

Degree	Type	Year
Biology	OB	3

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

The subject of Nutrition and Metabolism of the second course must be approved

Objectives and Contextualisation

To describe the functional mechanisms of plants and how they are regulated through internal and external factors.

To integrate the functional processes of the plants from the different organizational levels in the whole plant organism.

To understand the processes that determine the functioning of living beings in each of their levels of organization

To analyze and interpret the development, growth and biological cycles of living beings

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.

- Apply statistical and computer resources to the interpretation of data.
- Be able to analyse and synthesise
- Be able to organise and plan.
- Develop a historical vision of biology.
- 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.
- Understand the processes that determine the functioning of living beings in each of their levels of organisation.

Learning Outcomes

1. Analyse a situation and identify its points for improvement.
2. Analyse parameters of plant growth and development.
3. Apply statistical and computer resources to the interpretation of data.
4. Be able to analyse and synthesise.
5. Be able to organise and plan.
6. Critically analyse the principles, values and procedures that govern the exercise of the profession.
7. Describe the functional mechanisms of plants and how these are regulated by internal and external factors.
8. Identify the crucial discoveries in the history of plant physiology and assess their significance in the subsequent development of the discipline.
9. Integrate the functional processes of plants, from the different levels of organisation to the whole plant organism.
10. Propose new methods or well-founded alternative solutions.
11. 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.
12. 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.
13. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
14. Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
15. 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.
16. Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
17. Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.

Content

General contents

Plant growth: location and characteristics

Hormonal regulation: phytohormone concept. Characteristics, assessment, metabolism and functions of each group of hormones.

Other hormones and growth regulators.

Differentiation and Morphogenesis: cellular totipotency and polarity in development

Regulation by internal factors: Hormonal regulation and morphogenetic patterns.

Regulation by external factors: Photomorphogenesis, Photojournalism, Influence of cold on development.

Introduction to secondary metabolism

flowering

Dormancy of gems and seeds

Germination of seeds.

Formation and ripening of fruits.

Plant movements.

Aging, senescence and abscission

LABORATORY PRACTICES:

Bioassay of cytokinins in barley (*Hordeum vulgare*) leaf segments

Bioassay of gibberellins in barley endosperm (*Hordeum vulgare*)

Bioassay of auxins in corn coleoptiles (*Zea mays*)

Determination of overfertilization in nitrates

Visualization of toxicity by chemical agents using vital staining

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Laboratory practices	12	0.48	6, 2, 1, 3, 9, 10, 4, 5
Seminars	6	0.24	17, 16, 6, 2, 1, 8, 10, 15, 13, 11, 12, 4
theoretical classes	32	1.28	6, 2, 1, 7, 8, 9, 14, 13, 5
Type: Supervised			
Tutoring	2	0.08	6, 1, 13, 11, 12, 4
Type: Autonomous			
Personal study	69	2.76	17, 16, 6, 2, 7, 8, 9, 15, 14, 13

Report of laboratory practices	7	0.28	17, 2, 1, 3, 12, 4, 5
Work and report from seminar	18	0.72	17, 16, 6, 2, 1, 8, 10, 15, 13, 11, 12, 4

Theory classes

In the theory classes, the teacher explains the fundamental mechanisms of the functioning of plants, referring to the processes of growth and metabolism, establishing the relationships between them and clarifying basic concepts necessary for their understanding. The methodology is mainly oral presentation with digital accompaniment. Teacher-student interaction is worked with questions, reasoning, anecdotes or any other activity that promotes teacher-student communication and gives an overview of the concepts developed in the contemporaneity of the explained syllabus. The basic bibliographic references and other sources of information are given to encourage independent study.

Seminars

The main purpose of the seminars in this subject is to promote students' knowledge of general and transversal skills. The teaching methodology is based on the presentation and discussion of case studies and/or problems posed by the teacher to the students so that they solve them in groups, present it to their peers and discuss it with them with the help and guidance of the teacher .

Practical classes

Some of the topics discussed in the theory class are visualized through an experiment in the laboratory. The student becomes familiar with protocols and basic techniques of a Plant Physiology laboratory and learns to represent and interpret the results obtained in his own experiments. The student will be able to access the protocols and practice guides through the Virtual Campus.

