

Degree programme	Type	Course
Terrestrial Ecology and Biodiversity Management	OP	1

Contact lecturer

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Teaching staff

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Group languages

You can consult this information at the [end](#) of the document.

Prerequisites

There are no additional prerequisites

Objectives

This module brings students to places and circumstances where studies in terrestrial ecology are carried out. The module is based on the student's contact with several research groups and / or several experimental designs, and with the interaction with them. The module consists of theoretical classes mixed with related practices, so that students know the bases of the different techniques used and the main equipment used in each one of the areas (ecophysiology, plant ecology, animal ecology). Thus, students get to know the scientists in charge of experimental stations and active experimental fields, and know and manipulate cutting-edge scientific equipment in the context of studies in ecology. During the sessions, activities are carried out with students to assess the various aspects, practical and theoretical, of each of the cases, with special emphasis on the balance found between quality of experimental design and logistical or operational limitations.

Learning outcomes

1. Present the results of a study on the state of conservation of one (or several) threatened species.
2. Apply the main techniques for sampling and measuring used in (animal and plant) ecology.
3. Interpret and apply protocols for data collecting, sampling and instruments.
4. Identify the main approaches used to set up experimental studies, both in field conditions and in greenhouses or experimental fields, and the limitations of these approaches.
5. Make significant field observations for ecological studies.
6. Apply the main tools used in functional ecology to measure exchanges of matter and energy between organisms and their environment.

7. Design a scientific study on the basis of an initial hypothesis.
8. Identify and correctly use the most appropriate measuring technique for a particular objective, keeping in mind its limitations.
9. Autonomously organise and carry out a scientific study, from the initial hypotheses to the detailed planning.
10. Work in a group to conduct and present a scientific study.

Contents

Description of the contents of this module:

- Main methods and techniques of sampling in ecophysiology, including the characterization of the medium (eg, soil moisture measurement by TDR probes), morphology and architecture of plant cover and root systems (optical and spectroradiometric methods, rhizotrons) , The study of the water use by plants (eg, gravimetric techniques, measurement of water potential and sap flow) and their hydraulic properties (hydraulic conductivity, vulnerability to embolism), the measurement of gas exchange at leaf level (Porometers, IRGA-porometers, fluorescence).
- Main methods and techniques of sampling in plant ecology, including inventory and census techniques (transects, point quadrat, plots), measurement of the main structural parameters of a forest (basal area, biomass, leaf area index), dendrochronology, net primary production at the ecosystem level (successive crops, eddy covariance), soil decomposition and respiration fluxes, isotopic methods and examples of complex experimental designs under field conditions.
- Main methods and techniques of sampling in animal ecology, including methods of identification and tagging of individuals, census and population monitoring techniques, methods for studying occupation areas and the use and characteristics of territories, as well as habitat selection, methods to studying the foraging of terrestrial vertebrates (eg, cafeteria experiments), ethological methods.

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
Design of an experimental work	35	1.4	
Therory sessions	5	0.2	
Groups to organize work	30	1.2	
Proposal of a scientific work	23	0.92	
Field sessions on ecological field techniques	49	1.96	

The methodology used in this module follows the scientific process, with some activities directed and the rest supervised. All work is done in working groups. Thus, the methodology that follows is the following:

- 1) presentation of the main field techniques in eco-physiology, plant ecology and animal ecology
- 2) On-site assessment of experimental designs in different fields, including the objectives, the hypotheses, the methodology that is intended to be used, and the expected results
- 3) Presentation of various works related to the visits made

Annotation: within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continuous assessment activities

Title	Weight	Hours	ECTS	Learning outcomes
Design of an experimental work, use of the scientific method	30	4	0.16	2, 3, 4, 5, 6, 7, 8, 9
Presence and active participation	20	2	0.08	10
Presentation of the results	50	2	0.08	1

The students must prepare several works, some individuals and some in groups, related to the visits made.

The commission of any irregularity in an assessment activity (academic fraud, plagiarism, or improper use of AI, unless such use is expressly authorized in the course guide) that may lead to a significant change in the grade will result in that activity being graded with a 0.

If the course guide stipulates that, in order to pass the subject, it is an essential requirement to have obtained a minimum grade in this assessment activity, or if multiple irregularities occur in the assessment activities of the same subject, the final grade for that subject will be 0.

In addition, disciplinary proceedings may be initiated against any student who engages in any of these irregularities.

Single Evaluation

If a student wants a single evaluation, she/he will have to do an exam a day agreed with the teacher(s)

Bibliography

Chapin FS, Matson PA, Mooney, HA (2002) *Principles of Terrestrial Ecosystem Ecology*. Springer, New York, NY, USA.

Farina A (2007) *Principles and Methods in Landscape Ecology: Towards a Science of the Landscape*. Springer, New York, NY, USA.

Gotelli NJ & Ellison AM (2004) *A primer of Ecological Statistics*. Sinauer, Sunderland, MA, USA.

Karban R & Huntzinger M (2006) *How to Do Ecology. A concise Handbook*. Princeton University Press, Princeton, NJ, USA.

Krebs CJ (1999) *Ecological Methodology* (2nd Edition). Benjamin Cummings, Menlo Park, CA, USA.

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Pearcy RW, Ehleringer J, Mooney HA, Rundel P (eds.) (1989) *Plant physiological ecology: field methods and instrumentation*. Chapman and Hall, London, UK.

Quinn GP & Keough MJ (2002) *Experimental Design and Analysis for Biologists*. Cambridge University Press, Cambridge, UK.

Sala OE, Jackson RB, Mooney HA, Howarth RW (eds.) (2000) *Methods in Ecosystem Science*. Springer, New York, NY, USA.

Schlesinger WH (1997) *Biogeochemistry. An analysis of global change* (2nd edition). Academic Press, San Diego, California, USA.

Schulze E-D, Beck E, Müller-Hohenstein K (2005) *Plant Ecology*. Springer, Berlin, Germany.

Sutherland WJ (2006) *Ecological Census Techniques* (2nd edition). Cambridge University Press, Cambridge, UK.

West PW (2004) *Tree and Forest Measurement*. Springer, Berlin, Germany.

Software

No specific software required

Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this [link](#). To access the information, you will need to enter the course CODE

Type of teaching	Group	Language	Semester	Shift
(TEm) Theory (master)	1	Catalan/Spanish	first semester	morning-mixed
(PCAMm) Field practices (master)	1	Catalan/Spanish	first semester	morning-mixed
(PCAMsm) Suport a les pràctiques de camp (màster)	1	Catalan/Spanish	first semester	morning-mixed