

Forest Ecology

Code: 100819
ECTS Credits: 6

2024/2025

Degree	Type	Year
2500251 Environmental Biology	OT	4

Contact

Name: Jordi Martinez Vilalta

Email: jordi.martinez.vilalta@uab.cat

Teachers

Lidia Quevedo Dalmau

Teaching groups languages

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

Prerequisites

Before enrolling into the Forest Ecology course it is desirable that students have attained the learning skills corresponding to the following courses: Mathematics, Biostatistics, Natural Environment Prospecting, Botany, Ecology and Vegetation Analysis.

Objectives and Contextualisation

The objective of this course is to produce the knowledge and methodological skills required for (1) learn the reality of forests, particularly in the Mediterranean region; (2) gain basic understanding on their functioning and dynamics in the context of global environmental change; and (3) acquire notions on the main principles and tools used in forest management. The course will be conducted respecting the diversity and plurality of ideas, people and situations.

Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Develop analysis and synthesis skills.
- Identify and interpret the diversity of species in the environment.
- Identify and use bioindicators.
- Introduce changes in the methods and processes of the field of knowledge to provide innovative responses to the needs and demands of society.

- Make decisions.
- Perform studies on animal and plant production and improvement.
- Solve problems.
- Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
- Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.

Learning Outcomes

1. Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
2. Actuar en l'àmbit de coneixement propi avaluant les desigualtats per raó de sexe/gènere.
3. Develop analysis and synthesis skills.
4. Draw up plans for the sustainable management of woodland.
5. Introduce changes in the methods and processes of the field of knowledge to provide innovative responses to the needs and demands of society.
6. Make decisions.
7. Manage the different variables for describing a forest system and its degree of conservation.
8. Solve problems.
9. Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
10. Use indices to determine the state of conservation of an ecosystem.

Content

The syllabus consists of the following topics, structured in four blocs:

Bloc 1. What are forests and how do we study them?

1. From the tree to the forest.
2. The global importance of forests.
3. Describing a forest.
4. How are forests planned and managed?

Bloc 2. Forest functioning

5. Primary production and carbon stocks in forests.
6. Water and nutrient fluxes in forests.
7. Modelling forests.

Bloc 3. Forest dynamics

8. Forests in time.
9. Disturbances and their effects.
10. Forests and global change.

Bloc 4. Forest multifunctionality. Ecosystem services

11. Managing Mediterranean forests.

12. Forest uses and conservation.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Computer practicals	5	0.2	3, 7, 6, 8
Field practicals	16	0.64	4, 7, 6
Master classes	28	1.12	3, 4, 7, 10
Practicals in the classroom	3	0.12	3, 6, 8
Type: Supervised			
Service-learning project (ApS)	36	1.44	3, 4, 7, 6, 10
Type: Autonomous			
Personal work	50	2	3, 4, 7, 6, 8, 10

Master classes

They will combine theoretical lectures, problem solving and debates and invited seminars on current topics in forest ecology, as well as follow-up classes for the ApS project (see below) or other tasks commissioned by the teaching staff. The students will have complementary material that will facilitate the follow-up of the classes, which will be previously available in the corresponding moodle classroom.

Computer practices

During these practical classes we will learn to use forest databases and methodological tools such as dendroecology (study of tree growth rings).

Service-learning project (ApS)

This activity consists of the presentation (by groups) of a proposal for management and/or monitoring of management actions in a given forest area, in collaboration with the environmental administration in charge of its management. Based on the knowledge that is obtained during the course, the groups will be able to carry out a diagnosis of the state of the forest and the suitability of its management. To guide the work there will be a series of sessions in which the teaching staff will supervise the process.

Field practices

The course includes two field trips to see different forests in situ and apply the main tools and methodologies in forest ecology, including forest inventories. One of the two trips will be to La Garrotxa and the other to the forest studied in the ApS project.

Classroom practicals

Practical in the classroom in which we will carry out an activity/debate related to decision making in the management and exploitation of forests. We will work in groups and special emphasis will be placed on the applied aspects corresponding to fourth block of the course.

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

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Exam - reevaluation	(variable)	2	0.08	3, 7, 8, 10
Other activities	15	0	0	1, 3, 8
Self-assessment/Co-assessment	40	6	0.24	2, 9, 3, 7, 6
Service-learning project (ApS) - analysis	20	0	0	3, 7, 10
Service-learning project (ApS) - management plan	25	4	0.16	9, 3, 4, 5, 6

Service-learning project (ApS)

Written essay (by groups) of the initial analysis and design part of the ApS (20% of the final grade) and written and oral group presentation of the final proposal (25%).

