

Subject card

Subject name and code	Plant anatomy, PG_00154391						
Field of study	Biology						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2024/2025		
Education level	undergraduate studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		2.0		
Learning profile	academic		Assessment form				
Conducting unit	Pracownia Cytologii i Embriologii Roślin -> Katedra Biologii Eksperymentalnej i Biotechnologii Roślin -> Faculty of Biology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Emilia Brzezicka				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	30		6.0		14.0	50
Subject objectives	- Understanding the basic and essential concepts of the anatomy of flowering plants. - Overview of histology and organography of flowering plants - Understanding the basic concepts related to tissue structure and functional tissue systems in plants						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BIOLL3_W04] The graduate is conversant with the course of physiological processes and their relationship to the adaptation of the organism to changing environmental conditions	The graduate understands the basic developmental processes related to tissue and organ formation in plants and their connection to organism adaptation under changing environmental conditions.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report [SW5] implementation of a problem task
	[BIOLL3_W03] The graduate knows the structure and functional relationships at the cellular, tissue, organ and organismal levels	The graduate describes the structure of plant organisms and their functional relationships at the cellular, tissue, organ, and organismal levels using light microscopy.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report [SW5] implementation of a problem task
	[BIOLL3_U02] The graduate will be able to make observations individually and in teams, and carry out basic physical, biological and chemical measurements in the field or laboratory	The graduate conducts microscopic observations and performs basic anatomical measurements in the laboratory.	[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written [SU5] implementation of a problem task [SU8] observation of student's independent or team work
	[BIOLL3_U01] The graduate will be able to use basic apparatus and research tools and follow the correct sequence of operations in laboratory and field work	The graduate is proficient in using basic research equipment and maintaining the correct sequence of tasks in laboratory work.	[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written [SU8] observation of student's independent or team work
	[BIOLL3_K06] The graduate is prepared to take responsibility for the equipment/materials entrusted to them and for their own work and that of others	The graduate is responsible for the entrusted equipment (light microscope), materials (including permanent specimens) and their own work, and respects the work of others.	[SK8] observation of student's independent or team work
Subject contents	Plant cell structure. Structure and functioning of meristems as a source of stem cells. Basics of histogenesis. Structure and functions of plant tissues. Morphology and anatomy of higher plant organs: stems (primary structure and secondary growth); leaves (anatomy of unifacial and bifacial leaves; differences in leaf anatomy between plants with varying water access); roots (primary and secondary structure); introduction to plant embryology (flower anatomy structure of male and female gametophytes, seeds).		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Tests	51.0%	76.0%
	Method used to conduct experiments and observations, results documentation and interpretation, notes, presentations.	51.0%	24.0%
Recommended reading	Basic literature Literature used during laboratory • Hejnowicz Z. 2002. Anatomia i histogeneza roślin naczyniowych. PWN, Warszawa. • Steeves TA and Sawhney VK. 2017. Essentials of Developmental Plant Anatomy. Oxford University Press. • Eshel A, Tom Beeckman T. 2013. Plant Roots: The Hidden Half, Fourth Edition. CRC Press • Williams, M.E. (October 23, 2012). Evolutionary and Developmental Origin of Leaves. Teaching Tools in Plant Biology: Lecture Notes. The Plant Cell • (online), doi/10.1105/tpc.109.tt1109. • Braune W, Leman A, Taubert H. 1975. Praktikum z anatomii roślin. PWN, Warszawa • Gorczyński T. (red). 1979. Ćwiczenia z botaniki. PWN, Warszawa Literature studied by the student individually • Hejnowicz Z. 2002. Anatomia i histogeneza roślin naczyniowych. PWN, Warszawa. • Esau K. 1973. Anatomia roślin. PWRiL, Warszawa. • Braune W, Leman A, Taubert H. 1975. Praktikum z anatomii roślin. PWN, Warszaw		

	Supplementary literature	• Crang, R., Lyons-Sobaski, S., Wise, R. (2018). <i>Plant anatomy: a concept-based approach to the structure of seed plants</i>. Springer. • Malinowski E. 1973. Anatomia roślin. PWN, Warszawa • Brzezicka, E., Karwowska, K., Kozieradzka-Kiszkurno, M., Chernetsky, M. (2015). Leaf micromorphology of <i>Kalanchoë laciniata</i> (Crassulaceae). <i>Modern Phytomorphology</i>, 8. • Karwowska, K., Brzezicka, E., Kozieradzka-Kiszkurno, M., & Chernetsky, M. (2015). Anatomical structure of the leaves of <i>Crassula cordata</i> (Crassulaceae). <i>Modern Phytomorphology</i>, (8), 53-54.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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