

16. Oxygen (O₂) Equipment Service Technician Instructor

16.1 Introduction

This is the instructor level certification course for instructors wishing to teach the TDI Oxygen (O₂) Service Technician course. This course involves the preparation of scuba equipment for use with diving gasses. The objective of this course is to train instructors to teach the proper preparation of scuba equipment for the use with diving gases. This course may be combined with the TDI Visual Inspection Procedures Instructor course at the discretion of the instructor trainer.

16.2 Qualifications of Graduates

Upon successful completion of this course, graduates may teach the TDI Oxygen (O₂) Service Technician course

16.3 Who May Teach

Any active TDI Equipment Service Technician Instructor Trainer may teach this course

16.4 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. N/A

16.5 Student Prerequisites

1. Minimum age 21
2. Certified as a TDI Service Technician
3. Provide proof of VIP certification or equivalency through a recognized agency
4. Provide proof of a repair certification or equivalency through a recognized agency

16.6 Course Structure and Duration

Open Water Execution

1. No dives are required

Course Structure

1. TDI allows instructor trainers to structure courses according to the number of students participating and their skill level; Visual inspection procedures (VIP) instructor may be combined with this course by oxygen service technician ITs who also hold the VIP IT rating

Duration

1. The minimum number of classroom and briefing hours is 6; 9 hours if combined with a VIP course

16.7 Administrative Requirements

The following are the administrative tasks:

1. Collect the course fees from all the instructor candidates
2. Ensure that the instructor candidates have the required equipment
3. Communicate the training schedule to the instructor candidates
4. Have the instructor candidates:
 - a. Complete the *TDI Liability Release and Express Assumption of Risk form*

Upon successful completion of the course the instructor trainer must:

1. Issue the appropriate TDI certification by submitting the appropriate TDI Dive Leader Registration form to TDI Headquarters

16.8 Required Equipment

The following are required for this course:

1. *TDI Equipment Service Technician Manual*
2. *TDI Equipment Service Technician Instructor Guide*
3. *TDI Standards and Procedures Manual*
4. *TDI Equipment Service Technician PowerPoint presentation*

16.9 Required Subject Areas

Instructor trainers must use the *TDI Equipment Service Technician Instructor Guide* and the current *TDI Standards and Procedures Manual*, but may also use any additional text or materials that they feel help present these topics. The following topics must be covered during this course:

1. The Responsibility of the Service Technician
2. Gases of Diving
 - a. Air
 - b. Oxygen (O₂)
 - c. Nitrogen
 - d. Helium
 - e. Other gases
3. Oxygen (O₂) Handling
 - a. Oxygen (O₂) hazards
 - b. Causes and prevention of oxygen (O₂) fires
 - c. Oxygen (O₂) system design
 - d. Local regulations for gas blending and handling
 - e. Oxygen (O₂) compatible systems components
4. Equipment Servicing
 - a. Materials for use in oxygen (O₂) cleaned systems
 - i. Lubricants
 - ii. O-rings
 - iii. Cleaning chemicals
 - b. Procedures for oxygen cleaning
 - i. Cylinders
 - ii. Valves
 - iii. Regulators
 - iv. System components
5. Gas Production
 - a. Equipment
 - i. Compressors
 - ii. Cylinders
 - iii. Filtration systems
 - iv. Analog Gauges
 - v. Digital Gauges

6. Mixing Techniques
 - a. General considerations
 - b. Continuous blending systems
 - c. De-nitrogenated air systems
 - d. Partial Pressure blending
 - i. Mathematics of partial pressure
 - ii. Mixing by weight, optional
7. Oxygen (O₂) Analyzing
 - a. Procedures
 - b. Oxygen (O₂) analyzers
8. Cylinder Handling and Sign Out

16.10 Required Skill Performance and Graduation Requirements

The following skills must be completed by the instructor candidate:

1. Satisfactorily complete the TDI Equipment Service Technician course written examination and be able to adequately explain each answer to a prospective student
2. Demonstrate mature, sound judgment concerning training, and execution
3. Demonstrate proficiency in the preparation of scuba equipment for the use with diving gases
4. Demonstrate proficiency in teaching the TDI Equipment Service Technician program
5. Present at least 1 graded presentation on an equipment service topic