University of Gdańsk

Subject card

Subject name and code	Bioindication, PG_00154494		
Field of study	Natural Resources Conservation		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2028/2029
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Optional subject group 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	3	Language of instruction	Polish
Semester of study	5	ECTS credits	2.0
Learning profile	academic	Assessment form	exam
Conducting unit	Laboratory of Plant Taxonomy -> Department of Plant Taxonomy and Nature Conservation -> Faculty of Biology -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Eugeniusz Pronin	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	0.0	0.0	15

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	15	2.0	33.0	50

Subject objectives

Learning the basic ecological laws used in bioindication.

Ability to distinguish and use bioindicators for a comprehensive assessment of the state of the environment.

Knowledge of bioindicative properties of individual groups of organisms.

Ability to properly select bioindication methods and their application in practice.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[OZPL3_K05] The graduate is ready to understand the need to improve their own competences, update their knowledge and improve their skills	(O_K05) - is aware of the need to improve bioindication knowledge	[SK1] oral statement/conversation/ discussion
[OZPL3_W11] The graduate possesses a fundamental understanding of the concepts and terminology of natural science, as well as knowledge of the evolution of natural sciences and the research methods employed in them. They are also cognizant of the potential for practical application	(O_W11) - knows the basic concepts and terminology of nature used in bioindication and the research methods used, and is also aware of their potential translation into practical activities	[SW4] test/exam - oral or written
[OZPL3_W07] The graduate has an advanced understanding of the methods and means of nature and environmental protection, including nature monitoring	O_W07 - presents the most important methods and methods of nature conservation used in bioindication and knows the basic concepts and terminology of nature used in bioindication and the research methods used in it, and is also aware of their potential translation into practical activities	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
[OZPL3_K08] The graduate is ready to systematically update his/ her natural knowledge and to apply it in practice	O_K08 - is familiar with key methods and techniques of nature conservation based on bioindication and is proficient in the basic terminology and concepts related to this field. They possess knowledge of the research methods used in bioindication and understand their significance for environmental protection. Additionally, they are prepared to systematically update their knowledge of natural sciences and apply it practically in various situations related to nature conservation.	[SK1] oral statement/conversation/ discussion [SK4] test/exam - oral or written [SK8] observation of student's independent or team work
[OZPL3_U02] The graduate can read with comprehension scientific texts in the field of natural sciences in Polish and simple texts in English	O_U02 - uses Polish literature and simple texts in English in the field of bioindication	[SU1] oral statement/conversation/ discussion
[OZPL3_U03] The graduate is able to search for and use available sources of biological information, including electronic sources, and critically analyse them	O_U03 - uses knowledge of techniques for searching for sources of information in the field of bioindication in electronic databases and the Internet	[SU1] oral statement/conversation/ discussion

Subject contents

Theoretical bases of bioindication and distinguishing bioindicators (definitions, mechanisms, conditions).

Examples of various organisms and groups of organisms used as bioindicators.

Principles of using bioindication in ecological research.

Monitoring environmental pollution and changes in biocenoses using bioindication methods.

Various aspects of the practical use of bioindication in the protection of biodiversity, agriculture and forestry

Prerequisites and co-requisites

Basic knowledge of botany and systematics of plant organisms.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
exam	51.0%	100.0%

Recommended reading	Basic literature	A. Literature required to finally pass the course (pass the exam): A.1. used during classes: Burchardt L. (eds.). 1994. Teoria i praktyka badań ekologicznych. Idee ekologiczne t. 4, seria Szkice nr 3, UAM, Sorus, Poznań. (in Polish) Falińska K. 1996. Ekologia roślin. PWN, Warszawa.Fałtynowicz W. 1995. Wykorzystanie porostów do oceny zanieczyszczenia powietrza. CEEW, Krosno. (in Polish) Mróz, W. Monitoring Siedlisk Przyrodniczych. Przewodnik Metodyczny. Część II i IV.,[Mróz, W.,(eds.); Główny Inspektorat Ochrony Środowiska, Warszawa, 2012 i 2015 (in Polish) A.2. studied independently by the student: Pullin A. S. 2004. Biologiczne podstawy ochrony przyrody. PWN, Warszawa.Zimny H. 2005. Ekologia miasta. Agencja Reklam.-Wyd. A. Grzegorczyk, Warszawa. (in Polish)
	Supplementary literature	Krebs Ch. 2001. Ekologia. Eksperymentalna analiza rozmieszczenia i liczebności. PWN. Warszawa. (in Polish) Markert B. (eds.). 1993. Plants as Biomonitors. VCH, Wienheim-New York-Basel-Cambridge. Żółkoś K., Kukwa M., Afranowicz-Cieślak R. 2013. Changes in the epiphytic lichen biota in Scots pine (Pinus sylvestris) stands affected by a colony of grey heron (Ardea cinerea): a case study from northern Poland. Lichenologist 45(6): 815-823. Banaś K. 2016. The principal regulators of vegetation strukture in lakes of north-west Poland. A new approach to the assembly of macrophyte communities. Wydawnictwo Uniwersytetu Gdańskiego. Gdańsk Latałowa M., Pędziszewska A., Maciejewska E., Święta-Musznicka J. 2013. Tilia forest dynamics, Kreitzschmaria deusta attack, and mire hydrology as palaeoecological proxies for mid-Holocene climate reconstruction in the Kashubian Lake District (N. Poland). The Holocene 23(5): 667-677 Lenarczyk J., Kołaczek P., Jankovská V., Turner F., Karpińska-Kołaczek M., Pini R., Pędziszewska A., Zimny M., Stivrins N., Szymczyk A. 2015. Palaeoecological implications of the subfossil Pediastrum argentinense-type in Europe. Rev. Palaeobot. Palynol. 222: 129-138. Pełechaty i Pronin 2015: Rola Roślinności Wodnej i Szuwarowej w Funkcjonowaniu Jezior i Ocenie Stanu Ich Wód. Stud. Limnol. Telmatologica , *9*, 253 (in Polish)
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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