PATD

Standards

english from 31.03.2023

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Imprint

Standards
PATD (Herausgeber)
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PATD, Wilhelm und Melcher GbR, Leineweberstraße 11, 31303 Burgdorf, Germany
Burgdorf, February 2026

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...constant revision, note the current version!

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General Standards

Validity

PATD Standards are provided in German and English. The German version published in the internet (http://www.PATD.de) serves as reference. PATD diving instructors and members of the technical committee are invited to submit their suggestions for improvement to the Training Director or the BoD at any time.

Training Goal

PATD sees their training goal beyond the common limits for recreational diving and thus does not provide training on the recreational diving or beginner level. The typical common recreational diving training is limited as follows:

- Maximum depth 40 meters
- Diving with pressurized air or Nitrox
- Diving with open systems
- No decompression dives
- Diving in open water (no overhead environments)

Age

Participation in PATD training courses is possible beginning at the age of 18. The course "Basics of Technical Diving" is open for participants at the age of 16, provided a written approval by the legal guardian.

Required Diving Skills

- Participation in PATD courses requires a certificate as Advanced Open Water Diver (Rescue Diver recommended) or CMAS** diver or equivalent.
- Participation in the instructor program requires a certificate as Dive Master or CMAS Instructor Assistant or a proof of activities in the area of training support. The acceptance as PATD Instructor is no authorization to train common recreational diving (e. g. beginner courses).
- The diver needs to prove a minimum of 15 dives during the last 12 months.
- The diver needs to prove his physical fitness for diving by means of a medical certificate (max 1 year old). He needs to sign a liability disclaimer stating, that his medical state has not changed since this examination.
- A check dive is mandatory if the diver's skills are unknown.

Equivalence

In general PATD accepts an equivalent course level. Those level may be accepted in lieu of the general requirements or the required skills. It is for the instructor to decide, whether additional practical or theoretical tests are required. The instructor may use the exercises or final exams of previous levels for this.

Should a diver not hold a certification on a PATD or an equivalent level, the following entry requirements must be fulfilled instead:

- Compliance with all skills from the two previous PATD courses
- Passing the written exams of the two previous PATD courses
- Providing evidence of at least 50 dives on the level of the previous course
- All other requirements for the course aspired to
- Acceptance by the Training Director in every single case

Combination Course

A maximum of two courses may be merged into one course (combination course). The courses to be merged need to directly succeed in the course structure or must originate from two course lines. A combination course must be defined as such at sign-in. For a combination course, the sum of all requirements and the sum of all course limits apply. In case of inhomogeneity, a slow increase is to be scheduled. The combination course must include all exercises of the merged courses. The contents from both merged courses needs to be communicated. The higher instructor/student relation (i.e. the lower number of students) and the lower number of assistants apply. The total diving time and the total number of dives may be reduced by a maximum of 20%, but not exceeding 50% of a single dive time.

Certification

A diver can only be certified if the following requirements have been fulfilled:

- All dives have been executed (with documentation of number and duration)
- All exercises have been passed successfully
- The diver has taken part in the theoretical class
- The diver has passed the written exam
- The diver has paid all fees
- The diver has filled in and signed a disclaimer of liability regarding PATD and instructor, before the training has started
- The diver as fulfilled all requirements (documentation needed)
- The diver has filled in the certification form

Course modules that have not been passed may be repeated with the particular instructor during a period of 12 months.A diver gains training and education through PATD. The certification, he needs to earn with knowledge and skills.

Standards Check

Some students will be selected randomly during certification. They will receive a questionnaire with reference to the course. In this, some things regarding the standards are polled, in order to check the course quality. Apart from this, the technical committee may dispatch their members without prior announcement, to check the course quality Supervision.

Supervision

All dives take place under direct supervision by the instructor. He may call in assistants for this purpose.

Documentation

- All training dives must be document in the student's and in the instructor's log. The instructor needs to document the student's name in his log.
- The entry requirements need to be documented with name.
- The final exam needs to be documented with name and result.
- The certification needs to be documented with name.

All documents must contain the particular person's name and a date. Certifications will be stored in the non-public PATD certification database (together with common personal data). These data will only be used internally by PATD. The instructor is bound to keep all documents for 10 years, even if should leave PATD.

Equipment

PATD does not prescribe in detail, how the equipment is to be configured. It is up to the instructor to accept equipment for the particular training level and the diving environment. The following basic equipment must be present:

- Mono 12 l bottle with double valve (Level ARD)
- Double tanks with isolation manifold (except with side mount configuration). Rebreathers need to have a suitable bail out system.
- Two first stages with a second stage each
- The right-hand regulator of a double tank must be equipped with a 2 m low-pressure hose.
- The equipment must include two separate buoyancy compensators (e. g. wing and dry suit).
- A main torch (brightness equivalent to 10 W HID torch) and a backup torch for diving in overhead environments, two backup torches are prescribed.
- All tanks are equipped with a pressure gauge. For a double tank with an isolation manifold, one pressure gauge is suitable.
- Cutting tool, suitable to cut stainless steel wire
- Computer or bottom timer, backup bottom timer or backup computer for decompression dives
- Diving tables according to dive plan
- Wetnotes
- Compass
- Protection against cold according to diving conditions
- A SMB (Surface Marker Buoy) longer than 1.2 m is mandatory for open water dives in the ocean. Additionally, emergency signal rockets and an emergency whistle are recommended.

- A safety spool (at least 25m) per diver and a continuous line into the open water per team for dives in overhead environments
- Line arrows and cookies starting with Cave I and Wreck I
- All tanks must at least be marked with the contained gas mix and MOD (Maximum Operation Depth).

The back mount tanks will never be taken off during the dive!

Training material

If a PATD manual exists for a course, it has to be used. Every student needs to have his own copy of the used training material (even after the course). An instructor may provide additional material (books, excerpts, tables...) on his own responsibility, suitable for the current student level. No part of the PATD manual may be reproduced without the BoD's written approval, not even in excerpts.

Standards for Diving Tanks, Gases and Mixing Methods

- All tanks need to be oxygen clean and must be fitted with oxygen-compatible materials.
- On all stage tanks, the maximum operating depth must be marked.
- On all tanks, the contained gas mix must be marked.
- For tanks with pure oxygen, the marking "Oxygen" is recommended.
- Breathing gasses must match the pureness degree "Breathing air, medical" or at least 4.6.
- Oxygen needs to be filled with the prescribed flow rate. This is also valid for filling a gas into pure oxygen.
- The user needs to analyse his breathing gas before use.

The following needs to be documented during filling of gas mixtures:

- Date, blender name and signature
- Customer name and signature
- Blender analysis
- Customer analysis
- MOD
- Gas supplier and tank number of storage tank

Relation of Instructor and Students

The relation of instructor and students will be defined specifically for every course. The instructor needs to be able to see all students. Thus, with bad visibility the number of students needs to be reduced. An Instructor may be accompanied by two assistants for training and support purposes. The number of students may be incremented by 1 per assistant. The instructor defines the assistant's responsibilities.

A diver must fulfil the following requirements in order to act as an assistant:

- PATD Instructor or with a training support role, passed PATD standard exam, liability insurance for training
- Certified as user for the particular course level
- Documented 30 dives on the course level

Partial Pressure Limits

For all courses, the following partial pressure limits apply:
pPO2 > 0,16 bar
pPO2 <= 1,6 bar*

Bottom mix for decompression dives: pPO2 < 1.4 bar*.
A pPO2 of 1.0 bar is recommended

PN2 < 3,2 bar

*In the following situations, the maximum pPO2 must be reduced by the mentioned value:

Situation	**Reduction by**
Bottom time longer than 30 minutes	0.1 bar
Exhausting dive	0.1 bar
Repetition dive	0.1 bar

Pure oxygen may be used in a depth between 0m and 6m without reduction (CNS% limits are to be observed). Maximum allowed CNS% load for a course dive: 100%.

Maximum training depth: 100m.

Standard Gases

Bottom Gas

Gas	MOD (recommended)
Nitrox 32	30 m*
Triox 30/30	30 m*
Trimix 21/35	45 m
Trimix 18/45	60 m
Trimix 15/55	75 m
Trimix 10/70	90 m
Trimix 10/80	100 m

* According to Mayer-Overton, oxygen has the same narcosis potential as nitrogen.

