GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2024-2025

Physiological Energetics of Marine Organisms (C004233)

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

Credits 4.0 **Study time 100 h**

Course offerings in academic year 2026-2027

A (semester 2)	English	Gent

Lecturers in academic year 2026-2027

Navarro, Enrique	LEIOA01	lecturer-in-charge
Bego Urrutia, Miren	LEIOA01	co-lecturer
Ibarrola, Irrintzi	LEIOA01	co-lecturer

Offered in the following programmes in 2026-2027	crdts	offering
International Master of Science in Marine Biological Resources	4	A

Teaching languages

English

Keywords

molluscs, crustaceans, fish, scope for growth , energetics, pollution, production, experimentation

Position of the course

Physiological basis of energetic exchanges between marine animals and environment are analysed. Aims to present the tools that Physiological Energetics provides to understand the basis of energy exchanges and constrains to attain high rates of growth and to present the tools that Physiological Energetics provides to evaluate sublethal effects of pollutants on individual growth and reproductive potential. At the end of the Unit, you should be able to perform critical Analysis of literature data on Scope For Growth, express (write and analyse) experimental results obtained in the laboratory and design experiments.

Contents

1 The course is organized into two sections: discussion of general principles of physiological energetics; and two independent and complementary modules developing concepts and methods within the framework of production and toxic effects of pollutant agents.
2 Lectures and laboratory experiments deal with the physiological parameters of the energy balance, such as: rates of food ingestion and absorption; absorption efficiency; metabolic rate; excretion rate; and the resulting scope for growth.
3 Modules on production and pollution follow the pattern of a case study where experimental results are thoroughly discussed.

Initial competences

Basis of bioscience or animal science and environmental sciences.

Final competences

1 Handle information Scope For Growth provides as regards to understanding actual growth and factors that may potentially affect growth rate.
2 Design simple experiments to measure the scope for growth in marine animals.

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

Seminar, Lecture

Extra information on the teaching methods

- Lectures 20
- Practicals 10
- Seminars 6
- Tutorials 4

Study material

None

References

- Galloway, T.S., Sanger, R.C., Smith, K.L., Fillmann, G., Readman, J.W., Ford, T. E., Depledge, M.H. Rapid assessment of marine pollution using multiple biomarkers and chemical immunoassays ,(2002) Environmental Science and Technology, 36 10, 2219-2226.
- Widdows, J., Donkin, P., Staff, F.J., Matthiessen, P., Law, R.J., Allen, Y.T., Thain, J.E., (...), Jones, B.R. Measurement of stress effects (scope for growth) and contaminant levels in mussels (Mytilus edulis) collected from the Irish Sea , (2002) Marine Environmental Research, 53 4, 327-356.
- Webb, N.A., Shaw, J.R., Morgan, J., Hogstrand, C., Wood, C.M. Acute and chronic physiological effects of silver exposure in three marine teleosts ,(2001) Aquatic Toxicology, 54 3-4, 161-178.
- Niemi, Gerald J., Bradbury, Steven P., McKim, James M. Use of fish physiology literature for predicting fish acute toxicity syndromes ,(1991) ASTM Special Technical Publication, 1124, 245-260.
- Willmer P, Johnston I, (2000) Environmental Physiology of Animals. Blackwell Publishing.

Course content-related study coaching

- Written/oral examination (Theory) 60%
- report (40%)

Assessment moments

end-of-term assessment

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

Oral assessment, Written assessment, Assignment

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

Oral assessment, Written assessment, Assignment

Examination methods in case of permanent assessment

Possibilities of retake in case of permanent assessment

not applicable

Calculation of the examination mark