GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Geographic Information Systems, PG_00065955		
Field of study	Green Technologies		
Date of commencement of studies	February 2027	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	1	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Geoinformatics -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Marcin Kulawiak	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	0.0	30

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	30	5.0	15.0	50

Subject objectives

Teaching students the basic knowledge and practical skills in the field of Geographic Information Systems (GIS), which includes both the use of GIS software as well as acquisition and processing of geographic data.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U05] formulates and tests hypotheses related to engineering problems and simple research problems concerning environmental protection, the use of new environmental protection technologies and analytical procedures	Student knows how to use various GIS tools to conduct and visualize results of a spatial data analysis.	[SU4] Assessment of ability to use methods and tools
[K7_W02] has knowledge of protecting soil, air and water from pollution	Student learns methods of air, soil and water pollution monitoring and simulation using GIS tools.	[SW1] Assessment of factual knowledge
[K7_U03] solves design tasks in the field of environmental protection technologies, taking into account their non-technical, environmental, economic and legal aspects as well as occupational health and safety principles	Student can use GIS tools to analyse spatial data from various sources.	[SU4] Assessment of ability to use methods and tools
[K7_K01] is aware of the problems related to the profession of engineer, is able to assess the effects of the activities performed	Student can select the proper GIS tool to complete a given task.	[SK2] Assessment of progress of work

Subject contents

Course content – lecture

1. Definition, structure and basic concepts related to GIS.
2. Examples of GIS applications.
3. Data models in GIS.
4. Vector geographic data model.
5. Raster data model in GIS.
6. Acquiring and storing three-dimensional information in GIS.
7. Basic algorithms of vector data processing.
8. Basic algorithms for processing raster data.
9. Open standards for geographic data transfer.

<table>
<tr><td>Prerequisites and co-requisites</td><td></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>Laboratory</td><td>60.0%</td><td>50.0%</td></tr>
<tr><td>Lecture exam</td><td>60.0%</td><td>50.0%</td></tr>
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<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. Longley P., Goodchild M., Maguire D., Rhind D. "Geographic Information Systems and Science", John Wiley & Sons Ltd., West Sussex 2015</td></tr>
<tr><td>Supplementary literature</td><td>1. Enhancing a City via GIS: Issues and Challenges, Kulawiak M. (Ed). 2015. Croatian Information Technology Society, GIS Forum ISBN 978-953-6129-53-9</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Creation of vector data in GIS.

Processing of vector data in GIS.

Processing of raster data in GIS.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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