

## Scientific Diving in Marine Ecology (C004278)

<b>Course size</b>	<i>(nominal values; actual values may depend on programme)</i>		
<b>Credits 3.0</b>	<b>Study time 84 h</b>	<b>Contact hrs</b>	30.0h
<b>Course offerings in academic year 2022-2023</b>			
A (semester 1)	English	Gent	
<b>Lecturers in academic year 2022-2023</b>			
Santos, Rui	FAR001	lecturer-in-charge	
Padrão, Nuno	FAR001	co-lecturer	
Paulo, Diogo	FAR001	co-lecturer	
<b>Offered in the following programmes in 2022-2023</b>			
<a href="#">International Master of Science in Marine Biological Resources</a>	<b>crdts</b>	<b>offering</b>	
	3	A	

### Teaching languages

English

### Keywords

Scientific diving, sampling techniques, marine ecology, transferable skills

### Position of the course

This course is designed to train students in to underwater sampling techniques applied to Marine Ecology. Advanced SCUBA dive planning, focusing on safety and efficiency will also be exercised.

An international certification may be awarded through an additional training module.

### Contents

The class program will be focused on:

Theory component:

- a) Distinguish scientific diving from other diving activities and understand the applications and limitations of scientific diving
- b) Sampling strategies: random, hap hazard and systematic
- c) Error vs Bias
- d) Develop a scientific perspective and respect to the underwater world
- e) Develop knowledge and familiarity with scientific diving practices applied to marine ecology:
  - Band transects to access organism density
  - Point intersect transects for genetic sampling
  - Use of underwater sampling grids for spatial distribution of species
  - Underwater sample collection
  - Underwater video documentation of marine habitats
  - Underwater photomosaics
  - Introduction to data processing for the above sampling techniques, such as software for photomosaic and underwater mapping.
- f) Advanced SCUBA Dive planning

Practical application:

Develop knowledge and familiarity with scientific diving practices applied to marine ecology:

- Band transects to access organism density
- Point intersect transects for genetic sampling
- Use of underwater sampling grids for spatial distribution of species
- Underwater sample collection

- Underwater video documentation of marine habitats
- Underwater photomosaics

### **Initial competences**

This class has an entry level prerequisite for students which is to have an Advanced Diving certificate such as GUE Fundamentals or equivalent.

### **Final competences**

Students will be able to acquire quality data by planning and executing scientific dives using marine ecology techniques and methods in a safe, efficient manner.

### **Conditions for credit contract**

Access to this course unit via a credit contract is determined after successful competences assessment

### **Conditions for exam contract**

This course unit cannot be taken via an exam contract

### **Teaching methods**

Seminar, Lecture

### **Extra information on the teaching methods**

Theory classes will be mandatory. Students will be taught the methods used in marine ecology and how to plan a dive where those skills will be applied. Prior to the dives all students will participate in testing the dive plan out of the water, for a better understanding of the methodology to apply. Each dive will have a specific skill to be developed where all students will have the opportunity to use and practice the skill (i.e. Photomosaic). Complexity of skills will be increased gradually. Post dive, data will be processed and analysed to identify areas of improvement so that the error and bias of future sampling can be reduced (thereby increasing data quality).

### **Learning materials and price**

Diving courses are not included in the tuition. Students should contact the CCMAR Dive Center (<https://www.ccmар.ualg.pt/page/dive-center>) for information on prices.

### **References**

Doing it Right: The Fundamentals of Better Diving, by Jarrod Jablonski (Global Underwater Explorers)  
 Beginning with the end in Mind, by Jesper Belgrund Jablonski (Global Underwater Explorers)

### **Course content-related study coaching**

Individual coaching is foreseen for students having problems, and will be on a one to one basis.

### **Assessment moments**

end-of-term and continuous assessment

### **Examination methods in case of periodic assessment during the first examination period**

Report, Written examination

### **Examination methods in case of periodic assessment during the second examination period**

Report, Written examination

### **Examination methods in case of permanent assessment**

Skills test

### **Possibilities of retake in case of permanent assessment**

examination during the second examination period is possible

### **Extra information on the examination methods**

Students will be evaluated in terms of performance in the water, in the theory component with a written exam, and in the practical component with a report.

### **Calculation of the examination mark**

Students will be evaluated in the theory component with a written exam (20%); and in the practical component with a report (20%). Additionally, a scale from 1 to

4 will be used to evaluate student in water performance (60%) where:

- Unsafe (fail)
- Cannot complete the task (need to repeat)
- Complete the task well (pass)
- Excellent performance (pass)

Retakes are possible; dates for retakes will be arranged between the instructors and the students.