

## Diseases in Aquaculture (I002796)

**Cursusomvang** *(nominale waarden; effectieve waarden kunnen verschillen per opleiding)*

**Studiepunten 6.0** **Studietijd 180 u**

**Aanbodsessies in academiejaar 2024-2025**

A (semester 1) Engels Gent

**Lesgevers in academiejaar 2024-2025**

Declercq, Annelies	LA22	Verantwoordelijk lesgever
Chantziaras, Ilias	DIO8	Medelesgever
Decostere, Annemie	DIO5	Medelesgever
Hermans, Katleen	DIO5	Medelesgever

**Aangeboden in onderstaande opleidingen in 2024-2025**

	stptn	aanbodsessie
<a href="#">International Master of Science in Health Management in Aquaculture</a>	6	A
<a href="#">International Master of Science in Marine Biological Resources</a>	6	A
<a href="#">Master of Science in Aquaculture</a>	6	A
<a href="#">Uitwisselingsprogramma bio-ingenieurswetenschappen: landbouwkunde (niveau master-na-bachelor)</a>	6	A

**Onderwijstalen**

Engels

**Trefwoorden**

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

**Situering**

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.

**Inhoud**

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

**Begincompetenties**

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

**Eindcompetenties**

- 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

#### **Creditcontractvoorwaarde**

Toelating tot dit opleidingsonderdeel via creditcontract is mogelijk mits gunstige beoordeling van de competenties

#### **Examencontractvoorwaarde**

Dit opleidingsonderdeel kan niet via examencontract gevolgd worden

#### **Didactische werkvormen**

Hoorcollege, Practicum

#### **Toelichtingen bij de didactische werkvormen**

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

#### **Studiemateriaal**

Geen

#### **Referenties**

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)

#### **Vakinhoudelijke studiebegeleiding**

Study guidance upon request by email or on appointment.

#### **Evaluatiemomenten**

periodegebonden en niet-periodegebonden evaluatie

#### **Evaluatievormen bij periodegebonden evaluatie in de eerste examenperiode**

Schriftelijke evaluatie

#### **Evaluatievormen bij periodegebonden evaluatie in de tweede examenperiode**

Schriftelijke evaluatie

#### **Evaluatievormen bij niet-periodegebonden evaluatie**

Participatie, Werkstuk

#### **Tweede examenkans in geval van niet-periodegebonden evaluatie**

Examen in de tweede examenperiode is mogelijk

#### **Toelichtingen bij de evaluatievormen**

The theory is examined by a written closed book exam.

The practical classes, including participation and report, will be evaluated permanently.

#### **Eindscoreberekening**

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.