

Applied Botany

Code: 100800
ECTS Credits: 6

| Degree | Type | Year | Semester |
|-----------------|------|------|----------|
| 2500250 Biology | OT | 4 | 1 |

Contact

Name: Sergi Masso Aleman
Email: sergi.mass@uab.cat

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

Jordina Belmonte Soler
Ramon Perez Obiol
Llorenç Saez Goñalons
Moisés Guardiola Bufí
Andreu Salvat Saladrigas
Sergi Masso Aleman

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

- Be able to analyse and synthesise
- Characterise, manage, conserve and restore populations, communities and ecosystems.
- Develop a sensibility towards environmental issues.

Learning Outcomes

1. Be able to analyse and synthesise.
2. Develop a sensibility towards environmental issues.
3. Interpret values of human demography and epidemiology.

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: Non-food use of plant resources

Plants as a source of fibers (clothing, paper, vimetry, etc.) and vegetable dyes. Industrial and social importance. Plants as construction elements (homes, furniture, instruments, utensils, symbolic elements ...). Producers of latex, resins, gums and oils. Obtaining and applications. Biofuels (coal, biodiesel, bioethanol, biomass).

Topic 2: Plant bioactive compounds

Psychoactive Toxic (poisons, biocides). Plants in medicine and cosmetic.

Topic 3: Regulation and ethics on the exploitation of plant resources (patents, bioprospecting ...)

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

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 applications

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

Topic 7: Forensic botany

Forensic Botany: Forensic Palinology. Macroscopic and microscopic identification of plant remains in corpses. The algae in forensic investigations. Case studies.

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 species

Session 2 - Palinology Practices I. Methods of analysis in melissopalynology and aerobiology; Treatment and sample preparation; Melissopalynological 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 CLASSROOM (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.

Methodology

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 (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 (in party group) 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.

Activities

| Title | Hours | ECTS | Learning Outcomes |
|-------|-------|------|-------------------|
|-------|-------|------|-------------------|

Type: Directed

| | | | |
|-------------------------|----|------|------|
| Field trips | 9 | 0.36 | 2, 1 |
| Laboratory practices | 6 | 0.24 | 1 |
| Practices with computer | 3 | 0.12 | 2, 1 |
| Seminars | 5 | 0.2 | 2, 1 |
| Theory classes | 29 | 1.16 | 2, 1 |
| Type: Autonomous | | | |
| Study | 83 | 3.32 | 2, 1 |

Assessment

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 and field practices will help the student have the necessary skills and knowledge to successfully pass this test, 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.

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.

Assessment Activities

| Title | Weighting | Hours | ECTS | Learning Outcomes |
|------------------------------|-----------|-------|------|-------------------|
| Exam of laboratory practices | 20% | 6 | 0.24 | 3, 1 |
| Exam of theory 1st partial | 35% | 2 | 0.08 | 2, 1 |
| Exam of theory 2nd partial | 35% | 2 | 0.08 | 2, 1 |
| Seminars | 10% | 5 | 0.2 | 2, 1 |

Bibliography

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Software

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