Dekogase

Gas	MOD (recommended)
Oxygen	6 m
Nitrox 50	21 m
Trimix 50/15-25*	21 m
Trimix 35/35	36 m
Trimix 21/45	57 m

* According to nitrogen content of the previous gas.

Descent/Ascend

The maximum descend rate is 15m/min, the maximum ascend rate is 10m/min. The minimum deco time is to be observed during all dives, if the decompression plan does not dictate otherwise.

Instructors -Standards

PATD Instructors must not discredit divers, instructors or associations, neither publicly, nor in internet discussions.Deactivation of life-supporting elements (closing valves, shutting down rebreather control units) is not permitted. Moreover, tearing down a diver's mask by the instructor is not permitted.During a PATD course, all participants demonstrate their respect for nature, property and reverence: Blemishing of drop-off and cave walls, collecting dripstones or breaking off corals is strictly prohibited. Access to the dive site must be cleared by the relevant owner. The collection of artefacts or fossils must correspond to the particular legal provisions. See or war graves remain untouched.

Publications, in which PATD plays a vital role, must be approved by BoD or Training Director in advance. The PATD logo may be used on the instructor's business cards or for advertising purposes of the instructor and/or the diving base. In this case, the individual advertising must be at the very fore. Commercial activities require the BoD's approval in advance.

PATD provides training, not equipment. A binding link with a supplier/brand is not permitted.

Boards

- Board of Directors: The BoD decides about PATD's actions. Board members are the associates of PATD. Decisions and nominations will be documented.
- Training Director: The TD is responsible for training standards, user training and instructor training. He is nominated by the BoD.
- Technische Kommission: The TC is responsible for the ongoing training quality assurance. It counsels the TD with regard to training standards and materials. The TC is nominated by the BoD.
- Instructor Trainer An IT is responsible for the certification of PATD Diving Instructors. An IT is nominated by the Training Director..
- Agency: Book keeping sales and certificate administration are done by the agency, which is nominated by the BoD.

Higher-ranking authorities are entitled to rule about the decisions of their subordinate authorities. Members of superior authorities cannot be members of similar authorities in other associations.

Training Program Rec

ARD - Advanced Recreational Diver

Goal

This course teaches the basics of DIR diving under use of Nitrox as breathing gas. The main emphasis are configuration of equipment with a single tank or small double tanks considering DIR standards and optimizing of skills like trim, bouyancy, propulsion, emergency procedures. This course can be teached in a wet- or drysuit.

Requirements

- AOWD or CMAS**
- 30 logged dives
- Diving insurance
- Diving medical health certification

Corse Limits

- Maximum depth: 30 m
- Maximum oxygen content: 40%
- No decompression

Dives

- Number of dives: 6
- Total dive time: 200 min
- One dive must reach a depth of 15 m
- One dive must be carried out with Nitrox

Excecises

- Pre dive sequence
- Propulsion (frog-, flutter, backwardick, helicopterturn)
- Trim and bouyancy
- Out of gas, Safety-Drill, Valve-Drill
- Deploying SMB
- Changig the mask during the dive
- Rescue an unconscious diver
- Free ascent from 15 m
- Floating without propulsion for 2 min in 5 m depth

Course Contents

- Nitrox theory
- Decompression Sickness
- Physics (pressure, partial pressure)
- Dive planning
- Equipment aspects of technical diving
- Balanced rig
- Handling of all equipment components
- Safety-Drill, Valve-Drill, Out of Gas
- Fin techniques (frog kick, flutter kick, modified frog kick, modified flutter kick, backward kick, helicopter turn)
- Bouyancy and trim
- Diving in a team
- Communication (active, passive, hand signs, lamp signs, touch contact)
- Stress management

Instructor/Student Relation

- I:S = max. 1:4
- Assistants: max. 1

Instructor

- ARD Instructor

Training Program Tech

BoTD - Basics of Technical Diving

Goal

In this course, the diver will familiarise himself with the basics of technical diving and diving with gas mixes (Nitrox and Triox 30/30). He will learn how to master safety drill, valve drill, buoyancy, trim, different fin techniques and possible dangerous situations.

Requirements

- AOWD or CMAS **
- 40 logged dives
- diving insurance
- diving medical health certification

Course Limits

- Maximum Depth: 30m
- Maximum oxygen content: 40%
- Minimum decompression

Dives

- Number of dives: 6
- Total dive time: 240 Min.
- One dive must reach a depth of 25m.
- Four dives must be carried out with Nitrox.

Excercises

- Pre-dive sequence
- Fin techniques (modified flutter kick, frog kick, modified frog kick, helicopter turn, backward kick), hovering, trim
- Out of gas, safety drill, valve drill, bubble check
- Deploying a SMB, free ascent
- Using the backup torch
- Changing the mask during the dive
- Rescue an unconscious diver
- Free ascent from 15m with a stop of 1 minute every 3 m (+/-0.5m)
- Floating without using the fins for 3 minutes at 5m depth.

Course Contents

- Nitrox – Theory
- Minimal deco
- Decompression sickness
- Physics (pressure, partial pressure)
- Dive planning
- Gas management
- Equipment Aspects of technical diving
- Balanced rig
- Handling of all equipment components
- Safety drill, valve drill, out of gas
- Fin techniques (frog kick, modified frog kick, modified flutter kick, backward kick, helicopter turn), buoyancy, trim
- Diving in a team
- Communication skills (active/passive communication, hand signs, lamp signs, touch contact, wetnotes)
- Stress management

Instructor/Student Relation

- I:S = max. 1:4
- Assistants: max. 1

Instructor

- BoTD Instructor

Tech Diver 1

Goal

This course teaches the planning and execution of dives in the Normoxic-Trimix range using a decompression gas with a maximum of 30 minutes decompression. In addition, procedures for problem solving and emergency management are trained using the standardized equipment consisting of double tank and one stage.

Requirements

- BoTD or equivalent
- 60 logged dives
- diving insurance
- diving medical health certification

Course Limits

- Maximum depth: 51m
- Trimix 21/35 and 18/45
- Maximum oxygen content: 50%
- Max equipment: double tank and one stage tank

Dives

- Number of dives: 6
- Total dive time: 150 Min.
- Two dives must reach a depth of at least 33m.
- Three dives must include a gas change

Exercises

- Pre-dive sequence
- Defining the minute volume
- 2 minutes of hovering, max depth 6m, max. depth variance ± 0.5m
- Mounting / unmounting the stage tank in shallow water
- Passing-on the stage tanks in the team
- Keeping a constant descent/ascent rate
- Diving a distance of 50m without mask
- Diving a distance of 10m while holding breath, gas sharing for 2 minutes.
- Changing the mask during the dive
- Deploying a SMB during 2 dives
- Free ascent with line reference (SMB)
- Out of gas, safety drill, valve drill
- Free ascent while breathing from the buddy's long hose (out of gas) until gas change depths
- Rescue an unconscious diver

Course Contents

- Dive planning (goal, gas planning, decompression, time limit, task sharing in the team)
- Introduction to decompression theory and ratio deco (45m)
- Decompression sickness
- Factors promoting decompression sickness
- Treating decompression sickness
- Creating decompression plans
- Decompression methods (blue water, lift bag/reel, constant reference, line/shot line)
- Introduction to diving with stage tanks
- Executing gas changes
- Gas management
- Standard gases and their use
- CO2 difficulties
- Stress management
- Emergency management afloat and ashore

Instructor/Student Relation

- I:S = max. 1:4
- Assistants: max. 2

Instructor

- Tech 1 Instructor

Tech Diver 2

Goal

This course teaches diving with normoxic Trimix 18/45 and longer decompression times using 2 decompression gases. This includes, among other things, the safe handling of 3 stages (bottle rotation) when using a leash. In addition, the diver receives an introduction to the handling of hypoxic Trimix 15/55. For the safe execution of deeper dives, standardized problem-solving and emergency strategies are taught.

