

Module objectives

This module extends students' depth experience, consolidates buoyancy control and develops their awareness of the underwater environment. Buddy rescue skills using an alternative supply (AS) are also developed during this module. Each module could be completed over a single dive or a series of dives dependant on conditions and skills progress.

Achievement targets

At the end of this module students should:

- Have had an enjoyable dive and extended their depth experience to 7-10m showing an increased awareness of the underwater environment and their potential impact on it
- Have further developed their buoyancy control, finning action and swimming attitude
- Be able to confidently remove, replace and clear their mask of water in a depth of approximately 4-6m, with no sign of panic
- Be able to correctly retrieve and clear a dropped demand valve in a depth of approximately 4-6m, with no sign of panic
- Be able to perform an AS ascent from 4-6m, as both donor and recipient
- Have developed an awareness of pilotage as a means of navigation
- Be able to carry out a near-vertical ascent, while maintaining good control of their buoyancy

This module should also offer the student the opportunity to experience one or more of the following diving conditions:

- **Sea dive** a dive conducted in salt water
- Shore dive a dive beginning and ending on either a gently shelving shore or a deep-water entry/exit
- **Dive in protective clothing** a dive wearing either a wetsuit or drysuit
- Low visibility dive a dive in visibility of 2-4m
- **Wall dive** a dive along a vertical or near-vertical wall with at least 4m of water between the divers and the bottom

Equipment needed

For this module the instructor and each student will need:

- Basic equipment (mask, fins and snorkel)
- A scuba set comprising a single cylinder containing air, buoyancy compensator (BC) (ensure that a student's BC is a good fit) and regulator fitted with an alternative supply (AS) configured to comfortably provide an effective gas supply to an out-of-gas recipient
- Weight belt, weight harness or BC integrated-weight system and weights
- Appropriate protective clothing, such as a wetsuit or drysuit complete with boots, hood and gloves
- Ancillary equipment including a knife or net cutter, and a dive computer or watch and depth gauge

Note: the breathing gas to be used is air.

Initial training is best completed with simple, standard equipment, so it is best practice to avoid the use of specialised or unusual equipment for Ocean Diver modules if possible.

Venue

This module requires a site with a shore entry, by wading or steps, a level area at a depth of approximately 4-6m for skills practice, a maximum depth of approximately 10m, and a suitable visual reference (steep rock face, shot line) against which vertical (or near-vertical)



descents/ascents can be performed over a depth range of at least 5m.

For students' early open-water experiences you should consider the comfort of the water conditions likely to be encountered at the chosen site on the day. Cold water (less than 10°C), low visibility (less than 5m), and any noticeable water movement (more than 0.2 knots) will all make the experience more challenging and potentially less enjoyable. Such conditions should be avoided if practical to do so.

Module content

This module extends students' depth experience, consolidates their buoyancy control and continues to develop their awareness of the underwater environment.

Buddy rescue skills using an alternative supply (AS) will also be developed during this module, which includes a number of ascents that, because of their nature, are likely to exceed the normal ascent rate. Because of this, these ascents should be carried out before any other diving activity below a depth of 6m. Careful consideration should be given to the decompression implications of these repeat ascents on the subsequent dive profile and any subsequent dives.

The module contents that follow assume that students are using drysuits. For advice on adapting this module where other types of protective clothing are necessary see the section 'Adapting this module' at the end of these module notes.

All practical Ocean Diver modules can either be delivered as a single session or broken down into two or more separate sessions, depending

on students' progress and the time available.



The following sections are intended as a guide on how to deliver the skills. The sequence can be varied to suit local conditions and the needs of individual students. However, each session should begin with a briefing and a buddy check, and end with a debrief.

Using the principle of teaching by demonstrating a practical skill and then asking students to do it (demo/do), you will demonstrate each element of a skill first before asking students to copy your demo. Correct any errors by repeating the demo-do sequence emphasising the correct action.

Briefing

The briefing for open-water modules should start in advance of the diving.

Advance briefing

In advance, make sure that students have access to all the necessary equipment they will require and are fully prepared for the experience. This includes protective clothing and all the smaller items that can easily be overlooked by divers at this stage of training – hoods, gloves, additional weights plus spares, drysuit inflation hoses, dry change of clothing, wind-proof clothing, cold/hot drinks as appropriate.

