

Vegetation Analysis

Code: 102804
ECTS Credits: 6

Degree	Type	Year	Semester
2501915 Environmental Sciences	OT	4	1

Contact

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Teachers

María Elena Ruiz Molero

Prerequisites

There are no official pre-requisites, but it is recommended to have previous knowledge on biology and geography of the territory and to have the competences obtained in the Botany part of the subject Plant physiology and Botany of the first course. It can help in the progress of this subject the competences acquired in the subjects Ecology and Soil Sciences, as well as subjects from Geology of the double degree.

Objectives and Contextualisation

The objectives of this subject is that the students obtain the basic knowledge and the fundamental tools that will enable them to recognize the main vegetal formations in the plant landscapes. By following this subject, the student will learn on the description, the analysis and the interpretation of these plant formations, and to estimate their plant biodiversity, their dynamics through the history and the time and the space to, finally, be able to make an environmental evaluation and to determine the environmental risks that can affect it. To get this objective implies also to review the morphological characteristics and the environmental requirements of the main plant species integrating the landscape.

Practicing this subject will make the student able to observe the vegetation and relate it to the biotic and abiotic characteristics of the environment. It will also provide the student with useful knowledge for other subjects. Some of these subjects will have been already attended (i. e. Management and planning of the resources and the territory; Environmental evaluation of plans, programs and projects), and the present one (Analysis of the Vegetation) will offer to the student the possibility to put them into practice with a better preparation. Other related subjects are programmed in parallel, such as Applied ecology, Development and planning of rural and urban landscapes, and Environmental education and communication. The knowledge acquired in this subject can be fundamental to work directly or indirectly (legislation), among others, in the management of parks and natural spaces; Protection and conservation of species, communities and spaces; restoration and territorial planning; environmental education.

Competences

- Adequately convey information verbally, written and graphic, including the use of new communication and information technologies.
- Analyze and use information critically.
- Collect, analyze and represent data and observations, both qualitative and quantitative, using secure adequate classroom, field and laboratory techniques
- Demonstrate adequate knowledge and use the most relevant environmental tools and concepts of biology, geology, chemistry, physics and chemical engineering.
- Demonstrate concern for quality and praxis.
- Demonstrate initiative and adapt to new situations and problems.
- Learn and apply in practice the knowledge acquired and to solve problems.
- Quickly apply the knowledge and skills in the various fields involved in environmental issues, providing innovative proposals.
- Teaming developing personal values regarding social skills and teamwork.
- Work autonomously

Learning Outcomes

1. Adequately convey information verbally, written and graphic, including the use of new communication and information technologies.
2. Analyze and use information critically.
3. Demonstrate concern for quality and praxis.
4. Demonstrate initiative and adapt to new situations and problems.
5. Describe the basics of plant and animal toxicology.
6. Diagnose and solve environmental problems concerning the biological environment.
7. Identify and interpret the diversity of organisms in the environment.
8. Identify organisms and biological processes in the surrounding environment and evaluate them properly and originally.
9. Identifying and using bioindicators.
10. Interpret the vegetation.
11. Learn and apply in practice the knowledge acquired and to solve problems.
12. Mostrear, characterize and manipulate specimens, populations and communities.
13. Observe, recognize, analyze, measure and properly and safely represent organisms and biological processes.
14. Participate in environmental assessments as to the biological environment.
15. Teaming developing personal values regarding social skills and teamwork.
16. Work autonomously

Content

Theoretical classes

Introduction to the concept of vegetation and geobotany.

Main species forming the vegetal landscape of the Iberian Peninsula and the Balearic and the Canary Islands.

Basic concepts for the analysis and the interpretation of the vegetation and its dynamics. Factors that determine the distribution of plants on Earth surface. Distribution areas and categories of the species depending on their provenance, degree of naturalization and extension. Plant populations and plant communities. Analysis of the spatial and temporal (dynamics) distribution of the vegetation. The successions and disturbances.

Methods for the study and description of the vegetation and the plant landscapes. Methodologies for the analysis and description of the vegetation. Physiognomic methods and floristic methods. Use of databases on the web to obtain information.

Distribution of climates and vegetation in the world. Concept of climate. Climates in the world. Bioma and characteristics of the world biomes.

Vegetation of Europe and the Mediterranean basin. Characteristics of the vegetation of Europe and the Mediterranean basin. Studies on the history of the vegetation and the climate and their contribution to the understanding of current vegetation and the estimation of the future.

The vegetation of the Iberian Peninsula and the Balearic Islands and the Canary Islands. General characteristics of the environment, biogeography and distribution of the vegetation of the Iberian Peninsula, the Balearic Islands and the Canary Islands. Characteristics and composition of the main plant formations integrating the landscape: the forest formations (aciculifolious, deciduous and sclerophyllous forests); the shrub and herbaceous formations; the vegetation of special places. Vegetation linked to anthropic action (agricultural, forestry and ornamental flora; introduced and invasive species).

Field practices

As a complement to the theoretical classes and to be able to observe in situ the main Iberian vegetation types, two field trips are scheduled to areas of Catalonia representative of the main types of Iberian plant landscapes. Depending on the availability of resources and the interest of the students, we can agree on more field practices to other environments with other types of vegetation.