Requirements

- Tech Diver 1 or equivalent
- 100 logged dives
- diving insurance
- diving medical health certification

Course Limits

- Maximum depth: 75m
- Trimix 18/45 and 15/55
- Maximum oxygen content: 100%
- Max. 3 stage tanks, double tank

Dives

- Number of dives: 6
- Total dive time: 180 Min.
- One dive must reach a depth of 50m.
- Two dives must reach a depth of at least 40m.
- All dives must include two gas changes.
- Two dives must include decompression with pure oxygen.
- Four dives must be carried out with double tank and two stage tanks.
- One dive must include a hypoxic descent.
- Handling of Stages in a Leash (Bottle-Rotation)
- Decending on Travel Gas

Excercises

- Pre-dive sequence
- 3 minutes of hovering in 6m depth, max. depth variance ± 0.25m
- Mounting/Dismounting stage tanks in shallow water (max. 3m), followed by regulator change.
- Observing the defined ascend rates and deco stop depths
- Diving a distance of 10 m while holding breath, gas sharing for 2 minutes.
- Deploying a SMB during 2 dives
- Changing the mask during the dive
- Free ascent with line reference (SMB)
- Out of gas, safety drill, valve drill
- Rescue an unconscious diver

Course Contents

- Dive planning (goal, gas planning, decompression, time limit, task sharing in the team)
- Trimix theory (hypoxia, hyperoxia, gas breaks, narcosis)
- Advanced decompression theory and ratio deco (60m)
- Risk analysis
- Stress management
- Creating decompression tables
- Diving with Trimix 18/45 and 15/55
- CO2 difficulties
- Cold, treating hypothermia, heating systems
- Dive planning, conducting emergency case examples (what if)
- Different types of Leash

Instructor/Student Relation

- I:S = max. 1:4
- Assistants: max. 2

Instructor

- Tech 2 Instructor

Tech Diver 3

This course teaches diving with hypoxic trimix (fO2 < 16%) to depths greater than 100 m with long decompression times and multiple decompression gases. Standardized problem solving and emergency response strategies are taught to safely conduct deeper dives.

Requirements

- Tech Diver 2 or equivalent
- 150 logged dives
- 50 dives deeper than 35 meters
- diving insurance
- diving medical health certification

Course Limits

Maximum depth: 100m, the certificate is depth-wise not limited, if the partial pressure limits are observed.

Dives

- Number of dives: 5
- Total dive time: 200 Min.
- Total bottom time: 30 Min.
- Three dives must reach a depth of at least 60m, one dive must reach a depth of at least 70m.
- All dives must include two gas changes.
- Four dives must be executed with 3 stage tanks.

Exercises

- 3 minutes of hovering in 6m depth, max. depth variance ± 0.25m
- Mounting/Dismounting stage tanks in shallow water (max. 3m), followed by regulator change.
- Deploying a SMB in less than 60 seconds
- 3 minutes of decompression at the SMB line in an out of gas situation
- Observing the defined ascend rates and deco stop depths
- Free ascent with line reference (SMB)
- Changing the mask during the dive
- Out of gas, safety drill, valve drill, bubble check
- Rescue an unconscious diver

Course Contents

- Hypoxia
- Dive planning, gas management
- Underwater emergency procedures
- Cold, heating systems
- Emergency procedures during decompression dives
- Bottom mix/travel mix
- Advances decompression theory, Bühlmann with GF, bubble models, ratio deco
- Hypoxic Trimix
- Isobaric counter diffusion

Instructor/Student Relation

- I:S = max. 1:3
- Assistants: max. 1Instructor

Instructor

Tech 3 Instructor

Training Program Wreck

Wreck Diver 1

Goal

The diver is introduced to diving and penetrating wrecks. Main goal is configuration of equipment for diving in overhead environment, guideline skills and decompression in swell and current.

Requirements

- Tech Diver 1 or equivalent
- 60 logged dives
- diving insurance
- diving medical health certification

Course Limits

- Maximum depth: According to diver level, max. 60 m
- Penetration in the daylight zone
- No constrictions
- No branches (jump, gap, t), linear penetration only
- Max. double tank and one stage tank during penetration

Dives

- Number of dives: 5
- Total dive time: 200 minutes
- Two dives must be carried out in the wreck.

Exercises

- Pre-dive sequence
- Safety drill, valve drill during all dives
- Changing the mask during the dive
- Fin techniques (modified flutter kick, frog kick, modified frog kick, helicopter turn, backward kick)
- ** Line laying with primary and secondary tie-off and placement
- ** Following the line
- ** Following the line during out of gas
- ** Following the line with blindfolded mask in touch communication
- ** Line laying during a wreck dive with primary and secondary tie-off and Placement
- Following the line
- Following the line during out of gas
- Following the line with blindfolded mask in touch communication
- 3 minutes of hovering in 6m depth, max. depth variance ± 0.5m

Safety checks (buddy bubble check, valve drill, safety drill) during boat dives

** Dry exercise/drill ashore

Course Contents

- Limits of wreck diving
- Rights of the wreck owner
- Dangers in overhead environments
- Equipment (lights, line, Jon line, SMB, cutting tools)
- Buoyancy, trim
- Fin techniques
- Guiding line laying, line types and materials, following the line
- Dive planning
- Communication skills (active/passive communication, hand signs, lamp signs, touch contact, wetnotes)
- Psychology, motivation, attitude
- Stress management
- Panic
- Emergency procedures (no visibility, lights out, line blocking, gas loss)
- Securing the diving boat
- Safety assessment of the wreck (position, stability, superstructure, nets, silt, fauna, explosives/ammunition…)

Instructor/Student Relation

- I:S = max. 1:4
- Assistants: max. 2
- In the wreck: 1:3 max.

Instructor

- Wreck 2 Instructor

Wreck Diver 2

Goal

The diver learns how to dive to a wreck and how to penetrate it, even far away from daylight. He also learns how to handle the seas and currents during long decompression dives.

Requirements

- Wreck Diver 1 or equivalent
- Tech Diver 1 or equivalent
- 100 logged dives
- diving insurance
- diving medical health certification

Course Limits

- Maximum depth: no depth limit, must be mixedgas trained, means Trimix without limitations; for dives deeper than 30m must be used corresponding mixed gas
- Penetration: max. 150m
- Navigation: One t in the wreck, jumps and gaps in wrecks with layed lines
- Max. double tank and one bottom stage tank during penetration

Dives

- Number of dives: 6
- Total dive time: 240 minutes, of which 120 minutes in wrecks
- Four dives must be carried out in a wreck away from the daylight zone.
- One wreck dive must take 20 minutes
- Four dives must be decompression dives
- Ascends: one at a line, one at the SMB, one in open water

Exercises

- Pre-dive sequence
- Changing the mask during the dive
- Lost line search
- Lost buddy search
- Laying a jump line
- Placing direction arrows in wrecks with laid lines
- ** Lost line search
- ** Lost buddy search
- Securing placed equipment
- 3 minutes of hovering in 6m depth, max. depth variance ± 0.25m
- Diving a distance of 15m while holding breath, gas sharing for 2 minutes.
- Safety drill, valve drill during all dives
- Placing/using the line in the wreck
- Following the line (50m) with blindfolded mask in touch communication and out of gas and through a constriction. This may be done outside the wreck.
- Mounting/Dismounting stage tanks in shallow water, followed by regulator change.
- Deploying a SMB in less than 60 seconds

- Hovering and ascending by using the SMB in an emergency procedure
- Observing the defined ascend rates and deco stop depths

** Dry exercise/drill ashore

Course Contents

- Limits of wreck diving
- Rights of the wreck owner
- Line techniques
- Descent/ascend techniques
- Decompression in strong currents, drift deco, deco rig
- Emergency procedures during decompression dives
- Laying the guide line in a wreck during deep penetration
- Orientation in wrecks laying on the side or belly up
- Securing placed equipment
- Dangers in overhead environments during wreck dives (rust, silt, unstable areas, constrictions, line traps, fat oil)
- Dive planning
- Checks
- Communication (hand signs, light signs, touch communication)
- Diving to deep wrecks
- Psychology, motivation, attitude
- Stress management
- Panic
- Emergency procedures (lost diver, lost line, entanglement)
- Safety assessment of the wreck (position, stability, superstructure, nets, silt, fauna, explosives/ammunition…)

Instructor/Student Relation

- I:S = max. 1:3
- Assistants: max. 2
- In the wreck: 1:2 max.

Instructor

- Wreck 2 Instructor

Training Program Cave

Cave Diver 1

Goal

The diver is introduced to cave penetration (leaving the daylight zone). Penetration is limited to 1/6 of a double tank or half a stage tank. Linear penetration only (way in = way out), one t is allowed, no jump or gap.

