



CMAS

CONFÉDÉRATION MONDIALE
DES ACTIVITÉS SUBAQUATIQUES

WORLD UNDERWATER FEDERATION

**CMAS Scientific & Sustainability
Committee**

**Advanced Marine Biology
Course (AMBC)**

2018

The non-professional CMAS Scientific Specialty Courses (SSC) combines the expertise of marine and freshwater scientists, underwater geologists and archaeologists, diving officers, administrators, legislators, individual divers, from different parts of the world scientific diving community. Therefore we revised the last version with the colleagues in the CMAS Scientific & Sustainability Committee (SC) mentioned below, who helped to produce this new standards, and acknowledges the help and advice given by many other people through letters or oral comments.

CMAS Scientific & Sustainability Committee, 2018

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Advanced Marine Biology Course

Minimum 5 days

15 theoretical teaching units (TTU)

15 practical teaching units (PTU)

4-8 dives

1.1. Aim of course

- to provide the diver an advanced personal experience of marine biology
- to give advanced comprehensive information on marine animal and plant groups and their ecology
- to educate qualified multipliers for the idea of protection of marine life
- to teach methods of marine sciences which can be used by sports divers
- to increase the access to the complex interaction and the "tiny life" in the sea
- to encourage the diver to raise awareness and participate in environmental activities (organize/participate in beach clean-ups...)

1.2. Student performance objectives

By the end of the course the diver should

- be familiar with the general biological and ecological processes in the sea
- be able to identify animal and plant groups and their biology and interrelationships
- have worked on a marine biology task (project)
- have written a report on the project he/she had practically worked on

1.3. Prerequisites for participants (minimum requirements)

- age of 16 years
- CMAS ** or equivalent
- valid medical certificate

1.4. Instructor/course participant ratios in open water

- depending on the visibility and diving level

1.5. Instructor requirements (see SC administrative text)

- CMAS** diving licence and 100 dives
- academic background in the respective field, or
- several years' professional experience in the respective field
- teaching abilities
- a high sensibility for sustainable diving

1.6. Speciality Course requirements:

- adequate lecture place
- adequate dive site
- identification books for marine organisms
- marine biology presentation
- marine biology scripts or text books
- equipment for scientific sampling and investigations (e. g. microscopes, dissecting microscopes, equipment for e.g. plankton and mesoplankton sampling, aquaria)

- 1.7. Theoretical teaching units** (the instructor sets thematic emphases)
- advanced knowledge of aspects taught in the Marine Biology Course
 - conservation (applications, principles, Marine Protected Areas,...)
 - mechanisms of nutrient access (e. g. symbiosis, filtration, sediment feeding, predation)
 - symbiosis, parasitism, commensalism
 - pollution
 - marine bioindication and bioindicators
 - marine water chemistry
- 1.8. Practical teaching units** (proposals)
- to study benthic and pelagic filter feeders and their anatomy
 - to monitor depth distribution of animals
 - to study settlement pattern of benthic organisms
 - to study predator-prey interrelationships
 - to study zonation of corals
 - to collect samples from different depths for investigations of the trophic status of the ecosystems
 - to monitoring of anthropogenic impacts of coral reefs
 - to stratificate lakes using depth-sounder, thermocline, water plants, nutrients and oxygen
 - daily plankton migration
 - to study mating, spawning and larval developing areas of marine organisms
 - to determination of the age of the fish community using otoliths
 - to study biodiversity / species-area relationship of specified groups that are readily identifiable in the field
- 1.9. Certification**
- control of success by the instructor
 - all divers having successfully completed all components of the course will be issued with the appropriate CMAS Advanced Marine Biology Course Card
 - the brevet is valid permanently

All questions should be addressed to the
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