



Universitat de Lleida

DEGREE CURRICULUM  
**ST IN BIODIVERSITY AND  
ECOLOGY**

Coordination: SERRANO ENDOLZ, LUIS

Academic year 2023-24

## Subject's general information

<b>Subject name</b>	ST IN BIODIVERSITY AND ECOLOGY			
<b>Code</b>	111009			
<b>Semester</b>	ANUAL CONTINUED EVALUATION			
<b>Typology</b>	<b>Degree</b>	<b>Course</b>	<b>Character</b>	<b>Modality</b>
	Master's Degree Erasmus Mundus in Spatial and Ecological Modelling in European Forestry	2	OPTIONAL	Attendance-based
	Master's Degree Erasmus Mundus in Spatial and Ecological Modelling in European Forestry		OPTIONAL	Attendance-based
<b>Course number of credits (ECTS)</b>	5			
<b>Type of activity, credits, and groups</b>	<b>Activity type</b>	PRALAB	TEORIA	
	<b>Number of credits</b>	1.5	3.5	
	<b>Number of groups</b>	1	1	
<b>Coordination</b>	SERRANO ENDOLZ, LUIS			
<b>Department</b>	AGRICULTURAL AND FOREST SCIENCES AND ENGINEERING			
<b>Important information on data processing</b>	Consult <a href="#">this link</a> for more information.			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
SERRANO ENDOLZ, LUIS	luis.serrano@udl.cat	5	

## Subject's extra information

Course devoted to Ecology with special emphasis on diversity and ecophysiology.

Course for motivated students in Forest Ecology.

One-to-one teaching or alternatively small groups face-to-face.

## Learning objectives

Understanding Biodiversity as the main driver of biomass production and stability at Ecosystem level.

Understanding plant response and tradeoffs among different interacting factors that operate to constrain and limit growth in the Mediterranean basin.

## Competences

The outcomes might include among others and according to the student's choice:

Knowledge of management considering succession, functioning and biodiversity of ecosystems.

Basic management for biodiversity in Mediterranean woodlands.

Knowledge of the importance of species richness, diversity, ecological resilience and environmental sustainability.

The student should be able to understand the effects on carbon storage dynamics of silvicultural practices and forest management compared with unmanaged forest and to evaluate the effects of deforestation.

To Understand the carbon fluxes in different types of forested ecosystems and the main models and methods applied. Evaluate the effects of harvest removals, losses and disturbances on carbon sequestration.

The effects of environmental factors such as temperature, radiation and water availability in tree growth. Evaluate the impact on biomass and the forest vulnerability to abiotic stresses (drought, extreme temperatures and changes in radiation).

The effects of forest ecosystem fragmentation related to the carbon cycle. The student should be able to understand the dynamics of forest fragments and the associated concepts of island biogeography and biodiversity.

To understand tree growth. Height and diameter growth under external stresses (mainly competence), and the effects of cultural practices on tree shape and timber quality.

To understand the carbon partitioning in forest stands with different management systems.

The student should be able to explain the biomechanical optimum in woody stems and the uniform distribution of tensions.

## Subject contents

This course covers different topics related to Ecology, Biodiversity, Ecophysiology and Structure and Function of Trees. Organization level may be scaled from molecular/cellular to population/ecosystem.

A number of topics are offered to the students.

The specific contents should be selected by each student according to their own interests, previous knowledge or needs.

## Methodology

The teaching methodology for this course consists of lectures and laboratory work in small groups. Alternatively tutorial teaching scheduled individually will be agreed and programmed for students with a specific study topic in order to discuss contents, attend lectures and laboratory sessions, analyse progress, provide new study material and write reports.

## Evaluation

Students should prepare reports of the main issues addressed in the reading assignments (articles/books), including the most innovative ideas, hypothesis, results and a short discussion. This methodology contributes to a better understanding of the subject and also increases the process of long-term knowledge and clearly identifies the issues to be covered in the tutorial sessions.

Grading- 0-10 (F-A)

## Bibliography

- Begon, M., Townsend, C.R., and John L. Harper, J.L. 2005. Ecology: From Individuals to Ecosystems. Wiley.
- Canadell, J.G.; Pataki, D.E.; Pitelka, L.F. (Eds.). 2007. Terrestrial Ecosystems in a Changing World. Springer.
- Jørgensen, S.E.; Svirezhev, Y.M. 2004. Towards a Thermodynamic Theory for Ecological Systems ecological models. Elsevier.
- Kozłowski, T.T., Kramer, P.J., Pallardy S.G. 1991. The Physiological Ecology of Woody Plants. Academic Press.
- Lambers, H., Chapin III, F.S., Pons, T.L. 1998. Plant Physiological Ecology. Springer.
- Mattheck, C. 1998. Design in Nature. Learning from trees. Springer.
- Niklas, K.J. 1992. Plant Biomechanics. The University of Chicago Press.
- Royle, J.A.; Dorazio, R.M. 2008. Hierarchical Modeling and Inference in Ecology. The Analysis of Data from Populations, Metapopulations and Communities. Academic Press.
- Schmitz, O.J. 2016. The New Ecology: Rethinking a Science for the Anthropocene. Princeton University Press.
- Tilman, D.; Isbell, F.; Cowles, J.M. 2014. Biodiversity and Ecosystem Functioning. *Annu. Rev. Ecol. Evol. Syst.* 45:471–93.