Requirements

- BoTD or equivalent
- At least 30 TG BoTD Leveldiving
- insurance
- diving medical health certification

Course Limits

- Maximum depth: 30 m
- Penetration: 1/6 gas from a double tank, minimum pressure at the beginning of the dive 150 bar. Should the student already be Tech I certified, one stage tank is admissible. In this case, the penetration duration can be up to half a stage tank.
- No decompression dives
- No caves with inflowing current
- No constrictions
- Linear penetration only (way in = way out), one t is allowed, no jump or gap.

Dives

- Number of dives: 8
- Total dive time: 300 minutes, of which 200 minutes away from the daylight zone
- 6 dives must be carried out away from the daylight zone.
- Dives must take place in three different caves.

Exercises

- ** Placing the line
- ** Marking the line
- ** Following the line
- ** Following the line during out of gas
- ** Repairing the line
- Placing the line 50 m
- Marking the line
- Following the line
- Mask change
- blowing off long hose
- Following the line during out of gas, 50 m or 5 min
- Repairing the line

- Following the line eyes closed in touch communication and out of gas in every position (first, second or third diver and wing to wing) 50 m
- Ending the dive using the backup torch
- 3 minutes of hovering in 6m depth, max. depth variance ± 0.5m
- Pre-dive sequence
- Valve drill, safety drill during all dives
- Defining the minute volume
- Lost diver search/lost line search
- Rescue an unconscious diver
- Diving a distance of 15m while holding breath, out of gas
- Fin techniques (modified flutter kick, frog kick, modified frog kick, helicopter turn, backward kick, pull and glide)

** Dry exercise/drill ashore

Course Contents

- Cave I Limits
- Cave protection
- Rights of the land owner
- Accident analysis
- Basics of cave forming
- Equipment (mask/fins, lights, instruments, lines, cutting tools…)
- Buoyancy, trim
- Fin techniques (see exercises)
- Laying the line for cave diving
- Dive planning
- Gas management
- Communication (hand signs, light signs, touch communication)
- Psychology, motivation, attitude
- Stress management
- Panic
- Emergency procedures (no visibility, lights out, line blocking, gas loss, lost line, lost diver)
- Geology of cave forming, karst phenomena
- Dangers in overhead environments (water, ceiling, limited space, darkness, visibility, current, constrictions, mazes, line traps, air pockets…)
- Redundancy

Instructor/Student Relation

- I:S = max. 1:3

Instructor

- Cave 2 Instructor

Cave Diver 2

Goal

The diver extends the cave penetration. Penetration is limited to 1/4 of the transported bottom gas, linear penetration (way in = way out), two branches and one jump plus one gap are admissible.

Requirements

- Cave Diver 1 or equivalent
- Recommended Tech Diver 1
- 150 dives loggeddiving insurance
- diving medical health certification

Course Limits

- *Maximum training depth: 45m
- Penetration: 1/4 of the bottom gas
- No downstraem caves
- Maximum 3 stages (decompression and/or bottom gas)
- Depth and decompression limits according to mixed gas certification

Dives

- Number of dives: 6
- Total dive time: 200 minutes, of which 160 minutes in the cave
- All dives must be carried out away from the daylight zone.
- Dives must take place in two different caves.
- Two dives must be decompression dives.
- After the course, the diver must be familiar with five different cave systems.

Exercises

- ** Lost line search
- ** Laying a jump line
- ** Marking the line
- Lost line search
- Laying a jump line
- Marking the line
- Pre-dive sequence
- Valve drill, safety drill
- Rescue an unconscious diver

** Dry exercise/drill ashore

Course Contents

- Laying jumps, line markers
- Different types of reels and their use
- Navigation in a cave maze
- Special decompression techniques during cave dives (e. g. yo-yo cave profile)
- Dive planning with deco
- Gas management
- Emergency procedures (lost buddy, lost line, los gas, lights out, lost orientation)

Instructor/Student Relation

- I:S = max. 1:3

Instructor

Cave 3 Instructor

Cave Diver 3

Goal

In principle, the diver penetrates caves without limitation. The diver gets additional information on navigating in a maze and an introduction to planning and executing exploration dives with several stage tanks.

Requirements

- Cave Diver 2 or equivalent
- Tech Diver 1 or equivalent
- • 200 logged divesdiving insurance
- diving medical health certification

Course Limits

- Penetration: 1/4 of bottom gas in team of 2, 1/3 of bottom gas in team of 3
- Complex navigation
- Unlimited stage limit
- Depth and decompression limits after mixed-gas certification

Dives

- Number of dives: 6
- Total dive time: 300 minutes, of which 240 minutes in the cave
- All dives must be carried out away from the daylight zone.
- Dives must take place in three different caves.
- One cave dive must take at least 100 minutes in the cave.
- Two dives must be decompression dives.
- After the course, the diver must be familiar with seven different cave systems.

- During the course, the diver must master one traverse or a loop, which would exceed the thirds rule in a single dive

At least two of the following dives must be carried out:

- Scooter dive (DPV)
- Stage dive
- Sidemount dive
- Diving in sinkholes *
- Diving in strong currents (source)
- Combination of dry cave and diving cave
- Survey dive (mapping)

* When diving in sinkholes (siphon, downstream systems), the instructor dives in first and leaves last. The current can only be as strong, as it is possible to easily go against it by using the fins only. The dive is to be carried out along the wall. Areas with huge height differences are to be avoided.

Exercises

- Following the line (100m) with blindfolded mask in touch communication and out of gas and through a constriction.
- Checks (Pre-dive sequence, bubble check, valve drill, safety drill)
- Rescue an unconscious diver

Course Contents

- Planning of loops and traverses (two dive/three dive philosophy)
- Difficulties regarding visual gaps and trust me dives
- Basics of scooter dives in caves (DPV)
- Stage diving
- Introduction to sidemount configurations
- Diving in sinkholes
- Diving in strong currents (source)
- Combination of dry cave and diving cave
- Survey dive (mapping)

Instructor/Student Relation

I:S = max. 1:3

Instructor

Cave 3 Instructor

Cave CCR Diver 1

Goal

The course is for experienced rebreather divers who want to learn cave diving in their usual CCR configuration. The diver extends the cave penetration. Penetration is limited to 1/6 of the transported bailout gas, linear penetration (way in = way out), two branches and one jump plus one gap are admissible.

Requirements

- BoTD or equivalent
- At least 30 TG BoTD Level
- 60 logged dives
- 50 hours of experience on the rebreather after completing the ccr user course
- using a BOV
- diving insurance
- diving medical health certification

Course Limits

- Maximum depth: 30 m
- Penetration: 1/4 gas from bailout
- No decompression dives
- No caves with inflowing current
- No constrictions
- Linear penetration only (way in = way out), one t is allowed, no jump or gap.
- One stage tank

Dives

- Number of dives: 8
- Total dive time: 300 minutes, of which 200 minutes away from the daylight zone
- 6 dives must be carried out away from the daylight zone.
- Dives must take place in three different caves.

