

Course name:**Diversity of plant anatomy as habitat adaptation**

ECTS	3
Course status	<i>facultative</i>
Course final assessment /evaluation of outcomes	The grade based on Student's work
Prerequisite	

Main field of study:

Agriculture and Horticulture, Biology and Biotechnology (Erasmus+)

Educational profile	General academic
Code of studies and education level	master of science (SM)
Semester of studies	Winter or summer
Language of instruction	English

Course offered by:

Name of faculty offering the course	Faculty of Biotechnology and Horticulture
Name of department offering the course	Department of Botany, Physiology and Plant Protection
Course coordinator	dr hab. Barbara Nowak

Learning outcomes:

Symbol of outcome	Description of the learning outcome	Reference to main field of study outcomes	Area symbol*
KNOWLEDGE – student knows and understands			
PAD_W1	Relations between plant physiology, plant structure and its habitat	OGR2_W05	R, P
PAD_W2	Processes occurring in the plant tissues at the course of fixing, embedding and staining.	OGR2_W01	R, P
SKILLS – student is able to			
PAD_U1	properly select objects for observation depending on goals	OGR2_U03	R,
PAD_U2	independently prepare microscopic preparations and interpret the results obtained	OGR2_U04	R,
SOCIAL COMPETENCIES – student is ready to:			
PAD_K1	Follow the principles of teamwork with the awareness of responsibility for jointly implemented tasks	OGR2_K02	R

Teaching contents

Lectures	5 hours
Topics	<p>Aquatic and wetland plants and their adaptations.</p> <p>Light: plants of moist shady habitats against heliophytes. Epiphytes and vines.</p> <p>Plants of low- nutrient conditions: mycorrhizal associations, nitrogen-fixing symbionts, parasitic plants, carnivorous plants</p> <p>Plants of cold and hot arid habitats</p> <p>Halophytes and salt exclusion mechanisms. Salt marshes and mudflats.</p>

Accomplished learning outcomes	<i>PAD_W1-W2,</i>	
Means of verification, rules and criteria of assessment	<i>Analysis of the habitat conditions of the plant being the object of anatomical observations. Share in the final evaluation 30%</i>	
Classes:	25 hours	
Topics	<p>Basic methods of preparing specimens - fresh versus permanent (fixing, dehydration, embedding in paraffin, sectioning, staining). Fixing and dehydration of own students samples.</p> <p>Plant trichomes as different adaptations. Infiltration with paraffine students samples.</p> <p>Aquatic and wetland plants: aerenchyme, epidermis with trichomes and stomata</p> <p>Plants of moist shady habitats, heliophytes and epiphytes. Comparison of mesophyll, epidermis, cuticule.</p> <p>Plants of arid habitats - xerophytes. Structure preventing water loss and storing available water. Comparison of xeromorphic features in leaves anatomy. Embedding student samples in paraffin bricks.</p> <p>Sectioning students samples.</p> <p>Staining students samples and interpretation.</p>	
Accomplished learning outcomes	<i>PAD_W1-W2, PAD_U1-U2, PAD_K1</i>	
Means of verification, rules and criteria of assessment	<i>Preparation of permanent, stained cross-section and its interpretation presented in the form of a written study. Share in the final evaluation 70%</i>	

References:

Basic	Peterson R.L., Peterson C.A., Melville L.H., 2008. Teaching Plant Anatomy. NRC Press. Ingrouille M.J., Eddie B., Plants. Diversity and evolution. Cambridge (chosen chapters).
Supplementary	3 max

Structure of learning outcomes

Area of academic study: R – Agricultural, forestry and veterinary sciences	2	ECTS**
Area of academic study: P – Biological sciences	1	ECTS**

Structure of student activity

Contact hours	35	hrs.	1.4	ECTS**
Including:	lectures	5	hrs.	
	classes and seminars	25	hrs.	
	consultations	5	hrs.	
	participation in research	...	hrs.	
	obligatory traineeships	...	hrs.	
	participation in examination	...	hrs.	
e-learning	...	hrs.	ECTS**
student own work	40	hrs.	1.6	ECTS**

*Areas of academic study in the fields of: H- humanities; S - social studies; P – biological sciences; T – technological sciences; M- medical, sport and health sciences; R – Agricultural, forestry and veterinary sciences; A – the arts

** stated with an accuracy to 0.1 ECTS, where 1 ECTS = 25 - 30 hours of classes