



## Hands on Functional Diversity: from Ecological Indicators to Ecosystem Services

**Lecturers/Organizers:** Alice Nunes (Univ. Lisboa), Paula Matos (Univ. Lisboa), Laura Concostrina-Zubiri (Univ. Lisboa), Pedro Pinho (Univ. Lisboa), Margarida Santos-Reis (Univ. Lisboa), Cristina Branquinho (Univ. Lisboa).

**Note:** This course is intended to be presential, but if needed (e.g. due to COVID-19 security measures by the time of the course) it may be adapted to be given remotely

**Date:** May 12<sup>th</sup>-16<sup>th</sup> 2025

**Duration:** 36 hours (contact hours)

**Schedule:** 9:00-17:30; Lectures/Computer Lab – 5 days

### **Objectives:**

Under the general framework of Global Change Ecology, the goal of this course is to provide the participants with the most recent and practical knowledge on the use of Functional Diversity. This includes the selection of functional traits and calculation of Functional Diversity Indexes. Examples

of the application of this knowledge will be given regarding Ecological Indicators and Ecosystem Services.

The specific objectives are:

- To give a general overview on global change drivers and point out the needs of current and future studies on Ecology
- To synthesize the most useful methods and tools for Ecosystem Services assessment, focusing on Ecological Indicators
- To allow the participants to apply the acquired knowledge on case study data (participants' data or data provided by the organizers), using R software. Examples of calculation with other software will also be provided (e.g. PC-ORD)

## **PROGRAM**

### **Monday**

09:00-09:30 Welcome session and program presentation

09:30-12:30 Ecological Indicators: background

Link to Ecosystem Services

12:30-13:30 Lunch

13:30-17:30 Personal project: presentation

### **Tuesday**

09:00-12:30 Functional Diversity Indices: theory and methods

Database management

12:30-13:30 Lunch

13:30-17:30 Computer Lab – personal project

### **Wednesday**

09:00-12:30 Computer Lab – personal project

12:30-13:30 Lunch

13:30-17:30 Computer Lab – personal project

### **Thursday**

09:00-12.30 Case studies from cE3c

12:30-13:30 Lunch

13:30-17:30 Preparation of presentation of personal project

### **Friday**

09:00-12.30 Personal project: results and discussion

12:30-13:30 Lunch

13:30-17:00 Personal project: results and discussion

17:00-17:30 Closure

Participants have to be present at 85% of the contact hours (this means that they can miss one half-day), and actively participate in all activities.

This course can give credits to PhD programmes at FCUL or of programmes with partnership from FCUL and other institutions with 6h-7h of contact hours per ECT, as a function of specific requirements. **For these students additionally to the exercises done during the week the delivery of a written report done after the course is mandatory.** For programmes with less hours of contact per ECT (6h/ECT, getting 6 ECTs from the course) students need to do an additional assignment (summary report). If needed 1 or 2 additional hours of contact may be added. Such report(s) are also advised for other students requesting accreditation of the course in their institutions.

**Nº (min, max) students:** 10-20

**Minimal formation of students:** Bachelor in Biology, Natural Science or related areas

**Directed to:** MSc or PhD students in Biology, Environmental Sciences, Ecology or related areas, postdocs and professionals working in related topics.

#### **FEE**

Free for 1st year PhD students in Doctoral programmes at FCUL (e.g. Biologia), Biodiversity, Genetics and Evolution (BIODIV UL; UP), Biology and Ecology of Global Changes (BEAG UL, UA) and Sustainability Science (UL, several institutions), when the course counts credits for their formation, in which case the delivery of a final report done after the course is mandatory; the course is also free for more advanced PhD students of the BIODIV programme (ULisboa or UPorto); 50 € for more advanced PhD students of cE3c of other programmes; 80 € for PhD students of the PEERS network (CFE); 125 € for FCUL Master students and unemployed; 180 € for BTI, BI and other PhD students; 250 € for Professional and postdocs.

When the maximum number of students is reached, 10 vacancies will be available for non-paying 1st year PhD students mentioned above, being, by order of preference students from: 1) cE3c; 2) BIODIV (not from cE3c); 3) FCUL (not from cE3c); 4) Sustainability Science (not from cE3c or FCUL); 5) BEAG (not from cE3c or FCUL).

**Deadline for applications:** April 11<sup>th</sup> 2025

#### **How to apply**

Candidates should fill in a FORMULARY that will be available when the call is open.

This formulary is strictly confidential, as explained in the introduction, and the data are required because the cE3c Advanced Courses are also offered as part of the PRR programme of FCUL.

When filling the formulary mind to:

- 1) FILL ALL THE MANDATORY FIELDS

- 2) UPLOAD CV AND MOTIVATION LETTER, both mandatory; use the names as instructed there
- 3) If you want to resume later SAVE the formulary, otherwise you will need to fill everything again
- 4) At the end SUBMIT the formulary before exiting

For any doubts please contact the cE3c coordinator of the cE3c courses Margarida Matos ([mmmatos@fc.ul.pt](mailto:mmmatos@fc.ul.pt)) and the teacher Alice Nunes ([amanunes@fc.ul.pt](mailto:amanunes@fc.ul.pt))