

Ocean Diver

Introduction to Open Water

Module objectives

The five Ocean Diver sheltered-water modules focus on teaching students the basic skills they need to be safe underwater. Each module could be completed over a single dive or a series of dives dependant on conditions and skills progress. Progressing to open water, the emphasis changes to teaching them how to enjoy the underwater environment, while continuing to develop their skills to match the expanding range of conditions that they encounter. In this module students will practice their basic skills with the added encumbrance of protective clothing, or at deeper depths than before.

Achievement targets

At the end of this module students should:

- Have had an enjoyable dive and extended their depth experience to approximately 6m, showing an awareness of the underwater environment and their potential impact on it
- Have, where appropriate, established the correct amount of weight required for the new water conditions and the protective clothing worn
- Have developed their buoyancy-control skills while swimming underwater wearing protective clothing or going deeper than before
- Be able to clear their mask of water in a depth of approximately 2m
- Be able to correctly retrieve and replace a dropped demand valve in a depth of approximately 2m
- Be able to successfully recover from a drysuit inversion (if worn) without floating to the surface
- Be able to quickly disconnect their drysuit/BC inflator hose in the event of the valve sticking open

- Be able to jettison their weights as an emergency means of achieving positive buoyancy

This module should also offer students 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

Equipment needed

The instructor and each student will need:

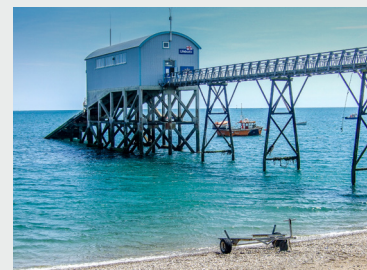
- Basic equipment (mask, fins and snorkel)
- A scuba set comprising a single cylinder containing air, buoyancy compensator (BC) (ensure that a student's BC is a good fit) and regulator fitted with an alternative supply (AS) configured to comfortably provide an effective gas supply to an out-of-gas recipient
- 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 first open-water module requires a site with easy shore access, via a sloping shore or ladder, into water of standing depth. Water depths of up to 6m should be reachable within a short swim.



For students' first 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 contents

This module introduces students to diving in less-sheltered waters and in protective clothing where appropriate, this may be progression from a pool to open water, or a depth progression from shallow, sheltered open water. Basic skills are practiced following a short, exploratory dive to 4-6m.

Remember that many of the differences from sheltered water that are taken for granted by experienced divers – including water temperature, reduced underwater visibility, and the restrictions of protective clothing – will be significant for students.

It is important that this module is not rushed. The prime objective of this first open-water experience is to ensure that students enjoy themselves.

The module contents that follow assume that students are using drysuits for the first time. For advice on adapting this module where other types of protective clothing are necessary, or where a drysuit familiarisation session has been conducted in sheltered water, 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.

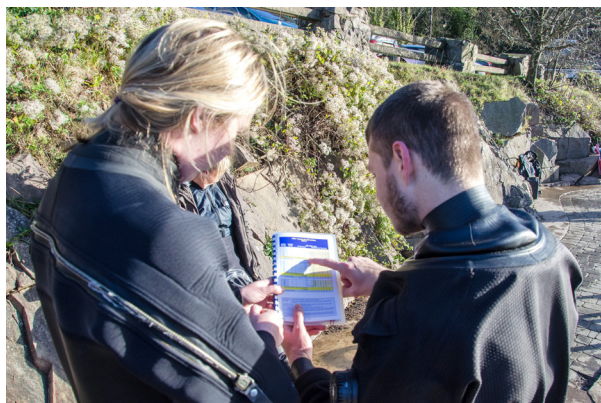
SEEDS brief

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.

As this is the first open-water session, 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.



- **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.

- **Exercise**

Briefly outline the topography of the site, the route the dive will take and any significant things the students are likely to see. Briefly explain the main exercises to be undertaken as given in the lesson objectives: including mask and demand valve clearing, and drysuit skills including recovery from inversion and disconnection of direct feed hoses. Do not talk through each skill in detail, this will be covered by demonstrating in the water.