Exercises

- ** Placing the line
- ** Marking the line
- ** Following the line
- ** Following the line during out of gas
- ** Repairing the line
- Placing the line 50 m
- Marking the line
- Following the line
- Mask change
- blowing off long hose
- Following the line during out of gas, 50 m or 5 min
- Repairing the line

- Following the line eyes closed in touch communication and out of gas in every position (first, second or third diver and wing to wing) 50 m
- Ending the dive using the backup torch
- 3 minutes of hovering in 6m depth, max. depth variance ± 0.5m
- Pre-dive sequence
- Valve drill, safety drill during all dives
- Defining the minute volume
- Lost diver search/lost line search
- Rescue an unconscious diver
- Diving a distance of 15m while holding breath, out of gas
- Fin techniques (modified flutter kick, frog kick, modified frog kick, helicopter turn, backward kick, pull and glide)

** Dry exercise/drill ashore

Course Contents

- Cave I Limits
- Cave protection
- Rights of the land owner
- Accident analysis
- Basics of cave forming
- Equipment (mask/fins, lights, instruments, lines, cutting tools…)
- Buoyancy, trim
- Fin techniques (see exercises)
- Laying the line for cave diving
- Dive planning
- Gas management
- Communication (hand signs, light signs, touch communication)
- Psychology, motivation, attitude
- Risks of ccr diving
- Stress management
- Panic
- Emergency procedures (no visibility, lights out, line blocking, gas loss, lost line, lost diver)
- Geology of cave forming, karst phenomena
- Dangers in overhead environments (water, ceiling, limited space, darkness, visibility, current, constrictions, mazes, line traps, air pockets…)
- Redundancy

Instructor/Student Relation

- I:S = max. 1:3

Instructor

CCR Cave Instructor

Cave CCR Diver 2

Goal

This course is designed for rebreather divers who are trained in cave diving (OC or CCR). The diver extends the cave penetration. Penetration is limited to 1/4 of the transported bailout gas, linear penetration (way in = way out), two branches and one jump plus one gap are admissible

Requirements

- Cave CCR Diver 1 or equivalent
- Cave Diver 1 or equivalent
- Recommended Tech Diver 1
- 150 dives logged
- 50 hours of experience on the rebreather after completing the ccr user course
- using a BOV
- diving insurance
- diving medical health certification

Course Limits

- *Maximum depth: 45m, according possibly excisting mixgas training; for dives deeper than 30m must be used corresponding mixed gas
- Penetration: 1/4 of the bailout gas
- No caves with inflowing current
- Two stage tanks
- Depth and decompression limits after mixed-gas certification

Dives

- Number of dives: 6
- Total dive time: 200 minutes, of which 160 minutes in the cave
- All dives must be carried out away from the daylight zone.
- Dives must take place in two different caves.
- Two dives must be decompression dives.
- After the course, the diver must be familiar with five different cave systems.

Exercises

- ** Lost line search
- ** Laying a jump line
- ** Marking the line
- Lost line search
- Laying a jump line
- Marking the line
- Pre-dive sequence
- Valve drill, safety drill
- Rescue an unconscious diver

** Dry exercise/drill ashore

Course Contents

- Laying jumps, line markers
- Different types of reels and their use
- Navigation in a cave maze
- Special decompression techniques during cave dives (e. g. yo-yo cave profile)
- Dive planning with deco
- Risks of ccr diving
- Gas management with CCR
- Emergency procedures (lost buddy, lost line, los gas, lights out, lost orientation)

Instructor/Student Relation

- I:S = max. 1:3

Instructor

- CCR-Cave Instructor

Exploration Sump Diver

Ziel

The exploration sump divers learn to dive in siphon with restrictions in upstream and downstream caves. The diver extends the cave penetration. Penetration is limited to 1/6 of the transported bottom gas. Diving in sidemount configuration with 2 cylinders and possibly a stage and optionally a helmet.

Requirements

- AOWD or CMAS **
- diving insurance
- diving medical health certification

Course Limits

- Maximum depth: 30 m
- No decompression
- Penetration: 1/6 gas from booom gas
- •Minimum Gas before entering the siphon = 10 minutes below 3x AMV at the maximum planned depth to resolve the problem
- T's unlimited
- no Jumps

Dives

- Number of dives: 8
- Total dive time: 300 minutes, of which 200 minutes away from the daylight zone
- 6 dives must be carried out away from the daylight zone.

- Dives must take place in three different caves.

Exercises

- ** Placing the line
- ** Marking the line
- ** Following the line
- ** Following the line during out of gas
- ** Repairing the line
- ** Handling different types of lines
- Placing the line 50 m
- Marking the line
- Following the line
- Mask change with helmet
- Following the line during out of gas, 50 m or 5 min
- Repairing the line
- Following the line eyes closed in touch communication and out of gas in every position (first, second or third diver and wing to wing) 50 m
- Ending the dive using the backup torch
- 3 minutes of hovering in 6m depth, max. depth variance ± 0.5m
- Pre-dive sequence
- Defining the minute volume
- Lost diver search/lost line search
- Diving a distance of 15m while holding breath, out of gas
- Equipment failure scenarios
- underwater movement with and without fins
- Transport of additional equipment, drying tubes, bins, sacks
- No Visibility Exit

** Dry exercise/drill ashore

Course Contents

- Cave protection
- Rights of the land owner
- Accident analysis
- Basics of cave forming
- Equipment (mask/fins, lights, instruments, lines, cutting tools…)
- Buoyancy, trim
- underwater movement with and without fins
- Laying the line for cave diving
- Dive planning
- Gas management
- Communication (hand signs, light signs, touch communication)
- Psychology, motivation, attitude
- Stress management
- Panic
- Emergency procedures (no visibility, lights out, line blocking, gas loss, lost line, lost diver)
- Geology of cave forming, karst phenomena
- Dangers in overhead environments (water, ceiling, limited space, darkness, visibility, current, constrictions, mazes, line traps, air pockets…)
- Redundancy
- Navigation based on karst features, currents…

Instructor/Student Relation

- I:S = max. 1:3

Instructor

- Sump Diver Instructor

Training Program Mine

Mine Diver 1

Goal

The diver gets an introduction to diving in flooded mines and other artificial water-filled structures. Penetration is limited to 1/6 of a double tank or half a stage tank. Linear penetration only (way in = way out), one t is allowed, no jump or gap.

Requirements

- BoTD or equivalent
- At least 30 TG BoTD Level
- 60 logged dives
- diving insurance
- diving medical health certification

Course Limits

- Maximum depth: 30 m
- Penetration: 1/6 gas from a double tank, minimum pressure at the beginning of the dive 150 bar. Should the student already be Tech I certified, one stage tank is admissible. In this case, the penetration duration can be up to half a stage tank.
- Linear penetration only (way in = way out), one t is allowed, no jump or gap.
- No decompression dives
- No restrictions
- No Caves

Dives

- Number of dives: 8
- Total dive time: 300 minutes, of which 200 minutes in overhead environment
- 6 dives must be carried in overhead environment.

Exercises

- Risks in mine diving
- Difference between mine and cave diving
- Equipment for mine diving
- Communication in the overhead environment (light, touch contact, special hand signals)
- Marking the line
- Different line markers
- Tasks and positions in the team
- Emergency procedures (no visibility, lights out, line blocking, gas loss, lost line, lost diver)
- Rescue an unconscious diver

- Fin techniques (modified flutter kick, frog kick, modified frog kick, helicopter turn, backward kick, pull and glide)
- Stress management
- Dive planning
- Gas management

Course Contents

- ** Placing the line
- ** Marking the line
- ** Following the line
- ** Following the line during out of gas
- ** Repairing the line
- Placing the line 50 m
- Marking the line
- Following the line
- Mask change
- blowing off long hose
- Following the line during out of gas, 50 m or 5 min
- Repairing the line
- Following the line eyes closed in touch communication and out of gas in every position (first, second or third diver and wing to wing) 50 m
- Ending the dive using the backup torch
- Pre-dive sequence
- Valve drill, safety drill during all dives
- Defining the minute volume
- Lost diver search/lost line search
- Diving a distance of 15m while holding breath, out of gas
- Fin techniques (modified flutter kick, frog kick, modified frog kick, helicopter turn, backward kick, pull and glide)

** Dry exercise/drill ashore

Instructor/Student Relation

- I:S = max. 1:3

Instructor

- Mine Diver Instructor
- Cave 2 Instructor

Mine Diver 2

Goal

The diver penetrates the mine up to 1/3 of his bootom gas. He learns to plan and do decompression dives and navigation with unlimited Ts, jumps and gaps on the permanent lines. The diver learns how to dive circuits and how to lay his own line.

Requirements

- Mine Diver 1 or equivalent
- Cave Diver 1 or equivalent
- Recommended Tech Diver 1
- 150 logged dives
- diving insurance
- diving medical health certification

Course Limits

- *Maximum training depth: 45m
- Depth and decompression limits after mixed-gas certification
- 3 stages
- Penetration: 1/4 of bottom gas in team of 2, 1/3 of bottom gas in team of 3
- No caves

Dives

- Number of dives: 6
- Total dive time: 200 minutes, of which 160 minutes in overhead environment
- 6 dives must be carried in overhead environment.
- Dives must take place in two different mines.
- Two dives must be decompression dives.

