INTRODUCTION TO ECOLOGICAL MODELLING

Organized by CIIMAR, University of Porto (https://www2.ciimar.up.pt/), Marine Ecosystem Modelling team

Date: 14-18 November 2022
Place: CMIA Matosinhos, Matosinhos, Portugal

Lecturers: Irene Martins (PhD, CIIMAR), Ana Costa (PhD, CIIMAR), Alexandra Guerra (MSc, CIIMAR)

Keynote speakers: João Alexandre Cabral (PhD, CITAB, UTAD), Isabel Iglesias (PhD, CIIMAR), Fabíola Amorim (PhD, CIIMAR)

Course short description

The course aims at teaching the basic theoretical concepts as well as the practical methodologies, to develop and implement mechanistic dynamic models with a focus on aquatic organisms and ecosystems.

The course is divided into theoretical (morning sessions) and practical lectures (afternoon sessions). Theoretical lectures will be delivered by researchers from the Marine Ecosystem Modelling (MEMO) team of CIIMAR and by invited experienced modellers.

During the practical sessions, participants will have a direct contact (hands on) with a modelling software (Powersim software by Powersim, Inc). After the introductory sessions to the basic concepts of ecological modelling and Powersim, participants will be asked to gather in small groups, brainstorm, and develop a simple model that may or may not focus their own research interests. During the practical sessions, modellers from the organizing team as well as the invited modellers will deliver advice and assist participants with questions and doubts regarding their ongoing modelling work.

In the afternoon of the last day of the course (Friday, the 18th November), participants will present their models, explain the methodology followed, show preliminary results, and discuss future developments. Lecturers and keynote speakers will feedback on the developed models and provide constructive advice.

At the end of the course, participants will have a 1-year free access to Powersim software.

Course program in brief

Day 1 14 Nov
9h-13h: Development of ecological models-basic components, the modelling process and steps, tests to the model, implementing a model
14h30min--18h: Introduction to PowerSim

Day 2 15 Nov
9h-13h: Physiological models; bioenergetics models, scope for growth models
14h30min-18h: Group practical work with PowerSim

Day 3 16 Nov
9h-13h: Population dynamics models; community models; predator-prey models
14h30min-18h: Group practical work with PowerSim

Day 4 17 Nov
9h-11h: Ecosystem models; food web models; scenario analysis
11h-13h: Keynote class with Isabel Iglesias and Fabíola Amorim- "Integration of oceanic, lagrangian, and ecosystem models"
14h30min-18h: Group practical work with PowerSim; Preparation of presentations

Day 5 18 Nov
9h-13h: Keynote class with João A. Cabral- "Hybrid ecological modeling approaches with application in the conservation of endangered species"
14h30min-18h: Presentation of the models by each group followed by feedback from lecturers and keynote speakers

- **Target audience:** students (undergraduate, MSc, PhD), researchers, and other professionals with an interest in environmental modelling
- Previously knowledge in ecological modelling is NOT required
- All classes will be in-person
- The course will be taught in English

Fee: 90 € (50 € for CIIMAR/UP members)

Limited to 25 available positions

Registration:

1) Fill the form and check payment details at: https://forms.gle/iGicpdM8tG8g5TWv6

2) Send proof of payment to imartins@ciimar.up.pt; a confirmatory e-mail for the registration will be sent.

Deadline for registration: 9th November 2022

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