Explain that buoyancy control is not just for comfort, it is also an essential element of avoiding damage to the underwater environment. Correct weighting and trim is vital for good buoyancy control so time will be spent determining the correct amount of weight for each student.

As this is the first time that many students will have worn any significant amount of weight, re-emphasise the importance of being able to jettison it quickly, and why practice will be done in very shallow 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 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 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

It may be more comfortable to put on your suit before assembling your kit, or vice versa. Advise students on the appropriate sequence for the weather conditions.

- **Assemble scuba**
 - Students to assemble their scuba kit, as learned in sheltered-water training. Check to ensure that this has been done correctly.
- **Carry out functionality checks**

Students to carry out functionality checks, as learned in sheltered-water training. 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**
 - Make an initial estimate of the amount of weight likely to be needed by each student, and add to student's belt, harness or integrated weight system.
 - If necessary, refine weighting later.
- **Fit suit**
 - Show students how to put on their suit, particularly any wrist and neck seals. Assist students where necessary.
 - Show drysuit users how they can help each other to close the zip without trapping their undersuit.

Note: the preceding steps could be completed prior to the SEEDS briefing.



- **Kit-up, in buddy pairs**

- Fit weight belt/weights, ensuring they are secure but can be ditched in an emergency.
- Put on scuba, with the unfamiliar encumbrance of protective clothing, students will likely need more assistance than before. Ensure all scuba straps are secure and that all hoses are neatly routed

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 be competent and confident to help each other kit up and conduct a buddy check, but will require guidance on any new aspects to be included (such as dry suit controls). Remind students of the importance of making sure that they can locate, release and breathe from their buddy's alternative supply.

- Supervise buddy check, ensuring that you are included.
- Listen for the use of BAR or another appropriate acronym.



- **Dry run, operating controls wearing gloves**

Carrying out even basic skills will be affected by protective clothing worn.

- Wearing gloves, practice locating and operating own critical items including demand valves, BC/drysuit inflators/deflators, dump valves, weight releases.
- Practise same actions on buddy.

- **Dry run, action for BC inflator stuck open**

This description of actions is correct if BC hose comes over the left shoulder, otherwise reverse.

- Grip the BC inflator mouthpiece with the right hand.
- Grip the collar of the direct feed with the thumb and forefinger of the left hand.
- Wrap the remaining fingers of the left hand around the hose.
- To disconnect, push the hose forward while pulling the collar backwards.
- The above sequence is reversed to reconnect the hose.
- Once connected, check that the inflator is working by pressing the inflate button and then venting the gas.

Note: this dry run should be carried out with the direct feed hose pressurised.

- **Dry run, action for drysuit inflator stuck open**

This description of actions is correct if drysuit hose comes under the right shoulder, otherwise reverse.

- Grip the direct feed hose with the right hand.
- Use thumb and forefinger of the right hand to grasp the collar.
- Use left hand to steady the suit valve, if necessary.
- To disconnect, push the hose forward while pulling the collar backwards.
- The above sequence is reversed to reconnect the hose.
- Once connected, check that the inflator is working by pressing the inflate button.

Note: this dry run should be carried out with the direct feed hose pressurised.

- **Fit mask and check seal**

- Slacken mask strap slightly to allow for hood, if worn.
- Defog mask and fit to face: wearing gloves will make fitting a mask more difficult, so iron out any problems here to help underwater mask-related exercises.
- Fit strap over back of head and check hood is clear of mask seal. If students are struggling to fit the strap over their head it is usually an indication that it is too tight.

Note: Remind students that masks should always be fitted before entering the water, and should stay in place until after exiting the water.

