



part 3

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Revision History

Revision Number	Date	Changes
0122	01/01/2022	Initial standard - All subsequent parts have been renumbered.

1. Specialty Overview Matrix

	Specialty Name	Minimum Age	Number of Required In Water Sessions	Student to Instructor Ratio in Open Water	Prerequisite Certification or requirements	Certification Card must be issued by PFI
4	Breath Hold Survival	12	5	6	n/a	Yes
5	Diver Propulsion Vehicle Freediver	16	5	2	Freediver	Yes
6	Freediver Marine Ecosystems Awareness	10	2	6	Freediver/JR Freediver	Yes
7	Reef Spearfishing Freediver	10	2	6	Freediver/JR Freediver	Yes
8	Ocean Spearfishing	10	2	6	Freediver/JR Freediver	Yes
9	Freediving Photographer	10	2	6	Freediver/JR Freediver	Yes
10	Freediving Videographer	10	2	6	Freediver/JR Freediver	Yes
11	Wreck Freediver – No Penetration	10	2	6	Freediver/JR Freediver	Yes
12	Mermaid Splash	6	1	n/a	n/a	Yes
13	Aquatic Mermaid	8	1	n/a	n/a	Yes
14	Technical Freediving	18	1	6 (3:1 cylinder)	Intermediate Freediver	Yes



2. General Specialty Standards

These following standards apply to all PFI Freediver Specialties.

2.1 Administrative

Instructors must ensure that all students complete the following forms, for each and every course and specialty the student participates in.

They are:

1. *PFI General Liability Release and Express Assumption of Risk Form*
2. *PFI Medical History Form*
If a student answers yes to any question in the medical history form, the student must provide written permission from a licensed physician before participating in confined or open water training or any course or specialty training
3. *PFI Student Registration Form* or register the student online in the member's section of the PFI website; upon completion of the specified program
4. All records must be kept for a minimum of *seven* years

2.2 Accidents

Hopefully a member will never have to do this; if a member were involved in an accident or simply witnessed an accident, the *PFI Accident/Incident Report* Form must be completed, by the member/witness, and emailed or faxed to PFI Headquarters immediately after the accident occurred.

2.3 Definitions

Assistant or Assisted by = A person who is assisting a primary and certified instructor, instructor trainer for a course that they, the “assistant”, is not certified to teach. Assistants can be used for the purposes of additional supervision and to increase ratios where standards and environmental conditions allow. Assistants listed on registrations will receive experience credits for courses they have assisted with only if listed on the initial registration form.

Co-Teach or 2nd Instructor = A person who is certified to teach the course taking place and is working together with an also certified instructor, or instructor trainer. The 2nd instructor will receive equal credit for the course if listed on the initial registration form.

Student Prerequisites = conditions that must be met by students prior to beginning a course. These cannot be completed during the course unless specifically outlined in the standard. Conditions listed here cannot be waived by the instructor. Written standards waivers for prerequisites may be issued by the HQ training department depending on the course, dive site, and the specific prior experience of course participants.

2.4 Equipment

A personal freedive computer (PFDC) or timing device must be used during all confined and open water training sessions, during PFI courses.

2.5 Confined Water Training

Confined water training must be conducted in a swimming pool or a confined body of water with the following conditions:

1. A minimum of approximately 5 metres / 16 feet of visibility
2. Calm surface conditions
3. Easy access to depths that allow students to stand with their head above water
4. Depths that allow skills, as defined in the confined water lesson guide, to be adequately demonstrated
5. Equipment appropriate for the training site
6. Confined water training sites other than pools, must be approved by PFI Headquarters

2.6 Open Water Training

The instructor, with the following considerations, must carefully choose an open water training site:

1. Body of water similar to the regional freediving conditions (ocean, lake, etc)
2. Swimming pools are not considered an open water environment
3. Water clarity
4. Temperature above and below the water
5. Weather conditions
6. Water access
7. Equipment adequate for the conditions
8. Thermal protection appropriate for the conditions
9. A complete briefing that includes:
 - a. The freedive site
 - b. Water conditions
 - c. Skills to be performed
 - d. Entry/Exit to be used
 - e. Emergency procedures
10. A complete debriefing that includes:
 - a. Performance of freedivers as a whole
 - b. Areas that need improvement
 - c. Environmental observations
 - d. Question and answers

2.7 Student – Minimum Equipment Requirements

The students must have the following equipment:

1. Mask, fins and snorkel
2. Quick release weight system
3. Personal freedive computer (PFDC) or timing device
4. Exposure suit adequate for the training conditions
5. Knife or cutting device

2.8 Instructor – Minimum Equipment Requirements

Unless otherwise noted, the minimum equipment requirements for training by an instructor, assistant instructor and freediver supervisor is as follows:

1. Mask, fins, and snorkel
2. Quick release weight system
3. Personal freedive computer (PFDC)
4. Additional timing device
5. Exposure suit adequate for the training conditions
6. Cutting device
7. Visual and audio rescue signals
8. A dive flag must be carried in accordance with local laws or regulations for all open water locations
9. Float with adequate buoyancy to support two freedivers' airway above water

2.9 Qualification Procedures for Teaching a Specialty Course

To qualify to teach a specialty, the instructor must:

1. An active teaching PFI Instructor
2. Provide proof of 25 logged dive sessions in the specialty being applied for

OR

1. Complete the relevant PFI Specialty Instructor Course with an PFI Instructor Trainer qualified as an instructor in that specialty
2. Complete the PFI Specialty Instructor upgrade form and agree to use the latest approved PFI Specialty Standards

Note:

1. Some courses such as Breath Hold Survival course do require an Intermediate Freediver Instructor course be taken before the instructor may actually teach the course
2. In order to be an instructor for the PFI Breath Hold Survival Course, the instructor must:
 - a. Minimum age 21
 - b. Certified as PFI Intermediate Freediver Instructor
 - c. Certified as Breath Hold Survival or Assisted with a Breath Hold Survival Course
 - d. This rating may be obtained by administrative upgrade, or by completing a course with an PFI Breath Hold Survival Instructor Trainer but the prerequisites must be met either way
3. Assistant instructors must complete all specialty instructor courses with a qualified PFI Instructor Trainer

2.10 Combining Specialties

None of the PFI Specialties may be combined into one program. An instructor may teach more than one specialty per day, but the courses must be taught separately.

No specialty course may be combined with the PFI Freediver course however, courses may be taught in “blocks”. The student must complete an academic review and receive the appropriate pool/confined water training prior to open water training. To teach courses in blocks all requirements for PFI Freediver must be successfully completed prior to any in water training for any specialty course.

2.11 Procedure for Creating a Unique Specialty

Instructors often create their own specialties and wish to have a certification issued by PFI. The procedures for getting a unique specialty approved are as follows.

The instructor must:

1. Be an active teaching PFI Instructor
2. Provide proof of 25 dive sessions in the specialty being applied for
3. Complete the *PFI Specialty Instructor upgrade* form
4. Submit an outline, in the same format as the core PFI Specialties, for approval by PFI Headquarters
5. PFI Headquarters must approve the outline before the course may be taught

2.12 Upgrading from PFI Junior certification to full PFI certification

This procedure is for freedivers who were initially certified with the Junior designation and are now eligible to upgrade to the full certification without age related restrictions.

Upgrade Requirements

1. Provide verification of initial certification: certification card or formal verification letter on agency letterhead
2. Provide verification of diving activity in the last 12 months: logbook or personal freedive computer download*
3. Freedivers who are under the age of 18 must provide letter of approval to upgrade signed by parent or legal guardian

*If recent diving activity cannot be produced, diver will be directed to their nearest PFI Facility or equivalent to complete a refresher program with an active Instructor.

Upon successful completion of PFI refresher program or equivalent, active Instructors must: provide a signed letter of update completion or signed logbook entry for Junior diver to submit to PFI World Headquarters or Regional Office.

Processing Procedure – Contact PFI World Headquarters or Regional Office. Submit appropriate documentation in accordance with upgrade requirements. After providing all required items and purchasing new certification card, certification to be issued and credential sent to student.

3. Breath Hold Survival

3.1 Introduction

The PFI Breath Hold Survival is a course, geared to train surfers, kayakers, and other water enthusiasts, as well as professional emergency services personnel in methods designed to make the student more comfortable in hazardous conditions while in water, such as a big wave hold-down. It brings a whole knowledge approach introducing skills and techniques as well as a high-level of knowledge in physics, physiology, as well as safety and problem management. During this program, participants work in depths to 40 meters / 132 feet while learning valuable 'warm-up' and cross training skills to enhance this capacity. This program encompasses static apnea, high metabolism apnea, and may also introduce dynamic apnea. A PFI Breath Hold Survival Pool Only certification may be issued to those not wishing to participate in open water training. This level also has a coaching specific program for additional experience and skill refinement.

