

# INTERNATIONAL MASTER OF SCIENCE IN HEALTH MANAGEMENT IN AQUACULTURE

PROGRAMME JOINTLY OFFERED BY GHEENT UNIVERSITY, NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY, WAGENINGEN UNIVERSITY, AUTONOMOUS UNIVERSITY OF BARCELONA, UNIVERSITY OF BARCELONA

120 ECTS CREDITS - LANGUAGE: ENGLISH

## WHAT

Aquaculture, the controlled production of aquatic organisms, plays a crucial role in meeting the growing demand for healthy, tasty and sustainably produced seafood. The rapid growth and intensification of seafood farming has inevitably resulted in the increased occurrence of viral, bacterial, parasitic or stress-related disease outbreaks. Indeed, current farming techniques may in many farming practises tend to promote the presence of unwanted micro-organisms. Until recently this aspect of modern aquaculture has been vastly underestimated or largely ignored in some regions. If, however, current aquaculture production is to be improved in a sustainable way, strategic approaches are necessary. In salmon aquaculture, for instance, spreading of viral diseases and parasites (salmon lice) are among the main current health and welfare challenges. In penaeid shrimp farming, viral disease outbreaks have occasionally decimated the production of whole countries, causing huge economic losses and threatening the livelihoods of numerous family-run business. Science-based efficient health management and well-educated specialised personnel are paramount to overcoming these problems.

The AquaH programme responds to the need for an expert training that prepares students to develop and implement innovative solutions to aquaculture health issues, thus contributing to the sustainable development of the aquaculture industry. The programme focuses on understanding and controlling the interaction between aquaculture species and their environment, in order to produce robust and healthy animals with attention for epidemiological, environmental and welfare regulations. The programme offers three distinct tracks, each addressing aquaculture health issues on a different level:

- the relationship between the ecosystem and health;
- disease prevention and adequate health maintenance with minimal impact on the environment;
- the relationship between animal physiology and health

This ERASMUS Mundus programme enables students to study at four of Europe's leading institutes in aquaculture and do a work placement at one of our

numerous industry or research partners worldwide. ERASMUS Mundus scholarships are available.

## STRUCTURE

### First term

The programme starts with a common term at Ghent University, in the course of which students take course units on fundamental aspects of health management in aquaculture and essentials in statistics and aquaculture practices.

### Second and Third term

Students can choose between one or the two learning lines each at another of the four programme partner institutes.

- The **learning line of NTNU, Norway**, on 'Ecosystems and Health'  
Involves important interactions between farmed and native organisms, including how diseases and parasites are spread (salmon lice); interactions between native microbial communities and farmed hosts; the influence of water quality (e.g. toxic algae) on the health and welfare of farmed fish. The overall focus is normally on how the environment, or the ecosystem, may affect fish health, not on the effects of farming on the environment. Learning activities include mainly health, welfare and environmental issues for fish from larval to adult stages. NTNU currently has major involvement in research on health issues in marine fish farming and has a strong relationship with industry.
- The **learning line at WU, Netherlands**, on 'Disease Prevention Management & Health'  
Focuses on relevant innovations by studying fish and shellfish nutrition and health. This is mainly in circular aquaculture systems, be it in recirculating aquaculture systems or ponds. Research looks into how nutrition influences health and how novel feeds improve disease resistance; it also considers the latest strategies in terms of activation of the immune system and key therapeutic tools, such as new generation vaccines.
- The **learning line of UAB/UB, Barcelona**, on 'Physiology and Health'  
With the main purpose of acquiring knowledge on the physiological mechanisms involved in the overall health of fish and shellfish. Therefore, the following aspects will be considered: harmonious

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growth and balanced nutrition; the generation of the stress response and stress prevention methodologies; the innate and adaptive mechanisms of immune defences; the regulatory systems involved; knowledge of infections; pathological signs; and the patho-physiological response.

In the second and third semester, students will also do an internship at one of the many international industry or research partners of the programme consortium.

## Fourth semester: Master's

### Dissertation

Students can choose the topic for their master's Dissertation (thesis) in a broad range of disciplines in which the scientific staff of the master's programmes is active. In general, the students become involved in ongoing research within the research laboratories of their promoter(s). Thanks to our extended international network, students can perform their master's dissertation work in laboratories in other (non-) European countries. Students have to conduct research with the appropriate expertise in order to contribute to the development of a particular research domain. The ultimate goal is to initiate students into research at an academic level so that, upon completion of their master's programme, they are able to autonomously carry out scientific research.

