

Subject card

Subject name and code	Zoological methods of water quality assessment, PG_00143464						
Field of study	Natural Resources Conservation						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2025/2026		
Education level	undergraduate 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	2	Language of instruction			Polish		
Semester of study	4	ECTS credits			1.0		
Learning profile	academic	Assessment form					
Conducting unit	Pracownia Biosystematyki i Ekologii Bezkręgowców Wodnych -> Katedra Genetyki Ewolucyjnej i Biosystematyki -> Faculty of Biology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Agata Szwarc				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	15.0	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		8.0	25
Subject objectives	Introducing students to methods of assessing the ecological status of inland waters based on research on aquatic animal assemblages.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[OZPL3_W13] The graduate has an advanced understanding of the fundamental rules, methods, and techniques of environmental research and their potential applications in nature conservation		The student knows the methods used in the assessment and ecological monitoring of surface waters based on animal assemblages		[SW2] presentation/project/paper/report		
	[OZPL3_K02] The graduate is ready to work effectively in a team, taking on different roles within it		The student is able to work effectively in a team, assuming various roles		[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		The student conducts biological research in the field and in the laboratory used in the assessment of water quality based on benthic macroinvertebrates		[SU2] presentation/project/paper/report [SU8] observation of student's independent or team work		
Subject contents	<p>Benthic animals as biological indicators of water quality. Ecological and taxonomic measures and indicators used in assessing the ecological status of waters. Biotic indexes used in Europe and other countries. Polish system for assessing the condition of rivers BMW-PL based on macrozoobenthos. Polish Multimetric Indicators of the Ecological State of Rivers and Lakes based on benthic macroinvertebrates.</p> <p>Methodology of field and laboratory work, as well as principles for data analysis obtained from macrozoobenthos studies for the purposes of quality assessment and ecological monitoring of rivers and lakes in Poland, in accordance with the Water Framework Directive.</p>						

Prerequisites and co-requisites	<p>Formal requirements: none</p> <p>Entry requirements: to complete the content, it is necessary to have knowledge of identifying basic groups of invertebrates</p>		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	evaluation of the final project (report)	51.0%	50.0%
	evaluation of solutions to short written problem tasks	51.0%	25.0%
	attendance	80.0%	0.0%
	evaluation of student's work during classes	51.0%	25.0%
Recommended reading	Basic literature	<p>Kolada A. ed., 2020. Manual for monitoring biological elements and classifying the ecological status of surface waters. Environmental Monitoring Library, Warsaw.</p> <p>Kołodziejczyk A., Koperski P. 2000. Freshwater invertebrates of Poland. WUJW, Warsaw</p> <p>Tończyk G., Siciński J. (eds.) 2013. Key to the determination of benthic macroinvertebrates for the purposes of assessing the ecological status of surface waters. Environmental Monitoring Library, Warsaw.</p> <p>Kolada A. ed., 2020. Manual for monitoring biological elements and classifying the ecological status of surface waters. Environmental Monitoring Library, Warsaw.</p> <p>Panek P. 2011. Biotic indicators used in water monitoring since the implementation of the Water Framework Directive in Poland. Przegląd Przyrodniczy 22 (3): 111-123.</p>	
	Supplementary literature	<p>Dumnicka, E., Biesiadka, E., Namotywko, T. 2016. Zoobentos. In: Krzyściak-Kosińska, R., Wilk-Woźniak, E. (eds.) Aquatic ecosystems of the Białowieża National Park: 213-231, Białowieża National Park, Białowieża.</p> <p>Kajak Z. 1998. Hydrobiologia-Limnologia. Inland water ecosystems. PWN, Warsaw.</p> <p>Kownacki A., Soszka H. 2004. Guidelines for assessing the state of rivers based on macroinvertebrates and for sampling macroinvertebrates in lakes. Department of Nature Conservation, Polish Academy of Sciences, Kraków, Institute of Environmental Protection, Warsaw</p> <p>Lampert W., Sommer U. 1996. Ecology of inland waters. PWN, Warsaw.</p>	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Determining the water quality class based on the collected material (case study)		
Work placement	Not applicable		

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