Exercises

- ** Lost line search
- ** Laying a jump line
- **Laying own line
- ** Marking the line
- Lost line search
- Laying a jump line
- Laying own line
- Marking the line
- Pre-dive sequence
- Valve drill, safety drill
- • Diving circuits
- • Drop gas
- • Dive and gas planning for decompression dives

- Sketching of diving routes
- Cold protection during long dives
- Rescue an unconscious diver

** Dry exercise/drill ashore

Course Contents

- Laying jumps, line markers
- Different types of reels and their use
- Navigation in a mine maze
- Special decompression techniques during mine dives
- Dive planning with deco
- Risks
- Gas management
- drop of decompression and bottom gas
- Entanglement
- Diving a circuit (optional)
- Risks

Instructor/Student Relation

- I:S = max. 1:3

Instructor

- Mine Diver Instructor
- Cave 2 Instructor

Training Program Sidemount

Basic Sidemount Diver

Goal

In this course, the diver will familiarise himself with the basics of sidemount diving and diving with gas mixes (Nitrox). He will learn how to master safety drill, valve drill, buoyancy, trim, different fin techniques and possible dangerous situations.

Requirements

- AOWD or CMAS **
- 40 logged dives
- diving insurance
- diving medical health certification

Course Limits

- Maximum oxygen content: 40%
- No decompression dives

Dives

- Number of dives: 6
- Total dive time: 240 Min.
- One dive must reach a depth of 25m.
- Four dives must be carried out with Nitrox.
- 2 sidemount tanks, one with a long hose

Exercises

- Pre-dive sequence (mounting tanks, bubble check)
- Entering and exiting the water from a boat or jetty (mounting tanks at land) and shore (mounting tanks in water)
- Fin techniques (modified flutter kick, frog kick, modified frog kick, helicopter turn, backward kick), hovering, trim
- Out of gas, safety drill, valve drill, bubble check
- Valve feathering
- Deploying a SMB, free ascent
- Using the backup torch
- Changing the mask during the dive
- Rescue an unconscious diver
- Free ascent from 15m with a stop of 1 minute every 3 m (+/-0.5m)
- Floating without using the fins for 3 minutes at 5m depth.

Course Contents

- Nitrox – Theory
- Minimal deco
- Decompression sickness
- Physics (pressure, partial pressure)
- Dive planning
- Gas management incl. usage of both sidemount tanks
- Equipment aspects of sidemount diving
- different types of harness and wings
- tanks: attachment, size, buoyancy, steal compared to aluminium
- regulator configuration
- configuration difference between: wet suit, dry suit for water temperature above 10°C and dry suit in cold water (below 10°C)
- Balanced rig
- needed tank adjustment for head or foot heavy
- needed tank adjustment for valve rotation
- Handling of all equipment components
- Safety drill, valve drill, out of gas
- Fin techniques (frog kick, modified frog kick, modified flutter kick, backward kick, helicopter turn), buoyancy, trim
- Diving in a team
- Communication skills (active/passive communication, hand signs, lamp signs, touch contact, wet notes)
- Stress management

Instructor/Student Relation

- I:S = max. 1:3

Instructor

- BSM Instructor

Tech Sidemount Diver

Goal

The diver will switch from backmount to sidemount diving for mixed gas diving. After this course, the diver will be able to execute dives with gas changes in mixed dive teams (BM, SM) using sidemount equipment.

Requirements

- Tech Diver 1
- 80 logged dives
- diving insurance
- diving medical health certification

Course Limits

- Maximum depth: 45m
- Trimix (21/35)
- Maximum oxygen content: 50%
- Max equipment: double tank and one stage tank
- 2 sidemount tanks and at least 1 stage and 1 tank for dry suit inflation
- one sidemount tank with a long hose

Dives

- Number of dives: 4
- Total dive time: 120 Min.
- Two dives must reach a depth of at least 33m.
- Three dives must include a gas change.
- Pre-dive sequence
- Defining the minute volume
- 2 minutes of hovering, max depth 6m, max. depth variance ± 0.5m
- Mounting / unmounting the stage tank in shallow water
- Passing-on the stage tanks in the team
- Keeping a constant descent/ascent rate
- Diving a distance of 50m without mask
- Diving a distance of 10m while holding breath, gas sharing for 2 minutes.
- Valve feathering
- Changing the mask during the dive
- Deploying a SMB during 2 dives
- Free ascent with line reference (SMB)
- Out of gas, safety drill, valve drill
- Free ascent while breathing from the buddy's long hose (out of gas) until gas change depths
- Rescue an unconscious diver

Course Contents

- Gas management incl. usage of both sidemount tanks
- Equipment aspects of sidemount diving

- different types of harness and wings
- tanks: attachment, size, buoyancy, steal compared to aluminium
- regulator configuration
- configuration difference between: wet suit, dry suit for water temperature above 10°C and dry suit in cold water (below 10°C)
- Balanced rig
- needed tank adjustment for head or foot heavy
- needed tank adjustment for valve rotation
- Introduction to sidemount diving with stage tanks
- Positioning of stage tanks and dry suit inflation for sidemount diving
- Execution of gas change
- Risk assessment with focus on the aspects of sidemount diving
- Emergency procedures (gas leakages, feathering)

Instructor/Student Relation

- I:S = max. 1:3

Instructor

- Tech Sidemount Instructor

- OOG, S-Drill, V-Drill
- Freiwasseraufstieg am Longhose (OOG) bis zum Gaswechsel
- Retten eines bewusstlosen Tauchers unter Wasser

Cave Sidemount Diver

Goal

The diver will switch from backmount to sidemount diving for cave diving. After this course, the diver will be able to execute cave dives in mixed dive teams (BM, SM) using sidemount equipment.

Requirements

- Cave Diver 1
- 80 logged dives
- diving insurance
- diving medical health certification

Course Limits

- Penetration is limited to 1/4 of the transported bottom gas, linear penetration (way in = way out.
- Maximum depth: 30 m
- No caves with inflowing current
- No constrictions
- Linear penetration only (way in = way out), one t is allowed, no jump or gap.
- 2 sidemount tanks, if Tech I certified: One stage tank
- one sidemount tank with a long hose

Dives

- Number of dives: 4
- Total dive time: 120 minutes
- 4 dives must be carried out away from the daylight zone.
- Dives must take place in two different caves

Exercises

- Placing the line
- Following the line
- Mask change
- Following the line during out of gas
- Following the line eyes closed in touch communication and out of gas
- Ending the dive using the backup torch
- 3 minutes of hovering in 6m depth, max. depth variance ± 0.5m
- Pre-dive sequence
- Valve drill, safety drill during all dives
- Valve feathering
- Diving a distance of 15m while holding breath, out of gas
- Fin techniques (modified flutter kick, frog kick, modified frog kick, helicopter turn, backward kick, pull and glide)

Course Contents

- Equipment aspects of sidemount diving
- different types of harness and wings
- tanks: attachment, size, buoyancy, steal compared to aluminium
- regulator configuration
- configuration difference between: wet suit, dry suit for water temperature above 10°C and dry suit in cold water (below 10°C)
- Balanced rig
- needed tank adjustment for head or foot heavy
- needed tank adjustment for valve rotation
- Introduction to sidemount diving with stage tanks
- Gas management incl. usage of both sidemount tanks
- Positioning of stage tanks and dry suit inflation for sidemount diving
- Risk assessment with focus on the aspects of sidemount diving
- Emergency procedures (gas leakages, feathering)
- Rescue an unconscious diver
- Redundancy

Instructor/Student Relation

- I:S = max. 1:3

Instructor

- Cave Sidemount Instructor

Training Programm Rebreather

PSCR Diver 1

Goal

The diver learns the basics of diving with PSCR rebreathers up to trimix diving with a normoxic trimix up to max. 18/45. The use of gases as a travel mix (e.g. TX 35/35) as well as deco gases (e.g. TMX 50/25 and O2) are part of the course.