3.2 Who May Teach

Any active PFI Intermediate Instructor that has been approved by PFI Headquarters to teach Breath Hold Survival

3.3 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to ensure comprehensive and complete training of the subject matter

Confined Water (swimming pool-like conditions)

1. A maximum of eight students to one instructor (8:1). Or a maximum of twelve students to one instructor (12:1 max) with the use of active status PFI Assistant Intermediate Freediver Instructors

Open Water (ocean, lake, quarry, spring, river or estuary)

1. A maximum of six students to one instructor (6:1). Or a maximum of ten students to one instructor (10:1 max) with the use of active status PFI Assistant Intermediate Freediver Instructors.

3.4 Student Prerequisites

1. Minimum age of 12 for Junior Breath Hold Survival or 16 years for full Breath Hold Survival
2. Competent swimming skills

3.5 Course Structure and Duration

In Water Execution

1. Four dive sessions are required with complete briefs and debriefs by the instructor, 2 of which must be confined water, 1 open water
2. Complete at least 6 free immersion warmup freedives. One freedive must be deeper than 20 meters / 66 feet but not deeper than 40 meters /132ft; in open water conditions without hypoxic or barotrauma symptoms
3. Complete at least 6 freedives using free immersion descent, constant weight no fins ascent. One must be deeper than 20 meters/66 feet, but not deeper than 40 meters/132 feet, in open water conditions without hypoxic or barotrauma symptoms.
4. One static apnea must be at least 3:00 in duration without hypoxic symptoms

Course Structure

1. PFI allows instructors to structure courses according to the number of students participating and their skill level

3.6 Administrative Requirements

Administrative Tasks:

1. Collect the course fees from all the students
2. Ensure that the students have the required equipment
3. Communicate the schedule to the students
4. Have the students complete the:
 - a. *PFI General Liability Release and Express Assumption of Risk Form*
 - b. *PFI Medical History Form*

Upon successful completion of this specialty the instructor must:

1. Issue the appropriate PFI certification by registering the students online through member's area of the PFI website or submitting the *PFI Student Registration* form to PFI Headquarters. A Breath Hold Survival Pool Only certification may be issued.

3.7 Training Material

Required Material:

1. *PFI Intermediate Freediver* Manual and KQ Review Booklet (or eLearning course)
2. *PFI Intermediate Freediver* Instructor Guide

Optional Materials:

1. *PFI Intermediate Freediver* or *Breath Hold Survival* PowerPoint Presentation

3.8 Required Equipment

Basic freediver equipment as described in section three of this manual, and any other equipment that may apply to the chosen specialties

3.9 Approved Outline

The material covered must be an overview and introduction. This is just an outline and is not intended to be taught in any particular order.

1. Introduction
 - a. Participant and staff Introductions
 - b. Course overview
 - c. Course Schedule
 - d. Paperwork and prerequisites
 - e. Equipment requirements
 - f. Classroom, confined and open water protocols and conduct
 - g. Safety / supervision practices
 - h. Prep for Equalizing
2. Safety & Problem Management
 - a. Breath-Hold Supervision: General
 - b. Breath-Hold Supervision: Depth
 - c. Breath-Hold Supervision: Static
 - d. Breath-Hold Supervision: Dynamic
 - e. Near Blackouts (Loss of Motor Control, LMC) & Blackouts (BO)
 - f. Near Blackout (LMC) Signs vs. Symptoms
 - g. Assisting Near Blackouts (LMC)
 - h. Blackout (BO) Signs vs. Symptoms
 - i. Assisting a blackout at the surface
 - j. Assisting an ascending diver blacking out

- k. Protective Reflexes
- l. Recovery Breathing (RB)
- m. Recovery Breathing (Pool & Emergencies)
- n. Recovery Breathing (Depths 25m/82'+)
- o. Self-Rescue Skills - Bailout
- p. Asking for Assistance
- q. Buddy Separation
- 3. Equalization Techniques
 - a. What is equalization:
 - b. Boyle's Law – Pressure vs. Volume
 - c. Equalize every 1-1.5m/3-5 ft.
 - d. Three techniques of equalizing
 - e. Which method are you using?
 - f. Equalizing problems
 - g. Frenzel technique
- 4. Breathing Techniques
 - a. Respiratory muscles
 - b. Breathing techniques
 - c. Specialty breathing techniques
- 5. Physics of Breath-Holding
 - a. Depth and pressure
 - b. Pressure and volume
 - c. Partial pressures
 - d. Buoyancy
 - e. Streamlining and hydrodynamics
- 6. Physiology of Breath-Holding
 - a. Basic Breath-Holding Physiology
 - b. Nervous system
 - c. Circulatory system
 - d. Lung volumes and freediving
 - e. What makes us breathe
- 7. Types of blackout
- 8. Aquatic adaptations
 - a. Mammalian diving reflex
 - b. Blood shunting
 - c. Bradycardia – slowing of the heart
 - d. Splenic contractions
 - e. Thoracic filling
- 9. Effects of immersion

10. Pressure and body airspaces
11. Barotraumas – pressure related injuries and treatment
12. Physiological stresses of Breath-Hold
 - a. Hypoxia
 - b. Hypercapnia
 - c. Hypocapnia
13. Fuel & Diet for Breath-Hold
14. Psychology of Breath-Holding
 - a. Anxiety Stimulus
15. Training Exercises
 - a. Freediving Breathing Exercises
 - b. Dry Land Training
 - c. Pool Training
 - d. Open Water Training

3.10 Required Skill Performance and Graduation Requirements

Students are required to successfully complete the following:

Confined Water:

1. Watermanship & Stamina
 - a. Continuous swim
 - b. 200-meter continuous swim without aids
 - i. If using a wetsuit, the freediver must demonstrate surface collarbone neutrally buoyancy
 - ii. Mask or goggles can be used
 - c. Tread water for 10 minutes without floatation with both airways out of the water
2. Static apnea
 - a. As a breath-holder student must complete a minimum of 4 consecutive static breath-holds
 - b. Complete a minimum 3:00 static apnea without any signs or symptoms of hypoxia
 - c. As a safety student must complete:
 - i. Buddy supervision
 - ii. Timing and safety signals
 - iii. Recovery breathing and support assistance

- d. Exhalation Static apnea
 - i. Students will complete 3 exhalation statics of short duration using a 1st level exhalation
 - ii. 2-minute breathe – 1-minute static, 2-minute breathe – 1:30 static, 3-minute – 2-minute static
 - iii. Signals will start at 0:15 and be given every 15 seconds
 - iv. Reinforce that no bubbles will be seen if a blackout occurs
- 3. Duress Static
 - a. Series of 4 x 1-minute statics: 1 minute breathe – 1-minute hold, 45 seconds breathe – 1-minute, 30 seconds breathe – 1-minute, 15 seconds – 1-minute
 - b. Students work in teams of 3 to 4
 - i. Buddy A – breath holder
 - ii. Buddy B – safety
 - iii. Buddy C/D – wave
 - c. Buddy A will protect their airway and head while relaxing the rest of their body
 - d. Buddy B will have all equipment in place watching Buddy A for any signals and immediately say “UP UP UP” if one is given
 - e. Buddy C will splash water at the face of Buddy A while Buddy A breathes up, then during the breath hold they will roll, bounce, spin, etc Buddy A, starting mildly during the first breath hold then increase intensity with each breath hold
- 4. Dynamic apnea (optional)
 - a. As a breath-holder student must complete a minimum of 3 dynamic performances
 - b. Streamlining and kicks appropriate for dynamic no fins
 - c. As a safety student:
 - i. Surface safety with floatation
 - ii. Recovery breathing and surface support assistance
- 5. Negative Pressure Dives
 - a. Students work as Buddy A and Buddy B; switching back and forth after each dive
 - b. Students must complete 6 negative pressure dives
 - i. 1 – 2; first level exhalation
 - ii. 3 – 4; second level exhalation
 - iii. 5 – 6; third level exhalation with mouth fill
 - c. Complete at a minimum, first level exhalation with proper equalization at a minimum depth of 3m/10ft

- d. Complete all dives as follows:
 - i. Employ surface pre-equalizations; ½ way down and once on bottom
 - ii. Hand on mask to keep mask in place and equalizing
 - iii. Free hand may be used for additional weight to assist with descent
 - iv. Dives may be performed feet down with additional weight
 - v. Perform recovery breathing
- e. As Safety provide supervision and assistance with recovery breathing.

