GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2024-2025

Production and Health Management in Aquaculture Facilities (I002878)

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

Credits 8.0 **Study time 200 h**

Course offerings in academic year 2024-2025

A (semester 1) English Gent

Lecturers in academic year 2024-2025

Masaló Llora, Ingrid	BARCELO3	lecturer-in-charge
Gil Roig, José Maria	BARCELO3	co-lecturer
Kallas Calot, Zein	BARCELO3	co-lecturer
Oca, Joan	BARCELO3	co-lecturer
Reig Puig, Maria Lourdes	BARCELO3	co-lecturer

Offered in the following programmes in 2024-2025	**crdts**	**offering**
International Master of Science in Health Management in Aquaculture	8	A

Teaching languages

English

Keywords

Intensive aquaculture systems, Recirculation systems, facilities engineering, tank design, environmental enrichment, carrying capacity, bioprogramming, routine operations, stock control, feeding management, technical decisions, aquaculture economics, marketing strategies, cost-benefit analysis

Position of the course

This course aims at introducing into the design of aquaculture facilities, the production management, and the analysis and improvement of the competitiveness aquaculture industries

Contents

1. Production and health management

- Bioprogramming a fish farm facility to ensure health, welfare, and sustainability
- Influence of technical decisions on the viability of the operation
- Routine operations in an aquaculture facility: main criteria and procedures
- Stock control: monitoring growth, biomass, number of individuals, and stocking density
- Feeding management: method, frequency, time

2. Engineering of aquaculture production systems

- Introduction to marine aquaculture systems
- Design criteria of aquaculture tanks and environmental enrichment
- Site considerations, pump selection, and flow control
- Required flow rates and carrying capacity in flow-through systems
- Water treatment
- Recirculating Aquaculture Systems

3. Economics for Aquaculture

- Price Determination in Aquaculture Markets
- Agrofood Marketing
- Market trends, innovation, and consumer behavior
- Cost-Benefit Analysis

Initial competences

General biology, use of spread-sheets (i.e. excel)

Final competences

1 *Identify the criteria for defining the product, management and location to implement an aquaculture operation that guarantees the fish welfare and health*
2 *Develop the productive program (bioprogramming) of a fish farm according to these criteria*
3 *Identify the influence of technical decisions and routine operations on fish health*
4 *Identify the basic design criteria and engineering principles needed to set up and manage a successful aquaculture system*
5 *Asses the technical management of an aquaculture company, considering economic and welfare aspects*
6 *Asses the business management of an aquaculture company*
7 *Make decisions concerning the management and maintenance of the facilities*
8 *Understand the functioning of Aquaculture Markets and Value Chain*
9 *Knowledgeable about how aquaculture companies face market challenges*
10 *Understand the economic tools for decision making*

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

Group work, Seminar, Excursion, Lecture, Practical, Independent work

Study material

None

References

FAO (2020) El estado mundial de la Pesca y la Acuicultura (SOFIA) http://www.fao.org/fishery/sofia/en
HUGUENIN, J.E. and COLT J. 1989. Design and operating guide for aquaculture seawater systems. Elsevier. Amsterdam.
HUNTINGFORD, F. (2010) Aquaculture and behavior. Ed. Wiley-Blackwell, UK
JANA, S. (2018). Socioeconomic Impacts and Cost-Benefit Analysis of Wastewater-Fed Aquaculture. In Wastewater Management Through Aquaculture (pp. 269-284). Springer, Singapore.
JOBLING, M. (1994) FISH BIONERGETICS. Chapman and Hall. Fish and Fisheries Series 13. London, UK.
LAWSON, T. 1995. Fundamentals of Aquacultural Engineering.Chapman & Hall. New York
LEKANG, O.I. (2007) AQUACULTURE ENGINEERING. Blackwell Publishing, UK.
MIDLEN, A.B., REDDING, T.A. (1998) Environmental management for aquaculture. Chapman & Hall, London, UK
PILLAY, T.V. (1992) Aquaculture and the Environment. Fishing New Books. London, England.
RANKING, J. C. & JENSEN, F. B. (1993) FISH ECOPHYSIOLOGY. Fish and Fisheries Series, 9. Chapman & Hall, UK.
ROSS, L. G. and ROSS, B. (2000) ANAESTHESIC AND SEDATIVE TECHNIQUES FOR AQUATIC ANIMALS. Wiley-Blackwell; 2nd Edition, UK. .
STICKNEY, R.R., McVEY, J. P. (2002) Responsible marine aquaculture. CABI Publishing, Oxon, UK
WEDEMEYER, G.A. (1996) PHYSIOLOGY OF FISH IN INTENSIVE CULTURE SYSTEMS. Chapman and Hall. USA.
TIMMONS, M.B. and LOSORDO, T.M. 1994. Aquaculture water reuse systems: engineering design and management. Elsevier. Amsterdam
TIMMONS, M.B.and EBELING, J.M. 2010. Recirculating Aquaculture (2nd Ed). NRAC Publication No. 401-2010

Course content-related study coaching

Teacher available for student counselling

Assessment moments

end-of-term and continuous assessment

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

Peer and/or self assessment, Written assessment with open-ended questions, Written assessment, Assignment

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

Oral assessment, Written assessment with open-ended questions

Examination methods in case of permanent assessment

Oral assessment, Skills test, Peer and/or self assessment, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible in modified form

Calculation of the examination mark

30% Bioprogramming case-study; 30% Written examination; 30% Presentation of the individual report; Whole duties attendance and accomplishment 10%.
Students who eschew period aligned and/or non-period aligned evaluations for this course unit may be failed by the examiner.