

Botany

Code: 107526
ECTS Credits: 6

2025/2026

Degree	Type	Year
Biology	FB	1

Contact

Name: Merce Galbany Casals

Email: merce.galbany@uab.cat

Teachers

Maria Elena Ruiz Molero

Moisés Guardiola Bufí

Laia Guardia Valle

Teaching groups languages

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

Prerequisites

There are no official prerequisites. Having basic knowledge of evolution, reproductive biology, and the morphological and functional diversity of plants and fungi will make it easier to follow the subject. In addition, it will be useful to have a good base of global and Iberian geography and knowledge of geological periods.

Objectives and Contextualisation

This subject addresses the study of plant diversity in a broad sense and, in a synthetic way, also the diversity of fungi.

On the one hand, the student will be able to construct a phylogenetic scheme in which to locate the various elements of this plant and fungal biodiversity, based on the study of the evidence and methodologies that allow the classification of living beings (morphology, anatomy, molecular markers, biogeographic aspects, etc.).

On the other hand, the main biological processes (life cycles, reproduction, dispersion, etc.), evolutionary processes (phylogenetic relationships, evolutionary trends, coevolution, etc.), ecological aspects (limiting factors, habitats, adaptations to the environment, etc.) and human applications (industry, land management, etc.) of the main groups will be studied.

This subject will be complemented with that of *Analysis and Cartography of Vegetation*, and is essential for taking the fourth-year elective subjects *Ecology, Evolution and Diversity of Cryptogams, Biology and Diversity of Phanerogams*, and *Applied Botany*.

Learning Outcomes

1. CM12 (Competence) Evaluate temporal and spatial patterns and dynamics observed in vegetation, relating it to environmental factors and assessing the environmental impact of anthropogenic action.
2. CM13 (Competence) Act in accordance with the Sustainable Development Goals in the process of managing and conserving plant communities.
3. KM20 (Knowledge) Describe the development, growth and biological cycles of plants and fungi, as well as their diversity and evolution.
4. KM21 (Knowledge) Identify plant and fungal species, applying current techniques of classification of living beings.
5. SM16 (Skill) Apply cartographic techniques (Geographic Information Systems and Remote Sensing) that allow the analysis and management, spatially and temporally, of vegetation.
6. SM17 (Skill) Obtain plant and fungal specimens and materials for subsequent laboratory analysis.
7. SM18 (Skill) Carry out reports on the analysis of the vegetation of natural communities, presenting them in written and oral form.
8. SM19 (Skill) Analyse the origin, evolution and diversity of plants and fungi.

Content

- Macroevolution and phylogeny of plant and fungal organisms

Fundamental concepts for understanding the origin and evolution of the main groups (evolutionary lineages) of fungi and photoautotrophic organisms. Importance will be given to the processes of endosymbiosis that gave rise to the main phylogenetic lines and plant diversity at basal levels of the tree of life.

The bases will be given for the interpretation of the classification systems and definition of taxa from a fundamentally evolutionary perspective, as well as the macroevolutionary processes that have taken place.

- Characteristics, diversity and systematics of the main plant and fungal groups

The biological characteristics (morphology, reproduction and ecology) and some examples of the main evolutionary lineages will be seen: cyanobacteria, fungi, algae and very especially terrestrial plants (bryophytes, vascular cryptogams, gymnosperms and angiosperms).

A phylogenetic organization criterion will be followed in accordance with the most recent classification proposals. Emphasis will be placed on shared derived characters (synapomorphies) and genealogical (kinship) relationships.

- Functional characteristics

Based on the phylogenetic framework, the different milestones acquired throughout the evolutionary process by fungi and plant organisms will be highlighted, including: origin of the chloroplast, appearance of the embryo, acquisition of vascular tissue, origin and evolution of the seed and pollen grain, and evolution of the flower and fruit. Special mention will be made of the processes of coevolution and diversification. Other functional aspects will also be discussed, such as the importance of algae in marine and continental ecosystems, or the ecological role of fungi or fungal symbioses in terrestrial ecosystems.

The topics are presented according to this scheme:

- Introduction
- The classification of living beings
- Taxonomy, systematics and phylogeny

- Levels of morphological organization
- Reproduction and cycles
- Amoeboid fungi - Mucoromycetes
- Ascomycetes fungi
- Basidiomycetes fungi
- Lichens and mycorrhizae
- Origin and evolution of the chloroplast
- Photosynthetic bacteria
- Heterokonts
- Rhodophytes
- Chlorophytes and basal Streptophytes
- Introduction to terrestrial plants. Bryophytes
- Introduction to vascular plants
- Vascular cryptogams
- Introduction to Spermatophytes
- Gymnosperms
- Introduction to Angiosperms
- Diversity of Angiosperms

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Field trips	10	0.4	CM12, CM13, KM21, SM16, SM17, SM18, CM12
Laboratory practices	12	0.48	KM20, KM21, SM17, KM20
Seminars	4	0.16	KM20, KM21, SM17, KM20
Theoretical sessions	27	1.08	KM20, KM21, SM19, KM20
Type: Autonomous			
Preparation of an assessable autonomous work	50	2	CM13, KM21, SM17, CM13
Study	44	1.76	KM20, KM21, SM19, KM20

This subject has a strong practical, laboratory and field component, as we consider this as an inseparable part of theoretical botanical knowledge. Therefore, students must be responsible for keeping up to date with the knowledge acquired during the theoretical, practical and seminar sessions.