SEEDS brief

On the day, cover all elements of a SEEDS brief in a logical sequence appropriate to the local conditions. Reassure students that less haste at this point in training will mean more speed overall. Choose a location where the students are comfortable so that they are able to fully focus on the briefing.

Safety

Emphasise the basics including: confirming fitness to dive (students are free from colds); the importance of ear clearing, mask equalisation; checking gas consumption; and breathing normally at all times when using scuba, taking particular care on ascent. Point out any relevant hazards of the site, including slippery or uneven surfaces and a silty seabed.

Emphasise consideration of breathing-gas consumption and ensure that appropriate turn-around and reserve values are established. Although no-stop times will not be exceeded on this dive, students should be shown why not, emphasising that decompression planning has not been ignored.

Stress that during the simulated AS exercise students should not remove their own demand valve until they have the AS demand valve in their hand.







Equipment

List the equipment required for the lesson: basic equipment, scuba and weight system, suit with hood and gloves, depth gauge and timer/dive computer, knife/ line cutter. Brief students on the use of shot lines, if appropriate.

Exercise

Briefly outline the topography of the site, the route the dive will take and any significant things the students are likely to see. Explain that the objective is to have an enjoyable dive while increasing students' depth experience and their awareness of the underwater environment and how to navigate around it.

Briefly explain the main exercises to be undertaken as given in the lesson objectives: including further development of buoyancy control by introducing more rapid pressure changes associated with near vertical descents and ascents, and static AS practice. Do not talk through each skill in detail, this will be covered by demonstrating in the water.

Discipline

Remind students of the importance of watching each of your demonstrations and only attempting to repeat a skill when prompted by you. Remind students of the importance of staying close together and the need to always ascend as a group (one up, all up).

Signals

Remind students of the basic diving ('OK', 'stop', 'up', 'down') and teaching signals ('you watch me' and 'you do'). Introduce any special signals that will be used for specific skills, such as 'AS donate', 'AS receive', or to point out items of interest.









Report dive plan to Dive Manager

Ensure that your dive plan is reported to the Dive Manager. Seeing you as a role model, students will adopt this as standard procedure.

Kit up and buddy check, dry run and entry

Assemble scuba

- · Students to assemble their scuba kit.
- Check to ensure that this has been done correctly.
- Ensure that any adjustments to the positioning of students' cylinders, identified to improve trim in the first open-water module, have been adopted by the student.

Carry out functionality checks

Students to carry out functionality checks. Check to ensure that this has been done correctly.

- Physical check: Check that all hoses are free from damage. Check that the mouthpieces of both main and AS demand valves are firmly attached and are free from splits or tears that could allow water in.
- Contents check: Turn cylinder valve on slowly, holding the contents gauge facing the cylinder. Check gauge to ensure cylinder has adequate contents.
- Operational check: Take several breaths from both main and AS demand valves, while observing the contents gauge. Ensure valves breathe smoothly and contents gauge operates correctly (no fluctuations).
- Leak check: Turn cylinder valve off and check for leaks by both listening and observing the contents gauge (leave for a few minutes).
- Breathe down: Purge the air pressure, while cylinder valve is closed, and attempt to breathe from both main and AS demand valves to check for inward leaks. Before use, open cylinder valve, slowly as usual.

Prepare weights

 Ensure that any adjustments to students' weights, identified to improve buoyancy in the first open-water module, have been adopted by the student.

Fit suit

- Help students to put on their suits.
- Ensure students help each other to close drysuit zips.

Kit-up, in buddy pairs

- Fit weight belt/weights, ensuring they are secure but can be ditched in an emergency.
- Put on scuba.

Note: Bend at the knees and keep back straight when lifting weights and scuba to protect against back injury.

Fit hood and gloves.

Note: it can be more comfortable to do this before fitting weights and scuba. Students should be encouraged to try different sequences.

Conduct buddy check

Students should by this stage should have achieved the performance standard to help each other to kit up and conduct a buddy check.

- Supervise buddy check.
- Listen for the use of BAR or another appropriate acronym.
- Once students have completed their own buddy checks, you should perform a check of your equipment for the benefit of all students.