Open Water (optional for pool only certification):

- 1. Free Immersion Warm-up Dives
 - a. Minimum six free immersion warm-up dives
 - i. May be used to complete other skills such as 'self-emergency ascent procedures'
 - ii. Reaching a minimum of 20m/66ft without any hypoxic symptoms or barotraumas
 - iii. A negative pressure dive with 1st level exhalation to a max 10m/33ft with 'touch 'n go' may be introduced as last warm-up procedure on ocean #2
- 2. Free Immersion descent, Constant Weight No Fins ascent
 - a. Six target breath hold dives
 - i. Complete a minimum of six (6), free immersion descent constant ballast no fins style freedives
 - ii. Reach a minimum depth of 20m/66ft without hypoxic symptoms or barotraumas

Graduation Requirements

- 1. Enter with technique appropriate for the environment
- 2. Proper Weighting and Buoyancy
 - a. Surface neutral buoyancy check and positive buoyancy exhalation check
 - b. 5m/16ft positive buoyancy exhalation, 10m/33ft neutral buoyancy check (n/a pool only certification)
- 3. Equalization of Ears, Sinuses and Mask
- 4. Surface Dives
- 5. Surface breathing and preparation

6. Self-Emergency Ascent Procedures
 - a. Flooded mask ascent
 - i. Full flood in shallow water and wait 10 seconds before ascending (pool only)
 - ii. Full flood at 10m/33ft and wait 10 seconds before ascending (required for full certification)
 - b. Weight belt removal and ascent
 - i. Remove and ascend from shallow water (pool only)
 - ii. Remove and ascend from 10m/33ft for full certification
7. Emergency Rescue & Problem Management
 - a. Assist with recovery breathing as a safety
 - b. Assist with a simulated surface LMC as a safety
 - c. Respond to a simulated blackout at the surface
 - d. Assist with a simulated underwater blackout

4. Diver Propulsion Vehicle (DPV) Freediver

4.1 Introduction

This course is designed to train freedivers in the use of a diver propulsion vehicle (DPV) and familiarizes them with the skills, knowledge, planning, organization, procedures, techniques, problems, and hazards of using a DPV in a non-overhead environment. Students under the age of 18 are issued a Junior DPV Freediver and are required to freedive under the supervision of a parent or guardian. DPV Freedivers are not certified to dive deeper than their current freediver level certification.

4.2 Who May Teach

An active PFI Instructor that has been certified to teach this specialty

4.3 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to ensure comprehensive and complete training of subject matter

Confined Water (swimming pool-like conditions)

1. N/A

Open Water (ocean, lake, quarry, spring, river or estuary)

1. A maximum of 2 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate

4.4 Student Prerequisites

1. PFI Freediver or equivalent
2. Minimum age 18, 16 with parent or guardian present

4.5 Course Structure and Duration

Open Water Execution

1. Two dive sessions are required with complete briefs and debriefs by the instructor
2. Freedive plan must include surface interval calculations, direct supervision, etc. to be figured out and logged

Course Structure

1. PFI allows instructors to structure courses according to the number of students participating and their skill level

4.6 Administrative Requirements

Administrative Tasks:

1. Collect the course fees from all the students
2. Ensure that the students have the required equipment
3. Communicate the schedule to the students
4. Have the students complete the:
 - a. *PFI General Liability Release and Express Assumption of Risk* Form
 - b. *PFI Medical History* Form

Upon successful completion of this specialty the instructor must:

1. Issue the appropriate PFI certification by registering the students online through member's area of the PFI website or submitting the *PFI Student Registration* Form to PFI Headquarters

4.7 Required Equipment

1. Basic freediver equipment as described in section three of this manual
2. Diver Propulsion Vehicle
3. Harness for DPV

4.8 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

1. Physics
 - a. Pressure review
 - b. Review of hypoxia, thoracic squeezes, and decompression theory
 - c. Review of ascents/descents with regards to pressure changes
 - d. Review surface interval calculations
 - e. Diver propulsion vehicle (DPV) considerations
2. Advantages of Using a Diver Propulsion Vehicle (DPV)
 - a. Features to consider when choosing a DPV
 - b. Types of DPVs
 - c. Accessories
3. Overview of DPVs Used for This Course
 - a. Maximizing battery life
 - b. Battery safety tips
 - c. Maintenance; storing and transporting
 - d. Freedive planning and safety considerations
 - e. Hypoxia and decompression
 - f. Battery endurance
 - g. Determining the turn-around time point
4. Safety Considerations
 - a. Vehicle failure
 - b. Depth and descent/ascent considerations
 - c. Avoiding propeller entanglements and obstructions
 - d. Never going farther than you can return without the DPV
5. Using the Buddy System
6. Diver Propulsion Vehicle (DPV) Use
 - a. Pre-dive preparation
 - b. Water entries
 - c. DPV use at the surface
 - d. Riding tandem
 - e. Orientation and descent procedures
 - f. Ascent and exit procedures
 - g. Post dive maintenance

4.9 Required Skill Performance and Graduation Requirements

Students are required to successfully complete the following:

1. Open Water Freedive Session 1
 - a. Freedive plan
 - b. Proper entry
 - c. Surface use of DPV
 - d. Descent with DPV
 - e. Monitor DPV and buddy
 - f. Ascent and exit
 - g. Care of equipment
 - h. Log freedives
2. Open Water Freedive Session 2
 - a. Freedive plan
 - b. Entry and descent
 - c. Underwater tour
 - d. Ascent and exit
 - e. Care of equipment
 - f. Log freedives

5. Freediver Marine Ecosystems Awareness

5.1 Introduction

Freedivers have a vested interest in protecting the marine environment. In many cases, freedivers do not have environmental information about the local sites. This specialty is designed to increase the freediver's understanding of marine and freshwater environments, the problems facing these unique ecosystems, and the role that freedivers play in protecting our marine resources.

5.2 Who May Teach

An active PFI Instructor that has been certified to teach this specialty

5.3 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to insure comprehensive and complete training of subject matter

Confined Water (swimming pool-like conditions)

1. N/A

Open Water (ocean, lake, quarry, spring, river or estuary):

1. A maximum of 6 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. The instructor has the option of adding 4 more students with the assistance of an active assistant instructor
3. The total number of students an instructor may have in the water is 10 with the assistance of active assistant instructors

5.4 Student Prerequisites

1. PFI Freediver, PFI Junior Freediver, or equivalent
2. Minimum age 18, 10 with parental consent

5.5 Course Structure and Duration

Open Water Execution

1. Two dive sessions are required with complete briefs and debriefs by the instructor
2. Freedive plan must include surface interval calculation, direct supervision procedures, etc. to be figured out and logged

Course Structure

1. PFI allows instructors to structure courses according to the number of students participating and their skill level

5.6 Administrative Requirements

Administrative Tasks:

1. Collect the course fees from all the students
2. Ensure that the students have the required equipment
3. Communicate the schedule to the students
4. Have the students complete the:
 - a. *PFI General Liability Release and Express Assumption of Risk* Form
 - b. *PFI Medical History* Form

Upon successful completion of this specialty the instructor must:

1. Issue the appropriate PFI certification by registering the students online through member's area of the PFI website or submitting the *PFI Student Registration* Form to PFI Headquarters

5.7 Required Equipment

1. Basic freediver equipment as described in section three of this manual
2. A marine life identification guide
3. Diver's slate

5.8 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

1. Physical Attributes
 - a. Temperature and thermoclines
 - b. Salinity and halocline
 - c. Dissolved gases
 - d. Light, as it applies to photosynthesis
 - e. Nutrient circulation
 - f. Waves and tides
 - g. Currents and nutrient cycling
2. Topographical Features
3. Marine Organisms
 - a. Plankton
 - i. Zooplankton
 - ii. Phytoplankton
 - b. Aquatic plants
 - i. Types of algae
 - ii. Seed plants
 - iii. Specific local plant life
 - c. Aquatic animals
 - i. Sponges
 - ii. Cnidarians
 - iii. Mollusks
 - iv. Arthropods
 - v. Echinoderms
 - vi. Chordates
 - d. Specific local animals
 - e. Aquatic food webs
 - f. Behavioral changes due to daily cycle
4. Ecosystems
 - a. Tropical reef
 - b. Temperate
 - c. Freshwater
5. Environmentally Friendly Freediving Techniques
 - a. Buoyancy control
 - b. Kick technique
 - c. Local considerations

6. Issues Facing Marine Ecosystems
 - a. Issues of local interest
 - b. Global habitat destruction and pollution
 - c. Overfishing
7. Coral Bleaching
8. Diver Animal Interactions
 - a. Intrusive
 - b. Non-intrusive
 - c. Feeding
 - d. Treating marine life injuries
9. Observation Techniques
 - a. Grids
 - b. Passive observation
10. Collection Methods

5.9 Required Skill Performance and Graduation Requirements

Freedive sessions must be completed at 2 different sites or at different times of the day. Students are required to successfully complete the following:

1. Open Water Freedive session 1
 - a. Demonstrate buoyancy control
 - b. Make general observations
 - i. Location
 - ii. Bottom composition
 - iii. Marine life
 - iv. Special characteristics
 - v. Indications of human impact
 - c. Grid observations
 - i. Make two separate sets of grid observations during the freedive session
 - ii. Describe all marine life for later identification
 - iii. Record behavior
 - d. Log freedives

2. Open Water Freedive Session 2

- a. Complete this freedive session at a different site or time of day than freedive session 1
- b. General Observations
- c. Same as open water session 1
- d. Specific observations
- e. Same as open water session 1
- f. Site debrief
- g. Compare and contrast sites
- h. Discuss the effect of human impacts
- i. Discuss ways to minimize human impact
- j. Log freedives

6. Reef Spearfishing and Collecting Freediver

6.1 Introduction

The purpose of this specialty is to actively allow the student to engage the collection of certain marine objects and to demonstrate and explain the benefits, skills, techniques, and necessary rules of underwater hunting on or around structure or terrain. Stress must be placed on prudent and conservative techniques of both aspects, as well as safety and problem management.

