

Degree	Type	Year
2500251 Environmental Biology	OT	4

## Contact

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## Teachers

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## Teaching groups languages

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

## Prerequisites

It is desirable, and will help the follow-up of the course, that students are familiar with basic knowledge of botany, phylogeny and plant evolution.

## Objectives and Contextualisation

This course deals with basic aspects related to the biology and diversity of the Spermatophytes. Its general objective is to train the students in the main theoretical aspects and in the applicable methods in research or management initiatives in the field of the inventory of the biodiversity. The specific objectives are the following:

- (1) To provide a scientific framework that integrates information from various scientific disciplines and allows the study of the diversity of seed plants.
- (2) To addressing the study of plant biodiversity from an evolutionary perspective.
- (3) To understand the main biological, evolutionary and ecological processes that influence the diversity of seed plants.
- (4) To provide knowledge about the differential characteristics, reproductive, biological, ecological and corological aspects, as well as human applications, of the main families of studied plants.

## Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Describe, analyse and interpret the vital adaptations and strategies of the principal groups of living beings.
- Integrate knowledge of different organisational levels of organisms in their functioning.
- Introduce changes in the methods and processes of the field of knowledge to provide innovative responses to the needs and demands of society.
- Obtain, observe, handle, cultivate and conserve specimens.
- Recognise and interpret the development, growth and biological cycles of the principal groups of living beings.

## Learning Outcomes

1. Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
2. Collect, determine and conserve specimens and collections of cryptogams and phanerogams.
3. Interpret and recognise the different stages in the biological cycles of phanerogams and cryptogams.
4. Interpret the causes and the functioning of adaptation to the environment on the part of cryptogams and phanerogams.
5. Interpret the origin and functioning of cell and tissue structures in the different groups of cryptogams and phanerogams.
6. Introduce changes in the methods and processes of the field of knowledge to provide innovative responses to the needs and demands of society.

## Content

Topic 1: Introduction to Spermatophytes: origin, evolution, characteristics and main groups.

Topic 2: Evolution and main mechanisms of speciation. Hybridization and introgression: implications.

Topic 3: Apomixis: Problematic groups of plants with apomictic reproduction mechanisms.

Topic 4: Biological strategies of the Spermatophytes. Analysis of the different vital forms and examples of the variation of the spectrum of biological forms.

Topic 5: Reproductive strategies of spermatophytes. Pollination. Autogamy and allogamy: implications. Mechanisms to avoid auto pollination.

Topic 6: Reproductive strategies of the Spermatophytes: Analysis of the different dispersion mechanisms and examples.

Topic 7: Gymnosperms: characteristics, evolutionary trends and study of different groups.

Topic 8: Angiosperms: characteristics, evolutionary trends and study of the different groups.

## Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			

Elaboration of works	60	2.4	1, 3, 5, 4, 6, 2
Field practices	18	0.72	1, 3, 4, 2
Laboratory work	12	0.48	1, 3, 4, 2
Lectures	18	0.72	1, 3, 5, 4, 6
Seminars	6	0.24	1, 4, 6
Type: Autonomous			
Study	30	1.2	3, 5, 4

The methodology used is based on 1) the information directly provided by the teacher and 2) the work of the student both in the laboratory and field sessions. The course is based on the combination of lectures (theory classes), seminars and laboratory work.

(1) lectures or theory (in whole group) where the concepts and methods of the discipline are explained. Lectures stand out and address the complicated and important points of the subject. The student should complement the information given in class with bibliographic information and autonomous work. The lectures are 50 minutes long and will be presented using material prepared by the teacher, and that the student will have available on the Virtual Campus.

(2) seminars where problems are analyzed or specific cases of study and participatory debates are made about the significance and limitations of the concepts and methods explained in theory. These seminars allow to deal with topics that are usually of special interest (due to their controversy or current affairs) but which are outside a general agenda of the subject, as they refer to a very specific topic and would break the main thread of the course.

(3) laboratory work. Laboratory practices will be carried out. Tools and bibliography will be provided to the students so that they can identify the species studied.

(4) field excursions. There will be field practices in which the students will visit areas with floristic diversity representative of the ecosystems of the northeastern Iberian Peninsula and that allow to work, analyze and criticize some of the concepts and methods treated in both lectures and seminars. Students will also see practical cases of conservation of species and habitats on the ground.

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
Autonomous field work	30%	0	0	1, 3, 5, 4, 6, 2
Practical exam	30%	3	0.12	1, 3, 4, 2
Theoretical exam	40%	3	0.12	3, 5, 4

The assessment consists of a block of theory and a block of practices. The student will need to get a minimum score of 4 in each of the two blocks to pass the subject.

Block of theory:

Theoretical exams: set of writing questions related to the theoretical classes. There will be two eliminatory and non-recoverable partial exams, each of which will have a weight of 20% of the final mark of the subject. It is necessary to obtain a mark equal to or greater than 4 in each one of the partial exams to be assessed of the subject.