Tutoring

In the group tutorials, the teacher tries to resolve doubts about the concepts of the subject and guide the students in their study.

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	70%	3	0.12	7, 8, 9, 15, 11, 12, 4, 5
Laboratory practices	20%	0.5	0.02	2, 1, 3, 10, 12, 4, 5
Seminars	10%	0.5	0.02	17, 16, 6, 1, 10, 14, 13, 11, 12, 4, 5

The evaluation of the theoretical part is done through written exams that include the evaluation of the contents of the classes. There will be two eliminatory tests corresponding to each of the parts into which the syllabus is divided.

In order to pass the subject, you must achieve a minimum grade of 5 in each of these parts. The weight of each partial exam in the theory grade is 40% for the first partial exam and 60% for the second partial. The weight of the theory grade in the final grade is 70%.

To pass grades below 5, the final recovery of each of these exams must be done in a final recovery exam.

In order to improve the grade, a final exam must be taken for all content and the grade of this final exam will be counted (ie, with the waiver of the previously obtained grade)

To evaluate the laboratory practices, an individual written test will be carried out that will represent the 80% of the practice grade. The preparation of the practice script will be done in groups and will represent the remaining 20% of the grade. The script will be delivered via Virtual Campus one week after the end of the internship. The final grade of practicals represents 20% of the total grade of the subject. Attendance at practices is mandatory. In case of justified non-attendance, it can be recovered by attending another group (determined by the practice teachers) or, if this is not possible, by means of substitute work. It is up to the teacher to assess the justification for non-attendance. There is no recupercaio of practices.

Attendance at seminars is mandatory. Participation, quality of work and/or problems solved and presented count for 10% of the final grade. Seminars are not recovered.

The subject will be approved when the student meets the conditions to be able to pass it and the grade resulting from the different parts (exams, practicals and seminar) is ≥ 5.0

It will be considered that a student will obtain the grade of Non-Evaluable when the number of assessment activities carried out is less than 50% of those scheduled for the subject (the two elimination exams, the three practice sessions and the participation in the seminars) . The presentation to the final make-up exam in any case means that the student has presented and will be evaluated

Students who cannot attend an individual assessment test for justified reasons (such as illness, death of a first-degree relative or accident) and provide the corresponding official documentation to the Degree Coordinator, will have the right to take the test in question at another date

Unique assessment:

This subject contemplates the single assessment which consists of a single synthesis test in which the contents of the entire theory program will be assessed. The test will mostly consist of questions to be developed and some relationship, test or sentence or paragraph completion questions. The grade obtained in this synthesis test will account for 70% of the final grade of the subject.

The assessment of practical activities and seminars and the delivery of assignments will follow the same process as the continuous assessment, and the grade obtained will represent 20% and 10% of the final grade of the subject respectively.

The single assessment test will coincide with the same date fixed in the calendar for the last continuous assessment test and the same recovery system will be applied.

Bibliography

BARCELÓ, J.; NICOLÁS, G.; SABATER, B.; SÁNCHEZ, R.: *Fisiología Vegetal*. Pirámide. Madrid (2007).

AZCÓN-BIETO, J. i TALÓN M., 2008. Fundamentos de Fisiología Vegetal. Segunda edició. The McGraw-Hill Companies <https://exa.unne.edu.ar/biologia/fisiologia.vegetal/FundamentosdeFisiologiaVegetal2008Azcon..pdf>

SALISBURY, F.B.; ROS, C. W.: *Plant Physiology*, 4th edition. Wadsworth Publ. Company, Belmont, California (1992).

TAIZ,L.; ZEIGER, E.: *Plant Physiology*, varias ediciones on line <http://6e.plantphys.net/>

Software

no software is used

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
(PLAB) Practical laboratories	131	Catalan	first semester	afternoon
(PLAB) Practical laboratories	132	Catalan	first semester	afternoon
(PLAB) Practical laboratories	133	Catalan	first semester	afternoon
(PLAB) Practical laboratories	134	Catalan	first semester	afternoon
(SEM) Seminars	131	Catalan	first semester	morning-mixed
(SEM) Seminars	132	Catalan	first semester	morning-mixed
(TE) Theory	13	Catalan	first semester	morning-mixed