UAB
Universitat Autònoma de Barcelona

Applied Botany

Code: 100800
ECTS Credits: 6

2024/2025

Degree	Type	Year
2500004 Biology	OT	4

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Teaching groups languages

You can view this information at the end of this document.

Prerequisites

There are no prerequisites

Objectives and Contextualisation

The general objective is to train the students in the main concepts and methods related to all the disciplines related to the broad scope of applications related to plants, fungi and algae.

The specific objectives are the following:

(1) To provide basic information about the importance of organisms studied by Botany in aspects several, from a practical perspective and their impact on society.

(2) To provide a scientific framework that integrates information from various disciplines and allows the study of Biological problems related to the applications and the intrinsic problems of some characteristics of organisms studied by Botany.

(3) To provide some basic knowledge about various disciplines that have a clear practical impact on the society (food, materials, aerobiology, palynology, biofuels, bioconstruction, ethnobotany, aspects regulations and regulations, etc.).

Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Analyse and interpret the development, growth and biological cycles of living beings.
- Be able to analyse and synthesise
- Develop a sensibility towards environmental issues.
- Identify and classify living organisms.
- Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
- 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. Analyse a situation and identify its points for improvement.
2. Analyse and interpret the development, growth and biological cycles of plants.
3. Be able to analyse and synthesise.
4. Critically analyse the principles, values and procedures that govern the exercise of the profession.
5. Develop a sensibility towards environmental issues.
6. Identify and classify the plants.
7. Propose new methods or well-founded alternative solutions.
8. Propose viable projects and actions to boost social, economic and environmental benefits.
9. Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
10. Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
11. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
12. Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
13. Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
14. Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.

Content

Unless the requirements enforced by the health authorities demand a prioritization or reduction of these contents, the course has of three parts: Theoretical classes, Seminars, Practices

Theoretical classes

Topic 1: Ethnobotany: approaching plants from local knowledge

Ethnobotany: theoretical and methodological foundations. History of ethnobotany. Plants as a source of fibers (clothing, paper, wickerwork, etc.) and vegetable dyes. Social, cultural and spiritual importance of plants. Ethnobotanical prospecting methods. Loss and erosion of ethnobotanical knowledge. Knowledge of plants in indigenous societies. A decolonized look at 21st century botany.

Topic 2: Plant bioactive compounds

Toxic compounds (poisons, biocides). Psychoactive compounds. Plants in medicine.

Topic 3: Regulation and ethics on the exploitation of plant resources

Regulation and regulations on the collection of plants and fungi. Discussion on ethical issues in the case of the exploitation of protected endemic plants that are collected as medicines, and in the exploitation of the forest by collectors of mushrooms. Mechanisms to classify species according to extinction risk. Basic regulations for the legal protection of protected and threatened plant species.

Topic 4: The plants of alimentary use

Plants in the human and animal diet (cereals, plants as sources of lipids, proteins, starch, vitamins and minerals, sugars). Fermented vegetables. Spices and seasonings. Food additives of vegetable origin

Topic 5: Domestication of plants

Origin of agriculture. Domestication and radiation centres of cultivated plants.

Topic 6: Palinology and its applicationts

Introduction to the palynological science. The grain of pollen and spores: biological origin, morphology and functions. Methodology. Contributions from the Palinology to other sciences: Melissopalinology, Aerobiology, Actuopalinology, Paleopalinology, Melissopalinology, Aerobiology. Visit to the Laboratory of Palinological Analysis of the UAB.

Seminars

There will be three seminars: one on biodeterioration and two on career opportunities in the field of applied botany.

Practices

The practices are divided in:

LAB WORK (3 sessions x 2h)

Session 1- Morphological and functional study of representative culinary spices

Session 2 - Palinology Practices I. Methods of analysis in melissopalinology and aerobiology; Treatment and sample preparation; Melissopalinological techniques; Aerobiological techniques; Identification of pollen and spores at microscope

Session 3 - Palinology II Practices. Identification of pollen types in honeys and aerobiological samples .

PRACTICAL COMPUTER CLASROOM (1 session x 3h)

Session 1- Use of databases and procedures to establish the state of risk according to IUCN categories.

FIELD PRACTIQUES (2 sessions,total: 8 h).

There will be field practices in which the students will visit areas that allow to work, analyze and criticise some of the concepts and methodstreated in both lectures and seminars.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Field trips	9	0.36	5, 3
Laboratory practices	6	0.24	3
Practices with computer	3	0.12	5, 3
Seminars	5	0.2	5, 3
Theory classes	29	1.16	5, 3
Type: Autonomous			
Study	83	3.32	5, 3

The proposed teaching methodology may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities.

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, in practical computer classroom and field sessions. The course is based on the combination of lectures (theory classes), seminars and practices.

(1) lectures or theory 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 specific cases of study are analyzed, and participatory debates are made about the significance and limitations of the concepts and methods explained in theory. These seminars 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) practices field practices, laboratory practices and computer room will be carried out

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 of laboratory practices	20%	6	0.24	6, 3
Exam of theory 1st partial	35%	2	0.08	14, 4, 2, 1, 6, 7, 8, 13, 12, 11, 9, 10, 5, 3
Exam of theory 2nd partial	35%	2	0.08	14, 4, 2, 1, 6, 7, 8, 13, 12, 11, 9, 10, 5, 3
Seminars	10%	5	0.2	5, 3

Student's assessment may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities.

The assessment consists of the following blocks: theory, seminars and lab practices. The student will need to get a minimum score of 5 in each of these blocks to pass the subject.

1) Theoretical exams (2 exams): set of questions (brief and very specific in general) related to the theoretical classes and computer classroom. There will be two eliminatory partial exams, each of which will have a weight of 40% of the final mark of the subject.

2) Practical exam: test that will consist of set of questions related to laboratory practices, which will have a weight of 20% of the final mark of the subject. It is necessary to obtain a 5 in order to pass the course. There is no compensation or recovery.

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.

Single evaluation

The single evaluation will consist of a single test in which the contents of the entire program of the subject (theoretical, practical and seminars) will be evaluated. The grade obtained in this synthesis test will mean 100% of the final grade for the subject. This test will take place on the same day and time scheduled for the second partial exam. In the event that the exam is not passed, it may be recovered on the date and time set in the calendar for the final exam of the subject.

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Software

RAMAS Red List Professional, https://www.ramas.com/red-list-pro

Language list

Name	Group	Language	Semester	Turn
(PCAM) Field practices	141	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	141	Catalan	first semester	afternoon
(SEM) Seminars	141	Catalan	first semester	morning-mixed
(TE) Theory	14	Catalan	first semester	morning-mixed