Dry run, AS ascent wearing gloves

- Ensure students can locate, release and breathe from their buddy's AS.
- Ensure donor and recipient can make positive contact in a comfortable position.
- Ensure donor and recipient can locate and operate their respective inflators and deflators/dump valve controls for the ascent. Remind recipients that they can only dump gas.
- Ensure students can locate and orally inflate their own BC by mouth or emergency cylinder (if fitted).







Note: The dry run is a helpful tool to show students what is required once in the water, but should be kept brief to avoid unnecessary discomfort to fully kitted divers.

Fit mask and check seal

- Remind students that masks should always be fitted before entering the water, and should stay in place until after exiting the water.
- Shore entry, by wading or steps, into standing-depth water
 - Partly inflate BC.
 - Breathing from demand valve, enter the water by either steps or wading in.
 - Fit fins in standing-depth water, leaning on buddy or other suitable fixed object for support.
 - To prepare students for the water temperature during later mask clearing, have each lift their mask off their face and splash water onto their face before refitting mask.
- Check correct weighting and surface buoyancy
 - As the students' weights may have been changed since the first open-water dive, check that they can initiate a descent.
 - Also check that they have adequate surface buoyancy, their demand valve should be comfortably clear of the water when their BC is fully inflated.







- Descent into 4-6m water
 - Conduct a controlled descent suitable for site conditions. Ensure students maintain control of buoyancy throughout.

Skills practice in 4-6m

These exercises consolidate students' buoyancy and mask-clearing skills and build on the AS ascent skills introduced in the sheltered-water modules.

Buoyancy control

Aim to achieve true neutral buoyancy and consolidate students' appreciation of how breathing affects buoyancy.

Establish neutral buoyancy from a horizontal position on the bottom by inflating/ venting drysuit (BC if using wetsuit) in short bursts to hover just clear of the bottom.

- Maintain hover while gently ascending/descending with breathing cycle, remaining clear of the bottom and the surface throughout.
- Check students' trim keeps them reasonably horizontal in the water.
- Excessive head-down or feet-down orientations should be corrected by either adjustment of cylinder position in BC or repositioning of weights.







Recap mask clearing, in deeper water

The following mask clearing exercises consolidate students' skills at a deeper depth than on OO1, but care should be taken to break the skill down into small, progressive steps to build students' confidence.

- With no water in the mask, hold top edge of mask against forehead
- Breathe out steadily (but not forcibly) through nose, and tilt head (according) to type of mask), to clear out water.

Note: It is important to start breathing out before tilting head to prevent water entering the nose.

Partial-flood mask clear

- Lift lower skirt of mask from face to allow a small amount of water to enter.
- Clear as above.

Note: If students find it uncomfortable having water around their nose then suggest they look down as this will minimise the temptation to breathe in through the nose.







Full-flood mask clear

- Lift the mask skirt off the face to completely flood the mask
- Clear as above.

Remove and replace mask

- Flood mask completely as above and remove mask
- Identify nose pocket and place at bottom to ensure mask is correct way up
- Place strap out of way over front of mask lens
- Clear hair from face, place mask on face, check seal for trapped hair
- Replace strap over the head, and clear as above







Demand-valve clearing

This exercise is a recap of the drill practiced in OO1 and is included here as a precursor to the AS exercises.

- Breathe in, remove demand valve from mouth and allow a small stream of bubbles to escape from mouth.
- Hold demand valve out to side with the mouthpiece facing downwards to avoid free flow.
- Replace demand valve and exhale to clear.







Switch to own AS demand valve

- Remove AS from stowage.
- Breathe in, exchange valves while allowing a small stream of bubbles to escape from mouth.
- Clear AS by exhalation.
- Repeat using purge button to clear.

Static AS use, student as donor then recipient

As in the sheltered-water modules, teach for the most stressful of emergency situations requiring AS, where the recipient takes the donor's AS from its stowage location and doesn't wait for the donor to remove it and offer it.

This exercise ensures students are competent in both the donating and receiving roles while static on the bottom before progressing to an AS ascent.

