

## Fish and Shellfish Immunology (1002797)

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

**Credits 4.0**

**Study time 120 h**

**Course offerings in academic year 2023-2024**

A (semester 1)

English

Gent

**Lecturers in academic year 2023-2024**

Vanrompay, Daisy

LA22

lecturer-in-charge

**Offered in the following programmes in 2023-2024**

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

4

A

[International Master of Science in Marine Biological Resources](#)

4

A

[Master of Science in Aquaculture](#)

4

A

[Exchange Programme in Bioscience Engineering: Agricultural Sciences \(master's level\)](#)

4

A

**Teaching languages**

English

**Keywords**

Immunobiology, innate and adaptive immunity, humoral and cellular immunity, inflammation, infectious diseases

**Position of the course**

This course aims at providing a detailed overview of immunology of fish and shellfish.

**Contents**

- 1 History of immunology
- 2 Antigens
- 3 Immune organs of fish
- 4 Inflammation
- 5 Innate immunity
- 6 Key cells
- 7 Cell based innate immune sensing fish
- 8 Cellular effectors in fish
- 9 Humoral-based immune sensing in fish
- 10 Cytokines and chemokines
- 11 MHC in fish
- 12 Ag presentation
- 13 T cell response in fish
- 14 Immunoglobulines of fish
- 15 B cell response in fish
- 16 Hemocytes in shellfish and tissues of their immune system
- 17 PRR of shellfish
- 18 ProPO in shellfish
- 19 Coagulation in shellfish
- 20 Anti-viral mechanisms in shellfish

**Initial competences**

An adequate knowledge of basic concepts of general biology, cell biology, microbiology and aquaculture is crucial to be able to follow along and for the proper understanding of the lectures

**Final competences**

- 1 The student possesses a broad knowledge at an advanced level in a number of basic disciplines (biology, immunology) relevant to aquaculture

- 2 The student understands the processes ongoing in different forms and systems of aquatic production in relation to disease prevention
- 3 The student understands the ethical issues of animal production and experimentation
- 4 The student can design and implement strategies for future development in aquaculture with emphasis on prevention of infectious diseases
- 5 The student is able to interact with peers, with various stakeholders in the aquaculture sector, and with a general public concerning personal research, thoughts, ideas, and research proposals, both written and orally

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

Access to this course unit via a credit contract is determined after successful competences assessment

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

This course unit cannot be taken via an exam contract

#### **Teaching methods**

Lecture

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

Theory lectures: lectures based on powerpoint presentations.

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

Syllabus (English). Estimated price 15 euro.

#### **References**

- 1) Fish Defenses, Vol I: Immunology. Edited by G. Zaccane et al., (2017). CRC Press, Taylor & Francis Group
- 2) Fish vaccination. Edited by R. Gudding, A. Lillehaug and O. Evensen (2014). John Wiley & Sons, Ltd. , 9600 Garsington Road, Oxford, OX4 2DQ, UK. ISBN 978-0-470-67455-0.
- 3) Immunobiology. Kenneth Murphy and Casey Weaver. 9<sup>th</sup> Edition, (2016). Garland Science Publishing. Book is also known as Janeway's Immunobiology
- 4) Essential Immunology. P.J. Delves, S.J. Martin, D.R. Burton, Roitt, I.M. (eds) (2011). Wiley-Blackwell 12<sup>th</sup> edition.
- 5) Abul K. Abbas & Andrew H. Lichtman, S. Pillai (2017). Cellular and Molecular Immunology. 9<sup>th</sup> edition. Elsevier Science/Saunders, Philadelphia.

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

Teacher available for student counselling

#### **Assessment moments**

end-of-term assessment

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

Written assessment

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

Written assessment

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

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

not applicable

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

Theory: written examination

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

Out of 20:

20 points attributed to written exam

Students who eschew period aligned evaluations for this course unit may be failed by the examiner.