Requirements

- Tech Diver I
- 250 dives logged
- Proprietary PSCR rebreather
- Minimum age 21 years
- diving insurance
- diving medical health certification

Course Limits

- Maximum depth: 60 m

Dives

- Number of dives: 10
- Total dive time: 400 min.
- All dives must be conducted with the PSCR
- At least 6 dives must be done with stages
- 2 dives must be at 55m
- 2 dives must include 2 gas switches
- One dive with a running time of 120 minutes

Exercises

- 3 minutes of hovering in 6 m depth, max. depth variance ± 0.5 m
- Pre-dive sequence
- Safety drill, valve drill, out of gas
- Retrieving the loop
- Changing to bail out system
- Stage handling
- Gas change
- Observing the defined ascend rates and deco stop depths
- Emergency procedures
- Rescue an unconscious diver

- **Assembling the unit
- **Unit safety check
- **Cleaning the unit
- **Rebreather troubleshooting

** Dry exercise/drill ashore

Course Contents

- Basics of rebreathers
- Device types
- Peculiarities of PSCR rebreathers
- Diving oxygen poisoning problems, oxygen level monitors
- Problems of hypoxia
- Risk analysis
- Diving carbon dioxide problems
- Using the scrubber
- Oxygen partial pressure
- Procedures
- Device configurations
- Oxygen Drop
- Dive Planning (MOD, END, Deco, Gas Management, CNS%)
- Gas mix change during a dive
- Risk analysis
- Useing the switch block
- Decompression procedures
- Care and service of the device
- Different leash models
- Diving with bottom stage
- Multiple Stage Handling (rolling of 3 stages
- Advanced decompression theory and ratio deco (60m)
- Create decompression tables
- Diving with trimix 18/45

Instructor/Student Relation

- I:S = max. 1:2
- Assistants: max. 1

Instructor

- PSCR Instructor

PSCR Diver 2

Goal

The diver learns the basics of diving with PSCR rebreathers up to trimix diving (with mixtures fO2 < 16%).

Requirements

- Tech Diver 2
- PSCR Diver 1
- 25 logged dives on pscr
- Diver-owned PSCR
- Minimum age 21 years
- diving insurance
- diving medical health certification

Course Limits

Maximum depth: 90m, the certificate is depth-wise not limited, if the partial pressure limits are observed.

Dives

- Number of dives: 5
- Total dive time: 200 min.
- All dives must be conducted with the PSCR
- All dives must be done with stages
- 2 dives must be at 65m
- All dives must include 2 gas switches
- One dive with a running time of 120 minutes

Exercises

- 3 minutes of hovering in 6 m depth, max. depth variance ± 0.5 m
- Pre-dive sequence
- Safety drill, valve drill, out of gas
- Retrieving the loop
- Changing to bail out system
- Stage handling
- Gas change
- Observing the defined ascend rates and deco stop depths
- Emergency procedures
- Rescue an unconscious diver
- **Assembling the unit
- **Unit safety check
- **Cleaning the unit
- **Rebreather troubleshooting

** Dry exercise/drill ashore

Course Contents

- Hypoxic Protocol
- Difficulties regarding oxygen poisoning during a dive, oxygen control units
- Difficulties regarding hypoxia
- Extended risk analysis
- Procedures
- Device configurations
- Oxygen drop
- Avanced dive planning (MOD, END, deco, gas management, CNS%)
- Gas mix change during a dive
- Extended decompression procedures

Instructor/Student Relation

- I:S = max. 1:2
- Assistants: max. 1

Instructor

- PSCR Instructor

Specialty-Program

Gas Blender

Goal

The diver familiarises himself with theoretical and practical basics and safety rules for creating gas mixtures.

Requirements

- None

Course Limits

- Gas mixtures containing air, oxygen and helium
- Decanting argon

Dives

- None

Exercises

- Creating a Nitrox 32 mix
- Creating a Trimix mix

Course Contents

- Calculating Nitrox / Trimix mixes, remaining blends, topping-up
- Mixing software
- Real gases and ideal gases
- Mixing methods - overview: Partial pressure with pure gases and premix, DNA membrane, continuous flow, weight
- Mixing devices, pumping gases
- Gas analysis
- Mixing documentation
- Special characteristics of oxygen
- Oxygen pureness and oxygen compatibility
- Gas and gas mix suppliers
- Marking gas mixtures

Instructor/Student Relation

- I:S = None

Instructor

- Gas Blender Instructor

DPV Basic Diver – Diver Propulsion Vehicle

Goal

The diver should learn the basics of DPV operation and be able to safely plan and execute DPV-assisted dives. Furthermore, they will receive an overview of different DPV models, the technical features of various manufacturers, and the handling and maintenance of a DPV. Standardized problem-solving and emergency strategies will be taught to ensure the safe execution of DPV dives.

Requirements

- ARD or equivalent
- BoTD or equivalent
- diving insurance
- diving medical health certification

Course Limits

- Open water

Dives

- 4 dives with scooter

Exercises

- Pre-Dive Sequence
- Buoyancy Control, Trim
- Diving Techniques
- Team Diving
- Light Guidance
- Ascents and Descents with DPV
- Problem-Solving and Emergency Procedures

Course Contents

- Use of DPVs
- Setting up a DPV
- Maintenance and servicing
- Using scooters
- Driving techniques: cornering, towing
- Dangers of scooter operation
- Gas management and dive planning
- Dangers while using a scooter

Instructor/Student Relation

- I:S = max. 1:3
- Assistants: max. 1

Instructor

- DPV Instructor

SRT - Single Rope Techniques

Goal

Learning the single rope techniques.

Requirements

- None

Course Limits

Max. Course continuous abseiling distance 50m.

Dives

- None

Exercises

- Rope knowledge and rope maintenance
- Knot knowledge
- Using a sit harness, chest harness, abseiling equipment, ascender and safety lunges
- Anchors
- Abseiling on a single rope and passing an intermediate anchor
- Ascending on a single rope and passing an intermediate anchor
- Crossing over on a horizontal rope

Instructor/Student Relation

- I:S = max. 1:2

Instructor

- SRT Instructor

Technical Ice Diver

Goal

The diver will familiarize with the autonomous diving of frozen Waters. He gets an introduction into guideline skills

Requirements

- BoTD equivalent
- diving insurance
- diving medical health certification

Course Limits

- Penetration to 1/6 of a double tank
- At least seperable double 7 l
- Only standing waters
- No dekompression dives
- max. depth 30m

Dives

- 2 in open water
- 2 under ice

Exercises

- Fixing the line
- Placing the line**
- Following the line**
- propulsion
- tation & trim
- emergency procedures
- Lost line,
- Lost diver,
- Out of Gas

**dry exercice / drill ashore

Course Contents

- Course limits
- Selection of diving spot
- Preparation of diving spot
- diveplanning

Instructor/Student Relation

- I:S = max. 1:2

Instructor

- Technical Ice Diver Instructor

Multiple Stage Diver

Goal

The diver learns the handling of several stages with a leash.

Requirements

- Tech Diver 1 equivalent
- diving insurance
- diving medical health certification

Course Limits

- 3 stages

Dives

- 2 dives
- Total dive time: 150 Min.

Exercises

- Pre-dive sequence
- Handling of 3 stages
- Gas switch
- Handling stages in a leash
- Entry into boat dives with leash
- Stage handling in open water
- Exercises in open water (+/-0.5m)

Course Contents

- different leash models
- Positioning of 3 stages in different conditions
- Diving with bottom stage
- Handling of multiple stages on boat dives
- Dive planning for long bottom times
- Decompression planning with Ratio Deco and software

Instructor/Student Relation

- I:S = max. 1:3

Instructor

- Tech 2 Instructor

Drysuit Diver

Goal

This course teaches the basics of using a drysuit. Key topics include materials and types, construction, functions, insulation strategies, safe handling while diving with a drysuit, and its maintenance. Students receive an introduction to the ideal body position in the water and neutral buoyancy control (balance rig). Standardized problem-solving and emergency procedures are taught for any issues that may arise.

