University of Gdańsk

Subject card

Subject name and code	Geographical information systems, PG_00198081						
Field of study	Natural Resources Conservation						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2026/2027			
Education level	Bachelor's studies		Subject group	Obligatory subject group in the field of study 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	1		Language of instruction	Polish			
Semester of study	1		ECTS credits	3.0			
Learning profile	academic		Assessment form	credit			
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	45.0	0.0	0.0	45
	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	45		4.0	26.0	75	
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
[OZPL3_U03] The graduate is able to search for and use available sources of biological information, including electronic sources, and critically analyse them	The student searches for and uses available sources of biological information, including electronic databases and critically analyzes them.	[SU5] implementation of a problem task [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[OZPL3_W12] The graduate possesses knowledge of statistical methods and IT tools relevant to the field of study.	The student has knowledge of the use of IT tools for introducing, collecting, processing and visualizing nature spatial data.	[SW5] implementation of a problem task
[OZPL3_K01] The graduate is ready to recognise the limitations in his/her own knowledge and understands the need for continuous learning and development	The student knows the limits of their own knowledge and understands the need for constant learning and development.	[SK1] oral statement/conversation/ discussion [SK8] observation of student's independent or team work
[OZPL3_K07] The graduate is prepared to demonstrate responsibility for the equipment/ materials entrusted, respects the work of others and is ready to consciously apply the principles of savoir-vivre in life	The student is responsible for the entrusted equipment/materials (computer, GPS device).	[SK6] demonstration of practical skills [SK8] observation of student's independent or team work
[OZPL3_U05] The graduate is able to apply basic statistical methods and computer techniques and tools to describe phenomena and analyse biological data	The student applies basic statistical methods and IT techniques such as map algebra, data interpolation methods to describe phenomena and analyze biological data.	[SU5] implementation of a problem task [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[OZPL3_U07] The graduate is able to draw correct conclusions on the basis of analysis and synthesis of data from various sources	The student analyzes and synthesizes data from various sources (botanical, zoological, habitat properties, distribution of protected areas data) and draws appropriate conclusions on this basis.	[SU1] oral statement/conversation/ discussion [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[OZPL3_W10] The graduate possesses a comprehensive understanding of current issues in protection of natural resources and related fields	The student presents and describes contemporary problems in biology and disciplines related such as cartography and computer science.	[SW1] oral statement/ conversation/discussion [SW5] implementation of a problem task

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

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, WarszawaManikowska-Ślepowrońska 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	

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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