## LABOUR MARKET

The ever-continuing intensification in aquaculture systems, along with an increased production scale has inevitably resulted in the increased occurrence of disease outbreaks. This has created an urgent need for aquaculture health management experts who can respond to the health challenges in the aquaculture industry.

The AquaH programme will prepare you for a diverse range career options, including:

- head of R&D teams in one of the leading aquaculture pharma companies;
- self-employed consultant on fish disease issues;
- governmental veterinary officer responsible for farmed fish health and welfare, quarantine regulation, food quality and security control etc;
- ...

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## TOELATINGSVOORWAARDEN VOOR HOUDERS VAN EEN VLAAMS DIPLOMA

### 1 Na onderzoek van de bekwaamheid van de student om de opleiding te volgen:

- Bachelor in de bio-industriële wetenschappen
- Bachelor in de bio-ingenieurswetenschappen
- Bachelor in de biochemie en de biotechnologie
- Bachelor in de biologie
- Bachelor in de biomedische wetenschappen
- Bachelor in de biowetenschappen
- Bachelor in de diergeneeskunde
- Bachelor in de farmaceutische wetenschappen
- Bachelor in de industriële wetenschappen:  
milieukunde

## ADMISSION REQUIREMENTS FOR INTERNATIONAL DEGREE STUDENTS

Candidates must:

Hold a Bachelor's degree of 180ECTS (is equivalent to 3y) from a university or recognized equivalent

Demonstrate through their transcripts or records to have successfully acquired:

1. Basic science training in at least 5 out of 7 of the following fields: (i) Mathematics; (ii) Physics; (iii) Chemistry; (iv) Biochemistry; (v) Biology; (vi) Microbiology; (vii) Engineering

2. Statistics level 1 and 2\*

\* see Wageningen University study guide for details

Some academic or professional background in aquaculture is highly recommended.

Consult [the programme website](#) for specific academic and language requirements.

Information on admission requirements and the administrative procedure for admission on the basis of a diploma obtained abroad, can be found on the following page: [www.ugent.be/prospect/en/administration/enrolment-or-registration](http://www.ugent.be/prospect/en/administration/enrolment-or-registration).

## LANGUAGE REQUIREMENTS

Language requirements Dutch: no language requirements

Language requirements for this study programme differ from the required standard level for English

taught study programmes as specified in the Ghent University Education and Examination Code:

**English:** TOEFL IBT 92, with subscore for speaking 23 - ACADEMIC IELTS 6.5 overall score with a minimum of 6 for writing and 6 for speaking - CEF-B2 certificate (awarded by a European language centre) - ESOL CAMBRIDGE English CAE (Advanced) score between 176-210 or Grade C

### Exemptions:

Language proficiency proof is not required for applicants who are nationals from, or have obtained a bachelor and/or master degree (excluding double degrees or online degrees programmes) in, a higher education institute with English as mode of instruction in USA, Australia, New Zealand, United Kingdom, Republic of Ireland or Canada (except universities in Quebec Province, apart from applicants that have completed a 4 year bachelor degree at McGill University with English as the language of instruction. A certificate confirming that the mode of instruction was English needs to be submitted.)

See also <https://aquah.eu/apply/>.

## PRACTICAL INFORMATION

### Study programme

[studiekiezer.ugent.be/international-master-of-science-in-health-management-in-aquaculture-en/programma](http://studiekiezer.ugent.be/international-master-of-science-in-health-management-in-aquaculture-en/programma)

### Information sessions

#### Graduation Fair

[afstudeerbeurs.gent/en/students/further-studies](http://afstudeerbeurs.gent/en/students/further-studies)

### Enrolling institution

Ghent University, Wageningen University, Norwegian University of Science and Technology, University of Barcelona, Autonomous University of Barcelona

Information on enrolment at Ghent University.

### Application Deadline (for International degree students)

More information on programme specific application procedures and deadlines for both **Belgian and international students**.

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## **Tuition fee**

More information is to be found on: [www.ugent.be/tuitionfee](http://www.ugent.be/tuitionfee)

## **Learning path counsellor**

### **Learning path counsellor**

Mevr. Isabelle Vantornhout  
[studietraject.coupure.bw@UGent.be](mailto:studietraject.coupure.bw@UGent.be)

## **Contact (for international degree students)**

### **Ghent University**

Faculty of Bioscience Engineering  
International Training Centre  
Coupure Links 653, B-9000 Gent  
[applications.itc@ugent.be](mailto:applications.itc@ugent.be)

[www.itc.ugent.be](http://www.itc.ugent.be)