 3: Basic Boat Handling			
Topic 3-1: Demonstrating Trailing			
Lecture	0:00		
Activity 3-1: Completing an Obstacle Course with a Trailer		0:50	
Topic 3-2: Demonstrating the Operation of a Large Rescue Boat			
Lecture	0:00		
Activity 3-2: Performing Basic Station Keeping and Motor Manipulation		1:00	
Topic 3-3: Demonstrating Jet Dock Use			
Lecture	0:00		
Activity 3-3: Launching and Recovering from a Jet Dock		1:00	
Topic 3-4: Demonstrating Launching and Recovering			
Lecture	0:00		
Activity 3-4: Launching and Recovering		1:00	
Topic 3-5: Demonstrating Docking			
Lecture	0:00		
Activity 3-5: Docking to the Port and Starboard Sides		1:00	
Unit 3 Total	0:00	4:50	4:50
Unit 4: Rules of the Road, Weather, Tides, and Maintenance			
Topic 4-1: Identifying Rules and Regulations Governing Vessel Operation in Navigable Waters			
Lecture	0:15		
Activity 4-1: Simulating Right-of-Way Scenarios		0:05	
Topic 4-2: Identifying Tidal Conditions			
Lecture	0:15		
Activity 4-2: Identifying Tidal Changes		0:05	
Topic 4-3: Identifying Weather Conditions and Their Impacts			
Lecture	0:15		
Activity 4-3: Identifying Local Conditions		0:05	

Large Vessel Boat Operator

Segment	Lecture Time	Activity Time	Total Unit Time
Topic 4-4: Identifying Motor Maintenance Requirements			
Lecture	0:15		
Activity 4-4: To be determined by instructor		0:00	
Topic 4-5: Identifying Considerations for Near-Shore Operations			
Lecture	0:15		
Activity 4-5: Identifying Depth		0:05	
Topic 4-6: Describing Navigation Techniques for a Maritime Environment			
Lecture	0:30		
Activity 4-6: Determining Points' Latitude and Longitude		0:10	
Unit 4 Totals	1:45	0:30	2:15
Unit 5: Intermediate Boat Handling			
Topic 5-1: Navigating a Predetermined Course			
Lecture	0:00		
Activity 5-1: Planning and Navigating a Course		2:00	
Topic 5-2: Demonstrating Station Keeping			
Lecture	0:00		
Activity 5-2: Demonstrating Station Keeping		2:00	
Topic 5-3: Operating in Shallow Water			
Lecture	0:00		
Activity 5-3: Estimating and Determining Depth and Maneuvering in Shallow Water		1:45	
Unit 5 Totals	0:00	5:45	5:45
Unit 6: Communications, Navigation, and Local Area Orientation			
Topic 6-1: Communicating in the Maritime Environment			
Lecture	0:20		
Activity 6-1: To be determined by instructor		0:00	
Topic 6-2: Developing a Navigation Plan			
Lecture	0:30		

Large Vessel Boat Operator

Segment	Lecture Time	Activity Time	Total Unit Time
Activity 6-2a: Converting Latitude and Longitude		0:05	
Activity 6-2b: Developing a Navigation Plan		0:05	
Activity 6-2c: Calculating Speed/Time/Distance		0:05	
Topic 6-3: Using an Electronic Chart Plotter			
Lecture	0:15		
Activity 6-3: Using Chart Plotting Equipment		0:05	
Topic 6-4: Analyzing the Local Marine Environment			
Lecture	0:20		
Activity 6-4: To be determined by instructor		0:00	
Unit 6 Totals	1:25	0:20	1:45
Unit 7: Advanced Boat Handling			
Topic 7-1: Operating in Close Proximity to Other Vessels			
Lecture	0:00		
Activity 7-1: Coming Alongside for Transfer		1:55	
Topic 7-2: Operating in Close Proximity to Docks, Piers, and Bridges			
Lecture	0:00		
Activity 7-2: Operating in Close Proximity to Docks, Piers, and Bridges		1:55	
Topic 7-3: Towing			
Lecture	0:00		
Activity 7-3: Assessing, Towing, and Docking		2:00	
Topic 7-4: Recovering a Victim			
Lecture	0:00		
Activity 7-4: Assessing and Recovering a Victim		1:40	
Unit 7 Totals	0:00	7:30	6:15
Unit 8: Night Operations (Classroom)			
Topic 8-1: Demonstrating Radar Use			
Lecture	1:00		

Large Vessel Boat Operator

Segment	Lecture Time	Activity Time	Total Unit Time
Activity 8-1: To be determined by instructor		0:00	
Topic 8-2: Describing Night and Low-Visibility Operations			
Lecture	1:00		
Activity 8-2: To be determined by instructor		0:00	
Topic 8-3: Developing Search Patterns			
Lecture	1:00		
Activity 8-3: To be determined by instructor		0:00	
Unit 8 Totals	3:00	0:00	3:00
Unit 9: Night Operations (Practical Application)			
Topic 9-1: Developing Nighttime Search Patterns			
Lecture	0:00		
Activity 9-1: Planning and Conducting Searches at Night		2:00	
Topic 9-2: Conducting an Organized Search			
Lecture	0:00		
Activity 9-2: Mitigating a Scenario at Night		3:00	
Unit 9 Totals	0:00	5:00	5:00
Unit 10: Dynamic Boat Handling			
Topic 10-1: Operating in Dynamic Conditions			
Lecture	1:30		
Activity 10-1: Operating in Dynamic Conditions		3:00	
Topic 10-2: Developing and Executing Search and Rescue Operations			
Lecture	0:00		
Activity 10-2: Mitigating a Scenario		3:30	
Unit 10 Totals	0:30	6:30	7:00
Lecture, Activity, and Unit Totals:	8:45	31:15	40:00

Course Totals

Total Lecture Time (LT)	8:45
Total Activity Time (AT)	31:15

Large Vessel Boat Operator

Total Course Time	40:00
-------------------	-------