GHENT UNIVERSITY

# Course Specifications

Valid as from the academic year 2026-2027

## Marine Extreme Systems (C004492)

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

**Credits 4.0** **Study time 120 h**

**Course offerings and teaching methods in academic year 2026-2027**

| | | | |
|---|---|---|---|
| A (semester 1) | English | Gent | lecture |
| | | | seminar |

**Lecturers in academic year 2026-2027**

| | | |
|---|---|---|
| Pape, Ellen | WE11 | lecturer-in-charge |
| Braeckman, Ulrike | WE11 | co-lecturer |

| **Offered in the following programmes in 2026-2027** | **crdts** | **offering** |
|---|---|---|
| Master of Science in Geology | 4 | A |
| Master of Science in Marine and Lacustrine Science and Management | 4 | A |
| Exchange programme in Geology (master's level) | 4 | A |

**Teaching languages**

English

**Keywords**

Deep sea, ecology, biogeochemistry, global change, anthropogenic impacts, biodiversity, environmental management

**Position of the course**

The most important deep-sea and polar systems will be covered in an integrated way with a focus on biological and bio(geo)chemical processes, including ecosystem dynamics in a context of global change.

**Contents**

This course provides an introduction to the formation, structure, and evolution of ecosystems and macrohabitats in the deep sea and polar environments. It covers habitats such as cold seeps, mud volcanoes, cold-water coral reefs, carbonate mounds, hydrothermal vents, abyssal plains, and ice margins. Major geological features, patterns of biodiversity, key environmental drivers, and ecosystem processes are discussed, along with the tools and techniques used to study them. In addition, the course examines exploration activities and potential threats, including anthropogenic impacts such as resource exploitation and global change, and discusses environmental management practices aimed at mitigating these impacts.

**Initial competences**

Basic knowledge of marine biological, geological, oceanographic and biogeochemical processes.

**Final competences**

1 Explain the key ecological and environmental characteristics and processes of different marine extreme systems in deep-sea and polar environments, and describe how these vary across spatial and temporal scales.
2 Evaluate the suitability of different techniques, tools, and approaches for studying marine extreme systems.
3 Explain the multidisciplinary nature of scientific research on marine extreme systems by integrating geological, biological, chemical, and physical perspectives.
4 Propose environmental management approaches to mitigate different

anthropogenic threats to marine extreme systems.

**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**

Group work, Seminar, Lecture, Independent work

**Extra information on the teaching methods**

Both individual and group work are required to prepare oral presentations and to participate in group discussions based on selected topics related to marine extreme systems. Part of the lectures may be delivered online.

**Study material**

Type: Slides

Name: Lecture slides
Indicative price: Free or paid by faculty
Optional: no
Language : English
Available on Ufora : Yes
Online Available : Yes
Available in the Library : No
Available through Student Association : No
Additional information: Slides and - potentially - scientific papers for recommended reading will be made available via Ufora

**References**

**Course content-related study coaching**

Students can ask questions during or at the end of each class or by making an appointment with the designated lecturer. Additional Q&A sessions may be organised at the end of the course. Questions can also be addressed during scheduled contact moments related to assignments.

**Assessment moments**

end-of-term and continuous assessment

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

Written assessment with open-ended questions

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

Written assessment with open-ended questions

**Examination methods in case of permanent assessment**

Assignment

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

not applicable

**Extra information on the examination methods**

In addition to the exam, there is an assignment consisting of an oral presentation followed by interactive discussions on selected lecture topics, supported by specialized literature.

**Calculation of the examination mark**

- 60% written exam
- 40% assignment (oral presentation and participation in group discussions)