

5. Intro to Tech Instructor

5.1 Introduction

The TDI Intro to Tech Instructor course provides the training required to competently and safely introduce students to the world of technical diving. The objective of this course is to train instructors to familiarize students with technical equipment configurations, to enhance open water diving skills (such as buoyancy, trim, and situational awareness), and to introduce advanced gas planning techniques within a no-decompression context. Although taught in conjunction with material from the TDI Advanced Nitrox and Decompression Procedures courses, this course is strictly a no-decompression course; students are permitted to use enriched air nitrox mixes, provided the gas mix is within their current level of certification.

5.2 Qualifications of Graduates

Upon successful completion of the course, graduates may teach diving activities in a technical equipment configuration provided:

1. The diving activities approximate those of training
2. The areas of activities and environmental conditions approximate those of training

Graduates who are also nitrox instructors may enroll in:

1. TDI Advanced Nitrox Instructor course
2. TDI Decompression Procedures Instructor course

5.3 Who May Teach

1. A TDI Instructor Trainer qualified to teach the TDI Intro to Tech Instructor course

5.4 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 4 students per instructor trainer; it is the instructor trainer's discretion to reduce this number as conditions dictate

5.5 Student Prerequisites

1. Certified as an SDI Open Water Scuba Diver Instructor, or equivalent
2. Certified as a Advanced Nitrox and Deco Procedures diver, or equivalent

OR

1. Certified as a TDI Advanced Nitrox and Deco Procedures Instructor, or equivalent

5.6 Course Structure and Duration

Open Water Execution

1. Four dives with a minimum accumulated bottom time of 100 minutes

Course Structure

1. TDI allows instructor trainers to structure courses according to the number of candidates participating and their skill level

Duration

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

This course may be taught in conjunction with the TDI Nitrox Instructor Course

5.7 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

5.8 Required Material and Equipment

The following are required for this course:

1. *TDI Intro to Tech* Student Manual or eLearning course
2. *TDI Intro to Tech* Instructor Guide
3. *TDI Intro to Tech* PowerPoint Presentation
4. *TDI Advanced Nitrox and Decompression Procedures* Student and Instructor materials
5. *TDI Standards and Procedures* Manual

The following minimum equipment is required for each instructor and instructor candidate:

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 with power inflator, appropriate for equipment configuration
7. Ascent reel with lift bag/surface marker buoy
 - a. Appropriate for maximum planned depth
 - b. Lift bag with at least 11 kg / 25 lbs of lift
8. Exposure protection appropriate for local diving condition
9. Slates/wet notes
10. All equipment properly labeled and cleaned as required for enriched air nitrox (EAN) mixtures
11. Oxygen (O₂) analyzer (if required)

5.9 Required Subject Areas

Instructor trainers must use the current *TDI Standards and Procedures Manual*, *TDI Intro to Tech* and *TDI Advanced Nitrox/Decompression Procedures Manuals* or eLearning 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. Hyperthermia
 - b. Hypothermia
 - c. Psychological aspects
 - d. Hypoxia
 - e. Oxygen toxicity
 - i. Whole body
 - ii. CNS
 - f. Nitrogen narcosis
 - g. Nitrogen absorption and elimination
 - h. Carbon dioxide toxicity
 - i. Carbon Monoxide toxicity
3. Formula Work
 - a. Best mix computations
 - b. Maximum operating depth of a mixture computation
4. Equipment considerations
 - a. Single/double cylinder(s); valve options
 - b. Regulator options
 - c. Harness/BC options
 - d. Computer, bottom timer, depth gauge options
 - e. Ascent and navigation reels/spools options
 - f. Lift bag/surface marker bag options
 - g. Exposure protection options
 - h. Minimum equipment, bring only what you need
 - i. Stream lining and stowing equipment
 - j. Stage cylinder options
 - k. Jon-line or Garvin clips
 - l. Proper weighting and buoyancy control during dive phase and decompression

