University of Gdańsk

Subject card

Subject name and code	GIS - design laboratory, PG_00135508		
Field of study	Physical geography and geoinformation		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	postgraduate studies	Subject group	Obligatory subject group in the field of study
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	3.0
Learning profile	academic	Assessment form	
Conducting unit	Pracownia Systemów Informacji Geograficznej - GIS -> Faculty of Oceanography and Geography		
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	15.0	30.0	90

Subject objectives

1. Acquisition of skills by course participants in using and integrating GIS and ETL tools with advanced statistical and spatial analysis capabilities.
2. Improvement of skills in presenting and analyzing data for creating thematic layers related to natural, economic, and social phenomena, as well as spatiotemporal information.
3. Integration of knowledge and skills for project implementation in the fields of meteorology and climatology, hydrology, limnology, or geomorphology.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[GFGMU2_U04] describe and analyze the causes and course of physical and geographical processes and phenomena, selecting and applying advanced techniques and research tools in the field of statistical and geoinformation methods, interpreting the results, using theoretical knowledge to formulate own opinions and conclusions	The student can describe and analyze physical geographical processes and phenomena, skillfully selecting and applying advanced research techniques and tools in the field of geoinformatics methods, interpreting the results obtained from these methods, and then using theoretical knowledge to formulate his own opinions and conclusions. Contents: 1-5.	[SU2] presentation/project/paper/ report
	[GFGMU2_K03] accepting responsibility for group work assuming various roles in it, participating in preparation of scientific projects, taking responsibility for the equipment and safety rules, active developing of professional competences and knowledge in Earth and environmental sciences and geoinformation, including interdisciplinarity, as well as developing the principles of professional ethics, respecting copyright rules	The student is ready to take responsibility for group work by assuming various roles within it, participating in the preparation of scientific projects, actively expanding professional competencies and updating knowledge in the field of geoinformation, as well as adhering to and developing professional ethics, including respecting copyright in his own and others' work. Contents: 1-5.	[SK2] presentation/project/paper/ report
	[GFGMU2_K01] critical assessment of knowledge in the field of Earth and environmental sciences and geoinformation, its completion and verification through critical analysis of scientific literature	The student is ready to critically assess his knowledge in the field of geoinformation, to supplement and verify it by critically engaging with the relevant literature. Contents: 1-5.	[SK2] presentation/project/paper/ report
	[GFGMU2_W03] advanced issues in the theory of geographic information systems, basics of organization and operation of spatial information infrastructures and possibilities of using geoinformatics tools in physical geography	The student knows and understands advanced topics in the theory of geographic information systems, fundamentals of spatial information infrastructure organization and operation, as well as the potential applications of geoinformatic tools in physical geography. Contents: 2-5.	[SW2] presentation/project/paper/ report
	[GFGMU2_W04] theoretical foundations of research methods used in physical geography and closely related sciences, descriptive and mathematical statistics, as well as advanced methods of analyzing spatial phenomena	The student knows and understands the theoretical foundations of research methods applied in physical geography and closely related sciences, as well as advanced methods for analyzing spatial phenomena. Contents: 2-5.	[SW2] presentation/project/paper/ report
	[GFGMU2_U02] precisely and appropriately use terminology in the field of physical geography and geoinformation in oral statements and written works	The student can fluently and appropriately apply the terminology of physical geography and geoinformation in oral presentations and written work. Contents: 1-5.	[SU2] presentation/project/paper/ report
	[GFGMU2_W05] principles of planning field and laboratory research using techniques and research tools used in geomorphology, hydrology and climatology, as well as principles of operating equipment and devices used to obtain and process digital geographic information in accordance with health and safety principles	The student knows and understands the principles of operating equipment and devices used for acquiring and processing digital geographic information. Contents: 2-5.	[SW2] presentation/project/paper/ report

Subject contents	
	1. Selection and conceptual preparation of project work. 2. Data gathering, processing, and integration for project needs using GIS and/or ETL tools and/or scripting languages. 3. Preparation and execution of spatial analyses using vector and raster models. 4. Presentation of analysis results using advanced methods of visualization and result publication. 5. Interpretation of obtained results within the framework of the project being carried out.

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="2"></td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>practical exercises</td><td>51.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>- Malczewski J., Jaroszewicz J., 2018, Podstawy analiz wielokryterialnych w systemach informacji geograficznej, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa.

- Medyńska-Gulij B., 2024, Kartografia - geomatycznie i geomedialnie, Wydawnictwo Naukowe PWN, Warszawa.

- Zwoliński, Zb. (red.), 2009, GIS - platforma integracyjna geografii. Bogucki Wydawnictwo Naukowe, Poznań.Longley P.A.,

- Goodchild M.F., Maguire D.J., Rhind D.W., 2010, Geographic Information Systems and Science. Wiley.</td></tr>
<tr><td>Supplementary literature</td><td>- 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, 16: 3-14.

- Ustrnul Z., Czekierda D., 2006, Metody Analizy Przestrzenno-Czasowej w Badaniach Klimatologicznych (Na Przykładzie Polski), Roczniki Geomatyki IV.2, 147160.

- Szymanowski, M., Kryza M., 2012, The Application of Local Regression Residual Kriging for Spatial Interpolation of Annual Mean Air Temperature in Poland. Przegląd Geofizyczny, 57.1, 7384.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">Creating a multi-criteria analysis model - suitability analysis.

Creating a map atlas - map series.</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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