GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2024-2025

Aquaculture in the Ecosystem (I002862)

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

Credits 7.5 **Study time 200 h**

Course offerings in academic year 2024-2025

A (semester 1) English Gent

Lecturers in academic year 2024-2025

Reitan, Kjell Inge	TRONDH01	lecturer-in-charge
Olsen, Yngvar	TRONDH01	co-lecturer

Offered in the following programmes in 2024-2025	**crdts**	**offering**
International Master of Science in Health Management in Aquaculture	7.5	A

Teaching languages

English

Keywords

Ecosystem effects of aquaculture, waste generation and assimilation, spread of disease, alien species, genetic interactions and IMTA.

Position of the course

This course will provide a research-based understanding of developments in sea-based aquaculture, with a focus on environmental, technological and biological challenges that need to be resolved to ensure a sustainable development of the aquaculture sector. The main focus of the course will be on the sea-based aquaculture and environmental aspects related to it. However, mussel farming, cultivation of macroalgae and integrated multitrophic aquaculture (IMTA), and the importance of these within an ecological understanding of the aquaculture will be covered

Contents

It is expected a continued growth in aquaculture, both nationally and internationally. The importance of aquaculture for the production of food is likely to increase, and it will result in increasing focus on the environmental interactions of aquaculture. In Norway and Europe, most of the growth will happen in sea-based systems, and the aquaculture production must therefore be organised within the marine ecosystem without negative environmental effects. This course will provide a research-based understanding of developments in sea-based aquaculture, with a focus on environmental, technological and biological challenges that need to be resolved to ensure a sustainable development of the aquaculture sector. The course will treat the challenges of the growth of the aquaculture sector, general marine ecology, water transport models, waste from fish farming, genetic interactions, parasite dynamics linked to fish farming, spread of diseases, introduction of alien species, artificial reef issues, coastal zone planning and new sustainable feed raw materials. The main focus of the course will be on the sea-based aquaculture and environmental aspects related to it. However, new solutions as integrated multitrophic aquaculture (IMTA), and the importance of ecological understanding of the aquaculture will be covered. Digitalization and automation that will get increased importance in the future will be addressed. Sustainability aspects and how seabased aquaculture can fulfil the UN Developmental goals will be treated as well.

Initial competences

Competence for admission to EM AquaH study program and first semester courses

at UGent. Batchelor of marine science and aquaculture for national program MSOCEAN

Final competences

1 Candidates will understand ecological interactions between marine aquaculture and the marine environment, including aquaculture installations, operation of seabased farms, possible genetic interactions of fish farming, spread of parasites and the use of feed resources.
2 Candidates will gain an understanding of the principles for future sustainable aquaculture production and which bottlenecks that is critical for such development.
3 He/she can understand the importance of digitalization and automation.
4 The candidate shall understand how the aquaculture sector can fulfil specific UN DG to ensure future sustainable development of both Norwegian and global aquaculture production.
5 Candidates should be able to describe principles for evaluating interactions between environment and aquaculture, and understanding future trends in aquaculture.
6 Candidates will get good knowledge of sustainalbe developement of aquaculture with comprehensive solutions for planning and operating sea-based aquaculture facilities.
7 He / she must understand the dynamics of the marine ecosystem and learning forms and activities, and understand how aquaculture can fullfil UN SD goals, both for norwegian and global aquaculture sector.

Conditions for credit contract

This course unit cannot be taken via a credit contract

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Group work, Excursion, Lecture

Extra information on the teaching methods

Lectures: 30 hours
Group work with discussions in plenum
Excursions and company presentations to aseabased aquaculture stakeholders: 3 days
Group work with on specific topics with presentation to other students: 10 days with the presentation to the students (Compulsory assignments)
Group work and presentation need to be approved before exam

Study material

None

References

Will be announced at the beginning of the course

Course content-related study coaching

Guiding upon request, workshop lecture for practical task, optional organisation and participation in excursion, student advice on agreement.

Assessment moments

continuous assessment

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

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

Examination methods in case of permanent assessment

Oral assessment, Presentation, Written assessment, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible

Extra information on the examination methods

Approved assignment and presentation

The group work includes a presentation to your fellow students. The task with the included presentation must be passed in order to be able to complete the final written exam. The final exam gives the final overall grade.
In the event of failure or a new exam, the final written exam can be taken again, also in the semester the subject is not taught. Outside the teaching semester, it is possible for the exam to be conducted orally instead of written.

Calculation of the examination mark

The normal grades are A-F and 7.5 ECTS achieved if passed (E or better, 40%)
Students who eschew period aligned and/or non-period aligned evaluations for this course unit may be failed by the examiner.