- Instructor/recipient signals 'out-of-gas'. Student/donor moves their hands away from torso to prevent obstruction of access to their AS.
- Repeat previous step, add instructor/recipient takes donor's AS from stowage.
- Repeat previous two steps, add instructor/recipient removes own mouthpiece and replaces with purged donor's AS. Establish comfortable breathing.
- Repeat previous three steps, add student/donor makes positive contact with instructor/recipient by holding shoulder strap (avoiding quick release buckles) or other convenient handhold. Check all is OK by exchanging 'OK' signals. Disengage by retrieving your own demand valve.

Ask each student, one by one, to repeat the steps above as recipient. Indicate which other student should be the donor. Stay close to the students in case you need to offer your AS.













Use of AS on horizontal swim

- Start this AS exercise with the donor and recipient swimming side by side.
- Follow the usual steps to establish AS use (see above), reaching across to take donor's AS and making positive contact by holding shoulder strap or other convenient hand-hold.

Swim approx. 5m, disengage by retrieving recipient's main demand valve.

Note: The relative positioning of the donor and recipient should be such that, without changing their positions they can, in the subsequent exercise, ascend to the surface while being able to control drysuit/BC venting and without getting in the way of each other's finning action. The flexibility of position offered by the full length of the AS hose should be used to achieve this while still maintaining physical contact.

Mini AS ascent, student as recipient then donor

For the AS ascent exercise the instructor should demonstrate as the donor, as the donor has more control of the ascent rate and surfacing procedure.

During any ascent the whole group should remain together to ensure that any demonstrations can be clearly observed and to help maintain group control (one up all up).

Consider the use of a fixed datum for this element of training to provide students with a visual reference and an emergency 'brake' if required.

- From a position of neutral buoyancy establish static AS use, and comfortable breathing rhythm, as above.
- Donor and recipient carry out mini AS ascent, by ascending approximately 2m at a normal ascent rate, controlling their buoyancy by venting air from their dry suits as necessary.

Note: Repeat the above demonstration acting as donor again with another student as recipient, in order to ensure the first student sees a clear demonstration from the instructor.

Ask each student, one by one, to repeat the steps above as donor. Indicate which other student should be the recipient. Stay close to the students in case you need to offer your AS.





Full AS ascent, student as recipient then donor

 Repeat mini AS ascent, as above, but continue to the surface at a normal ascent rate, both participants controlling buoyancy by venting air from drysuits as necessary.





- If this skill is not performed to the required standard, then an additional dive with further repetitions and appropriate correction, should be carried out.
- Be aware of the decompression implications of multiple ascents and endeavour to keep the number of ascents to the minimum necessary.

Surface actions, following AS ascent

Teach the realistic situation that the recipient will have no gas with which to inflate their BC at the surface.

- On the surface, following an AS ascent, donor fully inflates their own BC using direct feed and supports recipient.
- Recipient to inflate their own BC by mouth or emergency cylinder (if fitted), while supported by donor/treading water.
- Repeat above exercise with donor inflating recipient's BC by mouth or emergency cylinder (if fitted) to illustrate technique required if recipient is unable to help themselves following an AS ascent.

Note: For BCs where the pull dump is routed through the corrugated BC hose take care to ensure that gas is not accidently dumped by pulling on the hose.







Check student comfort

At this stage, check students have sufficient gas, and are warm and comfortable enough to complete the next element. If students are cold, uncomfortable or just need further time in the water before doing skills practice; then exit the water (go to exit section p.17). The exploratory dive can be completed in a second dive.

Exploratory dive in 7-10m

The objective of this lesson element is a leisurely swim, which includes a vertical or near vertical descent/ascent over a depth range of approximately 5m. Throughout the dive highlight any points of interest and the features used for pilotage to return to the exit point.

The following tasks should be integrated into the dive rather than being performed as formal exercises.

Vertical descent

- Signal descend to group, get students to acknowledge with 'OK' and 'down' signals.
- Closely monitor students' buoyancy control during descent.
- Guide students to inflate their drysuits to arrest their descent just clear of the bottom, demonstrating good buoyancy control and avoidance of damage to underwater life on the bottom.
- You may have to encourage/prompt students to equalise their ears and mask.







Use of hand signals and monitoring of instruments

- Ensure that a full range of basic diving hand signals are used, and are responded to, throughout the dive.
- Conduct gas and time checks regularly with each student to demonstrate the importance of routine instrument monitoring.







