

## Nutrition and Health in Aquaculture (I002868)

**Course size** *(nominal values; actual values may depend on programme)*

**Credits 6.0** **Study time 168 h**

### Course offerings in academic year 2025-2026

A (semester 2) English Gent

### Lecturers in academic year 2025-2026

Schrama, Johan W	WAGENI01	lecturer-in-charge
Kokou, Fotini	WAGENI01	co-lecturer
Maas, Roel	WAGENI01	co-lecturer
Nederlof, Marit AJ	WAGENI01	co-lecturer
Wiegertjes, Geert F	WAGENI01	co-lecturer

### Offered in the following programmes in 2025-2026

International Master of Science in Health Management in Aquaculture	crdts	offering
	6	A

### Teaching languages

English

### Keywords

### Position of the course

### Contents

Aquaculture is increasingly important for human food supply. Two key challenges which should enable the global growth of the aquaculture sector are: 1) the production of sufficient, high quality and sustainable feeds and 2) maintaining healthy (shell)fish. In this course, general aspects and current issues in domains of nutrition and health of (shell)fish are addressed. Sustainability of aquaculture involves various biological factors/disciplines (husbandry, water quality/management, nutrition, health, etc.). This course has an integrative approach to these different factors from organ to organismal level and is focussing on nutrition and health aspects and their interactions. The major focal point in this course are the juvenile and adult (brood stock) life stages of fish and shellfish (shrimp). Only minor attention is given to larval stages.

Students will be taught to understand how (shell)fish grow and stay healthy (including welfare aspects) building on assumed basic knowledge of nutrition, physiology, pathology, immunology, and genetics to integrate the various disciplines. Key subjects are: metabolic aspects of fish nutrition; nutrient requirements; impact of diet on gut health/physiology (e.g., limitations/consequences of fishmeal replacement); feed intake regulation mechanisms; prevention of fish diseases; healthy fish feeds as drivers of innate immunity and general disease resistance; stress physiology and behaviour in relation to fish welfare.

### Initial competences

*Competence for admission to EM AquaH study program*

### Final competences

- 1 After successful completion of this course students are expected to be able to:
  - outline the effects of environmental factors (such as nutrition, water quality, etc.) on performance, disease, health and welfare of aquatic animals;
- 2 • illustrate the role of nutritional factors with respect to energy,

protein metabolism, feed intake regulation and waste production, including underlying mechanisms;

3 • demonstrate the ability to formulate fish diets and measure pellet quality and feed intake in aquatic organisms;

4 • assess fish welfare and health aspects based on pathological and functional knowledge on skin, gut and gill barriers and by measuring behavior and blood stress/health parameters.

5 • illustrate the role of healthy feeds with respect to barrier functioning and gut microbiome and identify the involved mechanism and concepts

6 • elaborate on the concept of vitality and welfare in aquatic organisms by integrating your knowledge on fish nutrition, water quality and health;

7 • summarise and present orally a scientific research article and to formulate a generalized concept of factors involved on specific topics being dealt with in case-studies on the basis of 3 to 4 articles.

#### **Conditions for credit contract**

This course unit cannot be taken via a credit contract

#### **Conditions for exam contract**

This course unit cannot be taken via an exam contract

#### **Teaching methods**

Lecture, Practical, Independent work

#### **Extra information on the teaching methods**

- lectures;
- practical exercises
- tutorial exercises

#### **Study material**

None

#### **References**

Course guide.

#### **Course content-related study coaching**

#### **Assessment moments**

end-of-term and continuous assessment

#### **Examination methods in case of periodic assessment during the first examination period**

Written assessment with multiple-choice questions, Written assessment with open-ended questions

#### **Examination methods in case of periodic assessment during the second examination period**

Written assessment with multiple-choice questions, Written assessment with open-ended questions

#### **Examination methods in case of permanent assessment**

Skills test, Participation

#### **Possibilities of retake in case of permanent assessment**

examination during the second examination period is possible

#### **Extra information on the examination methods**

- written test with approx. 35 multiple choice questions and approx. 5 open questions;
- participation in practicals and tutorials exercises are compulsory (pass/fail). A pass score for practicals and tutorials are valid for five years; a fail can be remediated the next time the course runs.

#### **Calculation of the examination mark**