- Guided activities:

- Theoretical classes:

The diversity, ecology, life cycles and classification of plants, fungi and other photoautotrophic groups will be presented in 50-minute lecture sessions. The teaching material corresponding to each theoretical topic will be available to students on the virtual campus.

- Seminars:

Part of the contents of this subject will be taught through two seminars of two hours each. In these sessions, a connection will be established between theory and practice and assessable autonomous work. Knowledge and skills for plant identification will be developed through the use of dichotomous keys and the recognition of diagnostic characters. Special attention will be paid to the study of the morphology and diversity of flowers and fruits.

- Laboratory practices:

They consist of six sessions where samples of the different groups of organisms treated in the theoretical classes will be studied with the guidance and support of the teaching staff and the necessary equipment and tools. The documentation necessary for each practice will be available to students on the virtual campus.

- Field trips:

Three field trips will be made to places with different climatic, geological and human impact characteristics, factors that determine a particular flora and vegetation. On each trip, the teaching staff will provide an introduction to floristic diversity and general aspects of the ecology of plant communities, adaptations to the environment, and human impact. With the support of the teaching staff, students will learn to recognize the main plant species of each area and become familiar with plant morphology. The documentation necessary for each practice will be available to students on the virtual campus.

- Autonomous activities:

- Study

Passing the subject requires the dedication of numerous hours of independent study, since much of the content has a memory component and is assessed through exams.

- Preparation of an assessable independent work

Students must prepare and present a work, which will mainly consist of the identification and morphological description of plants following the methodology and terminology worked on in the laboratory practices, field trips and seminars. This work will be part of the assessment of the subject.

This subject does not allow the use of Artificial Intelligence (AI) technologies in any of its phases. Any work that includes fragments generated with AI will be considered a lack of academic honesty and may lead to a partial or total penalty in the grade of the activity, or greater sanctions in serious cases.

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

Continuous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Assessable autonomous work	20%	0	0	CM13, KM21, SM17
Practical exam	25%	1	0.04	CM12, CM13, KM20, KM21, SM16, SM17, SM18
Theoretical exams	55%	2	0.08	KM20, KM21, SM19

The assessment consists of a theoretical part and a practical part. To pass the subject, the grade for the theoretical part must be equal to or greater than 5 and the grade for the practical part must be equal to or greater than 5.

I. Theoretical part: 55%

Written exam first partial: 27.5%

Written exam second partial: 27.5%

It is necessary to obtain a grade equal to or greater than 5 in each of the partials to be able to be evaluated for the subject. Students who have not passed the partials may take a retake exam for the part corresponding to the partial or partials not passed. For the calculation of the average of the theoretical part, the grade obtained in the retake exam will replace the original grade corresponding to the partial that must be recovered.

II. Practical part: 45%

Practical exam: 25%

Evaluable autonomous work: 20%

The practical exam will consist of the identification of fungi and plant organisms from the groups studied in the laboratory practices and field trips, and the recognition and description of morphological structures and functional aspects.

Students must prepare an assessable work autonomously, following the instructions of the teaching staff throughout the course, and submit it on the date indicated.

It is necessary to obtain a grade equal to or higher than 4 in the practical exam and in the independent work to be able to be assessed for the subject. Only the practical exam will be retaken.

Attendance at practices, both laboratory and field, is mandatory. Students will obtain the grade of "Not assessable" when their absence exceeds 20% of the scheduled sessions.

SINGLE EVALUATION:

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

-A single synthesis test in which the contents of the entire theory program and seminars of the subject will be evaluated. The test will consist of multiple-choice questions. The grade obtained in this synthesis test will represent 55% of the final grade for the subject and it is necessary to obtain a grade equal to or greater than 5 to pass the subject. The single evaluation test will be held on the same date set in the calendar for the last theory test of the continuous assessment (date of the second partial exam) and the same recovery system will be applied as for the continuous assessment.

-The evaluation of the practical activities will follow the same process as the continuous assessment. The grade obtained in the practical block will represent 45% of the final grade for the subject. Students who take the single assessment will take the practical exam on the same date set 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 25% of the final grade and will also consist of the identification of fungi and plant organisms from the groups studied in the laboratory practices and field trips, and the recognition and description of morphological structures and functional aspects. The work will be prepared in the same way and must be submitted on the same date established for the continuous assessment or on the date set in the calendar for the last theory test of the continuous assessment (date of the second partial exam), as agreed with the students during the course. The work will have a weight of 20% of the final grade for the subject. As in continuous assessment, it is necessary to obtain a grade equal to or greater than 4 in the practical exam and the autonomous work to be able to be assessed for the subject. The average of these two grades must be equal to or greater than 5 to be able to be assessed for the subject. There will only be a retake of the practical exam, on the date agreed upon.

