

Scientific Diving in Marine Ecology (C004278)

Course size *(nominal values; actual values may depend on programme)*

Credits 3.0 **Study time 84 h**

Course offerings in academic year 2026-2027

A (semester 1) English Gent

Lecturers in academic year 2026-2027

Santos, Rui	FAR001	lecturer-in-charge
Padrão, Nuno	FAR001	co-lecturer
Paulo, Diogo	FAR001	co-lecturer

Offered in the following programmes in 2026-2027

	crdts	offering
International Master of Science in Marine Biological Resources	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).

Study material

None

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

Written assessment, Assignment

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

Written assessment, Assignment

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.