

**Subject card**

<b>Subject name and code</b>	GIS and Remote Sensing II - laboratory, PG_00204491						
<b>Field of study</b>	Geography						
<b>Date of commencement of studies</b>	October 2026	<b>Academic year of realisation of subject</b>			2027/2028		
<b>Education level</b>	Bachelor's studies	<b>Subject group</b>			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
<b>Mode of study</b>	full-time studies	<b>Mode of delivery</b>			at the university		
<b>Year of study</b>	2	<b>Language of instruction</b>			Polish		
<b>Semester of study</b>	3	<b>ECTS credits</b>			2.0		
<b>Learning profile</b>	academic	<b>Assessment form</b>			credit		
<b>Conducting unit</b>	Geographic Information System (GIS) Laboratory -> Faculty of Oceanography and Geography -> Rector						
<b>Name and surname of lecturer (lecturers)</b>	<b>Subject supervisor</b>		dr Maciej Markowski				
	<b>Teachers</b>						
<b>Lesson types</b>	<b>Lesson type</b>	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	<b>Number of study hours</b>	0.0	0.0	20.0	0.0	0.0	20
	E-learning hours included: 0.0						
<b>Learning activity and number of study hours</b>	<b>Learning activity</b>	<b>Participation in didactic classes included in study plan</b>		<b>Participation in consultation hours</b>		<b>Self-study</b>	<b>SUM</b>
	<b>Number of study hours</b>	20		2.0		28.0	50
<b>Subject objectives</b>	<ul style="list-style-type: none"> <li>- Familiarization with the capabilities and practical applications of GIS</li> <li>- Learning the principles of cartographic image composition</li> <li>- Understanding selected methods of graphic analysis</li> <li>- Ability to analyze geographic data using GIS</li> <li>- Presentation of results, map composition, and printing</li> <li>- Proficiency in GIS software</li> </ul>						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[GEOGRL3-K02] is prepared to bear full responsibility for the actions taken and adhere to the principles of professional ethics and principles of intellectual honesty, is aware of the importance of a professional approach in professional life	The student ensures the transparency of the research process by documenting data sources and methodology (metadata), thereby guaranteeing the reproducibility and integrity of the presented cartographic results.	[SK5] implementation of a problem task
	[GEOGRL3-W06] knows advanced methods of acquiring, processing, and compiling geographic environmental data, as well as methods of analyzing and interpreting such data	The student independently acquires, processes, and analyzes spatial data in a GIS environment, creating databases using both spatial and non-spatial data and applying various metadata formats.	[SW4] test/exam - oral or written
	[GEOGRL3-U03] can plan and conduct, independently and as part of a team, simple research in the field of geography under the supervision of a scientific advisor, based on the necessary information from professional literature and other sources	The student can plan and conduct GIS analyses based on diverse spatial data sources, both individually and collaboratively in a team.	[SU5] implementation of a problem task
	[GEOGRL3-U04] can apply field and laboratory methods and research tools, spatial analysis methods, and methods of presenting research results in the field of geography, assess their usefulness for tasks in which the application goal of geography can be realized	The student applies spatial analysis methods and data visualization tools to effectively present GIS research results and evaluates their usefulness in addressing spatial problems.	[SU5] implementation of a problem task
Subject contents	<p>B.6 Georectification of raster and vector sources  B.7 Importing and processing data in various formats  B.8 Exploration and analysis of spatial data  B.9 Modeling vector data in interpolation  B.10 Digital Elevation Model (DEM) analysis  B.11. GIS in Open-Source Software</p>		
Prerequisites and co-requisites	Completion of the course GIS and Remote Sensing I		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test	51.0%	40.0%
	practical and theoretical exercises	51.0%	60.0%
Recommended reading	Basic literature	<ul style="list-style-type: none"> <li>Davis D., 2004, GIS dla każdego, Wydawnictwo Mikom, Warszawa.</li> <li>Gotlib D., Iwaniak A., Olszewski R., 2007. GIS. Obszary zastosowań. PWN Warszawa.</li> <li>Urbański J., 2012, GIS w badaniach przyrodniczych (ebook), Centrum GIS, Uniwersytet Gdański.</li> <li>Głazewski A., Kałamucki K., Kowalski P.J., Stankiewicz M., 2015, Podstawy wizualizacji kartograficznej. Wydawnictwo UMCS, Lublin.</li> </ul>	
	Supplementary literature	<ul style="list-style-type: none"> <li>Tomlinson R., Thinking about GIS, 2013, Esri Press.</li> <li>Zwoliński Z. (red.), 2010, GIS woda w środowisku. Bogucki Wydawnictwo Naukowe, Poznań.</li> <li>Markowski M., Golus W., Kwidzińska M., 2015, Aplikacyjność metod oceny wielkości opadów zasilających oczka Pomorza Gdańskiego [w:] D. Absalon, M. Matysik, M. Ruman [red.] Nowoczesne metody i rozwiązania w hydrologii i gospodarce wodnej, Komisja Hydrologiczna Polskiego Towarzystwa Geograficznego, Sosnowiec, s. 287-298.</li> <li>Bajkiewicz-Grabowska E., Markowski M., Lemańczyk K., 2016, Application of geoinformation techniques to determine zones of sediment resuspension induced by wind waves in lakes (using two lakes from Northern Poland as examples), Limnological Review 1/2016.</li> </ul>	
	eResources addresses		

Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"><li>• What does the process of georeferencing raster and vector data involve, and for what purpose is it performed?</li><li>• What are the basic stages of importing and processing spatial data in different formats?</li><li>• What types of analyses can be performed using a Digital Elevation Model (DEM), and what are they used for?</li></ul>
Work placement	Not applicable

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