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 (O₂) integrated
7. Dive Planning
 - a. Gas requirements
 - b. Oxygen limitations
 - c. Nitrogen limitations
 - d. Tables/computer dive planning and execution
 - e. Surface air consumption (SAC) rate calculations
 - f. Minimum gas reserve calculations for no-decompression dives
 - g. Environmental considerations
8. Procedures
 - a. Entry/exit strategies
 - b. Emergency strategies in case of gas failure/loss
 - c. Ascent/descent strategies
 - d. Dive planning
 - e. Standard operation
 - i. Gas requirements
 - ii. Oxygen limitations
 - iii. Nitrogen limitations
 - f. Emergency planning
 - i. Omitted decompression
 - ii. Decompression sickness
 - iii. Equipment failure
 - g. Primary and decompression gas
 - i. Normal operations
 - ii. Failure, loss or inadequate emergency procedures
 - iii. Analysis and logging
 - iv. Safeguards on deco supply regulators
 - v. Rigging and deployment of decompression equipment
 - h. Descent
 - i. Methods of entry, down lines or free decent
 - ii. Organization of equipment carried on dive
 - i. Ascent
 - i. Variable rates
 - ii. Trim and compensation

- j. Fixed or drifting decompression methods
 - i. Up lines fixed to bottom
 - ii. Reels and lift bags/surface marker buoys
 - iii. Free drifting stages or boat supply
 - iv. Self-contained versus surface supply / rendezvous gas cylinders
- k. Support
 - i. From shore
 - ii. From descent line or fixed platform
 - iii. From live aboard boat
- 9. Decompression Options
 - a. Air
 - b. Nitrox
 - c. Oxygen
- 10. Administration Procedures
 - a. Medical form
 - b. Waiver forms
 - c. Risk management
 - d. Registration forms
 - e. Standards and procedures

5.10 Required Skill Performance and Graduation Requirements

The following skills must be completed by the instructor candidate; maximum training depths shall not exceed 30 metres / 100 feet. The student must complete the following skills:

Land drills:

1. Properly analyze gas mixtures
2. Selection and preparation of equipment
3. Conduct team oriented skills (buddy checks) for lift bag deployment
4. Gas matching among buddy teams
5. Demonstrate familiarity with basic hand signals
6. Demonstrate adequate pre-dive planning with limits based on the team and personal gas consumption

Pre-dive drills:

1. Use S.T.A.R.T. * before every dive
2. Stress analysis and mitigation

***START is S-drill (OOA drill and Bubble Check), Team (buddy equipment checks), Air (gas matching), Route (entry/exit and planned path underwater), Tables (depth, duration, waypoints and schedule).**

In-water drills:

1. Weight check
2. Demonstrate adequate buoyancy control; ability to hover at fixed position in water column without moving hands or feet
3. Demonstrate adequate trim; ability to maintain horizontal during the descent, bottom and ascent portion of the dive
4. Demonstrate no-silting propulsion techniques; frog kick, modified frog kick, modified flutter kick, backwards kick
5. Demonstrate the ability to perform the following exercises while maintaining trim and buoyancy in the water column:
 - a. Regulator exchange
 - b. Regulator recovery
 - c. Mask partial flood and clear with minimal air loss
 - d. Mask removal and clear with minimal air loss
6. Demonstrate the ability to perform a safety drill (S-drill) while maintaining trim and buoyancy in the water column
7. Demonstrate the ability to perform a valve drill while maintaining trim and buoyancy in the water column (if double cylinders are being used)
8. Demonstrate the ability to deploy a surface marker buoy or lift bag while maintaining trim and buoyancy in the water column
9. Demonstrate emergency deployment of a backup regulator or bail-out scuba system
10. Demonstrate a simulated emergency gas sharing at a stationary depth
11. Contingency situations and problems solving (as appropriate by instructor trainer)
 - a. Omitted decompression
 - b. Extended bottom time profile with increased deco and recalculation
 - c. Failure to deploy lift bag / surface marker buoy and reel
 - d. Missed up-line or missed boat anchor
 - e. Loss of deco gas
12. A proper stop of at least 3 minutes shall be conducted on all dives and proper staged decompression stops whenever and wherever required
13. Demonstrate good buoyancy control and situational awareness throughout the dive
14. Show good situational awareness

In order to complete this course candidates must:

1. Complete all open water requirements safely and efficiently
2. Satisfactorily complete the TDI Advanced Nitrox and Decompression Procedures written examinations and be able to adequately explain each answer to a prospective student
3. Demonstrate mature, sound judgment concerning training, dive planning and execution
4. Demonstrate proficiency in teaching the TDI Intro To Tech course
5. Present at least 1 graded academic and at least 1 graded open water presentation on an Intro to Tech topic