

**Plant Physiology and Metabolism**

Code: 44780  
ECTS Credits: 6

Degree	Type	Year	Semester
4318297 Plant Biology, Genomics and Biotechnology	OT	0	1

## Contact

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## Teaching groups languages

You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

## Teachers

Isabel Corrales Pinart

Benet Gunse Forcadell

Merce Llugany Olle

Carlota Poschenrieder Wiens

Soledad Martos Arias

## Prerequisites

Basic knowledge of Plant Physiology and plant metabolism

## Objectives and Contextualisation

Acquisition of an integrative vision at the molecular, metabolic and physiological level of plant functioning based on the metabolic diversity of plants and their regulation through various internal and external factors.

## Learning Outcomes

- CA01 (Competence) Apply biotechnological cell factory methods to plants and fungi to obtain new secondary metabolite products that are useful in the pharmaceutical and food industries.
- CA02 (Competence) Work in a multidisciplinary team while respecting the universal accessibility of all people in the field of plant physiology and metabolism.
- KA01 (Knowledge) Describe transport processes and characterise the regulation of plant metabolism.

- KA02 (Knowledge) Identify and evaluate sex/gender inequalities in the field of plant biology.
- SA01 (Skill) Manage bibliographic information and computer resources in the field of plant physiology and metabolism.
- SA02 (Skill) Apply knowledge of secondary metabolites of plants for industrial and biotechnological uses.
- SA03 (Skill) Select and apply plant models to the study of functional mechanisms in plants.
- SA04 (Skill) Apply the most appropriate experimental tools to the study of plant phenotyping.

## Content

Compartmentation of the plant cell

Energy transformation

Transport processes and their regulation in plants

Primary metabolism

Secondary metabolism: diversity and industrial uses

Experimental techniques in Plant Physiology and Metabolism:

- Growth analysis and phenotyping
- Membrane stability (stress marker)
- Water and ionic relations
- Fluorescence of chlorophylls
- Metabolism analysis

## Methodology

Presential and supervised activities and visit to an external institution:

The face-to-face activities are theory classes, seminars, laboratory practices and a visit to a research institution.

Supervised activities refer to the preparation of presentations at the seminar. Students can request personalized tutoring sessions from teachers

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			
Laboratory practices	9.5	0.38	CA01, CA02, SA02, SA03, SA04, CA01
Seminars	10	0.4	CA02, KA01, KA02, SA01, CA02
Theoretical classes	18	0.72	KA01, SA01, SA02, KA01
Type: Supervised			

Preparation of seminars and reports	24	0.96	CA01, KA01, KA02, SA01, SA02, SA03, SA04, CA01
Type: Autonomous			
Personal study, consultation and analysis of articles and reports	87.5	3.5	CA02, KA02, SA01, SA02, SA03, SA04, CA02

## Assessment

The final grade is calculated as follows:  
attendance and participation in classes and seminars (10%);  
laboratory activities report (20%),  
individual presentation at the seminar (30%),  
written exam on the content of theoretical classes (40%)

This subject/module does not include the single assessment system.

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Attendance and participation in classes and seminars	10%	0	0	CA02, KA02, SA01
Individual presentation at the seminar	30%	0	0	CA02, KA02, SA01, SA03
Report of laboratory activities	20%	0	0	CA01, KA02, SA01, SA02, SA03, SA04
Written exam on the content of the theoretical classes	40%	1	0.04	KA01

## Bibliography

Barceló J, Nicolás G, Sabater B, Sánchez R (2001) Fisiología Vegetal. Pirámide, Madrid  
 Barceló J (2010) Perspectivas y retos de estudio en Fisiología vegetal, Boletín de la Sociedad Española de Fisiología vegetal 51: 35-44  
 Taiz L, Zeiger E, Moller IM, Murphy A (2014) Plant Physiology and Development, 6th edition. Sinauer Assoc. Oxford Univ Press. <http://6e.plantphys.net/>  
 Buchanan BB, Griessen W, Jones RL (2015) Biochemistry & Molecular Biology of Plants. 2nd edition; Wiley, Blackwell, Chichester, U.K.  
 Jones R, Ougham H, Thomas H, Waaland S (2013) The Molecular Life of Plants, Wiley-Blackwell, Chichester, U.K.  
 Grierson CS et al (2011) One-hundred Questions Facing Plant Science Research. New Phytologist 192: 6-12. <http://onlinelibrary.wiley.com/doi/10.1111/j.1469-8137.2011.03859.x/full>

## Software

No special software required