Study of Mediterranean vegetation: La Serra de Prades. Vegetation of evergreen sclerophylls and marcescent species: Southern Mediterranean vegetation (maquia); "Alzinar litoral" (*Quercus ilex* subsp. *ilex*); "Carrascar continental" (*Quercus ilex* subsp. *rotundifolia*); Marcescent oak forest with small leaved oak (*Quercus faginea*); Marcescent oak forest with Pyrenean oak (*Quercus pyrenaica*); Pine groves of the basal and montane floor (*Pinus halepensis*, *Pinus nigra*, *Pinus sylvestris*).

Study of the Eurosiberian and Boreo-Alpine vegetation: Vic-Vallter-Olot itinerary. Deciduous and high mountain vegetation: Beech forest (*Fagus sylvatica*); Oak forests (*Quercus petraea*); Oak forests of common or pedunculated oak (*Quercus robur*); Montane and subalpine pine forests (*Pinus sylvestris* and *Pinus mugo* subsp. *uncinata*); Alpine meadows.

Autonomous work

Students are expected that, as a result of their study and comprehension of the information received, will recognize the most important species in the environment and will elaborate synthetic schemes of the plant landscapes of the Iberian Peninsula and the Balearic and Canary Islands. These schemes will refer to the vegetation of the mountains (Eurosiberian and Mediterranean mountains), the vegetation of the plains and depressions, the vegetation of the Balearic Islands, the vegetation of the Canary Islands and the vegetation and landscapes of Catalonia. Also, that the student will applying the concepts learned to the analysis of the vegetation of a study area (of his/her choice) and will prepare a descriptive memory of it that will be evaluated and contribute to the evaluation of the matter.

Methodology

Theoretical classes, magisterial (in the aula or virtually) stimulating the participation of students, and with the support of IT to explain the main contents of the subject, with special emphasis on those aspects of more difficult comprehension for the student and the elaborated information that is difficult to access bibliographically. The basic material of the presentations made by the teacher will be made available to the student. These classes are a complement to the student's autonomous activity, based on reading and studying textbooks.

Supervised field trips, consisting of two full-day itineraries through areas of Catalonia. With an epicenter in the UAB, one of the field trips will show the latitudinal and altitudinal variation from the Mediterranean vegetation to the Eurosiberian and Boreo-Alpine vegetation and the other the variation to the vegetation of the Iberian mountains. The students will prepare, in groups of 2/3 (exceptionally 1) a work on aspects treated in field practices and from which a scheme will be provided.

Tutorials. With the aim of solving doubts and guide the study. They can be individualized tutoring, which will be agreed by e-mail or in the classroom and will be done in the teacher's office, and tutorials in group, which will be agreed in the classroom and will be done at a specific time and place.

Autonomous work. In addition to what each student develops individually, teachers will suggest ways to treat information such as the one explained in the Content section.

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.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Field trip practices	20	0.8	2, 11, 4, 3, 6, 8, 7, 9, 10, 12, 13, 1, 15
Theory classes	30	1.2	2, 3, 5, 6, 8, 7, 9, 10, 12, 13, 14
Type: Supervised			
Tutorials	4	0.16	2, 4, 3, 1
Type: Autonomous			
Preparation of the field trips work	20	0.8	2, 11, 3, 6, 8, 7, 9, 10, 12, 1, 16, 15
Study, work with documents and bibliography	72	2.88	11, 3, 6, 8, 7, 9, 10, 13

Assessment

Exams of Theory

Theory exams will be written and of the test type. There will be two partial exams that will contain questions related to the aspects dealt within the theoretical classes and the field trip practices. Each exam will contribute 35% to the final grade of the subject.

To pass a Theory exam a grade of 5 or higher must be obtained. In the case that one of the two exams is not exceeded, it could be compensated with the grade of the other exam if the average of the two exams is equal to or greater than 5 and if the failed exam received a grade of 4 or higher.

The student will be entitled to a reevaluation of the partial exams at the end of the semester. Only those who have previously presented 2/3 of the assessable activities can opt for recovery.

Students who choose to improve their grades may also take this reevaluation exam. In this case, the grade that will finally count to the student will be the highest of those obtained.

The work related to field trip practices

Students will prepare an individual report and the mark obtained will contribute 30% to the final mark of the subject.

To overcome the Practical Work will imply to obtain a grade of 5 or superior. The student will be entitled to a reevaluation of this work if the grade obtained has been equal or superior to 4 but lower than 5. In this case, students will have the option to improve the work for a few days based on the critical comments obtained.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Field trip practices work	30%	0	0	2, 11, 4, 3, 6, 7, 9, 10, 13, 1, 16, 15
First Partial exam of theory	35%	2	0.08	2, 11, 4, 8, 7, 9, 12, 13, 1, 16
Second partial exam of theory	35%	2	0.08	2, 11, 3, 5, 6, 9, 10, 14, 1, 16

Bibliography

General books

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Vegetation of the Iberian peninsula and of the Balearic and Canarian Islands

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Software

There is no need of Software.