GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Geographic information system (GIS), PG_00064987		
Field of study	Transport and Logistics		
Date of commencement of studies	February 2026	Academic year of realisation of subject	2026/2027
Education level	second-cycle 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	1	Language of instruction	Polish
Semester of study	2	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Division of Applied Computer Science -> Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Aleksander Kniat	
	Teachers	dr inż. Aleksander Kniat	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	30.0	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	8.0	22.0	75

Subject objectives

Presentation of geographic information analysis and synthesis methods and its practical usage.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W03] demonstrates structured and theory supported knowledge encompassing key issues in the field of Transport and Logistics, enabling developement and synthesis of transport systems and processes	Student identifies where it is possible to apply GIS tools for maritime transportation.	[SW2] Assessment of knowledge contained in presentation
[K7_W04] demonstrates knowledge encompassing selected issues in the field of advanced detailed knowledge, particularly in the scope of methods, techniques and tools specific to Transport and Logistics	Student understands how to apply tools and methods of GIS system to design a maritime transportation object or system.	[SW3] Assessment of knowledge contained in written work and projects
[K7_U01] utilizes acquired methods, tools and mathematical models for analysis and evaluation of transport systems and processes	Student understands how to perform a spatial analysis using GIS system concerning exploitation of maritime transportation objects or systems.	[SU1] Assessment of task fulfilment

Subject contents

Course content – lecture

Definition and applications of Geographic Information Systems (GIS).
Data in GIS system: spatial data and attributes.
Storing and using data, data sources.
Vector vs. raster objects.
Coordinate's systems.
Standard data formats.
Vizualization: maps, layers, symbols, labels.
Data classification.
Data analysis and synthesis, processing data from different sources, marcos and programming langauges.
Graphs and algorithms in spatial analysis (object location, shortest path)
Spatial data analysis examples in QGIS.

Course content – project

Collecting data and completing a project concerning spatial analysis utilizing network analysis

<table>
<tr><td>Prerequisites and co-requisites</td><td>Basic knowledge about operating system and file system usage.

Basic knowledge about programming.</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>project</td><td>60.0%</td><td>100.0%</td></tr>
</table>
</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Davis D. GIS dla każdego 2009
Gaździcki J. Systemy Informacji przestrzennej 1990
Kadaj R. "Polskie uklady wspolrzednych w geodezji" 2000</td></tr>
<tr><td>Supplementary literature</td><td>Litwin L., Myrda G., Systemy Informacji Geograficznej. Zarządzanie danymi przestrzennymi w GIS, SIP, SIT, LIS. 2005</td></tr>
<tr><td>eResources addresses</td><td>Supplementary
https://qgis.org - Home page of QGIS - GIS program
https://gis-support.pl/ - Web page with GIS data</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>Buffer creation

Extracting by location

Network analysis: shortest path, service area</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
</table>

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