

Syllabus 3.A.5

CMAS One Star Diver Training Programme

1. Required theoretical knowledge

1.1 Subject Area 1: Introduction

1.1.1 The participant shall be provided with all such information, as provided for in Clause 4. 2 of Chapter 1 in order to enable him to take an informed decision about his participation in the CMAS One Star Diver Training Programme.

1.1.2 The participant shall be provided with the information about the CMAS as provided for in Clause 4.3 of Chapter 1.

1.2 Subject Area 2: Equipment

1.2.1 The participant shall have an appropriate knowledge concerning the physical characteristics operating principles, maintenance and use of the following items of diving equipment.

1.2.1.1 **Basic Equipment**

- 1.2.1.1.1 Mask
- 1.2.1.1.2 Snorkel
- 1.2.1.1.3 Fins
- 1.2.1.1.4 Exposure suits
- 1.2.1.1.5 Quick release weight systems
- 1.2.1.1.6 Knife/cutting devices

1.2.1.2 **SCUBA equipment**

- 1.2.1.2.1 Cylinders
- 1.2.1.2.2 Cylinder valves
- 1.2.1.2.3 Regulators
- 1.2.1.2.4 Submersible pressure gauge (breathing gas monitor)
- 1.2.1.2.5 Alternative breathing gas source
- 1.2.1.2.6 Cylinder-support systems
- 1.2.1.2.7 Buoyancy control devices
- 1.2.1.2.8 Timing devices
- 1.2.1.2.9 Under-water navigational aids
- 1.2.1.2.10 Depth gauge/depth monitor
- 1.2.1.2.11 Dive tables
- 1.2.1.2.12 Dive computers

1.2.1.3 **Ancillary equipment**

- 1.2.1.3.1 Diving lights
- 1.2.1.3.2 Float and flag
- 1.2.1.3.3 Dive bags
- 1.2.1.3.4 Personal Diving Log Book

1.2.1.4 **Emergency equipment**

- 1.2.1.4.1 Emergency signalling device (acoustical, optical)

1.2.1.4.2 First-aid kit

1.2.1.4.3 Oxygen kit

1.3 **Subject Area 3: Physics of diving**

1.3.1 The participant shall have an appropriate knowledge concerning the physical principles and their application to diving activities, equipment and hazards relating to:

1.3.1.1 Sound

1.3.1.2 Light

1.3.1.3 Buoyancy

1.3.1.4 Pressure/gas laws

1.3.1.5 Temperature

1.4 **Subject Area 4: Medical and psychological problems related to diving**

1.4.1 **Medical problems related to diving**

1.4.1.1 The participant shall have an appropriate knowledge concerning the causes, symptoms, prevention, first-aid and treatment of diving medical problems.

1.4.1.1.1 **Direct Effects of Pressure**

1.4.1.1.1.1 **Descent phase**

1.4.1.1.1.1.1 Ears

1.4.1.1.1.1.2 Sinuses

1.4.1.1.1.1.3 Mask

1.4.1.1.1.1.4 Lungs

1.4.1.1.1.1.5 Suit

1.4.1.1.1.1.6 Teeth

1.4.1.1.1.2 **Ascent phase**

1.4.1.1.1.2.1 Gas expansion (ears, sinuses, lungs, stomach, intestines, and teeth)

1.4.1.1.1.2.2 Lung over pressurization/overexpansion injuries including arterial gas embolism

1.4.1.1.1.2.3 Vertigo

1.4.1.1.1.3 **Indirect Effects of Pressure** (Physiological)

1.4.1.1.1.3.1 Decompression Illness (including on-gassing, off-gassing, forms of DCI and post-dive effects)

1.4.1.1.1.3.2 Nitrogen narcosis

1.4.1.1.1.3.3 Hypercapnia (carbon dioxide excess)

1.4.1.1.1.3.4 Oxygen toxicity (discussion of first aid and treatment not required)

1.4.1.1.1.3.5 Hyperventilation/shallow-water blackout

1.4.1.1.1.3.6 Contaminated breathing gas supply

1.4.1.1.1.4 **Other Hazards**

1.4.1.1.1.5 First aid after diving incidents

1.4.1.1.1.5.1 Basic Cardio-pulmonary resuscitation (CPR)

1.4.1.1.1.5.2 Basic normobaric oxygen first aid

1.4.2 **Psychological problems related to diving**

1.4.2.1 The participant shall have an appropriate knowledge concerning causes, symptoms, prevention and management of:

- 1.4.2.1.1 Mental stress
- 1.4.2.1.2 Panic
- 1.4.2.1.3 Overconfidence

1.5 **Subject Area 5: Use of dive tables (decompression tables) and dive computers**

1.5.1 The participant shall have an appropriate knowledge concerning the use of dive tables and dive computers including:

- 1.5.1.1 How to determine dive profiles which do not require in-water decompression stops for single and repetitive dives.
- 1.5.1.2 How to determine required stage decompression (even though exceeding the no-decompression limit is beyond the qualification of a CMAS One Star Diver).
- 1.5.1.3 How to use dive tables and/or dive computers to properly plan and execute a dive
- 1.5.1.4 Flying after diving.

1.6 **Subject Area 6: Dive planning**

1.6.1 The participant shall have appropriate knowledge concerning the following dive planning issues:

- 1.6.1.1 Planning and preparation, with emphasis on the prevention of out-of-breathing-gas situations and emergencies
- 1.6.1.2 Communications, both under-water and on the surface
- 1.6.1.3 Emergency procedures
- 1.6.1.4 Accident management/prevention
- 1.6.1.5 Diver assistance (self/buddy)
- 1.6.1.6 Recommended safe diving practices (e.g. separation procedures, safety stops etc.)
- 1.6.1.7 Procedures for diving from boats
- 1.6.1.8 Proper use of Personal Diving Log Book

1.7 **Subject Area 7: Dive environment**

1.7.1 The participant shall have appropriate knowledge concerning the local and general conditions of the diving environment and their possible effects on the SCUBA diver and the SCUBA divers' impact on the environment.