Requirements

- OWD or CMAS*
- 15 dives logged
- diving insurance
- diving medical health certification

Course Limits

- Diving with a drysuit
- Depth limit according to certification level
- Maximum training depth in the course is 18m

Dives

- Number: 3
- Total dive time: min. 60 min

Exercises

- Visual inspection and preparation of the drysuit
- Equipment check
- Neutral buoyancy
- Horizontal body position
- Gas in the legs
- Faulty inlet valve
- Faulty exhaust valve
- Drysuit maintenance and care

Course Contents

- Structure and Functions
- Insulation
- Hypothermia and Hyperthermia
- Fit Check
- Pre-Dive Preparations
- Donning and Undressing
- Equipment Check
- Entering the Water
- Achieving Neutral Buoyancy

- Recommended Body Position
- Handling and Operation of the Drysuit
- Troubleshooting and Emergency Management (Gas in the Legs, Faulty Valve, Flooded Suit, Uncontrolled Ascent)
- Post-Dive Cleanup and Maintenance

Instructor/Student Relation

- I:S = max. 1:4

Instructor

- Drysuit Instructor

Training Program Instructor

Instructor Training Course (ITC)

Goal

The PATD Instructor Training Course (ITC) trains new PATD instructors. The ITC equips candidates with the necessary knowledge, skills, and current teaching methods for professional and safety-conscious dive training and instruction. Upon successful completion of the ITC and the subsequent Instructor Examination (IE), instructors are authorized to independently teach PATD dive courses and training programs. The Instructor Training Course, including co-teaching and the examination, comprises a minimum of ten (10) days.

Requirements

- Divemaster or active instructor
- BoTD with at least 60 logged dives at the required level
- Valid diving medical certificate
- Valid dive instructor liability insurance
- First aid training including CPR (less than 2 years old)
- Training in the use of emergency oxygen in diving accidents (less than 2 years old)

Course Limits

- Open water diving
- Theoretical and practical training according to ISO 24801-3 and 24802-1/2
- Advanced Recreational Diver and Basics of Technical Diving levels
- Tech, Cave, Mine and Rebreather Instructor levels are excluded

Dives

- Minimum number of dives: 15

Course Contents

- Responsibility
- Learning methods
- Briefings and debriefings
- Error analysis
- Presentation and communication techniques
- Fundamental laws of physics
- Medical aspects
- Diving techniques
- PATD standards
- ISO 24801 ff. and 24802 ff. standards
- Use of assistants
- Presentation techniques
- Communication techniques
- Conducting briefings and debriefings
- Error analysis

- Group leadership and positioning in the water
- Demonstration of exercises
- Assessments
- Dive planning
- Conducting attendance checks
- Risk management
- Rescue drills
- Certification and documentation
- Instructor status

Co-Teaching

To acquire an instructor certificate, co-teaching may be required. For this, the candidate must assist in a PATD course, he must give at least two theory and two diving lessons and he must have served as an assistant. The PATD Instructor will deliver a performance report to the Instructor Trainer, who will assess the following:

- Knowledge
- Diving skills
- Equipment
- Safety consciousness
- Teaching skills

Instructor Certification (IE)

To be certified as a PATD Instructor, the following requirements must be met:

- Passing the PATD Standard tests once Positive assessment of the required co-teaching courses
- Passing the instructor test for the particular level
- Holding two training lectures, where one topic is disclosed at least one day in advance, the other one hour in advance.
- Giving a training lesson in the water
- Articulated demonstration of all exercises for this level in teaching quality
- Commendable equipment, safety-conscious and professional attitude

Cross Over

Instructors of other associations may cross over to PATD at the same level. To do so, the following requirements must be met:

- Passing the PATD Standard tests once
- Passing the instructor test for the particular level
- Articulated demonstration of all exercises for this level in teaching quality
- Commendable equipment, safety-conscious and professional attitude

It is up to the Instructor Trainer to request additional performances.

Teaching Status

An Instructor only holds the teaching status for PATD Courses for the current year, if the following requirements have been met. Should one requirement not have been met, the teaching status is automatically cancelled, without a special notice by PATD.

- PATD Instructor certification for the particular teaching level
- Yearly PATD fees paid
- Every instructor needs a liability insurance, covering his classes for damages (200,000.- €) and injuries (1,500,000.- €). A defence insurance is strongly recommended.
- In the previous year, the Instructor has carried out at least 10 dives on his highest levels

Should an instructor not have done any certifications during the last three years, he must take part in an upgrade course. Alternatively, he may publish an article with relations to technical diving and PATD (consultation with BOD required), assist in an instructor course, assist in two user courses or carry out an activity, approved by the Training Director.

Instructors with teaching status are published in the PATD Instructor List in the internet. An instructor may be assigned the non-teaching status by the BoD or the TD (e. g. due to standards violations or after a complaint regarding a gross undermining of the PATD pricing structure). An instructor may be assigned the teaching status again. This is the responsibility of the BoD or the TD and may be subject to certain conditions.

ARD Instructor

Requirements

- BoTD
- 200 logged dives
- ARD Co-Teaching: 1
- diving insurance
- diving medical health certification

Courses to be held

- ARD
- Drysuit

BoTD Instructor

Requirements

- Tech 1
- 300 logged dives
- BoTD Co-Teaching: 1
- diving insurance
- diving medical health certification

Courses to be held

- ARD
- BoTD
- Drysuit

Tech 1 Instructor

Requirements

- Tech Diver 2
- BoTD Instructor
- Gas Blender
- Tech 1 Co-Teaching: 1
- 400 logged dives
- 50 dives deeper than 50m
- Has held 3 BoTD courses
- diving insurance
- diving medical health certification

Courses to be held

- ARD

- BoTD
- Tech Diver 1
- Gas Blender
- Drysuit

Tech 2 Instructor

Requirements

- Tech Diver 3
- Tech 1 Instructor
- Gas Blender
- Tech 2 Co-Teaching: 1
- 500 logged dives
- 50 dives deeper than 60m
- Has held 5 BoTD courses
- Has held 3 Tech 1 Courses
- diving insurance
- diving medical health certification

Courses to be held

- ARD
- BoTD
- Tech Diver 1
- Tech Diver 2
- Gas Blender
- Drysuit

Tech 3 Instructor

Requirements

- Tech Diver 3
- Tech 2 Instructor
- Tech 3 Co-Teaching: 1
- 600 logged dives
- 50 dives deeper than 70m
- Has held 5 BoTD courses
- Has held 5 Tech 1 Courses
- Has held 3 Tech 2 Courses
- diving insurance
- diving medical health certification

Courses to be held

- ARD
- BoTD
- Tech Diver 1
- Tech Diver 2

- Tech Diver 3
- Gas Blender
- Drysuit

Wreck Instructor

Requirements

- Wreck Diver 2
- Tech 2 Instructor or Cave 2 Instructor
- Wreck 1 Co-Teaching: 1
- Wreck 2 Co-Teaching 1
- 100 logged wreck dives, of which 50 dives in a wreck
- diving insurance
- diving medical health certification

Courses to be held

- ARD
- BoTD
- Wreck Diver 1
- Wreck Diver 2
- Drysuit

Cave 1 Instructor

Requirements

- Tech Diver 1
- Cave Diver 2
- BoTD Instructor
- Gas Blender
- Cave 1 Co-Teaching: 1
- 400 logged dives
- 100 cave dives
- Has held 3 BoTD courses
- diving insurance
- diving medical health certification

Courses to be held

- ARD
- BoTD
- Cave Diver 1
- Gas Blender

- Drysuit

Cave 2 Instructor

Requirements

- Tech Diver 2
- Cave Diver 3
- Cave 2 Co-Teaching: 1
- 500 logged dives
- 200 cave dives
- Has held 5 BoTD courses
- Has held 3 Cave 1 Courses
- diving insurance
- diving medical health certification

Courses to be held

- ARD
- BoTD
- Cave Diver 1
- Cave Diver 2
- Gas Blender
- Drysuit

Cave 3 Instructor

Requirements

- DPV
- Tech Diver 2
- Cave 2 Instructor
- Cave 3 Co-Teaching: 1
- 600 logged dives
- 250 logged cave dives
- Has held 5 BoTD courses
- Has held 5 Cave 1 Courses
- Has held 3 Cave 2 Courses
- diving insurance
- diving medical health certification

Courses to be held

- ARD
- BoTD
- Cave Diver 1
- Cave Diver 2
- Cave Diver 3
- Gas Blender

- DPV
- Drysuit

PSCR Instructor

Requirements

- Tech 3 Instructor
- Co-Teaching: 1
- 300 logged PSCR dives
- 50 dives with PSCR deeper than 70m
- diving insurance
- diving medical health certification

Courses to be held

- PSCR Diver

Specialty Instructor

Requirements

- 200 logged dives, should the specialty require dives
- 100 dives in the specialty area, should the specialty require dives
- Documented knowledge and experience in the specialty area
- diving insurance
- diving medical health certification

Courses to be held

- The particular specialty program.