GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2024-2025

Diseases in Aquaculture (I002796)

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

Credits 6.0 **Study time 180 h**

Course offerings in academic year 2024-2025

A (semester 1)	English	Gent

Lecturers in academic year 2024-2025

Declercq, Annelies	LA22	lecturer-in-charge
Chantziaras, Ilias	DI08	co-lecturer
Decostere, Annemie	DI05	co-lecturer
Hermans, Katleen	DI05	co-lecturer

Offered in the following programmes in 2024-2025	crdts	offering
International Master of Science in Health Management in Aquaculture	6	A
International Master of Science in Marine Biological Resources	6	A
Master of Science in Aquaculture	6	A
Exchange Programme in Bioscience Engineering: Agricultural Sciences (master's level)	6	A

Teaching languages

English

Keywords

Bacterial, parasitic and viral diseases, antibiotics, antibiotic resistance, identification and enumeration of micro-organisms, virulence, probiotics, immunostimulants, vaccination, handling & sampling techniques.

Position of the course

The aim of the course is to understand the importance of microbial, viral and parasitic diseases in aquaculture,
how to enumerate micro-organisms, to convey methodologies to prevent, to cure microbial diseases and how to handle, manipulate and sample fish.

Contents

1. Bacterial morphology
2. Enumeration methods for bacteria (including PCR, ELISA)
3. Antibiotics and antibiotic resistance, vaccination and immunostimulants in aquaculture
4. overview of a selection of relevant aquatic animal diseases
5. Hygiene and sanitation
6. Probiotics
7. Case studies of (marine) fish hatcheries, including vaccination protocols
8. Handling/sampling techniques
9. Basic principles in epidemiology and ethical issues
10. Practical lab work on bacterial antibiotics susceptibility, bacterial plasmid conjugation, quorum sensing, bacterial virulence factors. Practical work on the setup of experimental scientific research on fish diseases

Initial competences

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

Final competences

1 The student has insight into microbial morphology.
2 The student has insight into techniques to enumerate bacteria.

3 The student has knowledge on aquatic animal diseases and their causative/eliciting agents.

4 The student has insight into the pathogenesis of microbial diseases.
5 The student has insight into the importance of hygienic techniques in an aquaculture environment.
6 The student understands techniques for disease prevention, including the use of probiotics, immunostimulants and vaccines.
7 The student understands techniques for disease mitigation such as the use of antibiotics and bacteriophages.
8 The student has knowledge on handling and sampling techniques.
9 The student is able to enumerate aquaculture pathogens.
10 The student is able to determine antibiotic resistance transmission among bacterial species.

11 The student has knowledge on basic principles in epidemiology and ethical issues

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: microbiological experiments on antibiotic susceptibility, bacterial conjugation, virulence factors and quorum sensing in small groups. reflection on the setup of scientific experimental research regarding fish diseases including regulatory, practical and ethical aspects

Study material

None

References

Bacterial diseases of fish (Inglis, Roberts & Bromage)
Finfish and shellfish bacteriology manual (Whitman)
Asia diagnostic guide to aquatic animal diseases (FAO fisheries technical paper 40212)
Fish Diseases and disorders: Volume 1, 2 & 3 (Woo, Leatherland, Bruno)

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, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible

Extra information on the examination methods

The theory is examined by a written closed book exam.
The practical classes, incuding participation and report, will be evaluated permanently.

Calculation of the examination mark

Out of 20:

15 points attributed to written exam
5 attributed to report on practical classes and participation in class

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

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