6.2 Who May Teach

An active PFI Instructor that has been certified at the freediver level in this course and has been certified to teach this specialty

6.3 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to insure comprehensive and complete training.

Confined Water (swimming pool-like conditions)

1. N/A

Open Water (ocean, lake, quarry, spring, river or estuary)

1. A maximum of 6 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. The instructor has the option of adding 4 more students with the assistance of an active assistant instructor
3. The total number of students an instructor may have in the water is 10 with the assistance of active assistant instructors

6.4 Student Prerequisites

1. PFI Freediver, PFI Junior Freediver or equivalent
2. Minimum age 18, 10 with parental consent

6.5 Course Structure and Duration

Open Water Execution

1. One freedive session is required with complete briefs and debriefs by the instructor with an optional second session with collection of fish/invertebrates allowed.
2. Freedive plan must include surface interval calculation, direct supervision procedures, etc. to be figured out and logged

Course Structure

1. PFI allows instructors to structure courses according to the number of students participating and their skill level

6.6 Administrative Requirements

Administrative Tasks:

1. Collect the course fees from all the students
2. Ensure that the students have the required equipment
3. Communicate the schedule to the students
4. Have the students complete the:
 - a. *PFI General Liability Release and Express Assumption of Risk Form*
 - b. *PFI Medical History Form*

Upon successful completion of this specialty the instructor must:

1. Issue the appropriate PFI certification by registering the students online through member's area of the PFI website or submitting the *PFI Student Registration Form* to PFI Headquarters

6.7 Required Equipment

1. Basic freediving equipment as described in section three of this manual

6.8 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

1. Spearfishing and Collecting Ethics and In-born Hunting
 - a. Laws and spearfishing ethics and trends
 - i. Why do we spearfish
 - ii. Non-spearing lawmakers
 - iii. Public perception
 - iv. Knowing local laws
 - b. Memory recall “the hunt”
2. Safety & Problem Management in Reef Spearfishing
 - a. Freediving direct supervision
 - b. Speargun handling values
 - i. Finger off the trigger
 - ii. Know what is beyond your target
 - iii. Muzzle awareness
 - iv. Gun is always loaded
 - v. Entering and exiting the water with verbal communication
 - c. Location safety and freedive safety plan
 - i. Currents
 - ii. Entry and exit
 - iii. Shore buddy
 - iv. Freedive session plan
 - d. Loss of Motor Control and Blackouts
3. Reef Spearfishing Gear and Rigging
 - a. Types
 - b. Length
 - c. Rigging
 - d. Maintenance
4. Reef Spearfishing and Collecting Techniques
 - a. Types of fish
 - b. Body positioning and body language
 - c. Shore freedives vs. offshore
 - d. Stealth hunting - Aspetto
 - e. Ambush hunting
 - f. Structures – safety and problem management
 - g. Target shot
5. Caring for your catch

6.9 Required Skill Performance and Graduation Requirements

Students are required to successfully complete the following:

In-Water Session (Optional open water session 2 may allow using techniques learned to attempt to collect under the guidance of the instructor)

1. Entering and Exiting the Water
 - a. Muzzle awareness
 - b. Three-point supervision
 - c. Moving with buddy
 - d. LMC & Blackout
2. Loading and Unloading
3. Surface Entries
 - a. Surface breathing and preparation
 - b. Remove snorkel
 - c. Demonstrated adapted entry suitable for type of hunt and environment
4. Simulated Reef Hunt Scenarios
 - a. Target practice where allowable
5. Safety and Problem Management with Spearfishing and Collecting Equipment
6. After freedive session care of equipment and catch
7. Log freedive session

7. Ocean Spearfishing Freediver

7.1 Introduction

The purpose of this specialty is to actively allow the student to engage the collection of certain marine objects and to demonstrate and explain the benefits, skills, techniques, and necessary rules of underwater hunting in open ocean. Stress must be placed on prudent and conservative techniques of both aspects, as well as safety and problem management.

7.2 Who May Teach

An active PFI Instructor that has been certified at the freediver level in this course and has been certified to teach this specialty

7.3 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to insure comprehensive and complete training.

Confined Water (swimming pool-like conditions)

1. A maximum of 8 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. The instructor has the option of adding 4 more students with the assistance of an active assistant instructor
3. The total number of students an instructor may have in confined water is 12 with assistance of active assistant instructors.

Open Water (ocean, lake, quarry, spring, river or estuary)

1. A maximum of 6 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. The instructor has the option of adding 4 more students with the assistance of an active assistant instructor
3. The total number of students an instructor may have in open water is 10 with the assistance of active assistant instructors

7.4 Student Prerequisites

1. PFI Freediver, PFI Junior Freediver or equivalent
2. Minimum age 18, 10 with parental consent

7.5 Course Structure and Duration

In Water Execution

1. One freedive session is required with complete briefs and debriefs by the instructor with an optional second session with collection of fish/invertebrates allowed.
2. Freedive plan must include surface interval calculation, direct supervision procedures, etc. to be figured out and logged

Course Structure

1. PFI allows instructors to structure courses according to the number of students participating and their skill level

7.6 Administrative Requirements

Administrative Tasks:

1. Collect the course fees from all the students
2. Ensure that the students have the required equipment
3. Communicate the schedule to the students
4. Have the students complete the:
 - a. *PFI General Liability Release and Express Assumption of Risk Form*
 - b. *PFI Medical History Form*

Upon successful completion of this specialty the instructor must:

1. Issue the appropriate PFI certification by registering the students online through member's area of the PFI website or submitting the *PFI Student Registration Form* to PFI Headquarters

7.7 Required Equipment

1. Basic freediving equipment as described in section three of this manual

7.8 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

1. Introduction
 - a. Participant and Staff Overview
 - b. Course Overview
 - c. Paperwork and Prerequisites
 - d. Equipment Requirements and Check
 - e. Classroom, Confined and Open Water Protocols and Conduct
 - f. Safety/Supervision Practices
2. Spearfishing Ethics and in-born hunting
 - a. Laws and Spearfishing Ethics and Trends
 - i. Why do you spearfish
 - ii. Non-Spearing lawmakers
 - iii. Public Perception
 - b. Memory Re-Call “The Hunt”
3. Safety & Problem Management in Ocean Spearfishing
 - a. Freediving Supervision
 - i. One buddy up , one buddy down
 - ii. Arms reach distance
 - iii. Wait 30 seconds
 - iv. Are you O.K.
 - b. Speargun Handling values
 - i. Finger off the trigger
 - ii. Know what is beyond your target
 - iii. Muzzle awareness
 - iv. Gun is always loaded
 - v. Entry and exiting water with verbal confirmation
 - c. Location Safety and Dive Safety Plan
 - i. Currents
 - ii. Entry and Exit
 - iii. Shore Buddy
 - iv. Dive Plan
 - d. LMC and Blackouts
4. Ocean Spearfishing Gear and Rigging
 - a. Spearguns for Ocean hunting
 - i. Types
 - ii. Length
 - iii. Rigging
 - iv. Maintenance

- b. Polespears and Slings for Ocean Hunting
 - i. Type
 - ii. Length
 - iii. Rigging
 - iv. Maintenance
- 5. Ocean Hunting and Techniques
 - a. Types of Fish
 - b. Body Positioning & Language
 - c. Blue Water
 - d. Stealth Hunting-Aspetto
 - e. Ambush Hunting
 - f. Bluewater-safety and problem management
 - g. Target shot
- 6. Caring for your fish

7.9 Required Skill Performance and Graduation Requirements

Students are required to successfully complete the following:

In-Water Session (Optional open water session 2 may allow using techniques learned to attempt to collect under the guidance of the instructor)

- 1. Entering and Exiting the Water
 - a. Muzzle awareness
 - b. Three-point supervision
 - c. Moving with buddy
 - d. LMC & Blackout
- 2. Loading and Unloading
- 3. Surface Entries
 - a. Surface breathing and preparation
 - b. Remove snorkel
 - c. Demonstrated adapted entry suitable for type of hunt and environment
- 4. Simulated Ocean Hunt Scenarios
 - a. Target practice where allowable
- 5. Safety and Problem Management with Spearfishing Equipment
- 6. After freedive session care of equipment and catch
- 7. Log freedive session

