GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2026-2027

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 2026-2027

A (semester 1)	English	Gent

Lecturers in academic year 2026-2027

Declercq, Annelies	LA22	lecturer-in-charge
Decostere, Annemie	DI05	co-lecturer
Patel, Deepti	LA22	co-lecturer

Offered in the following programmes in 2026-2027	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

This course provides an integrated overview of infectious diseases in aquaculture, with a focus on bacterial pathogens, their biology, and their impact on aquatic animal health and production systems. Key topics include bacterial morphology, diagnostic and enumeration methods (e.g. PCR), antimicrobial use and resistance, vaccination strategies, immunostimulants, probiotics, hygiene and biosecurity, as well as basic principles of epidemiology and ethical considerations.
A selection of relevant aquatic animal diseases is discussed in detail, with emphasis on host–pathogen interactions, disease prevention, and management in aquaculture systems. Case studies, including hatchery practices and health management strategies, are used to link theoretical knowledge to real-world applications.
The course includes a **practical and case-based component**, in which students actively apply the concepts covered in class. Through a series of written and oral case studies, students are required to analyse disease scenarios, interpret data, propose diagnostic and management strategies, and report their findings. These activities contribute to the continuous assessment and form part of the oral evaluation.
Where feasible, practical exposure to sampling in a relevant aquaculture setting is included. Data obtained from such sampling activities may be further analysed and evaluated as part of the practical assessment.

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 and immunostimulants.
7 The student understands techniques for disease mitigation such as the use of antibiotics.
8 The student has knowledge on handling and sampling techniques.
9 The student is able to determine antibiotic resistance transmission among bacterial species.

10 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

Teaching methods:
Theory lectures: interactive lectures supported by presentations, introducing key concepts in aquatic animal diseases, diagnostics, prevention, and health management.
Case-based practical sessions: students work on a series of written and oral case studies related to disease scenarios in aquaculture. These sessions focus on the application of theoretical knowledge to real-life situations, including diagnosis, data interpretation, and the development of management strategies. Students present and discuss their analyses, fostering critical thinking and communication skills. These activities are integrated in a flipped classroom approach and contribute to continuous assessment.
Where feasible, practical exposure to sampling techniques in a relevant aquaculture setting may be included.

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 theoretical component is assessed by a **written closed-book examination**.
The practical component (case-based sessions), including participation, assignments, and reporting, is evaluated through **continuous assessment**. This component is **organized only once during the academic year and cannot be retaken in the resit examination period**.
Students who do not participate in the practical component or fail to complete the required assignments may not be evaluated for this part of the course.

Calculation of the examination mark

Assessment (out of 20):

- **15 points** are attributed to the **written closed-book examination**, assessing the understanding and integration of theoretical concepts.
- **5 points** are attributed to the **practical component**, including participation in case-based sessions and the quality of the submitted reports.

Participation in the practical component is **mandatory**. Students who do not attend the practical sessions without a valid reason may not be evaluated for this component and may be required to retake the course in the following academic year.
The practical component is organized only once during the academic year and cannot be retaken in the resit examination period.
All assessment components are mandatory. Students who do not participate in the required evaluation components may be recorded as absent and may not be evaluated for this course unit.