

## Aquaculture Environmental Impact (I000928)

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

**Studiepunten 3.0** **Studietijd 90 u**

**Aanbodsessies en werkvormen in academiejaar 2024-2025**

A (semester 2) Engels Gent hoorcollege

**Lesgevers in academiejaar 2024-2025**

Asselman, Jana LA22 Verantwoordelijk lesgever

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

	stptn	aanbodsessie
<a href="#">Master of Science in Aquaculture</a>	3	A
<a href="#">Uitwisselingsprogramma bio-ingenieurswetenschappen: landbouwkunde (niveau master-na-bachelor)</a>	3	A
<a href="#">Uitwisselingsprogramma bio-ingenieurswetenschappen: milieutechnologie (niveau master-na-bachelor)</a>	3	A

**Onderwijstalen**

Engels

**Trefwoorden**

Aquaculture, ecosystem, sustainability, algal blooms, ecological footprints.

**Situering**

In the past, oceans and seas were often perceived as a limitless source of seafood with an ever increasing supply of fish. However, with an increasing global population, the limits of both our terrestrial and marine food provisioning systems are becoming poignantly clear. Fish and other marine products are an important source of proteins, but as more than 30% of our fish stocks are already overfished, it is unlikely that increasing fishing activities will result in an adequate supply of proteins. Aquaculture, on the other hand, has been exponentially growing since the 1990's. As of today, aquaculture provides already half of the fish products being consumed, providing food security in various areas around the world. However, the impacts of aquaculture on the local ecosystem cannot be neglected. For example, extensive feeding causes eutrophication, which may lead to harmful algal blooms, which on their turn endanger harvests, local ecosystems and human health. Coastal ecosystems, like mangrove forests, often with a high carbon sequestering potential, are being removed in favor of aquaculture with consequences such as coastal erosion, biodiversity loss and a lower carbon sequestration. Antibiotics, applied to avoid losing profit due to diseases in the system, are an important cause of increasing antibiotic resistance. The impact of aquaculture on the environment should thus be taken into careful consideration in order to ensure a sustainable food supply.

**Inhoud**

The course aims at giving an extensive overview of aquaculture systems and their effects and interactions with the environment. To gain insight in said interactions, knowledge on different configurations and forms, e.g. traditional versus industrial aquaculture, is required and will be illustrated using case studies from all over the world. Additionally, the sustainability of different configurations will be discussed. Problems associated with aquaculture will be debated, such as, for example, (harmful) algal blooms with special attention to toxin production, species and monitoring. The theoretical insights in system configurations and interactions with the environment will be put into practice during the project assignment, in which the sustainability of an aquaculture system will be assessed. Additionally, students

will participate in the VLIZ Marine Science Day to gain a broad overview of environmental impact on marine ecosystems.

### **Begincompetenties**

Notions on general aquaculture.

### **Eindcompetenties**

- 1 The student has insight into the factors determining the sustainability of aquaculture.
- 2 The student can describe different aquaculture configurations including their advantages and disadvantages with regards to environmental impact
- 3 The student can describe the relationship between different environmental impacts (e.g (harmful) algal blooms) and aquaculture
- 4 The student can quantitatively compare different aquaculture configurations in terms of sustainability and feasibility

### **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**

Excursie, Hoorcollege, Zelfstandig werk

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

Theory lectures: lectures based on powerpoint presentations.

Excursion to the VLIZ Marine Science Day

Project assignments: project assignment on the VLIZ day and an individual assignment by the end of the lectures

Seminar on a specific aquaculture case study

### **Studiemateriaal**

Type: Slides

Naam: Slides and papers related to the course

Richtprijs: Gratis of betaald door opleiding

Optioneel: nee

Taal : Engels

Beschikbaar op Ufora : Ja

Online beschikbaar : Ja

Beschikbaar in de bibliotheek : Nee

Beschikbaar via studentenvereniging : Nee

Bijkomende info: All material is freely provided on UFORA. Students can choose to print this at their own expense.

### **Referenties**

#### **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**

Werkstuk

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

Niet van toepassing

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

\*End-of-term assessment: written examination on content of lectures

\*permanent evaluation: project assignment and excursion assignment,

participation in the seminar session.

**Eindscoreberekening**

End-of-term assessment: 60%, permanent evaluation: 40%

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