

Aquatic Microbial Community Management (I002086)

Wegens Covid19 kan mogelijk afgeweken worden van de onderwijs- en evaluatievormen. Dergelijke afwijkingen zullen via Ufora worden gecommuniceerd.

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

Studiepunten 3.0 **Studietijd** 75 u **Contacturen** 30.0 u

Aanbodsessies en werkvormen in academiejaar 2022-2023

A (semester 1) Engels Gent hoorcollege 21.25 u

Lesgevers in academiejaar 2022-2023

Bossier, Peter LA22 Verantwoordelijk lesgever

Aangeboden in onderstaande opleidingen in 2022-2023

	stptn	aanbodssessie
International Master of Science in Health Management in Aquaculture	3	A
International Master of Science in Marine Biological Resources	3	A
Master of Science in Aquaculture	3	A
Uitwisselingsprogramma bio-ingenieurswetenschappen: landbouwkunde (niveau master-na-bachelor)	3	A

Onderwijstalen

Engels

Trefwoorden

Micro-organisms, communities, microbiota, recirculating aquaculture systems, functionality, ecological selection, bio-floc technology.

Situering

The purpose of this course is to familiarize the students with the importance of the micro-organisms that are present in (the different compartments of) aquaculture systems, and how these can be managed. The students will learn that by the targeted manipulation of the microbiota in aquaculture systems, the disease risk for the cultured animals can considerably be decreased and production output can be increased. At the end of this course, it is the goal that the student can assess if an aquaculture system is managed in a microbially proper way, and how this can be remedied if this should not be the case.

Inhoud

- 1 Intro: the presence of micro-organisms in aquaculture systems
 - 1 Concepts, origin and prevalence
 - 2 Microbial biomass vs. target biomass
 - 3 Bacteria as food
 - 4 Commensal bacteria vs. pathogenic bacteria
- 2 Traditional management of the microbiota in aquaculture systems: antibiotics, hygienic barriers, SPF animals
- 3 Sustainable management of the microbiota in aquaculture systems:
 - 1 Probiotics and prebiotics
 - 2 Quorum sensing inhibition and quenching
 - 3 r/K selection
 - 1 flow-through
 - 2 matured biofilters
 - 3 recirculating aquaculture systems
 - 4 Bio-floc technology

- 1 Concept
- 2 Basics of biofloc management
- 3 Beneficial effects on cultured animals
- 4 Managing the microbiota towards functionality
 - 1 Management of the microbiota based on ecological theory
 - 2 Management of the microbiota towards biodiversity increase
- 5 Tracking of micro-organisms in aquaculture systems
 - 1 Tools: Plating, flow cytometry, DGGE, t-RFPL, next generation sequencing
 - 2 Interpretation of microbial community composition data

Begincompetenties

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

Eindcompetenties

- 1 The student is aware of the significance of the natural microbiota in aquaculture systems.
- 2 The student is able to describe and discuss the microbial compartments in aquaculture systems.
- 3 The student knows the methods that are available to evaluate the microbial community composition.
- 4 The student is able to assess if the microbial status in the aquaculture system poses a potential danger for the cultured animals or not.
- 5 The student is able to make funded suggestions and recommendations to improve the microbial community composition and functionality with the aim of maximizing animal health and culture performance.

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

Toelichtingen bij de didactische werkvormen

Theory lectures: lectures based on powerpoint presentations.

Leermateriaal

Outprints of the powerpoint presentations will be available during all classes.

Estimated cost of the print-outs: 15 euro (included in fee that is paid in the beginning of the academic year).

Referenties

Vakinhoudelijke studiebegeleiding

Study guidance upon request by email or on appointment.

Evaluatiemomenten

periodegebonden evaluatie

Evaluatievormen bij periodegebonden evaluatie in de eerste examenperiode

Schriftelijk examen

Evaluatievormen bij periodegebonden evaluatie in de tweede examenperiode

Schriftelijk examen

Evaluatievormen bij niet-periodegebonden evaluatie

Tweede examenkans in geval van niet-periodegebonden evaluatie

Examen in de tweede examenperiode is mogelijk

Toelichtingen bij de evaluatievormen

Period aligned evaluation: theory: written closed book exam.

Eindscoreberekening

Out of 20:

20 points attributed to closed book written exam

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