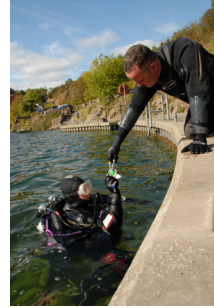
- **Shore entry, by wading or steps, into standing-depth water**
 - Partly inflate BC.
 - Breathing from demand valve, enter the water by either ladder or wading in.
 - Fit fins in standing-depth water, leaning on buddy or other suitable fixed object for support.
 - While breathing from the demand valve, bend forward to submerge face to check mask for leaks.

Adjust weighting and achieve neutral buoyancy

Not only will students have added weight to their sheltered-water kit configuration, but the distribution of buoyancy around their body will change with any extra protective clothing worn. Students will need time to acclimatise to this.

- **Descent and initial weight check, in standing-depth water**
 - Signal to all to descend together as a group, buddy pairs face each other and exchange signals.
 - Vent all gas from BC and dry suit, and descend.
 - Adjust buoyancy using drysuit inflator to achieve horizontal hover with fin tips just clear of bottom.
- **Adjust weight, if necessary**
 - Adjust weight until a horizontal hover can be achieved with no gas in the BC or drysuit.
 - Add 1- 2kg more to allow for change of buoyancy due to breathing gas consumption during the dive, dependent on size of cylinder.

Note: Ideally any weight adjustment should be achieved by adding weight to the weight belt or purpose-designed weight pouches. Where this is not practical the use of clip-on weights, which can be easily and securely attached to D-rings on the weighting system, is recommended. If it is necessary to add weight to a BC pocket this should be limited to a maximum of 2kg and you must ensure that it cannot accidentally come free during the dive. Make sure that weighting systems are then properly adjusted for subsequent dives.



- **Maintain hover**
 - Adjust buoyancy using drysuit inflator to establish steady hover clear of the bottom.
 - Maintain hover throughout breathing cycle.
 - No further inflation/deflation should be required.



- **Check trim**
 - Ensure that students are 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.

Exploratory dive in 4-6m

This should be a leisurely and enjoyable underwater swim. The following tasks should be integrated into the dive rather than being performed as formal exercises.

- **Descent following shelving shore**
 - From standing depth, as a group make a gentle descent down a sloping bottom to a maximum depth of 6m.
 - Ensure students equalise ears and mask on descent.

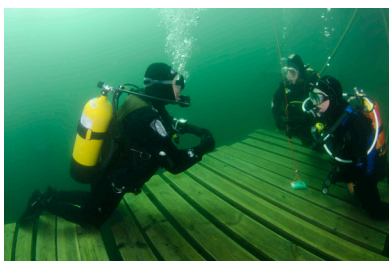
- **Use of hand signals and monitoring of instruments**
 - Ensure that a full range of basic diving hand signals are used, and are responded to, throughout the dive.
 - Conduct gas and time checks regularly with each student to demonstrate the importance of routine instrument monitoring.
- **Buoyancy control**
 - Check students' buoyancy control at approximately 2m depth increments by ensuring students can hover clear of the bottom without floating up or regularly bumping into the bottom.
 - Adjust buoyancy as depth changes using drysuit inflator (or BC inflator for non-drysuit divers) in small bursts and swim just clear of bottom. Use shoulder/wrist dump valve to vent gas if needed (or BC inflator dump or BC shoulder dump for non-drysuit divers).



- **Underwater swimming**
 - Develop the basic finning action taught in sheltered water, fin strokes should be long and gentle.
 - Ensure that the action is from the hip (not the knee), and that the knees only bend slightly on the upward stroke of kick and straighten on the downward stroke.
- **Underwater orientation**
 - Allow students time to familiarise themselves with the different attitudes that they will adopt in the water and the impact of their protective clothing on their buoyancy.
 - Re-check students' trim and note if it needs correction for subsequent dives.

- **Awareness of environment**

- Encourage students to be aware of their buoyancy control.
- Remind 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.
- Students are new to drysuits, so perfection is not expected at this stage. The planned route should take this into account.



