

PLANT PHYSIOLOGY

COURSE OUTLINE

1. GENERAL			
SCHOOL	School of Agricultural Sciences		
ACADEMIC UNIT	Department of Agriculture		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	0810.3.001.0	SEMESTER	1st
COURSE TITLE	Plant Physiology		

INDEPENDENT TEACHING ACTIVITIES if credits are awarded for separate components of the course	WEEKLY TEACHING HOURS	CREDITS
	5	5
Total	5	5

COURSE TYPE general background, special background, specialised general knowledge, skills development	Special background
PREREQUISITE COURSES	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS	English
OFFERED TO ERASMUS STUDENTS	Yes (in English)
COURSE WEBSITE (URL)	https://eclass.hmu.gr/courses/AGRO152/

2. LEARNING OUTCOMES
Learning outcomes

LEARNING OUTCOMES

Upon successful completion of the course, students will be able to:

- understand the fundamental physiological processes governing plant growth and development;
- explain the relationships between plant structure and function at the cellular, tissue and whole-plant levels;
- understand the mechanisms of water and mineral uptake, transport and distribution within plants;
- explain the physiological basis of photosynthesis, respiration and plant metabolism;
- understand the role of plant hormones in regulating growth, differentiation and development;
- evaluate the effects of environmental factors on plant physiological processes;
- interpret experimental results and apply physiological principles to agricultural production and crop management.

General Competences

Generic Competences

Students will develop the ability to:

- search for, analyse and synthesize scientific information using appropriate technologies;
- work independently;
- make informed scientific decisions;
- apply critical thinking to biological problems;
- promote free, creative and inductive thinking.

3. SYLLABUS

COURSE CONTENT

Theoretical Syllabus

- Plant cells and their physiological organization.
- Water relations in plants. Water potential, absorption, transport and transpiration.
- Mineral nutrition and nutrient uptake.
- Photosynthesis: light reactions, carbon fixation and environmental regulation.
- Respiration and energy metabolism.
- Transport of assimilates through the phloem.
- Plant growth and development.
- Plant hormones and growth regulators.
- Seed dormancy and germination.
- Flowering, fruit development and senescence.
- Plant responses to abiotic and biotic environmental factors.
- Physiological basis of crop productivity.

Laboratory Exercises

- Microscopic observation of plant tissues.
- Measurement of transpiration.
- Photosynthesis experiments.
- Determination of chlorophyll content.
- Osmosis and water potential experiments.
- Plant growth regulator demonstrations.
- Germination experiments.
- Interpretation of physiological data.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY Face-to-face, Distance learning, etc.	Teaching Method: Face-to-face teaching through lectures and laboratory sessions.	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY Use of ICT in teaching, laboratory education, communication with students	Use of Information and Communication Technologies (ICT) • PowerPoint presentations. • Audiovisual teaching material. • Support through the HMU e-Class platform. • Communication with students via e-Class and e-mail.	
TEACHING METHODS The manner and methods of teaching are described in detail.	Activity	Semester workload
	Lectures	39
	Laboratory Exercises	26
	Independent Study	60
	Course total	125
STUDENT PERFORMANCE EVALUATION Description of the evaluation procedure	Student Assessment Teaching is delivered in Greek, while English-language support and assessment are available for international (Erasmus) students. Assessment consists of: • Final written examination for the theoretical component. • Continuous assessment of laboratory performance. • Written and/or oral evaluation of laboratory exercises. • Problem-solving questions and interpretation of experimental results.	

5. ATTACHED BIBLIOGRAPHY

RECOMMENDED LITERATURE

Main Textbooks

- Taiz, L., Zeiger, E., Moller, I. M., & Murphy, A. *Plant Physiology and Development*.
- Hopkins, W. G., & Huner, N. P. A. *Introduction to Plant Physiology*.

Supplementary References

Additional scientific articles, laboratory notes and educational material are provided through the HMU e-Class platform.

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