Finning action and trim

- During the dive monitor the students' finning action and swimming attitude, particularly if the position of their weights was adjusted after the previous dive.
- Ensure finning action is originating from the hip (not the knee), and that the knees only bend slightly on the upward stoke and straighten on the downward stroke.
- Fin strokes should be long and gentle.

Maintain neutral buoyancy, in changing depth

- When small changes of depth are experienced, check students are actively managing their buoyancy.
- Provide corrective teaching as required.

Awareness of environment

- Draw students' attention to as many features of the topography or underwater life as possible during the dive. As this will all be new to them, don't assume that they will automatically see things, particularly where life hides in crevices or holes.
- Continue to encourage the students to be aware of the potential damage that they can do to underwater life, by carelessly placed hands or by the impact of their fins behind them.







Pilotage

- Throughout the dive, point out features that can be used for navigation and how to recognise them when returning in the opposite direction.
- Encourage the students to point out identifiable features that they can use to navigate back with.

Vertical ascent

- Initiate ascent by signalling 'up' to the group and ascend buddy pairs facing each other.
- Ensure that students use visual references to judge their rate of ascent, and that they maintain visual contact with all members of the group.
- Stop the ascent at the 6m check depth.
- Continue at a slower ascent rate, as advised by your dive-planning tool.
- Closely monitor students' buoyancy control during the ascent.
- Guide students to vent their drysuits during the ascent.







Note: Consider the inclusion of a safety stop of 1 to 3 minutes duration at the 6m ascent check depth if safe to do so.

Carry out surfacing drill

- In the last few meters, look up towards surface above/behind buddy's head.
- Raise free hand above head when nearing surface.
- Be prepared to stop ascent if there are obstructions.

Actions at the surface

- Fully inflate BC at surface.
- Exchange 'OK' signals.
- Discourage the, often natural, instinct to remove mask or demand valve on reaching the surface.



Demand valve and snorkel exchanges while surface swimming

This builds confidence in switching between demand valve and snorkel, as may be required on a shore dive involving a surface swim.

- Orally inflate BC to achieve slight positive buoyancy and to practice surface use of BC controls.
- Surface swim on front breathing from demand valve.
- Lift face clear of water, remove demand valve, place snorkel in mouth, clear and continue surface swim.
- Lift face clear of water, remove snorkel, tip demand valve mouthpiece down to drain, place in mouth, breathe normally and continue surface swim.
- Repeat demand valve and snorkel exchange over several cycles.

Note: This exercise requires reasonably smooth surface conditions to be successful. Avoid undertaking the skill if the surface water conditions are excessively rough.

Exit from standing-depth water and de-kit

Exit water by wading or steps

- Remove fins: lean on buddy or other suitable fixed object for support and use figure 4 position for stability.
- Leave the water by wading out or climbing steps.

Note: Masks should be kept on face, demand valves should be kept in mouth, until safely clear of the water.

De-kit

- Lead the de-kitting exercise.
- Ensure buddies help each other to remove scuba kit.
- Show students the appropriate techniques for getting out of their suit.

Report back to Dive Manager

 Following the dive, students should check in with dive manager to confirm their safe return and to report their gas out, maximum depth, dive time and other points of interest.

Equipment care

Remind students to clean and dry their equipment on their return home.

REAP debrief

Conduct a brief but thorough debrief using the REAP format, making sure that everyone has enjoyed their dive and highlighting the areas of progress that they have made. Offer constructive feedback and explain how they will further develop their skills in the next dive.

Although it is better to debrief the dive while it is still fresh in students' minds, if students have got cold during the dive, decide whether it is better to remove protective clothing before or after the debrief.

Review

- Briefly playback the skills covered in the lesson and remind students of the lesson objectives.
- Check that all students have enjoyed the dive and remind them of both interesting features/life that they saw and of the features used for pilotage.

Encourage

- Praise good performance both for the skills exercises and the exploratory dive.
- Provide support and comfort if things haven't gone so well.

Assess

- Offer constructive feedback to enable students to identify areas for improvement.
- Provide guidance on how these improvements can be achieved.

Preview

- Explain how students will further develop their skills in the next module.
- Give them something fun to look forward to and encourage them to come back for more.
- Answer any questions that the students have.