- **Pilotage**

Throughout the dive, indicate points of interest to the students and the features used for pilotage to return to the exit point.

- **Weight check with less gas, and controlled ascent to 2-3m**

By the end of the dive students' breathing rates will have settled down, which will have an effect on their buoyancy.

- Hover just clear of the bottom and adjust suit inflation to check/achieve neutral buoyancy.
- After the buoyancy check, ask students to completely vent their suit.
- Assess amount of gas vented from suit to determine whether any further adjustment to their weighting is needed for future dives.
- Make a controlled ascent up a gentle slope into shallower depths (2-3m).
- Maintain fine control of buoyancy to avoid uncontrolled ascent.

- **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.16).The skills practice and associated dry runs can be completed in a second dive.

Skills practice in 2-3m

These exercises are intended to develop familiarity with the encumbrance of protective clothing while performing skills with which students are very familiar. A depth of 2-3m is ideal for this. Although the skills have been learned and practised in sheltered water, break down the exercises again into small, progressive steps to ensure student safety and success when replicating it in open water.

- **Recap mask clearing**

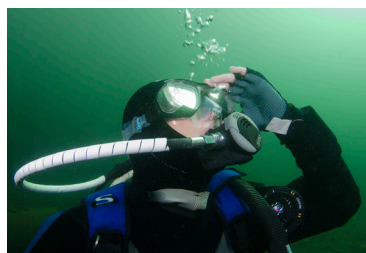
- With no water in the mask, hold top edge of mask against forehead
- Breathe out steadily (but not forcibly) through nose, and tilt head (according to type of mask), to clear out water.

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**

The following four exercises set out the minimum steps to use in any demand-valve retrieval skills breakdown.

- 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.



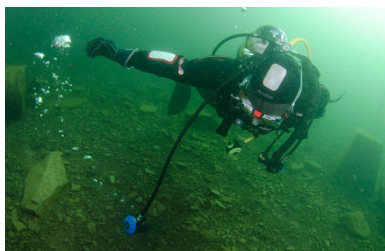
- **Switch to own AS demand valve**

- 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.

- **Demand-valve retrieval**

- While breathing from AS demand valve, hold main demand valve out to side and drop.

- Roll body sideways and lean right shoulder forwards (assuming demand valve comes over right-hand shoulder).
- Sweep arm back close to side of cylinder and then outwards and forwards to encircle demand valve hose to recover it.
- Repeat until retrieval performed correctly.
- Switch back to demand valve and clear.
- **Full demand-valve retrieval and clear**
 - Breathe in, remove demand valve from mouth and drop as above.
 - Recover it, as above, replace in mouth and exhale to clear.



Note: Have your AS demand valve ready to donate in case a student has difficulty recovering their own.

- **Drysuit inflator stuck open**
 - Simulating that a drysuit inflator has stuck open, demonstrate action to take as described in the dry run above.
 - Once reconnected the inflator should be briefly operated to check that the connection has been correctly made.

- **BC inflator stuck open**

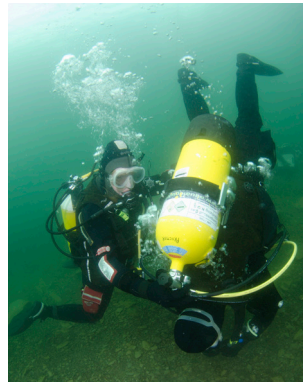
- Simulating that a BC inflator has stuck open, demonstrate action to take as described in the dry run above.
- Once reconnected the inflator should be briefly operated to check that the connection has been correctly made.



- **Drysuit inversion recovery**

- Assume slightly head-down attitude allowing air to migrate towards feet of suit.
- As legs start to rise, breathe out to minimise increase in buoyancy.
- Bend at the waist.

- Use both arm action and fin kicks to complete a forward roll until legs are again lower than body, allowing air to migrate back from legs.



