

## Nutrition and Health in Aquaculture (I002868)

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

**Credits** 6.0

**Study time** 168 h

**Contact hrs**

88.0h

**Course offerings in academic year 2022-2023**

A (semester 2)

English

Gent

**Lecturers in academic year 2022-2023**

Schrama, Johan W

WAGENI01 lecturer-in-charge

Kokou, Fotini

WAGENI01 co-lecturer

Nederlof, Marit AJ

WAGENI01 co-lecturer

Wiegertjes, Geert F

WAGENI01 co-lecturer

**Offered in the following programmes in 2022-2023**

**crdts**

**offering**

[International Master of Science in Health Management in Aquaculture](#)

6

A

**Teaching languages**

English

**Keywords**

Aquaculture, Aquaculture production; from organ to organismal level and is focussing on nutrition and health aspects and their interactions; Nutrition, food and feed quality, healthy (shell) fish, domains of nutrition and health, sustainability of aquaculture, husbandry, water quality and management.

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.

**Position of the course**

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.

**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.

**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 innate immunity 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: plenary exercises, Practicum, Lecture, Pde tutorial, Self-reliant study activities

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

- lectures;
- practical exercises
- tutorial exercises

#### **Learning materials and price**

All reading material is available on Brightspace, Learning Management System of Wageningen University and Research.

#### **References**

*Will be available through Brightspace, Learning Management System of Wageningen*

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

*Teaching support and supervision of the groups are by experts/ teachers, PhD students and industrial partners connected to this course.*

#### **Assessment moments**

continuous assessment

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

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

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

Skills test, Written examination, Written examination with multiple choice questions

#### **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 multiple choice questions and open questions;  
Participation in practical and tutorial exercises are obligatory.

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

The normal grades are between 0-10 and 6 ECTS is achieved iff passed (>5.5)