GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2026-2027

Aquatic Microbial Ecology (C002476)

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

Credits 6.0 **Study time 180 h**

Course offerings and teaching methods in academic year 2026-2027

A (semester 1)	English	Gent	lecture
			independent work

Lecturers in academic year 2026-2027

Vyverman, Wim	WE11	lecturer-in-charge
Sabbe, Koen	WE11	co-lecturer
Stock, Willem	WE11	co-lecturer
Verleyen, Elie	WE11	co-lecturer
Willems, Anne	WE10	co-lecturer

Offered in the following programmes in 2026-2027	**crdts**	**offering**
Master of Science in Marine and Lacustrine Science and Management	6	A

Teaching languages

English

Keywords

microbial biodiversity and ecology, viruses, prokaryotes, protozoa, micro-algae, marine and lake ecosystems, metagenomics

Position of the course

The aim of this course unit is to provide general insights in the biodiversity and ecology of micro-organisms in natural aquatic ecosystems. Special attention will be given to the increasing use of molecular tools, including the latest developments in the 'omics' area, to study aquatic microbial diversity and ecology. In addition to lecture sessions, students will have the opportunity to study specific topics in the field of Aquatic Microbiology through one or more literature assignments and practical sessions involving data analysis and interpretation.

Contents

This course unit will cover the microbial biodiversity occurring in natural marine and lacustrine ecosystems with emphasis on eubacteria, archaebacteria, cyanobacteria, micro-algae and protozoa that play a crucial role in the microbial balance of seas, oceans and lakes. Next to general overviews on microbial diversity, natural interactions and importance for ecosystem functioning, a number of lectures will be specifcially dedicated to methodological aspects of microbial sampling, isolation, enumeration and identification.
The following lectures or lecture series are scheduled in this course unit:

PROKARYOTES
- General introduction to the taxonomic and functional diversity of aquatic prokaryotes
- Sampling, isolation and identification of aquatic prokaryotes
- Molecular diversity and dynamics of bacterial populations in seas and oceans

PROTOZOA AND MICRO-ALGAE
- General overview of the biodiversity of aquatic micro-algae and protozoa
- Sampling, culturing and identification of aquatic micro-algae and protozoa
- Functional diversity of aquatic micro-algae and protozoa
- Biodiversity patterns of aquatic eukaryotic micro-organisms (e.g. seasonality,

biogeographical aspects)
- Harmful Algal Blooms (HABs)

GENERAL
- Microbial interactions in marine ecosystems

In addition to the scheduled lectures, students will receive one or more literature assignments. In this way, students have the opportunity to analyze and summarize the experimental design and major findings of published studies in the field of Marine Microbiology, and to present their own views before fellow students by means of an oral Powerpoint presentation.

Initial competences

Basic knowledge of molecular biology, biochemistry and of the physical and chemical ecology of aquatic ecosystems

Final competences

1 Understanding functional microbial diversity in aquatic environments.
2 Understanding and explaining microbial interactions in aquatic ecosystems.
3 Deciding on methodological aspects for isolation and identification of aquatic micro-organisms.
4 Summarizing and discussing published literature data.

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

Lecture, Independent work

Extra information on the teaching methods

Oral lectures, group sessions and individual assignments. Lecture recordings will be made available, provided that the scheduled auditorium or classroom is equipped with the necessary highquality recording facilities.

Study material

Type: Slides

Name: Aquatic microbial ecology
Indicative price: € 10
Optional: no
Language : English
Oldest Usable Edition : 2024
Available on Ufora : Yes
Online Available : No
Available in the Library : No
Available through Student Association : No

References

Course content-related study coaching

Interactive support via Ufora. Personal contact with lecturers is possible after electronic appointment.

Assessment moments

end-of-term assessment

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

Written assessment

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

Written assessment

Examination methods in case of permanent assessment

Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible

Extra information on the examination methods

- Bioinformatics exercises
- Literature assignment
- Written examination with knowledge and interpretive questions

Calculation of the examination mark

Students need to pass each of the three individual parts, namely the bioinformatics exercise (10%), the literature assignment (20%), and the written exam (70% of the final score). Final scores of 10/20 and above will be reduced to the highest failing mark (9/20) in case a student fails one of the individual parts.
A second term examination for the bioinformatics exercise and literature assignment is possible. Feedback will be provided and the students that have to take the second term exam can update their reports accordingly.