8. Freediving Photographer

8.1 Introduction

This course is designed to introduce freedivers to the equipment, techniques, and procedures to take freediving photographs and allow the student to experience and discuss many areas of interest to the freediving photographer

8.2 Who May Teach

An active PFI Instructor that has been certified to teach this specialty

8.3 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to ensure comprehensive and complete training of subject matter

Confined Water (swimming pool-like conditions)

1. N/A

Open Water (ocean, lake, quarry, spring, river or estuary)

1. A maximum of 6 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. The instructor has the option of adding 4 more students with the assistance of an active assistant instructor
3. The total number of students an instructor may have in the water is 10 with the assistance of active assistant instructors

8.4 Student Prerequisites

1. PFI Freediver, PFI Junior Freediver, or equivalent
2. Minimum age 18, 10 with parental consent

8.5 Course Structure and Duration

1. Open Water Execution
2. Two freedive sessions are required with complete briefs and debriefs by the instructor
3. Freedive plan must include surface interval calculation, direct supervision procedures, etc. to be figured out and logged

Course Structure

1. PFI allows instructors to structure courses according to the number of students participating and their skill level

8.6 Administrative Requirements

Administrative Tasks:

1. Collect the course fees from all the students
2. Ensure that the students have the required equipment
3. Communicate the schedule to the students
4. Have the students complete the:
 - a. *PFI General Liability Release and Express Assumption of Risk* Form
 - b. *PFI Medical History* Form

Upon successful completion of this specialty the instructor must:

1. Issue the appropriate PFI certification by registering the students online through member's area of the PFI website or submitting the *PFI Student Registration* Form to PFI Headquarters

8.7 Required Equipment

1. Basic freediver equipment as described in section three of this manual
2. Underwater photography equipment applicable to course structure and activities

8.8 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

1. Underwater Light
 - a. Variation of light under water
 - b. Time for best available light photography
 - c. Color correction filtering for depth
 - d. Strobos vs Video Light
 - e. Selective color absorption of light
 - f. Available light and strobe considerations
 - g. Possible backscatter issues
 - h. Additional drag while freediving

2. Film Considerations
 - a. Color balance
 - b. Grain
 - c. Resolving power
 - d. Latitude
3. Contrast
4. Color reversal
5. Digital
 - a. Capture Media
 - b. Memory Technology
 - c. Printing
 - d. Post Dive Review ability
6. TV vs Computer vs Camera
7. Camera Use in Association with freediving
 - a. Types of cameras
 - i. Housed style
 - ii. Integral unit
 - b. Handling of equipment
 - c. Camera settings
 - i. Auto vs Manual
 - ii. Optional settings (as required)
8. Photographic Subjects
 - a. Composition of scene
 - b. Use of light enhancement
 - c. Subject ease
 - d. Use of models
 - e. Marine Conservation awareness.
9. Care of Equipment
 - a. Saltwater care
 - b. Fresh water care
 - c. Care of the flooded-housed camera
10. Use of Color Positive Films
 - a. Ease of development (E—6 processing)
 - b. Mounting
11. Digital Software
 - a. Downloading images
 - b. Photo Storage
 - c. Photo Manipulation
 - d. Printing & Mounting

8.9 Required Skill Performance and Graduation Requirements

Students are required to successfully complete the following:

1. Open Water Freedive Session 1
 - a. Local freedive site to familiarize the student with the equipment and handling
 - b. Composition to be considered at a beginning point of view
 - c. Plan freedive session
 - d. Suitable Entry (care to be taken with camera & additional equipment; these may be passed to freediver once in the water in conditions & environment allows it)
 - e. Situational awareness (depth, time, hypoxic symptoms, and buddy awareness)
 - f. Photography of subjects as planned.
 - g. Conservational awareness
 - h. Exit
 - i. Care of equipment
 - j. Log freedives
2. Open Water Freedive Session 2
 - a. Choose a freedive site to give the student more application with
 - i. Marine subjects.
 - ii. Additional light considerations.
 - iii. Wide coloring
 - b. Stress on safety while within the water and attaining good quality subjects.
 - c. Both still and moving life subjects shown if possible
 - d. Conduct freedive session as per above.

A post-freedive session should be scheduled for students to review their photographic images and develop self-evaluation techniques.

9. Freediving Videographer

9.1 Introduction

Most freedivers have a desire to bring home the sights and sounds of being underwater. Underwater video makes it possible to save our underwater experiences and share them with others. Shooting underwater video is fun, exciting, and easy to learn. This course is designed to introduce freedivers to the equipment, techniques, and procedures needed to plan and shoot underwater video with maximum safety.

9.2 Who May Teach

An active PFI Instructor that has been certified to teach this specialty

9.3 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to ensure comprehensive and complete training of the subject matter

Confined Water (swimming pool-like conditions)

1. N/A

Open Water (ocean, lake, quarry, spring, river or estuary)

1. A maximum of 6 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. The instructor has the option of adding 4 more students with the assistance of an active assistant instructor
3. The total number of students an instructor may have in the water is 10 with the assistance of 2 active assistant instructors

9.4 Student Prerequisites

1. PFI Freediver, PFI Junior Freediver, or equivalent
2. Minimum age 18, 10 with parental consent

9.5 Course Structure and Duration

Open Water Execution

1. Two freedive sessions are required with complete briefs and debriefs by the instructor
2. Plan freedive session must include surface interval, direct supervision procedures, etc. to be figured out and logged

Course Structure

1. PFI allows instructors to structure courses according to the number of students participating and their skill level

9.6 Administrative Requirements

Administrative Tasks:

1. Collect the course fees from all the students
2. Ensure that the students have the required equipment
3. Communicate the schedule to the students
4. Have the students complete the:
 - a. *PFI General Liability Release and Express Assumption of Risk* Form
 - b. *PFI Medical History* Form

Upon successful completion of this specialty the instructor must:

1. Issue the appropriate PFI certification by registering the students online through member's area of the PFI website or submitting the *PFI Student Registration* Form to PFI Headquarters

9.7 Required Equipment

1. Basic freediver equipment as described in section three of this manual
2. Video camera and underwater housing equipped for the video camera, optional equipment, underwater lighting system

9.8 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

1. Video Equipment
 - a. Video systems
 - b. Types of video formats
 - c. Video cameras
 - d. Video controls
 - e. Accessories
2. Underwater Video Housings
 - a. Types of housings
 - b. Housing controls
 - c. Features and benefits
 - d. Selecting housing
3. Recording Underwater
 - a. Dive planning
 - b. Setting the video and dive objective
 - c. Creating a storyboard
 - d. Safety concerns
4. Pre-dive Session Equipment Assembly
 - a. Setting the camera controls
 - b. Assembling the system
 - c. Checking for leaks
5. Video Camera Handling Techniques
 - a. Using the viewfinder
 - b. Point and shoot
6. Basic Techniques
 - a. Shot selection
 - b. Shot times
 - c. Putting shots in sequence
 - d. Approaching marine life
 - e. Cutting video shots
 - f. Surface water shots
 - g. Above water shots

7. Underwater Video Lighting
 - a. Natural light
 - b. Artificial light
 - c. Light systems and power supplies
 - d. Lights and filters
 - e. Additional drag to consider while freediving
8. Shooting Video at Night
 - a. Safety concerns
 - b. Entries and exits
 - c. Operating the camcorder and housing controls
 - d. Approaching marine life at night
9. Editing
 - a. Fundamentals of editing
 - b. Required equipment
 - c. Editing equipment configurations
 - d. Editing techniques
 - e. In-camera editing
10. Care and Maintenance
 - a. After each freedive session
 - b. Regular maintenance
 - c. Periodic maintenance
 - d. Storing underwater video systems
 - e. Caring for a flooded video camera / housing
11. Traveling with Underwater Equipment
 - a. Deciding what equipment to bring
 - b. Packing the equipment
 - c. Bringing underwater video equipment on boats
 - d. Flying with underwater video equipment
 - e. Renting equipment

9.9 Required Skill Performance and Graduation Requirements

Students are required to successfully complete the following:

1. Open Water Freedive Session 1
 - a. Plan freedive session
 - b. Set the video objective
 - c. Plan the sequence of shots
 - d. Review of procedures
 - e. Entry
 - f. Planned freedive session
 - g. Exit
 - h. Care of equipment
 - i. Log freedive session
2. Open Water Freedive Session 2
 - a. Plan freedive session
 - b. Review procedures
 - c. Entry
 - d. Planned freedive session
 - e. Exit
 - f. Care of equipment
 - g. Edit footage to follow story
 - h. Log freedive session

10. Wreck Freediver

10.1 Introduction

Wreck freediving can be one of the most exciting aspects of freediving, however every effort must be made to maximize safer freediving techniques. This course will discuss the equipment and techniques commonly employed while wreck freediving. This course is taught as a non-penetration, 2 dives required.

