UCLouvain

lbio1240

2021

Plant physiology

4.00 credits	40.0 h + 15.0 h	Q1

Teacher(s)	Draye Xavier ;Lutts Stanley ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	*The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Main themes	Plant water relationships are reviewed, successively considering notions of water potential and its components, water transport in the soil-plant-atmosphere continuum and stomatal regulation. The bases of mineral nutrition are studied : interaction between the root system and the soil, notion and function of essential elements, cellular and transcellular transports. The structure of the photosynthetic apparatus and the light reactions of photosynthesis are specified. The carbon reactions (light-independent reactions) are explained integrating the gas exchange and water use efficiency problematics. Specificities of plant respiration are viewed. Assimilates transport is detailed: phloem loading and unloading, assimilate allocation and partitioning, sink to source relationships. The energetic balance resulting from the photosynthetic and respiratory activities is integrated in an eco-physiological viewpoint in relationship with the canopy structure, the impact of light intensity and the influence of CO_2 concentration in the atmosphere. The 5 classical plant hormones, namely auxins, gibberellins, cytokinins, ethylene and abscissic acid, are studied in detail. The specific functions of other molecules involved in plant growth and development, but also in plant defence against biotic invaders, are viewed. The major role of photoperiodism in plant development is analysed in depth using the control of floral transition as an example. Basic concepts on photomorphogenesis and endogenous biological rhythms are overviewed as well as the biochemical and physiological basis of vernalization and bud dormancy. The mechanisms of resistance of plants to environmental constraints are schematically presented.
Learning outcomes	**At the end of this learning unit, the student is able to :** 1 To give students precise notions to apprehend the specificities of plant functioning and to master the complex problematics of processes governing growth, development and adaptation to the environment. To initiate students to methodologies used in physiology of the whole plant.
Faculty or entity in charge	BIOL

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in History of Art and Archaeology : General	ARKE2M	4		
Minor in Biology	MINBIOL	4		
Minor in Scientific Culture	MINCULTS	4		
Bachelor in Biology	BIOL1BA	4	LBIO1112	
Master [120] in Biochemistry and Molecular and Cell Biology	BBMC2M	4		