

Subject card

Subject name and code	GIS - laboratory exercises, PG_00131519						
Field of study	Marine Hydrography						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2027/2028		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Subject group related to practical vocational preparation		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		3.0		
Learning profile	practical		Assessment form				
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Maciej Markowski				
	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		2.0		30.0	77
Subject objectives	Conveying knowledge in the following areas: • Familiarization with the capabilities and practical applications of GIS. • Understanding the principles of cartographic image composition. • Acquiring theoretical and practical knowledge in the design and use of GIS. • Learning selected methods of graphic analysis. • Gaining skills in performing geographic data analyses using GIS. • Presenting results, composing maps, and creating prints. • Acquiring the ability to use GIS software ArcGIS/ArcGIS Pro or QGIS at a basic to intermediate level.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[HML3-U11] use navigation devices, means of technical observation and communication as well as measuring instruments, as well as apply in practice various techniques of measurement and observation in the field of professional activity related to the field of study	Is capable of: - Using navigation devices, technical observation and communication means, and measuring instruments, as well as practically applying various measurement and observation techniques in professional activities related to the field of study.	[SU2] presentation/project/paper/report
	[HML3-U05] when identifying, formulating and solving engineering tasks, integrate knowledge from various fields and disciplines and perceive their systemic and non-technical aspects, including ethical aspects	Is capable of: - Integrating knowledge from various fields and disciplines when identifying, formulating, and solving engineering tasks, recognizing their systemic and non-technical aspects, including ethical considerations.	[SU2] presentation/project/paper/report [SU4] test/exam - oral or written
	[HML3-K03] apply economic and legal conditions in the aspect of professional activity related to the field of study	Is capable of: - Working independently or as part of a team, taking responsibility for their own work and for tasks carried out jointly.	[SK8] observation of student's independent or team work
	[HML3-U12] use engineering standards and norms and apply technologies specific to the field of study	Is capable of: - Utilizing engineering standards and norms, and applying technologies relevant to the field of study.	[SU2] presentation/project/paper/report [SU4] test/exam - oral or written
	[HML3-U04] use analytical, simulation and experimental methods to identify, formulate and solve engineering tasks	Is capable of: - Utilizing analytical, simulation, and experimental methods to identify, formulate, and solve engineering tasks.	[SU2] presentation/project/paper/report [SU4] test/exam - oral or written
Subject contents	Exercise Topics: 1. Understanding basic concepts in GIS and becoming familiar with the most commonly used GIS software. 2. Familiarizing with the concept of metadata and acquiring skills in obtaining, processing, and creating metadata for spatial data. 3. Creating map compositions according to cartographic principles. 4. Georeferencing and georectifying raster and vector sources and using them to acquire spatial data. 5. Acquiring and processing vector data. 6. Importing and processing data in various formats (e.g., CSV, XLS, DBF, SQLite, Shapefile, FGDB). 7. Exporting and exchanging vector and raster data in commonly used formats. 8. Performing spatial analyses (vector, raster) and presenting the obtained results through map compositions using methods such as choropleth maps, cartograms, 3D models, interpolation etc. 9. Creating file-based databases as an element of designing GIS systems.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	51.0%	40.0%
	Projects	51.0%	60.0%
Recommended reading	Basic literature	1. Bielecka, E.: "Systemy informacji geograficznej. Teoria i zastosowania." Wyd. PJWSTK, Warsaw, 2006. 2. Kraak, M. J., Ormeling, F.: "Kartografia: wizualizacja danych przestrzennych." PWN, Warsaw, 1998. 3. Litwin, L., Myrda, G.: "Systemy informacji geograficznej. Zarządzanie danymi przestrzennymi w GIS, SIP, SIT, LIS." Helion, Gliwice, 2005. 4. Longley, P. A., Goodchild, M. F., Maguire, D. J., Rhind, D. W.: "GIS. Teoria i praktyka." PWN, Warsaw, 2006. 5. Davis, D.: "GIS dla każdego." Wydawnictwo Mikom, Warsaw, 2004. 6. Urbański, J.: "Zrozumieć GIS. Analiza informacji przestrzennej." PWN, Warsaw, 1997.	
	Supplementary literature	1. GOODCHILD M. F., LONGLEY P. A.: Geospatial Analysis - a comprehensive guide. 2nd edition, 2006-2008. 2. IHO Special Publication No. 52, 1996. 3. IHO Special Publication No. 57, 1996. 4. ISO/TC211 Standardy serii 19100, 1998.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	1. What are the steps for importing data from a CSV file into GIS? 2. How to perform a buffering analysis in GIS? 3. What are the steps for creating a 3D terrain model? 4. What are the steps for creating an SQLite database in GIS 5. Example of creating a thematic map in GIS. 6. What are the steps in the georeferencing process for a raster image?		

Work placement	Not applicable
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