10.2 Who May Teach

An active PFI Instructor that has been certified to teach this specialty

10.3 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to insure comprehensive and complete training of subject matter

Confined Water (swimming pool-like conditions)

1. N/A

Open Water (ocean, lake, quarry, spring, river or estuary)

1. A maximum of 6 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate

10.4 Student Prerequisites

1. PFI Freediver, PFI Junior Freediver, or equivalent
2. Minimum age 18, 10 with parental consent
3. Freedivers must have an Intermediate certification in order to dive deeper than 20 meters / 66 feet in this course

10.5 Course Structure and Duration

Open Water Execution

1. Two freedive sessions are required for the course with complete briefs and debriefs by the instructor
2. Freedive plan must include surface interval calculations, direct supervision procedures, etc. will be figured and logged

Course Structure

1. PFI allows instructors to structure courses according to the number of students participating and their skill level

10.6 Administrative Requirements

1. Administrative Tasks:
2. Collect the course fees from all the students
3. Ensure that the students have the required equipment
4. Communicate the schedule to the students
5. Have the students complete the:
 - a. *PFI General Liability Release and Express Assumption of Risk* Form
 - b. *PFI Medical History* Form

Upon successful completion of this specialty the instructor must:

1. Issue the appropriate PFI certification by registering the students online through member's area of the PFI website or submitting the *PFI Student Registration* Form to PFI Headquarters

10.7 Training Material

Required Material:

10.8 Required Equipment

1. Basic freediving equipment as described in section three of this manual
2. Float and line
3. One audible and one visual signaling device

10.9 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

1. Motivating Statements
 - a. Why wreck freedive
 - b. Potential benefits
 - c. Beauty
 - d. Mysteriousness
 - e. One man's trash is another man's treasure
 - f. It's fun
2. Down lines and surface supports
 - a. Size
 - b. Material
 - c. Surface supports
 - i. Communications, when and if necessary
 - ii. Back-up procedures
3. Direct Supervision
 - a. Supervision with varied visibility
 - b. Float lines
 - c. Line signals
4. Navigation/Charting
 - a. Usage of the slate
 - i. Larger than normal
 - ii. Pre-dive marking
 - b. Pre-planning the dive using charts, other information
 - c. Directional determination
5. Disorientation
 - a. With/without buddy
 - b. Lost buddy
 - c. Light failure
 - d. Emergency procedures
6. Special Equipment
 - a. Lights
 - i. Primary and backup
 - ii. Size
 - iii. Burn time
 - iv. Usage
 - b. Knives and cutting devices

7. Limited Visibility Diving
 - a. Silt-out
 - b. Psychological considerations.
8. Light usage
 - a. Importance of light and backup
 - b. Dark vision, don't shine light in buddy's eyes
9. Life Lines and Reels
 - a. Type of line
 - b. Tie-offs
 - c. Directional markers
 - d. Line handling and reeling must be practiced on land prior to performing this skill underwater
10. Special Emergency Procedures
 - a. Safe Wreck
 - i. As normal, but with considerations for lack of free access to the surface in some cases
 - b. Hazardous or otherwise unsafe wrecks
 - i. Must avoid
 - ii. Overhead environments
 - iii. Don't enter doors blocked
 - iv. Entrance restrictions
11. Mapping the Wreck
 - a. Vertical
 - b. Horizontal
 - c. Feature Identification

10.10 Required Skill Performance and Graduation Requirements

Students are required to successfully complete the following. Dives 1 and 2 non-penetration are required for certification. In addition to dives 1 and 2, dives 3 is strictly optional for more experience.

1. Open Water Freedive Session 1
 - a. Plan freedive session
 - b. Familiarization with areas
 - c. Basic charting outside wreck
 - d. Usage of lines outside wreck, optional
 - e. Log freedive session

2. Open Water Freedive Session 2
 - a. Plan freedive session
 - b. Team complete mapping
 - c. Usage of lines outside wreck, optional
 - d. Log freedive session
3. Open Water Freedive Session 3 (Optional)
 - a. Plan freedive session
 - b. Review previous skills
 - c. Dive/explore as determined
 - d. Log freedive session

11. Mermaid Splash

11.1 Introduction

The Mermaid Splash Course is a beginner-level mermaid specialty designed to introduce participants to a mermaid experience by teaching basic mermaid skills, as well as introduce them to a new way to enjoy recreational water experiences in a non-threatening and fun environment.

11.2 Who May Teach

Any active PFI Instructor, SDI Open Water Instructor, SDI Assistant Instructor, or SDI Non-Diving Specialty Instructor that has been certified to teach this specialty

11.3 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to insure comprehensive and complete training of subject matter

Confined Water (swimming pool-like conditions)

1. A maximum of 8 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. The instructor has the option of adding 4 more students with the assistance of an active assistant instructor
3. The total number of students an instructor may have in the water is 12 with the assistance of active assistant instructors

Open Water (ocean, lake, quarry, spring, river or estuary)

1. N/A

11.4 Student Prerequisites

1. Minimum age 18, 6 with parental consent
2. Show comfort in water

11.5 Course Structure and Duration

Course Structure

1. In-water execution; this course is only conducted in confined water
2. Students must demonstrate skills necessary to swim successfully in a mermaid tail and remain in the water for 10 minutes.
3. All mermaid skills must be demonstrated during daylight hours.
4. PFI/SDI allows instructors to structure courses according to the number of students participating and their skill level.
5. The suggested number of training hours is 1.5 hours.
6. Max Depth 5m/15feet

11.6 Administrative Requirements

Administrative Tasks:

1. Collect the course fees from all the students
2. Ensure that the students have the required equipment
3. Communicate the schedule to the students
4. Have the students complete the:
 - a. *General Liability Release and Express Assumption of Risk* Form
 - b. *Medical History* Form

Upon successful completion of this specialty the instructor must:

1. Issue the appropriate PFI or SDI certification by registering the students online through member's area of the website or submitting the PFI or SDI *Student Registration* Form to Headquarters

11.7 Training Material

Required Material:

11.8 Required Equipment

1. Basic Mermaid equipment (fabric tail and monofin)
2. Mask and snorkel or goggles
3. Exposure protection

11.9 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

1. Safety
 - a. Adult Supervision, always swim with a trained buddy
 - b. Know where you are swimming/situational awareness
 - c. Swim with sound judgment, sober, and in good health
 - d. Know your fitness level and awareness of flexibility through stretching
 - e. Be mindful of those around you
 - f. Be mindful of the environment you are in
2. How to put on monofin and mermaid tail skin
 - a. Always put on tail at the water's edge
 - b. Put fin into the tail first
 - c. Place feet into the fin
 - d. Pull fabric over the legs
3. Use a controlled seated entry
4. Emergency tail release procedures
 - a. In case of an emergency, be able to quickly release the monofin by kicking feet out of pockets, to easily swim to safety/the surface
Larger than normal
5. Swimming in monofin
 - a. How to float on front, and flip onto back to rest and breathe
 - b. Surface Breathing Techniques
 - c. Dolphin Kick
 - i. Swimming with feet together inside of a monofin, the legs move in a synchronized motion originating at the hips
6. Duck Dive
7. Mermaid swimming skill development using dive toys

11.10 Required Skill Performance and Graduation Requirements

Students are required to successfully complete the following.

1. Complete the following without the use of floatation or swim aids (goggles/mask permitted)
 - a. Swim 15 meters/50 feet
 - b. Float comfortably on their back

- c. Float comfortably on their front, holding their breath for 15 seconds
 - d. Tread water for 1 minute
- 2. Properly prepare, put on, and adjust all mermaid equipment
- 3. Perform an emergency tail/monofin release while swimming in a monofin and full mermaid tail
- 4. Demonstrate good awareness of their environment
- 5. Safely conduct entries with their tail
- 6. Demonstrate comfortable floating and surface breathing
- 7. Proper dolphin kick in a monofin and full fabric tail.
- 8. Demonstrate mature and sound judgment concerning mermaid excursion planning and execution.

Upon successful completion of this course, graduates may:

- 1. Swim in a mermaid tail in conditions similar to training
- 2. Enroll in a PFI Aquatic Mermaid Course

12. Aquatic Mermaid

12.1 Introduction

The Aquatic Mermaid Specialty Course is an intermediate-level mermaid skills course designed to give students the necessary skills to safely swim in a mermaid tail in confined conditions similar to their training without the direct supervision of an instructor. This course paves the way to open discussion with students about expanding open water mermaid activities.

