

## 8. Advanced Nitrox Instructor

### 8.1 Introduction

This is the instructor level certification course for instructors wishing to teach the use of EAN-21 through 100 percent oxygen (O<sub>2</sub>) for optimal mixes to a depth of 40 metres / 130 feet. The object of this course is to train nitrox instructors to teach the benefits, hazards and proper procedures for EAN-21 through 100 percent oxygen (O<sub>2</sub>) for dives not requiring staged decompression.

### 8.2 Qualifications of Graduates

Upon successful completion of this course, instructors may teach diving activities utilizing EAN-21 through 100 percent oxygen provided:

1. The diving activities approximate those of training
2. The areas of activities approximate those of training
3. Environmental conditions approximate those of training

Upon successful completion of this course, graduates are qualified to enroll in:

1. TDI Decompression Procedures Instructor course
2. TDI Extended Range Instructor course

### 8.3 Who May Teach

Any active TDI Advanced Nitrox Instructor Trainer may teach this course

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

## 8.5 Student Prerequisites

1. Minimum age 18
2. Minimum certification of TDI Advanced Nitrox diver or equivalent
3. Provide proof of 100 logged dives, 25 must be nitrox dives
4. Must have certified 10 students in entry-level nitrox

## 8.6 Course Structure and Duration

### Open Water Execution

1. Four dives with a minimum accumulated bottom time of 100 minutes
2. All dives must be deeper than 23 metres / 75 feet
3. Two dives must be deeper than 30 metres / 100 feet
4. If advanced nitrox is taught in conjunction with decompression procedures a total of 6 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

## 8.7 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*
  - b. Submit the *TDI Medical Statement* form signed by a licensed physician

### 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

## 8.8 Required Equipment

### The following are required for this course:

1. *TDI Advanced Nitrox* Instructor Guide
2. *TDI Standards and Procedures* Manual
3. *TDI Advanced Nitrox* student manual or eLearning
4. *TDI Advanced Nitrox* PowerPoint

**The following minimum is required for each instructor:**

1. Sufficient gas supply for the planned dives
2. Alternate air source attached to a secondary regulator; a sufficient length hose for air sharing attached to a secondary regulator is required
3. A submersible pressure gauge
4. Depth gauge and bottom timer and / or dive computer
5. A redundant scuba unit (pony cylinder) with regulator and SPG is recommended but not required
6. Buoyancy compensator device (BCD) with power inflator
7. Exposure suit adequate for the open water environment
8. All equipment properly labeled and cleaned as required for enriched air nitrox (EAN) mixtures
9. Oxygen (O<sub>2</sub>) analyzer

## **8.9 Required Subject Areas**

**Instructor trainers must use the current *TDI Standards and Procedures Manual* and *TDI Advanced Nitrox 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. Physics
  - a. Pressure review
2. Physiology
  - a. Hypoxia
  - b. Oxygen toxicity
    - i. Whole body
    - ii. Central nervous system (CNS)
  - c. Nitrogen narcosis
  - d. Nitrogen absorption and elimination
  - e. Carbon dioxide (CO<sub>2</sub>) toxicity
  - f. Carbon monoxide (CO) toxicity
3. Formula Work
  - a. Best mix computations
  - b. Maximum operating depth of a mixture computation
4. Equipment Requirements
  - a. Less than 40 percent
  - b. More than 40 percent
5. Dive Tables
  - a. Equivalent air depth (EAD) with any table
  - b. Computer generated tables (Pro-Planner, DPA, Dr. X, Abyss, etc)

6. Dive Computers
  - a. Mix adjustable
  - b. Oxygen (O<sub>2</sub>) integrated
7. Dive Planning
  - a. Operational Planning
    - i. Gas requirements
    - ii. Oxygen limitations
    - iii. Nitrogen limitations
  - b. Common mixing procedures (demonstrate one method) partial pressure mixing
  - c. Continuous blending
8. Decompression
  - a. Enriched air nitrox (EAN) usage as deco gas i.e. 50/50 80/20 etc
  - b. Oxygen for decompression
  - c. Advantages / disadvantages of multiple gas switches

## **8.10 Required Skill Performance and Graduation Requirements**

**The following skills must be completed by the instructor candidate. Maximum training depths shall not exceed 40 metres / 130 feet. The student must complete the following skills:**

1. Properly analyze gas mixtures
2. Demonstrate adequate pre-dive planning limits based on:
  - a. Personal gas consumption
  - b. Oxygen exposures at planned depth with actual mix
  - c. Nitrogen absorption at planned depth with actual mix
3. Properly execute the planned dive within all pre-determined limits

**In order to complete this course, students must:**

1. Satisfactorily complete the TDI Advanced Nitrox course written examination and be able to adequately explain each answer to a prospective student
2. Demonstrate mature, sound judgment concerning training, dive planning and execution
3. Demonstrate proficiency in every skill required in the TDI Advanced Nitrox diver course
4. Demonstrate proficiency in teaching advanced nitrox
5. Present at least 1 graded presentation on advanced nitrox topic