



Universitat de Lleida

DEGREE CURRICULUM

**BIODIVERSITY, ECOSYSTEM  
FUNCTIONING AND THE  
PROVISIONING OF GOODS AND  
SERVICES UNDER GLOBAL  
CHANGE**

Coordination: SEBASTIA ALVAREZ, MARIA TERESA

Academic year 2023-24

## Subject's general information

<b>Subject name</b>	BIODIVERSITY, ECOSYSTEM FUNCTIONING AND THE PROVISIONING OF GOODS AND SERVICES UNDER GLOBAL CHANGE			
<b>Code</b>	11395			
<b>Semester</b>	1st Q(SEMESTER) CONTINUED EVALUATION			
<b>Typology</b>	Degree	Course	Character	Modality
	Erasmus Mundus Master's Programme in Mediterranean Forestry and Natural Resources Management (MEDFOR)	1	OPTIONAL	Attendance-based
<b>Course number of credits (ECTS)</b>	6			
<b>Type of activity, credits, and groups</b>	<b>Activity type</b>	PRACAMP	PRALAB	PRAULA
	<b>Number of credits</b>	0.4	1	1.6
	<b>Number of groups</b>	1	1	1
<b>Coordination</b>	SEBASTIA ALVAREZ, MARIA TERESA			
<b>Department</b>	AGRICULTURAL AND FOREST SCIENCES AND ENGINEERING			
<b>Teaching load distribution between lectures and independent student work</b>	Most activities in the course imply the active participation of students; only short talks by the coordinator or lectures by invited experts are expected.			
<b>Important information on data processing</b>	Consult <a href="#">this link</a> for more information.			
<b>Language</b>	English			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
SEBASTIA ALVAREZ, MARIA TERESA	teresa.sebastia@udl.cat	6	Flexible, pre-scheduled  Contact: teresa.sebastia@udl.cat

## Learning objectives

- To explore the diversity of life and the main factors regulating biodiversity patterns, particularly in the Mediterranean
- To evaluate the goods and services provided by ecosystems to humans: provisioning, regulating, cultural and supporting services
- To investigate the relationships between biodiversity and ecosystem goods and services, in particular, biogeochemical services provided by forests
- To analyze and use models developed within the diversity-function framework
- To investigate the risks associated to global change and biodiversity loss affecting the biodiversity-ecosystem services interaction

## Competences

- Capacity for analysis and synthesis of specific situations, definition of problems, decision-making and action plans implementation in the search for solutions
- Capacity for organization and planning, interpretation of studies, reports and data, as well as numerical analysis
- Capacity for critical judgement and self-appraisal, ability for selecting and managing the available sources of information related to the course topics
- Capacity for teamwork and leadership
- Capacity for learning and working autonomously, and for interacting with other people by means of collaboration and cooperation, including multidisciplinary teams
- Capacity for acting with rigor, making a personal commitment and upholding quality standards, as well as understanding and expressing oneself with the appropriate terminology, and present information correctly orally and in writing
- Capacity for discussion and argumentation in different forums

## Subject contents

1. The diversity of life: from genes to biomes
2. Patterns of biodiversity distribution through spatial and temporal scales in the Mediterranean: causes and consequences
3. Ecosystem goods and services. Types of services. The Mediterranean forest case
4. Relationship between biodiversity and ecosystem functioning (BEF), and the provisioning of ecosystem goods and services
5. Biogeochemical services. Models to assess BEF. The diversity-interaction model (DIM) and extensions. Multifunctionality
6. Risks for biodiversity and BEF under global change conditions. Threats to ecosystem service provisioning

## Methodology

Most of the course will be developed through activities and discussions of proposed (by the coordinator) or suggested (by students) material; and work by the students, individually or per groups. In addition, Case Studies will be used to apply the knowledge obtained in the course. Data will be modelled with R.

- Discussion of scientific and technical material, individually, per small groups or ensemble: scientific and technical papers, videos and movies, websites
- Poster and oral presentations per small groups
- Games
- Short theoretical presentations by experts or the students
- Data analysis and discussion of Case Studies
- Field trip to La Mitjana (Lleida) to identify ecosystems and ecosystem services

Discussions might track the students' interests emerging in the classroom.

## Development plan

The course will include many types of activities, mostly led by students, including discussions, games, poster and oral presentations, data analysis, GHG measurements, and a short field trip. Most activities will occur throughout the duration of the course, linked to the different parts found in "Content".

- Reading material, videos, movies and figures for discussion will be provided throughout the course
- Games and other activities (posters, ...) related to the content of the course will be proposed for the different main topics
- Short presentations and videos will be performed related to the different topics during the course, as well as some invited lectures by experts
- One or more Case Studies will be presented after the first part of the course on biodiversity has been completed
- Real data will be analyzed, preferably from the Case Studies, and the BEF models applied, using R or other computer language and environment
- Greenhouse gases will be measured on-Campus using a Photoacoustic equipment
- A short field trip to La Mitjana (Lleida) will be used to recognize ecosystems and discuss services

## Evaluation

The continuous evaluation will be:

20% exams

50% activities in small groups

30% individual work (essay)

Two exams in the form of tests will be performed in the middle and the end of the course. Activities in small groups (posters, presentations, exercises, etc.) and individual (essay) activities will be also proposed and evaluated.

## Bibliography

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- Tree of Life web project. [tolweb.org/tree/](http://tolweb.org/tree/)
- UN (2010) Sustainable Development Goals.
- Wilson, E.O. (1988) Biodiversity. Harvard University.