

Subject card

Subject name and code	Applied lichenology, PG_00154335						
Field of study	Natural Resources Conservation						
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	
Mode of study	full-time studies		Mode of delivery			at the university	
Year of study	1		Language of instruction			Polish Polish	
Semester of study	2		ECTS credits			2.0	
Learning profile	academic		Assessment form				
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Emilia Ossowska				
	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	1. Equipping the student with knowledge of lichen symbiosis and its components (bionts), structure ofstructure of lichen thallus and lichen secondary metabolites. 2. Ability to description of lichen lichen components using microscopic, chemotaxonomic and molecular methods. 3.Equipping students with basic knowledge of lichens, their biological properties, importance in nature and natural values.nature and their natural values in the context of bioindication and conservation.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[OZPL3_U01] The graduate is able to use basic apparatus and research tools and maintains the correct sequence of operations in laboratory and field work	use basic research apparatus and tools and follow the correct sequence of operations in laboratory and field work	[SU1] oral statement/conversation/discussion [SU3] text preparation/written work [SU8] observation of student's independent or team work
	[OZPL3_K07] The graduate is prepared to demonstrate responsibility for the equipment/materials entrusted and respects the work of others	is responsible for the equipment/materials entrusted to him/her and respects the work of others	[SK6] demonstration of practical skills [SK8] observation of student's independent or team work
	[OZPL3_W01] The graduate possesses advanced knowledge and understanding of the structural and functional relationships at the cellular, tissue, organ, and body levels.	understands natural phenomena and processes at different levels of complexity	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion [SW5] implementation of a problem task
	[OZPL3_W04] The graduate possesses advanced knowledge and understanding of the characteristics, systematics, and evolution of selected groups of organisms, as well as the basic concepts and mechanisms of evolution	has a thorough knowledge of lichenology	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion [SW2] presentation/project/paper/report [SW3] text preparation/written work [SW5] implementation of a problem task
	[OZPL3_K06] The graduate is prepared to demonstrate responsibility for their own and others' safe working conditions in the laboratory and in the field, and is able to recognise hazardous situations and take appropriate action	demonstrates responsibility for his/her own and others' safe working conditions in the laboratory and in the field and is able to recognise hazardous situations and take appropriate action	[SK6] demonstration of practical skills [SK8] observation of student's independent or team work
	[OZPL3_U06] The graduate is able to make observations and perform basic physical, biological and chemical measurements in the field or laboratory	makes observations and performs basic biological and chemical analyses in the field or laboratory	[SU6] demonstration of practical skills [SU8] observation of student's independent or team work
Subject contents	The basics of fungal systematics. Structure of the lichen thallus and their bionts. Lichen secondary metabolites and thin-layer chromatography (TLC) as a method for their detection and identification. Barkoding as a method of lichen identification. Lichen species under legal protection. Red lists of threatened lichens (national and regional). Lichens as indicators of changes in natural conditions (influence of pollution on lichen occurrence, lichens as indicators of the condition of forest ecosystems). Field classes in the Tri-city area.		
Prerequisites and co-requisites	Absent		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory exercise report	51.0%	25.0%
	Colloquium 2	51.0%	25.0%
	Colloquium 1	51.0%	25.0%
	Practical assessment	51.0%	25.0%
Recommended reading	Basic literature Szweykowska A., Szweykowski J. 2009. Botanika. Tom 1 i 2. PWN, Warszawa. Müller E., Loeffler W. 1987. Zarys Mykologii. PWRiL, Warszawa. Bystrek J. 1997. Podstawy lichenologii. Wydaw. Uniwersytetu Marii Curie-Skłodowskiej.		

	Supplementary literature	Guzow-Krzemińska B. 2012. Molecular approaches in conservation of lichens. In: Lichen protection - Lichen protected species. Lipnicki L. (ed.) p. 77- 89. Guzow-Krzemińska B., Kukwa M. 2013. Metody badawcze we współczesnej taksonomii porostów. Kosmos 62(1): 95-103. Kubiak D., Kukwa M. 2011. Chromatografia cienkowarstwowa (TLC) w lichenologii. W: Dynowska M., Ejdys E. (red.). Mikologia laboratoryjna. Przygotowanie materiału badawczego i diagnostyka. Wydawnictwo Uniwersytetu Warmińsko-Mazurskiego w Olsztynie, s. 176190. Kukwa M. 2012. Chemical and molecular methods and their impact on the estimation of threat status of lichens in Poland. W: Lipnicki L. (red.). Lichen protection Lichen protected species. SONAR Sp. z o.o., Gorzów Wielkopolski, s. 93100. Ossowska E. 2021. Rodzaj Parmelia w Polsce. Studium taksonomiczna. - Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk. Ossowska E., Guzow-Krzemińska B., Szymczyk R. Kukwa M. 2021. A molecular re-evaluation of Parmelia encryptata with notes on its distribution. Lichenologist 53, 341345. Ossowska E., Guzow-Krzemińska B., Kolanowska M., Szczepańska K., Kukwa M. 2019. Morphology and secondary chemistry in species recognition of Parmelia omphalodes group evidence from molecular data with notes on the ecological niche modelling and genetic variability of photobionts. MycoKeys 61: 3974. Kosecka M., Kukwa M., Jabłońska A., Flakus A., Rodriguez-Flakus P., Ptach Ł., Guzow-Krzemińska B. 2022. Phylogeny and Ecology of Trebouxia Photobionts From Bolivian Lichens. Front. Microbiol. 13:779784. Oset M. 2014. The lichen genus Stereocaulon (Schreb.) Hoffm. in Poland - a taxonomic and ecological study. - Monographiae Botanicae 104: 1-81
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Zone IV on the lichen scale is characterised by the occurrence of? Give some (4-5) examples of morphological characteristics to help identify lichens. How does the morphological type of the lichen mould show in the figure below. Please briefly characterise it.	
Work placement	Not applicable	

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