Universitat Autònoma de Barcelona

2020/2021

Plant Physiology

Code: 100912
ECTS Credits: 3

Degree	Type	Year	Semester
2500252 Biochemistry	OB	2	2

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

Contact

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: No
Some groups entirely in Spanish: No

Teachers

Isabel Corrales Pinart

Prerequisites

There are no inicial requirements to study this subject

Objectives and Contextualisation

- Describe the functional mechanisms of plants and their regulation through external and internal factors
- Integrate the functional processes of the plants from the different organizational levels within the plant organism
- Identify the crucial discoveries in the history of Plant Physiology and assess its significance for subsequent scientific development of the discipline

Competences

- Describe intercellular and intracellular communication systems that regulate the proliferation, differentiation, development and function of animal and plant tissues and organs.
- Describe metabolic routes, their interconnections and their physiological significance, and also understand the mechanisms that regulate their activity to satisfy physiological needs.
- Describe the structural, physiological and biochemical characteristics of the different types of cells and explain how their properties fit in with their biological function.

Learning Outcomes

1. Describe the metabolic pathways of plants and the functions of their products.
2. Describe the molecular bases of development in plants.
3. Integrate knowledge of the structure, biochemistry and functions of cells within whole-plant physiology.

Content

Topics*

1. Introduction to Plant Physiology.
2. Water needs: concept of water potential, osmotic relationships and growth.
3. Absorption and transport of water.
4. Mineral needs: mineral nutrition of the plant.
5. Absorption and transport of nutrients.
6. Plants and light: photosynthetic pigments; Transformation of energy.
7. Carbon Reduction Assimilation: Metabolism C3.
8. Photorespiration.
9. Metabolism C4 and CAM.
10. Reduction assimilation of nitrogen and sulfur.
11. Regulation of growth and development by internal factors: Phytohormones and genetic regulation.
12. Regulation by external factors: Sensory and regulation systems of flowering.
13. Dormition. Germination of seeds.
14. Fruit formation and maturation.
15. Senescence and abscission.
16. Introduction to plant genetic improvement.

*Unless the requirements enforced by the health authorities demand a prioritization or reduction of these contents.

Methodology

The methodology* used to achieve the learning process is based on making the student work the information that is available. The function of the teacher is to give the information or indicate where you can achieve it, by guiding and tutoring it so that the learning process can be carried out effectively. To achieve this goal, the subject is based on the following activities, through the combination of: master classes, seminars, personal study and individual and team work.

Master classes:

With these classes the student acquires the basic scientific-technical knowledge of the subject that must be complemented with the personal study of the topics explained. The theoretical sessions stand out and address the complicated and important points of each didactic unit. Subsequently, the student from the conceptual map will be able to complement it with bibliographic information from his non-contact work. Theoretical sessions are 50 minutes long.

Seminars:

The mission of the seminars is to promote the capacity for analysis and synthesis, critical reasoning and the capacity to solve problems. In seminars, various activities can be carried out, such as analysis and discussion of cases and problems, public presentation of works, commentary of videos, resolution of questions related to the topics covered, etc.

Tutorials

The tutorials will be carried out in person at the teacher's office (hours to be arranged). Tutorials should be used to clarify concepts, establish the knowledge acquired and facilitate study by students. They can also be used to solve doubts that students have about the preparation of self-learning.

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

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Reading texts	15	0.6	2, 1, 3
Seminars	6	0.24	2, 1, 3
Study	26	1.04	2, 1, 3
Theoretical classes	16	0.64	2, 1, 3
Tutorials	1	0.04	2, 1, 3
Writing of works	7	0.28	2, 1, 3

Assessment

The specific and transversal competences of this subject will be evaluated by means of written tests (exams), oral presentations and participation in the seminars.

Written tests can be overcome with partial eliminatory exams or with the recovery test. Students who have not been presented for a partial exam or have submitted a pass have not approved it (minimum grade 5/10) can recover it to the recovery test.

In accordance with the regulations: "In order to participate in the recovery, the students must have been previously evaluated in a set of activities whose weight equals to a minimum of two thirds of the total qualification of the student, subject or module. Therefore, students will obtain the "Non-Appraising" qualification when the assessment activities carried out have a weighting of less than 67% in the final grade ".

The minimum score to participate in the recovery is 3.5.

Seminars: The quality of the preparation and presentation of public works or exhibitions will be assessed as well as the answers to the questions and problems proposed. Overall, the evaluation of the seminars has a global weight of 20% of the final grade.

To pass the subject, a minimum grade of 5.0 must be obtained. This note is the result of the sum of the following items: 80% theory note, 20% note seminars.

The obtaining of the Honor Matriculation will be applied from a note equal to or greater than 9.0. The number of MH will depend on the number of enrollments of the current course.

Improvement of note

Students who want to improve their final grade can do so by presenting themselves to the final exam. In this case, it is understood that the student waives the previous qualifications and his/her final grade is calculated from the new final exam's grade. It is not possible to improve the note through work or other types of activities.

Definition of non-evaluable

It willbe considered that a student will obtain the qualification of NOT AVALUABLE if the following assumption is given:

The weighthin of all conducted evaluation activities is less than 67% of the final score

It will be described as non-evaluable to all those students who have not submitted a written and / or a seminary in writing and have not carried out any of the assessment tests planned. It is understood, therefore, that if the

student does at least one of the exams or presents at least one of the works contemplated in the ordinary assessment, he will have to carry out the complete evaluation of the subject.

Special cases

If for justified reasons (illness, death of a first-degree relative or accident, etc.) and provide the official documentation corresponding to the Degree Coordinator, they will be entitled to take the test in question on another date. The Degree Coordinator will ensure the specification of this with the teacher of the subject affected. However, if for the same justified reasons, the student could not perform the evaluation tests in the assigned hours, they can do them in special schedules to agree with the teaching staff.

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

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
first partial	30%	1	0.04	2, 1, 3
second partial	50%	2	0.08	2, 1, 3
seminars	20%	1	0.04	2, 1, 3

Bibliography

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

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

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http://6e.plantphys.net/

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