

Subject card

Subject name and code	The application of Geographic Information System (GIS) in nature research., PG_00146042						
Field of study	Biology						
Date of commencement of studies	October 2023	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	3	Language of instruction			Polish		
Semester of study	6	ECTS credits			2.0		
Learning profile	academic	Assessment form					
Conducting unit	Department of Plant Taxonomy and Nature Conservation -> Faculty of Biology -> Rector						
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		10.0		10.0	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 using cartographic modeling. Acquiring skills in working with a GPS device.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BIOLL3_W10] the graduate is familiar with the development and current state of knowledge and the latest trends in biology, as well as their relationship with other natural disciplines	The student is aware of the development and current state of knowledge as well as the latest trends in biology and indicates their relationship with other natural science disciplines such as: cartography, computer science.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
	BIOLL3_K04	The student is aware of responsibility for their own work and readiness compliance with the principles of teamwork and taking responsibility for tasks jointly carried out.	[SK8] observation of student's independent or team work
	BIOLL3_K03	The student is able to organize the work of a small team and demonstrates the ability to work effectively in a team.	[SK8] observation of student's independent or team work
	[BIOLL3_U05] the graduate is able to synthesise data from various sources and draw appropriate conclusions on this basis	The student synthesizes data from various sources (botanical and zoological data, habitat properties, location of protected areas) and draws appropriate conclusions on this basis.	[SU6] demonstration of practical skills [SU8] observation of student's independent or team work
	[BIOLL3_U04] the graduate can apply statistical methods and computer algorithms and techniques to describe phenomena and analyse biological data	The student applies basic statistical methods, algorithms and IT techniques such as map algebra, data interpolation methods to describe phenomena and analyze biological data.	[SU6] demonstration of practical skills [SU8] observation of student's independent or team work
	[BIOLL3_U03] the graduate is able to carry out simple tasks or research expertise typical of the biological sciences under the guidance of a supervisor	Student wykonuje proste projekty w systemach GIS, w tym wypełnia typowe bazy danych wykorzystywane do gromadzenia danych przyrodniczych na potrzeby ochrony przyrody.	[SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[BIOLL3_W12] the graduate knows and understands the principles of using IT tools for data analysis and interpretation of natural phenomena and processes	The student describes the principles of using Geographic Information Systems data analysis and interpretation of natural phenomena and processes.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion	
Subject contents	Work with QGIS and ArcGIS software. Definition and properties of maps. Geographic coordinate system and cartographic projection systems. Methods of preparing maps and presenting data. Properties of digital maps. Spatial data models and sources of data acquisition. Software modules and their use. Selection of visualization methods. Basic functions of vector and raster data analysis.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Practical skills test (QGIS).	51.0%	50.0%
	Practical skills test (ArcGIS).	51.0%	50.0%
Recommended reading	Basic literature	1. Urbański J. 2008. GIS w badaniach przyrodniczych. Wyd. UG. Gdańsk 2. Paślowski J. 2010. Wprowadzenie do kartografii i topografii. Wyd. Nowa Era, Warszawa.	
	Supplementary literature	1. Longley P.A., Goodchild M.F., Maguire D.J., Rhind D.W. 2008. GIS Teoria i praktyka. PWN, Warszawa 2. Urbański J. 1997. Zrozumieć GIS. Analiza informacji przestrzennej. PWN, Warszawa. 3. Manikowska Ślepowańska B., Lazarus M., Żółkoś K., Zbyryt A., Kitowski I., Jakubas D. Influence of landscape features on the location of grey heron Ardea cinerea colonies in Poland. C. R. Biologies 339 (2016) 507516	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. Preparing a map according to the given example. 2. Calculation of the area of forests/lakes/length of rivers occurring in a precisely defined area.		
Work placement	Not applicable		

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