GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2024-2025

Algae Culture (I000086)

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

Credits 3.0 **Study time 75 h**

Course offerings and teaching methods in academic year 2025-2026

A (semester 2)	English	Gent	practical
			lecture

Lecturers in academic year 2025-2026

Han, Taejun	LA22	lecturer-in-charge
De Clerck, Olivier	WE11	co-lecturer

Offered in the following programmes in 2025-2026	**crdts**	**offering**
Master of Science in Aquaculture	3	A
Exchange Programme in Bioscience Engineering: Agricultural Sciences (master's level)	3	A

Teaching languages

English

Keywords

Aquaculture, microalgae, macroalgae, seaweeds, culture techniques, applications.

Position of the course

This course aims at providing an overview of the procedures which are used for the cultivation of microalgae and macroalgae (seaweed). Microalgae are needed as live food in aquaculture of shellfish, crustaceans and zooplankton or are considered as candidate biofuels. Cultivation techniques and life cycle control of macroalgae (seaweed) is also addressed. Seaweed are used as food but also as bioresource from which numerous products are extracted. Seaweeds are also considered as important components of integrated multitrophic aquaculture.

Contents

1. Microalgae
1.1. Importance and uses of microalgae
1.2. Characteristics of microalgae, species cultured
1.3. Culture requirements: physical, chemical
1.4. Types of cultures and growth dynamics (autotrophic versus heterotrophic)
1.5. Culture systems and procedures (including highly intensive microalgal cultures for biofuel)
1.6. Problems and constraints: nutritional, technical, economical
1.7. Practical classes on the maintenance and quality analysis of microalgal cultures

2. Macroalgae
2.1. Origin and importance of macroalgae
2.2. Characteristics of macroalgae, species cultured
2.3. Life cycle control of commercial seaweed species
2.4. Culture systems and procedures for green, brown and red algae

Initial competences

General biology, chemistry, biochemistry and basic knowledge on aquaculture.

Final competences

1 The student knows the different procedures, which are used for the cultivation of microalgae and macroalgae.

2 The student is able to describe how environmental parameters limit algal growth (including application in intensive cultures).
3 The student understands and can apply algal growth dynamics.
4 The student understands the advantages and disadvantages of autotrophic versus heterotrophic growth.
5 The student has experienced basic techniques of microalgal culturing, has taken samples and has done quality checks.

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, Practical

Extra information on the teaching methods

Theory lectures: lectures based on powerpoint presentations.
Practical classes: microalgae culturing experiments in small groups.

Study material

Type: Slides

Name: Algal Culturing - Partim De Clerck
Indicative price: Free or paid by faculty
Optional: no
Language : English
Number of Slides : 160
Oldest Usable Edition : NA
Available on Ufora : Yes
Online Available : No
Available in the Library : No
Available through Student Association : No

References

J.E.Bardach, J.H. Ryther & W.O.McLarney. *Aquaculture. The Farming and Husbandry of Freshwater and Marine Organisms.* Wiley-Interscience. (1972). 868 pp.
M. Borowitzka & L. Borowitzka (eds): *Micro-Algal Biotechnology.* Cambridge University Press (1988)
Hatchery operation: culture of algae
FAO manuel on the production and use of life food in aquaculture (FAO 361)

Course content-related study coaching

Study guidance upon request by email or on appointment.

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

Participation, Written assessment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible

Extra information on the examination methods

Period aligned evaluation: theory: written closed book exam.
Non-period aligned evaluation: practical classes: participation and written closed book exam.

Calculation of the examination mark

Out of 20:
15 points attributed to written exam
5 attributed to written exam on practical classes

Students who eschew period aligned and/or non-period aligned evaluations for this course unit may be failed by the examiner.

Students that do not attend the practical course without a valid reason, should retake the course the next academic year.