12.2 Who May Teach

An active PFI Instructor that has been certified to teach this specialty

12.3 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to insure comprehensive and complete training of subject matter

Confined Water (swimming pool-like conditions)

1. A maximum of 8 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. The instructor has the option of adding 4 more students with the assistance of an active assistant instructor
3. The total number of students an instructor may have in the water is 12 with the assistance of active assistant instructors

Open Water (ocean, lake, quarry, spring, river or estuary)

1. N/A

12.4 Student Prerequisites

1. Minimum age 18, 8 with parental consent
2. Display comfort in water

12.5 Course Structure and Duration

Course Structure

1. In-water execution; this course is only conducted in confined water
2. Students must demonstrate skills necessary to swim successfully in a mermaid tail and remain in the water for 20 minutes.
3. All mermaid skills must be demonstrated during daylight hours.
4. PFI allows instructors to structure courses according to the number of students participating and their skill level.
5. The suggested number of training hours is 4 hours.
6. Max Depth 5m/15feet

12.6 Administrative Requirements

Administrative Tasks:

1. Collect the course fees from all the students
2. Ensure that the students have the required equipment
3. Communicate the schedule to the students
4. Have the students complete the:
 - a. *PFI General Liability Release and Express Assumption of Risk Form*
 - b. *PFI Medical History Form*

Upon successful completion of this specialty the instructor must:

1. Issue the appropriate PFI certification by registering the students online through member's area of the PFI website or submitting the *PFI Student Registration Form* to PFI Headquarters

12.7 Training Material

Required Material:

12.8 Required Equipment

1. Basic mermaid equipment (fabric tail and monofin)
2. Mask and Snorkel
3. Exposure protection

12.9 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

1. Safety
 - a. Adult Supervision; Always swim with a buddy
 - b. Know where you are swimming/situational awareness
 - c. Swim with sound judgment, sober, and in good health
 - d. Know your fitness level and awareness of flexibility through stretching
 - e. Be mindful of those around you
 - f. Be mindful of the environment you are in
2. How to put on monofin and mermaid tail skin
 - a. Always put on tail at the water's edge
 - b. Put fin into the tail first
 - c. Place feet into the fin
 - d. Pull fabric over the legs
3. Use a controlled seated entry
4. Emergency tail release procedures
 - a. In case of an emergency, be able to quickly release the monofin by kicking feet out of pockets, to easily swim to safety/the surface.
5. Swimming in monofin and mermaid tail
 - a. How to float on front, and flip onto back to rest and breathe
 - b. Surface Breathing Techniques
 - c. Dolphin Kick
 - i. Front
 - ii. Back
 - iii. Side
6. Mermaid Tail Safety Skills
 - a. Safety skills
 - b. Tail removal
 - c. Buddy procedures
7. Duck Dive
8. Angled Descent
9. Handstands
10. Front/Back Flip
11. Rolls
12. Tail Flips

12.10 Required Skill Performance and Graduation Requirements

Students are required to successfully complete the following.

1. Complete the following without the use of floatation or swim aids (goggles/mask permitted)
 - a. Swim a distance of 200 yards
 - b. Float comfortably on their back
 - c. Float comfortably on their front, holding their breath for 15 seconds
 - d. Tread water for 10 minutes
 - e. Swim underwater 3 meters/10 feet in one breath
2. Properly prepare, put on, and adjust all mermaid equipment
3. Perform an emergency tail/monofin release while swimming in a monofin and full mermaid tail
4. Demonstrate good awareness of their environment
5. Safely conduct entries with their tail
6. Demonstrate comfortable floating and surface breathing
7. Proper dolphin kick in a monofin and full fabric tail.
8. Demonstrate proper buddy procedures

Upon successful completion of this course, graduates may:

1. Swim in a mermaid tail in conditions similar to training
2. Enroll in a PFI Reef Mermaid Course

13. Reef Mermaid

13.1 Introduction

The Reef Mermaid Specialty Course is an advanced mermaid skills specialty course designed to give students the necessary skills to safely swim in a mermaid tail in open water conditions similar to their training without the direct supervision of an instructor. This course paves the way to open discussion with students about expanding to freediving and/or SCUBA as recreational activities.

13.2 Who May Teach

An active PFI Instructor that has been certified to teach this specialty

13.3 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to insure comprehensive and complete training of subject matter

Confined Water (swimming pool-like conditions)

1. A maximum of 8 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. The instructor has the option of adding 4 more students with the assistance of an active assistant instructor
3. The total number of students an instructor may have in the water is 12 with the assistance of active assistant instructors

Open Water (ocean, lake, quarry, spring, river or estuary)

1. A maximum of 6 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. The instructor has the option of adding 4 more students with the assistance of an active assistant instructor
3. The total number of students an instructor may have in the water is 10 with the assistance of active assistant instructors

13.4 Student Prerequisites

1. Minimum age 18, 10 with parental consent
2. Certified PFI Aquatic Mermaid

13.5 Course Structure and Duration

Open Water Execution

1. This course should be conducted open water, or in addition to confined water, at the instructor's discretion

Course Structure

1. Students must demonstrate skills necessary to swim successfully in a mermaid tail and remain in the water for 20 minutes.
2. All mermaid skills must be demonstrated during daylight hours.
3. PFI allows instructors to structure courses according to the number of students participating and their skill level.
4. The suggested number of training hours is 4 hours.
5. Max Depth 5m/15feet

13.6 Administrative Requirements

Administrative Tasks:

1. Collect the course fees from all the students
2. Ensure that the students have the required equipment
3. Communicate the schedule to the students
4. Have the students complete the:
 - a. *PFI General Liability Release and Express Assumption of Risk Form*
 - b. *PFI Medical History Form*

Upon successful completion of this specialty the instructor must:

1. Issue the appropriate PFI certification by registering the students online through member's area of the PFI website or submitting the *PFI Student Registration Form* to PFI Headquarters

13.6.1. Training Material

Required Material:

13.7 Required Equipment

1. Basic mermaid equipment (fabric tail and monofin)
2. Mask and snorkel
3. Exposure protection

13.8 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

1. Safety
 - a. Adult Supervision; Always swim with a buddy
 - b. Know where you are swimming/situational awareness
 - c. Swim with sound judgment, sober, and in good health
 - d. Know your fitness level and awareness of flexibility through stretching
 - e. Be mindful of those around you
 - f. Be mindful of the environment you are in
2. How to put on monofin and mermaid tail skin
 - a. Always put on tail at the water's edge
 - b. Put fin into the tail first
 - c. Place feet into the fin
 - d. Pull fabric over the legs
3. Use a controlled seated entry
4. Emergency tail release procedures
 - a. In case of an emergency, be able to quickly release the monofin by kicking feet out of pockets, to easily swim to safety/the surface.
5. Review swimming in monofin and mermaid tail
6. Full mermaid tail swimming skills in open water
7. Basics of breath-hold diving
 - a. Equalizing and pressure
8. Safety
 - a. Loss of motor control
 - b. Blackout
 - c. Emergency procedures
9. Buoyancy
10. Mermaid tricks for open water
11. Duck dive
12. Gentle, angled descent
13. Underwater movement skills

13.9 Required Skill Performance and Graduation Requirements

Students are required to successfully complete the following.

1. Properly prepare, put on, and adjust all mermaid equipment
2. Perform an emergency tail/monofin release while swimming in a monofin and full mermaid tail
3. Demonstrate good awareness of their environment
4. Safely conduct entries with their tail
5. Demonstrate comfortable floating and surface breathing
6. Proper dolphin kick in a monofin and full fabric tail.
7. Demonstrate proper buddy procedures
8. Identify a mermaid swimming emergency
9. Perform an emergency rescue
10. Swim underwater 25 meters/82 feet on one breath with fins or monofin

Upon successful completion of this course, graduates may:

1. Swim in a mermaid tail in conditions similar to training
2. Enroll in a PFI Freediver Course or an SDI Open Water Diver Course

14. Technical Freediving

14.1 Introduction

Freediving like any other endeavor may mean finding the right tool for the job and technical freediving can be that tool for many freediving applications. Hard working environments such as safety freediving at competitions where repetitive all-day deeper depths can be performed to longer repetitive bottom times in short time frames such as filming or spearfishing. Exploratory/expedition style freediving can also benefit from the use of oxygenated breathing mixtures at the surface to increase safety, reduce decompression fatigue, help with longer bottom times or create a margin of safety to avoid problems with hypoxia and nitrogen related issues such as decompression sickness.