Theoretical contents

Oral self-evaluation (individual) of the contents of the first part of the subject, supervised by the teaching staff (20% of the grade). This self-assessment includes an interview where the professor can introduce questions about the subject's syllabus.

Written co-evaluation (individual) of the contents of the subject as a whole (20% of the mark). The final grade for this part will be the average of the student's self-assessment and the grade assigned by the professor, as long as the difference between the two grades is at most one point (out of 10). If the difference is greater, the weight of the teacher's grade will increase proportionally to this difference.

Other activities

Problem solving and exercises, summaries of other activities and participation (15%)

The final grade of the course is calculated as the average weighted by the percentages indicated above. In case the average mark does not reach 5, it is necessary to go to a re-evaluation exam of the whole subject, which will replace the mark of the self-assessment and, therefore, it is worth 40% of the total grade. To participate in this re-evaluation, students must have been previously evaluated in a set of activities the weight of which is equivalent to a minimum of two-thirds of the total grade for the subject. Therefore, the students will obtain the grade of "Not Evaluable" when the evaluation activities carried out weight less than 67% of the final grade.

Whoever wishes, can take an exam to improve the grade for the theoretical part. This exam will be carried out on the same day as the re-evaluation exam and will also be worth 40% of the final mark, replacing the mark from the self-assessment. The pass is always guaranteed (that is, in no case will the student be failed if he / she had initially passed).

Failure to deliver any of the evaluation activities within the established period implies a score of zero for that activity.

Single assessment:

The single assessment consists of a synthesis test in which the contents of the entire theory program of the subject will be assessed. The grade obtained in this synthesis test will account for 40% of the final grade of the

subject. The single assessment test will coincide with the same date fixed in the calendar for the last continuous assessment test and the same re-evaluation system will be applied as for the continuous assessment.

The evaluation of the rest of the assessment activities (ApS Project, problem solving and exercises, etc.) will follow the same process as the continuous assessment, and the delivery dates will be the same as for the rest of students who do continuous assessment (that is, not at the end of the semester), given the methodology applied in this subject (project-based learning). The grade obtained from this part will account for the remaining 60% of the final grade of the subject.

Bibliography

Barnes BV, Zak DR, Denton SR, Spurr SH. 1998. *Forest Ecology* (4th Edition) Wiley.

Binkley D. 2021. *Forest Ecology: An Evidence-Based Approach*. Wiley.

Blanco E, Casado MA, Costa M, Escribano R, García M, Génova M, Gómez A, Gómez F, Moreno JC, Morla JC, Regato P, Sainz H. 1997. *Los bosques ibéricos*. Planeta.

Blondel J, Aronson J. 1999. *Biology and wildlife of the Mediterranean region*. Oxford University Press.

Chapin FS, Matson PA, Mooney HA. 2002. *Principles of Terrestrial Ecosystem Ecology*. Springer.

Hirons AD, Thomas PA. 2018. *Applied Tree Biology*. Wiley, USA.

Kimmins JP. 2003. *Forest Ecology* (3rd Edition) Benjamin Cummings.

Lloret F. 2022. *La muerte de los bosques*. Arpa Ed., Barcelona.

Peh KS-H, Corlett RT, Bergeron Y. 2015. *Routledge Handbook of Forest ecology*. Routledge, NY, USA.

Perry DA, Oren R, Hart SC. 2008. *Forest Ecosystems* (2nd Edition) The Johns Hopkins University Press.

Piñol J, Martínez-Vilalta J. 2006. *Ecología con números*. Lynx.

Terradas J. 2001. *Ecología de la vegetación*. Omega.

Thomas P, Packham J. 2007. *Ecology of Woodlands and Forests: Description, Dynamics and Diversity*. Cambridge University Press.

Waring RH, Running SW. 2007. *Forest Ecosystems: Analysis at Multiple Scales* (3rd Edition). Academic Press.

Young RA, Giese RL (eds.). 2002. *Introduction to Forest Ecosystem Science and Management* (3rd Edition) Wiley.

*Some of the previous texts are available electronically at the UAB library (<https://ddd.uab.cat/record/22492>)

Software

Catalan Forest Laboratory: <https://laboratoriforestal.creaf.cat/>

Language list

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	241	Catalan	second semester	afternoon
(PCAM) Field practices	241	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	241	Catalan	second semester	afternoon
(TE) Theory	24	Catalan	second semester	morning-mixed

PROVISIONAL