Exit from standing-depth water and de-kit

- **Weight belt/weight jettison practice**

While a controlled ascent from a dive is always preferable, if other options fail, a diver must be able to jettison weights/weight belt to regain the surface. The skill is introduced and practised before leaving the water.

- Kneeling in chest-deep water, operate own weight-belt buckle/weight releases.
- Pull weight-belt/weights clear of body and release.
- Breathe out on ascent.

Note: Because this exercise will result in a major increase in positive buoyancy, it must not be carried out in water deeper than chest deep.

- **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 and point out any differences from their previous experience caused by the introduction of protective clothing.
 - 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.
- **Brief on equipment care**
 - Equipment care will likely be carried out after returning home
 - Ensure that students are fully briefed about post-dive care for any items of equipment being used for the first time, including suits and weight belts.

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.
 - Ensure that the students note the configuration of equipment that they have used, particularly the amount and location of any additional weight required, when preparing their equipment for future dives. This should also include cylinder size and the height of the cylinder in BC (for trim).
- **Encourage**
 - Praise good performance both for the skills exercises and the exploratory dive.
 - Provide support and comfort if things haven't gone so well.

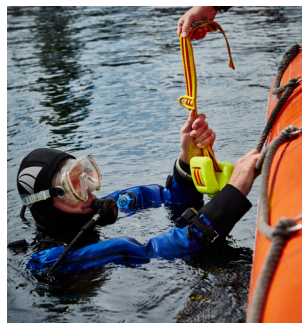


- **Assess**
 - Offer constructive feedback to enable students to identify areas for improvement.
 - Provide guidance on how these improvements can be achieved.
- **Preview**
 - Explain how students will further develop their skills in the next module.
 - Give them something fun to look forward to and encourage them to come back for more.
 - Answer any questions that the students have.

Adapting this module

Where standards of protective clothing/water conditions are other than temperate waters requiring drysuits, the module content will need to be adapted appropriately. Use the following guidance as a basis for how to adapt the module contents.

- **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 extension of the students' depth experience, skills practise at the deeper depth and their awareness and enjoyment of the underwater environment.
 - In these circumstances fitting of protective clothing and weight preparation can be removed from the module.
 - As the students will already have demonstrated proficiency at controlled vertical descents and ascents in the same protective clothing, water entry and exit from a boat into approximately 6m of water 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).
 - Adjustment to the students' weights, and initial buoyancy checks, will therefore be required.
 - As any change in protective clothing will not affect mask clearing, demand-valve clearing or how the students will adjust their buoyancy, the irrelevant aspects of these skills can be removed from the module.
- **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.
 - The only 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.

Kitting up Students should be able to correctly fit their protective clothing including hoods and gloves, if required in the local conditions.

Entry/exit Students should be able to safely enter and exit the water on a gently shelving shore or by ladder and understand the importance of acting as a buddy pair while doing so.

Buoyancy control and underwater swimming in 4-6m Students should show good control of their buoyancy while swimming with an efficient finning action at 6m, demonstrating their ability to inflate/deflate their drysuit (or BC if wearing a wetsuit) to make buoyancy adjustments without bumping into the bottom or floating to the surface. If a drysuit is worn, the student should not allow themselves to become inverted.

Demand valve recovery and clear in 2-3m Students should be able to successfully drop, flood, recover, clear and restart normal breathing from their demand valve. When the demand valve is removed it should be held mouthpiece down to avoid a free flow. When the demand valve is not in the mouth, the student should slowly exhale a continuous stream of small bubbles. The demand valve should be recovered calmly without signs of panic.

Mask removal and clear in 2-3m 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 that it is flat and 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.

Drysuit inversion (if worn) Students should be able to successfully recover from a drysuit inversion and regain control of their buoyancy without floating up to the surface.

Direct-feed disconnection Students should be able to locate their direct-feed hoses without hesitation, and disconnect the hoses from the inflator valves quickly and without fuss or fumbling.

Quick release of weights Students should be able to successfully release their own weights without them becoming entangled in diving equipment or otherwise snagged.

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