Each of the two parts of the block of theory can be reassessed through a reassessment exam that will be equivalent to the partial exam and will have the same weight in the final score.

To be eligible for the retake process, the student should have been previously evaluated in a set of activities equaling at least two thirds of the final score of the course. Thus, the student will be graded as "No Avaluable" if the weighing of all conducted evaluation activities is less than 67% of the final score.

Block of practices:

Practical exam: test that will consist of the identification of plants. Laboratory and field practices will help the student have the necessary skills and knowledge to successfully pass this test, which will have a weight of 30% of the final mark of the subject.

Field work: the student will carry out a work that consists in the elaboration of a floristic catalogue of an area of free choice. The student will have the orientation of the professors during the sessions of laboratory work to make progress on this work, that will have a weight of a 30% of the final mark of the subject.

It is necessary to obtain a mark equal to or greater than 4 in the practical exam and the floristic catalogue to be assessed of the subject. The block of practices cannot be reassessed.

**UNIQUE ASSESSMENT:**

For students who have requested it in accordance with the regulations, the single assessment for this subject consists of:

-A single summary test in which the contents of the entire theory program and seminars of the subject will be evaluated. The exam will consist of writing questions. The grade obtained in this synthesis test will account for 40% of the final grade of the subject and it is necessary to obtain a grade equal to or higher than 4 to pass the subject. The single assessment test will coincide with the same date fixed in the calendar for the last continuous assessment theory test (date of the second partial exam) and the same recovery system will be applied as for the continuous assessment.

-The assessment of practical activities will follow the same process as the continuous assessment. The grade obtained in the practice block will account for 60% of the final grade of the subject. Students who take the single assessment will take the practical exam coinciding with the same date fixed in the calendar for the last theory test of the continuous assessment (date of the second partial exam). The practical exam will have a weight of 30% of the final mark and will also consist of the identification of plants seen in the field trips. The floristic catalogue must be handed in on the same date established for the continuous assessment or on the date fixed in the calendar for the last theory exam of the continuous assessment (date of the second partial exam), as agreed with the students during the course. This work will have a weight of 30% in the final grade of the subject. As in the continuous assessment, it is necessary to obtain a grade equal to or higher than 4 in the practical exam and in the floristic catalogue in order to be assessed for the subject. There is no recovery for either of these two assessment activities.

## **Bibliography**

TEXT BOOKS AND DICTIONARIES OF BOTANY:

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- CHRISTENHUSZ, M.J.M.; M.F. FAY & M.W. CHASE. 2017. Plants of the world: an illustrated encyclopedia of vascular plant families. Royal Botanic Gardens, Kew.
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- FLORAS, IDENTIFICATION KEYS AND REGIONAL RED BOOKS:
- BOLÒS, O. & J. VIGO (1984-2001). Flora dels Països Catalans. 4 vols. Ed. Barcino. Barcelona.
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- CASTROVIEJO, S. *et al.* (Eds.) (1986-2015). Flora iberica. Plantas vasculares de la Península Ibérica e Islas Baleares. CSIC. Madrid.
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- SÁEZ, L., P. AYMERICH & C. BLANCHÉ (2010). Llibre Vermell de les plantes vasculares endèmiques i amenaçades de Catalunya. Argania Editio. Barcelona.
- INTERNET RESOURCES:
- Floristic works:
- Flora iberica: <http://www.rjb.csic.es/floraiberica/>
- Digital herbaria and plant images:
- La flora del nostre entorn: [www.floracatalana.cat](http://www.floracatalana.cat)
- Herbari virtual de la Mediterrània Occidental: <http://herbarivirtual.uib.es/cas-med/>
- Global Biodiversity Information Facility in Spain: <http://www.gbif.es>
- Herbari virtual de la Universitat de Barcelona: <http://www.bib.ub.edu/cedocbiv/herbari-virtual/>
- Images de la Flore de France: [http://ifdf.free.fr/index\\_fr.htm](http://ifdf.free.fr/index_fr.htm)
- Information on plant biogeography, taxonomy and conservation:

Banc de dades de Biodiversitat de Catalunya: <http://biodiver.bio.ub.es/biocat/homepage.html>

Projecte Anthos Espanya: <http://www.programanthos.org>

Angiosperm Phylogeny Website: <http://www.mobot.org/MOBOT/research/APweb/>

Endangered species: <http://www.iucnredlist.org/>

## Software

There is no specific software in this course.

## Language list

Name	Group	Language	Semester	Turn
(PCAM) Field practices	241	Catalan	second semester	morning-mixed
(PCAM) Field practices	242	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	241	Catalan	second semester	afternoon
(PLAB) Practical laboratories	242	Catalan	second semester	afternoon
(SEM) Seminars	241	Catalan	second semester	morning-mixed
(TE) Theory	24	Catalan	second semester	morning-mixed