

15. Gas Blender Instructor

15.1 Introduction

This is the instructor level certification course for instructors wishing to teach the TDI Nitrox Gas Blender program. The objective of this course is to train instructors to teach the proper techniques involved in blending nitrox gasses for use in scuba.

15.2 Qualifications of Graduates

Upon successful completion of this course, graduates may teach the TDI Nitrox Gas Blender course.

15.3 Who May Teach

Any active TDI Gas Blender Instructor Trainer may teach this course

15.4 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

15.5 Student Prerequisites

1. Minimum age 21
2. Certified TDI Nitrox Gas Blender or equivalent.

15.6 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

Duration

1. The minimum number of classroom and briefing hours is 6

15.7 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

15.8 Required Equipment

The following are required equipment for this course:

1. *TDI Nitrox Gas Blending* Manual
2. *TDI Nitrox Gas Blending* Instructor Guide
3. *TDI Standards and Procedures* Manual
4. *TDI Nitrox Blender* PowerPoint Presentation

15.9 Required Subject Areas

Instructor trainers must use the *TDI Gas Blender 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 Gas Blender
2. Gasses of Diving
 - a. Air
 - b. Oxygen
 - 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 compatible systems components
4. Gas Production Equipment
 - a. Compressors
 - b. Cylinders
 - c. Filtration systems
 - d. Analog gauges
 - e. Digital Gauges
5. 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)
6. Oxygen (O₂) Analyzing
 - a. Procedures
 - b. Oxygen (O₂) analyzers
7. Cylinder Handling and Sign Out

15.10 Required Skill Performance and Graduation Requirements

The following skills must be completed by the instructor candidate:

1. Satisfactorily complete the TDI Nitrox Gas Blender 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 blending and analysis nitrox mixtures
4. Demonstrate proficiency in teaching the TDI Nitrox Gas Blender program
5. Present at least 1 graded presentation on a nitrox blending topic