14.2 Who May Teach

An active PFI Intermediate Freediver Instructor that has been certified to teach this specialty

14.3 Student to Instructor Ratio

Academic

1. Unlimited, so long as adequate facility, supplies and time are provided to insure comprehensive and complete training of subject matter

Confined Water (swimming pool-like conditions)

1. A maximum of 8 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. The instructor has the option of adding 4 more students with the assistance of an active assistant instructor
3. The total number of students an instructor may have in the water is 12 with the assistance of active assistant instructors

Open Water (ocean, lake, quarry, spring, river or estuary)

1. A maximum of 6 students per instructor; it is the instructor's discretion to reduce this number as conditions dictate
2. The instructor has the option of adding 4 more students with the assistance of an active assistant instructor
3. The total number of students an instructor may have in the water is 10 with the assistance of active assistant instructors

Equipment

1. A maximum of 3 students per 1 Technical Freediving System for both high and low mixes

14.4 Student Prerequisites

1. PFI Intermediate Freediver or equivalent
2. Minimum age 18

14.5 Course Structure and Duration

Confined Water Execution

1. One confined water freedive session is required for the pool only certification with complete briefs and debriefs by the instructor (Optional if open water is conducted)
2. Freedive plan must include surface interval calculations, direct supervision procedures, gas mixes used, etc. will be figured and logged

Open Water Execution

1. One open water freedive session is required for the course with complete briefs and debriefs by the instructor (optional for Pool Only certification)
2. Freedive plan must include surface interval calculations, direct supervision procedures, gas mixes used, etc. will be figured and logged

Course Structure

1. PFI allows instructors to structure courses according to the number of students participating and their skill level

14.6 Administrative Requirements

Administrative Tasks:

1. Collect the course fees from all the students
2. Ensure that the students have the required equipment
3. Communicate the schedule to the students
4. Have the students complete the:
 - a. *PFI General Liability Release and Express Assumption of Risk Form*
 - b. *PFI Medical History Form*

Upon successful completion of this specialty the instructor must:

1. Issue the appropriate PFI certification by registering the students online through member's area of the PFI website or submitting the *PFI Student Registration Form* to PFI Headquarters

14.7 Training Material

Required Material:

1. *PFI Technical Freediver* Student Workbook
2. *PFI Technical Freediver* Instructor Guide
3. *PFI Technical Freediver* Final Exam

14.8 Required Equipment

1. Basic freediving equipment as described in section three of this manual plus an additional timing device for each student
2. Float and line
3. One audible and one visual signaling device
4. Scuba cylinders (one with a O₂ high mix 80%+, one with a low O₂ mix 28-34%) with first and second stage regulators

14.9 Approved Outline

Instructors may use any additional text or materials that they feel help present these topics. The following topics must be covered:

1. What is Technical Freediving?
2. History
3. Advantages / Disadvantages of Technical Freediving
 - a. Applications / Advantages
 - i. DCI Avoidance
 - ii. Reduced Decompression Stress
 - iii. Faster Recovery
 - iv. Accelerated Surface Intervals
 - v. Longer Bottom Times
 - vi. Conservatism
 - b. Hazards / Disadvantages
 - i. Lung Expansion Injuries Potential
 - ii. Contamination of breathing gas
 - iii. O₂ toxicity – CNS & Whole-body
 - iv. O₂ Handling
 - v. Decreased Depth-Advantage
 - vi. Possible DCI
 - vii. Increased Equipment Reliance

- 4. Physiology of Technical Freediving
 - a. Hypoxia > Normoxia > Hyperoxia
 - i. Hypoxia – decreased O₂ to the tissues
 - ii. Normoxia – normal O₂ to the tissues
 - iii. Hyperoxia – increased O₂ to the tissues
 - iv. Partial Pressures of Oxygen
 - b. Oxygen Toxicity
 - i. CNS Oxygen Toxicity
 - ii. NOAA O₂ Exposure Tables
 - iii. Signs and Symptoms
 - iv. First Aid and Treatment
 - v. Predisposing Factors
 - vi. Avoidance
 - vii. Maximum Operating Depths
 - c. CO₂ Narcosis
 - i. Hypocapnia
 - ii. Hypercapnia
 - iii. High O₂ exposure on CO₂ Chemoreceptors
 - iv. CO₂ Narcosis Signs & Symptoms
 - d. Decompression Illness and Decompression Stress
 - i. Partial Pressures and Nitrogen
 - ii. Decompression Illness vs Decompression Stress
 - iii. Type I and Type II DCI
 - iv. Signs and Symptoms
 - v. First Aid and Treatment
 - vi. Avoidance
 - e. Recovery and Lactic Acid
 - i. Decreased uptake time of O₂ saturation
 - ii. O₂ helps Lactic convert back into glucose via glycolysis in ATP
 - f. Surface Intervals (SI)
 - i. Reduced SI vs same but conservative
 - ii. Batle Tables
 - iii. PFI Surface Interval Tables
 - iv. Half normal SI times via 80% O₂ Acceleration
 - v. Equivalent Air Depth
 - vi. Off Oxygen – 2min

- g. Longer Bottom Times
 - i. Oxygen Hemoglobin Disassociation Curve
 - ii. Bohr Effect
 - iii. CO2 Blood Buffering
- h. Lung Over-pressurization
 - i. Pressure – Volume
 - ii. Breath-hold on scuba
 - iii. Signs and Symptoms
 - iv. First Aid and Treatment
 - v. Avoidance
- 5. Oxygen vs Nitrox: Types, Selection and Procedures
 - a. Oxygen
 - i. Types of Oxygen
 - ii. Types of Nitrox
 - b. Nitrox and Oxygen Selection for Technical Freediving
 - i. Pre-Breathe – longer bottom times
 - ii. Post-Breath – accelerated surface intervals
 - iii. Best Mix
 - iv. Multi Mixes
 - c. Common Procedures:
 - i. 5min Recovery (non-trained athletes)
 - ii. Low bottom mix:
 - iii. High surface mix:
 - iv. High / Low mix:
- 6. Equipment Parts, Assembly and Use for Technical Freediving
 - a. Tanks and Valves
 - i. Tanks – markings, inspection, testing, stickers
 - ii. Valves – types, O-rings, burst disk
 - iii. Storing / Transporting / Maintenance
 - b. Regulators and Pressure Gauge
 - i. 1st Stage & Assembly
 - ii. Pressure Gauges
 - iii. 2nd Stage Operation
 - iv. Storing / Transporting / Maintenance
 - c. Setting Up A Scuba System
 - d. Breathing Off Scuba Units
 - e. Oxygen Analyzers – Use and logging of mixes
 - f. Floats and Rigs
 - g. Nitrox and Oxygen Blending / Filling
 - h. Freedive Computers

7. Oxygen Handling and Servicing
 - a. Fire Triangle
 - i. O₂
 - ii. Fuel
 - iii. Ignition
 - b. O₂ Cleaned
 - i. Markings and stickers
 - c. O₂ Serviced
 - i. Markings and stickers
 - d. O₂ Regulator and Tank Handling
8. Procedures when Technical Freediving
 - a. Dive Session Gas Selection
 - i. Freedive profiles and objectives
 - ii. Application – single or multi use
 - iii. Selecting Best EAN_x / O₂
 - iv. Multi-Mixes
 - b. Scuba System Set-Up
 - i. Filling/Analyzing/Verification
 - ii. Technical Scuba System Assembly
 - iii. Tow-floats vs stationary
 - c. Gas Switching Procedures
 - i. On Gas
 - ii. Off Gas
 - iii. High Mix
 - iv. Low Mix
 - v. Switching Gases
 - vi. 2-5min Lung Flush

14.10 Required Skill Performance and Graduation Requirements

Students are required to successfully complete the following. Academic Workshop, Confined Water (required for Pool Only certification), and Open Water are required for full certification. Open Water is optional for Pool Only certification. Additional dives may occur for more experience.

1. Academic Workshop and Briefing
 - a. Plan freedive session, to include:
 - i. Objective and maximum depth/target time
 - ii. Single or multi-mix
 - iii. Surface support system
 - iv. Purchasing and checking labels
 - v. Analyze mixes
 1. Calibration
 2. Flow
 3. Verification and logging
 - b. Review and walk through safety procedures including
 - i. Rotation
 - ii. Recovery breathing
 - iii. Surface and underwater hypoxic procedures
 - iv. DCI Signs/Symptoms/Procedures
 - v. Setting up freedive computer alarms
 - c. Review and walk through gas switching procedures
 - i. Recovering using 'high mix'
 - ii. Safety 'high/low mix'
 - iii. Performer 'low mix' or '2-minute flush'
 - d. Complete dry max static (optional if confined water is used)
 - i. Two warmup statics breathing air
 - ii. 10 min breathe-up on 80% or higher mix
 - iii. Signals start at 2:00
 - iv. Proper recovery breathing then switch buddies
 - v. Disassemble and store equipment

2. Confined Water session (optional if open water is conducted)
 - a. Plan freedive session
 - b. Two warmup statics breathing air
 - c. 10 min breathe-up on 80% or higher mix
 - d. Signals start at 2:00
 - e. Proper recovery breathing then switch buddies
 - f. Disassemble and store equipment
 - g. Log freedive session
3. Open Water Freedive Session (optional for Pool Only)
 - a. Plan freedive session
 - b. Set up freedive platform/FRS and prepare technical freediving equipment
 - c. Complete at least 3 shallow warmup dives using air
 - d. Complete at least 3 depth freedives with bottom hang using 'low mix'
 - e. Complete at least 3 depth freedives with bottom hang using 'high mix' for surface interval acceleration
 - f. Complete at least 3 depth freedives with bottom hang using 'high mix' and 'low mix' procedures
 - g. Disassemble and store equipment
 - h. Log freedive session