1.7.1.1 **Water**

- 1.7.1.1.1 Temperature/thermocline
- 1.7.1.1.2 Visibility
- 1.7.1.1.3 Movement (surface action, currents, tides, and the like)
- 1.7.1.1.4 Density (fresh and salt water)

1.7.1.2 **Topography**

- 1.7.1.2.1 Bottoms
- 1.7.1.2.2 Shorelines

1.7.1.3 Aquatic life

- 1.7.1.3.1 Animal
- 1.7.1.3.2 Plant
- 1.7.1.3.3 Harm divers can cause to animal and plant life

1.7.1.4 Environmental awareness

1.7.1.5 Weather conditions

1.7.1.6 Orientation to new diving environments

1.7.1.7 Hazards

- 1.7.1.7.1 Surface hazards
- 1.7.1.7.2 Overhead environments
- 1.7.1.7.3 Entanglement

1.8 Subject Area 8: Career development

- 1.8.1 The participant shall be provided with the career development information as provided for in Clause 4.4 of Chapter 1.

2. Required SCUBA skills

2.1 Confined water skills

- 2.1.1 The participant shall be able to demonstrate the following skills in a comfortable and relaxed manner; each skill shall be mastered in confined water before that skill is performed in open water:

- 2.1.1.1 Use of mask, snorkel and fins
- 2.1.1.2 Diving system assembly and disassembly (at water's edge)
- 2.1.1.3 Pre-dive equipment inspection and in and out of water buddy check
- 2.1.1.4 Entries and exits
- 2.1.1.5 Proper weighting and trim
- 2.1.1.6 Mouthpiece clearing - snorkel and regulator
- 2.1.1.7 Regulator/snorkel exchanges at the surface
- 2.1.1.8 Proper descent and ascent procedures (e.g. equalising pressure in ears and mask)
- 2.1.1.9 Swim under-water efficiently with appropriate buoyancy and attitude
- 2.1.1.10 Mask-clearing, including removal and replacement
- 2.1.1.11 Controlled breathing underwater without a mask
- 2.1.1.12 Buddy-system techniques (e.g. appropriate hand signals, staying close, monitoring buddy)
- 2.1.1.13 Underwater and surface buoyancy control
- 2.1.1.14 Underwater problem-solving (e.g. regulator recovery/retrieval, etc)
- 2.1.1.15 Monitoring instruments
- 2.1.1.16 Surface-snorkel swimming with full diving equipment. (The student shall be able to swim a distance of at least 50 m)
- 2.1.1.17 Surface operation of the quick release/emergency function of the weight ballast system
- 2.1.1.18 Underwater removal and replacement of SCUBA system
- 2.1.1.19 Underwater removal and replacement of the weight/ballast system
- 2.1.1.20 Out-of-air emergency procedures allowing a SCUBA diver to ascend to the surface in the event of an out-of-breathing gas situation, acting as both receiver and donor. This shall include both dependent and independent procedures
- 2.1.1.21 Diver assistance techniques (self/buddy) (i.e. to assist a buddy to the surface and provide support on the surface)
- 2.1.1.22 Equipment care and maintenance (at water's edge)

2.2 Open water skills

- 2.2.1 The participant shall be able to demonstrate the following skills in a comfortable and relaxed manner. Participants shall demonstrate mastery of each skill using appropriate equipment and techniques for the local environment. They shall be capable of performing each skill in conditions typical of the local environment. Skills involving swimming shall be conducted over distances appropriate to local conditions and diving techniques:
- 2.2.1.1 Use of mask, snorkel and fins
 - 2.2.1.2 Diving system assembly and disassembly (at water's edge)
 - 2.2.1.3 Pre-dive equipment inspection and in and out of water buddy checks
 - 2.2.1.4 Entries and exits
 - 2.2.1.5 Proper weighting
 - 2.2.1.6 Mouthpiece clearing - snorkel and regulator
 - 2.2.1.7 Regulator/snorkel exchanges at the surface
 - 2.2.1.8 Proper descent and ascent procedures (e.g. equalising pressure in ears and mask)
 - 2.2.1.9 Swim under-water efficiently with appropriate buoyancy and attitude control
 - 2.2.1.10 Mask-clearing, including removal and replacement
 - 2.2.1.11 Controlled breathing underwater without a mask
 - 2.2.1.12 Buddy-system techniques (e.g. appropriate hand signals, staying close, monitoring buddy)
 - 2.2.1.13 Underwater and surface buoyancy control
 - 2.2.1.14 Underwater problem-solving (e.g. regulator recovery/retrieval, etc)
 - 2.2.1.15 Monitoring instruments
 - 2.2.1.16 Surface-snorkel swimming with full diving system. (The student shall be able to swim back to the point of safe exit but no less than 50 m)
 - 2.2.1.17 Surface removal and replacement of SCUBA system
 - 2.2.1.18 Underwater removal and replacement of the weight/ballast system
 - 2.2.1.19 Out-of-air emergency procedures allowing a SCUBA diver to ascend to the surface in the event of an out-of-breathing gas situation, acting as both receiver and donor. This shall include both dependent and independent procedures.
 - 2.2.1.20 Diver assistance techniques (self/buddy) (i.e. to assist a buddy to the surface and provide support on the surface)
 - 2.2.1.21 Simple under-water navigation
 - 2.2.1.23 Equipment care and maintenance (at water's edge)