

Subject card

Subject name and code	The application of Geographic Information System (GIS) in nature research, PG_00172068						
Field of study	Environmental Protection						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2025/2026		
Education level	Bachelor's studies		Subject group		Optional subject group		
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		2.0		
Learning profile	academic		Assessment form				
Conducting unit	Katedra Taksonomii Roślin i Ochrony Przyrody -> Faculty of Biology -> Rektor						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Magdalena Lazarus				
	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		5.0		15.0	50
Subject objectives	Familiarization with Geographic Information Systems (GIS) and the possibilities of their practical use in the work of a naturalist. Acquiring the ability to solve basic problems in the field of spatial analysis. Acquiring skills in working with a GPS receiver.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[OŚL3_K05] Identifies the level of her/his knowledge and skills, demonstrates the need to update knowledge about the environment and its protection, demonstrates the need for continuous professional training and personal development.	Students know the limitations of their own knowledge and understands the need for continuous learning and development, including in the field of information technology (GIS) tools.	[SK1] oral statement/conversation/discussion
	[OŚL3_U01] Performs tasks under supervision and independently in the field of analysis of the natural environment and the functioning of natural and man-made natural systems.	The student analyzes and synthesizes data from various sources (botanical, zoological data, habitat characteristics, distribution of protected areas).	[SU5] implementation of a problem task [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
	[OŚL3_W03] Operates mathematical, statistical and IT methods and tools in the description and interpretation of phenomena and processes occurring in the environment.	The student knows the basic statistical methods and techniques information technology used to describe environmental phenomena and processes.	[SW1] oral statement/conversation/discussion [SW5] implementation of a problem task
	[OŚL3_W02] Characterises the relationships and relationships between various disciplines of natural sciences and science, uses knowledge of mathematics, physics, chemistry and biology in the description of basic concepts, concepts and principles in environmental protection.	The student has knowledge of the use of IT tools for input, collection, processing and visualization of natural spatial data. The student uses knowledge from various fields in the field of environmental protection.	[SW1] oral statement/conversation/discussion [SW5] implementation of a problem task
	[OŚL3_K06] Knows and appreciates the practical application of the acquired knowledge and skills in solving problems.	The student knows and appreciates the practical application of the acquired knowledge and skills in the use of GIS tools in environmental protection.	[SK1] oral statement/conversation/discussion
	[OŚL3_U11] Uses statistical methods as well as algorithms and IT techniques, including application software packages to describe environmental experiments and analysis of typical data in socio-economic activities based on science and natural sciences.	The student applies basic statistical methods and techniques computer science such as map algebra, data interpolation methods to describe phenomena and analyze environmental data.	[SU5] implementation of a problem task [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
Subject contents	Tools for analyzing spatial data and preparing maps in QGIS and ArcGIS. Creating vector layers and editing them. Display and symbolization of objects. Map elements and their functions. Toolbox as a source of data analysis tools. Spatial data sources. Basic tools for working with raster data. Working with a GPS device.		
Prerequisites and co-requisites	None.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Practical assessment (QGIS)	51.0%	50.0%
	Practical assessment (ArcGIS)	51.0%	50.0%
Recommended reading	Basic literature	Urbański J. 2008. GIS w badaniach przyrodniczych. Wyd. UG. Gdańsk.	
	Supplementary literature	Longley P.A., Goodchild M.F., Maguire D.J., Rhind D.W. 2008. GIS Teoria i praktyka. PWN, Warszawa. Manikowska-Ślępowrońska B., Lazarus M., Żółkoś K., Jakubas D. 2016. Influence of landscape features on the location of grey heron Ardea cinerea colonies in Poland. Comptes Rendus Biologies 339(11-12). Pasławski J. 2010. Wprowadzenie do kartografii i topografii. Wyd. Nowa Era, Warszawa. Urbański J. 1997. Zrozumieć GIS. Analiza informacji przestrzennej. PWN, Warszawa.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	1. Prepare the map according to the given example. 2. Calculate the area of protected areas in the Pomeranian Voivodeship.		

Work placement	Not applicable
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