UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Plant Physiology

2223-3-E1301Q055

Aims

Aim of the course is the knowledge of the main aspects of plant physiology and biochemistry.

1. Knowledge and understanding: at the end of the course students will have acquired knowledge of the main physiological andbiochemical processes of plants.
2. Applying knowledge and understanding: the learned concepts will allow to understand the fundamental role of plants in the environment and to envisage their possible applications in the different fields of biology.
3. Making judgements: at the end of the course students will be able to understand the mechanisms of plants physiological and biochemical processes and to establish the correct relations among them.
4. Communication skills: at the end of the course students wil have acquired an adequate scientific language and will be able to properly explain the treated topics.
5. Communication skills: at the end of the course students will be able to read the scientific literature and to further pursue personal studies.

Contents

Aspects of plant physiology and biochemistry

Detailed program

Uptake and translocation. Plant water relations - Soil and water potential. Water movement. Transpiration and stomata regulation. Ion and solute uptake at the cell level. Phloem translocation. Nutrient uptake.

Photosynthesis: Photochemistry, Calvin cycle and photorespiration. Regulation of Calvin cycle. CO2 concentrating mechanisms (pumps, C4 and CAM plants).
Nitrogen (nitrate, ammonium, symbiosis) and sulfur assimilation .
Plant hormones: general aspects. Auxin: Structure, biosynthesis, catabolism and transport, physiological effects, molecular mechamism of cell enlargement and tropisms; gibberellins, cytokinins, abscisic acid, ethylene, brassinosteroids.
Seed germination. Plant orientation.

Prerequisites

No prerequisites. Useful background: botany, biological chemistry

Teaching form

Lectures (6 CFU).

Textbook and teaching resource

L. Taiz, E. Zeiger, Fisiologia Vegetale, IV Italian Edition, Piccin Editore

Mauseth J.D. "Botanica. Fondamenti di biologia delle piante" - Idelson-Gnocchi, 2020

Rascio N. "Elementi di fisiologia vegetale" Edises, 2017

Semester

First

Assessment method

Oral

For the exam, students will discuss a topic of their choice and a question posed by the instructor. The accurate use of scientific language to explain the topics and the ability to relate them will also be evaluated.

Office hours

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Sustainable Development Goals

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