GHENT UNIVERSITY

Course Specifications

Valid in the academic year 2023-2024

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 2023-2024

A (semester 2)	English	Gent	lecture
			practical

Lecturers in academic year 2023-2024

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

Offered in the following programmes in 2023-2024	**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, needed as live food in aquaculture of shellfish, crustaceans and zooplankton or which are widely considered as candidate biofuels, as well as the cultivation of macroalgae (seaweeds) of which numerous useful products are extracted and which are considered as important components of integrated multitrophic aquaculture.
The practical training involves the maintenance of microalgae cultures and quality analysis.

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. Importance and uses of macroalgae
2.2. Characteristics of macroalgae, species cultured
2.3. Culture requirements: physical, chemical
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.

Learning materials and price

Printouts of the powerpoint presentation will be available during all classes.
Estimated cost of the printouts: 10 euro (included in fee that is paid in the beginning of the academical year).

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

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

Written assessment

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.