University of Gdańsk

Subject card

Subject name and code	Plant anatomy, PG_00196814						
Field of study	Biology						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2026/2027			
Education level	Bachelor's 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	credit			
Conducting unit	Laboratory of Plant Cytology and Embryology -> Department of Experimental Biology and Plant Biotechnology -> Faculty of Biology -> Rector						
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_U02] The graduate is 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 is 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_W03] The graduate knows and uderstands at an advanced level the 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_W04] The graduate knows and understands at an advanced level 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_K06] The graduate is prepared to take responsibility for the entrusted equipment/materials and for his/her own work and the work 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 atructure 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%	75.0%
Method used to conduct experiments and observations, results documentation and interpretation, notes, presentations.	51.0%	25.0%

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). Plant anatomy: a concept-based approach to the structure of seed plants. *Springer*. • Malinowski E. (1973). Anatomia roślin. *PWN*, Warszawa • Brzezicka, E., Karwowska, K., Kozieradzka-Kiszkurno, M., Chernetskyy, M. (2015). Leaf micromorphology of *Kalanchoë laciniata* (Crassulaceae). *Modern Phytomorphology*, *8*. • Karwowska, K., Brzezicka, E., Kozieradzka-Kiszkurno, M., & Chernetskyy, M. (2015). Anatomical structure of the leaves of *Crassula cordata* (Crassulaceae). *Modern Phytomorphology*, (8), 53-54. • Brzezicka, E., Kozieradzka-Kiszkurno, M. (2025). Haustorial processes during the female gametophyte formation in *Rosularia pallida* (Schott & Kotschy) Stapf (Crassulaceae). Plant Reproduction, 38(2), 11.
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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