Adapting this module

Use the following guidance as a basis for how to adapt the module contents for circumstances different to those assumed for the above notes.

- Protective clothing/water conditions same as for sheltered-water training
 - Under these circumstances, the above lesson notes include some unnecessary duplication.
 - The object of the lesson becomes the further extension of the students' depth experience, and their awareness and enjoyment of the underwater environment.
 - In these circumstances, section 3 (Skills Practice in 4-6m) can be modified to exclude everything except the static and AS ascent skills.
 - As the students will already have demonstrated proficiency at controlled vertical descents and ascents, entry and exit from a boat may be substituted.
- Protective clothing/water conditions cause only a buoyancy change from sheltered-water training
 - Buoyancy changes may be due to changes in water salinity or to the need for a thicker wetsuit (but not to the extent of requiring gloves and hood) will be the same as in the previous dive.
 - Adjustment to the students' weights, and initial buoyancy checks, will not therefore be required. Continue to carry out the mid-water hover buoyancy check.
 - In these circumstances, section 3 (Skills Practice in 4-6m) can be modified to exclude everything except the static and AS ascent skills.
 - As the students will already have demonstrated proficiency at controlled vertical descents and ascents, entry and exit from a boat may be substituted.
- Shorty to full wetsuit change/changed water conditions
 - Where water conditions require a full wetsuit (including hood and gloves) students will need to adapt to the same factors of encumbrance and changed buoyancy as students wearing drysuits.
 - One adaptation to the lesson content is that students will use the BC inflator rather than the drysuit inflator for their buoyancy control. The technique will remain the same as for sheltered-water training, the difference will be wearing gloves.
 - The above lesson contents will apply in full except for drysuit inversion recovery, which can be removed from the module.

Skills performance standards

At the end of this module, students should be sufficiently competent to achieve the following skill performance standards without supervision, in the water conditions that they have experienced.

Buoyancy control (hover 1m clear of bottom) Students should be able to inflate/ vent their drysuit (or BC if wearing a wetsuit) to hover in mid water (completely clear of the bottom and below the surface), and maintain ± 1m variation around target depth due to breathing only. Students should remain clear of bottom and surface throughout breathing cycle.

Mask removal and clear in 4-6m Students should be able to flood, remove, refit and clear their mask of water. One or two hands may be used to hold the mask while clearing. The seal should be checked to ensure it is flat and that no hair is trapped. Completely clearing all the water from the mask in one breath, while desirable, is not essential. The mask should be replaced without signs of panic.

AS ascent as donor from 4-6m When acting as an AS donor, students should provide clear access to their AS for recipient, taking secure hold of recipient and allowing receiver to establish a stable breathing rhythm. After an exchange of 'OK' signals, the donor should ascend with recipient, following their 'up' signal, venting their own buoyancy device as necessary to control the ascent. At the surface, the donor inflates their own BC and maintains a secure hold of the recipient, supporting them on surface while they orally inflate their BC.

AS ascent as recipient from 4-6m When acting as an AS recipient, students should remove donor's AS from stowage, clear it of water and establish a stable breathing rhythm and a secure hold of the donor. After an exchange of 'OK' signals, recipient signals 'up' and ascends with donor, venting their own buoyancy device as necessary to control the ascent. At the surface they will orally inflate their BC, while supported by the donor.

Note: the recipient should not remove their demand valve until the AS is ready for use.

Buoyancy control on vertical ascent Students should be able to conduct safe controlled ascents, maintaining close contact with their buddy. They should do this without any yo-yoing and at a safe rate of ascent. Buddies should be looking beyond their buddy's head to ensure the surface is free from hazards. They should fully inflate their BC at the surface. Students should also be able to stop their ascent at any point.

Dive conditions Students should have gained experience of one or more of the following conditions:

- **Sea dive** a dive conducted in salt water
- Shore dive a dive beginning and ending on either a gently shelving shore or a deep water entry/exit
- **Dive in protective clothing** a dive wearing either a wetsuit or drysuit
- Low-visibility dive a dive in visibility ranging between 2m and 4m
- Wall dive a dive along a vertical or near vertical wall with no solid bottom a minimum of 4m below the divers