GHENT UNIVERSITY

Course Specifications

From the academic year 2020-2021 up to and including the academic year

Modelling and Management of Wild Populations (C003886)

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

Credits 6.0	**Study time 150 h**	**Contact hrs**	48.0h

Course offerings in academic year 2022-2023

A (semester 2)	English	Gent

Lecturers in academic year 2022-2023

Arrontes, Julio	OVIEDO01	lecturer-in-charge
Drumi, Fatima	OVIEDO01	co-lecturer
Ibañez Mesa, Santiago	OVIEDO01	co-lecturer
Perez Riera, Pablo	OVIEDO01	co-lecturer

Offered in the following programmes in 2022-2023	**crdts**	**offering**
International Master of Science in Marine Biological Resources	6	A

Teaching languages

English

Keywords

Position of the course

Contents

Module 1. Ecological Modelling (3 ECTS). Mathematical approach to Marine Ecology (a journey from the basic models to the real world systems). Understanding a differential equation. Software for scientific computation, numerical simulation and visualization of results. From mass balance models to dynamical models: an introduction to Ecopath, Ecosim and Ecospace. Toy-models and real-models of marine ecosystems: Ecopath, Ecosym and Ecospace. First steps in the designing of software for model analysis.
Module 2. Population Biology Applied to Conservation (3 ECTS).
Unstructured population models. Continuous and discrete-time population models. Sensitivity analysis. Estimation of parameters for ecological models. Age and class-structured population models. Construction of the population matrix. Projection of the population. Perturbation analysis. Stochastic models. The effect of variability in population parameters and its quantification. Implementing variability in simple models: Environmental and demographic stochasticity. Density-dependence, periodicity and stochasticity in structured models. Metapopulations. Population Viability Analysis. Conservation paradigms. Final and practical recommendations

Initial competences

Graduate level in sciences. Basic knowledge in mathematics is welcome. Marine Ecology course.

Final competences

1 Students should be able to understand what is in the backstage regarding existing software for simulations of real ecosystems.
2 They will learn how to use those programs and some basic abilities to be able of designing their own software.
3 The students will learn to identify problems in real populations and evaluate viability.

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

Learning materials and price

References

Course content-related study coaching

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

Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible

Extra information on the examination methods

Module 1: Four assignments to be reported at the end of the module.
Module 2: Assignment consisting in the preparation of an Individual Based Model for one marine species with an interest in conservation.

Calculation of the examination mark