Attendance at practices, both laboratory and field, is mandatory. Students will obtain the grade of "Not assessable" when their absence exceeds 20% of the scheduled sessions.

Students will obtain a grade of "Not assessable" when the assessment activities carried out have a weighting of less than 67% in the final grade.

Bibliography

Theory:

Bresinsky, A. *et al.* 2013. Strasburger's Plant Sciences (Including Prokaryotes and Fungi). Springer. Berlin. [Recurs electrònic disponible a la UAB]

Evert, R. & Eichhorn, S. 2013. Raven Biology of plants. 8th ed. W.H. Freeman & Company. New York.

Izco, J. *et al.* 2004. Botánica. McGraw-Hill-Interamericana. Madrid.

Lee, R. E. 2008. Phycology. 4th ed. Cambridge University Press. Cambridge. UK.

Llimona, X. *et al.* 1985. Història Natural dels Països Catalans, vol. 4: Plantes inferiors. Enciclopèdia Catalana. Barcelona.

Masalles, R. M. *et al.* 1988. Història Natural dels Països Catalans, vol. 6: Plantes superiors. Enciclopèdia Catalana. Barcelona.

Mauseth, J. D. 2017. Botany. An Introduction to Plant Biology. 6th ed. Multimedia enhanced edition. Jones & Bartlett Learning. Burlington.

Nabors, M. W. 2006. Introducción a la Botánica. Pearson Addison Wesley Educación. Madrid. [Recurs electrònic disponible a la UAB]

Practices:

Aguilella, A. & Puche, F. 2004. Diccionari de Botànica. Universitat de València. València.

Bolòs, O. de & Vigo, J. 1984-2001. Vols. I-IV. Flora dels Països Catalans. Barcino. Barcelona.

Bolòs, O. *et al.* 2005. Flora Manual dels Països Catalans. 3a edició revisada i ampliada. Pòrtic. Barcelona.

Bonnier G. & De Layens, G. 1990. Claves para la determinación de plantas vasculares. Omega. Barcelona.

- Cambra, J. *et al.* 1989. Guia de les algues i els líquens dels Països Catalans. Pòrtic. Barcelona.
- Castroviejo, S. *et al.* (eds.). 1986-present. Flora iberica. Plantas vasculares de la Península Ibérica e Islas Baleares. CSIC. Madrid. <http://www.floraiberica.es>
- Font Quer, P. 2009. Diccionario de Botánica. 4a ed. Península. Barcelona.
- Font Quer, P. 2015. Iniciació a la Botànica, 3a ed. revisada i actualitzada per Vallès, J. i Vigo, J. Edicions de la Universitat de Barcelona. Barcelona.
- Gerhardt, E. *et al.* 2000. Hongos de España y de Europa. Omega. Barcelona.
- Llistosella, J. & Sánchez-Cuixart, A. 2004. L'herbari. Arbres, arbusts i lianes. Edicions de la Universitat de Barcelona. Barcelona.
- Llistosella, J. & Sánchez-Cuixart, A. 2008. L'herbari: Mates, herbes i falgueres. Edicions de la Universitat de Barcelona. Barcelona.
- Llistosella, J. & Sánchez-Cuixart, A. 2015. Guia il·lustrada per a conèixer els arbres. Edicions de la Universitat de Barcelona. Barcelona.
- Llistosella, J. & Sánchez-Cuixart, A. 2020. Guia il·lustrada per a conèixer els arbusts i les lianes. Edicions de la Universitat de Barcelona. Barcelona.
- Llistosella, J. & Bernal, M. 2022. Manual pràctic de botànica. Morfologia de les plantes vasculares. Edicions de la Universitat de Barcelona. Barcelona.
- López González, G. 2001. Los árboles y arbustos de la Península Ibérica e Islas Baleares. Tomos I y II. Ed. Mundi-Prensa. [Recurs electrònic disponible a la UAB]
- Recasens, J. 2000. Botànica agrícola. Plantes útils i males herbes. Universitat de Lleida. [Recurs electrònic disponible a la UAB]
- Wirth, V. *et al.* 2004. Guía de campo de líquenes, musgos y hepáticas. Omega. Barcelona.

Web sites:

Flora catalana.net. La flora del nostre entorn: <http://www.floracatalana.net/>

Herbari virtual del Mediterrani occidental: <http://herbarivirtual.uib.es/cat-med/index.html>

Software

There is no specific software in this course.

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(PCAM) Field practices	111	Catalan	first semester	morning-mixed

(PCAM) Field practices	112	Catalan	first semester	morning-mixed
(PCAM) Field practices	113	Catalan	first semester	morning-mixed
(PCAM) Field practices	114	Catalan	first semester	morning-mixed
(PCAM) Field practices	115	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	111	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	112	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	113	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	114	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	115	Catalan	first semester	morning-mixed
(SEM) Seminars	111	Catalan	first semester	morning-mixed
(SEM) Seminars	112	Catalan	first semester	morning-mixed
(TE) Theory	11	Catalan	first semester	afternoon