



Subject card

Subject name and code	GEOGRAPHIC INFORMATION SYSTEMS, PG_00065979						
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		English		
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).						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[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		
	[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_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_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		
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.						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory	60.0%	50.0%
	Written exam	60.0%	50.0%
Recommended reading	Basic literature	Longley P.A., Goodchild M.F., Maguire D.J., and Rhind D.W., Geographic Information Systems and Science, John Wiley & Sons, 2015, ISBN: 0471892750.	
	Supplementary literature	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	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Creation of vector data in GIS. Processing of vector data in GIS. Processing of raster data in GIS.		
Practical activities within the subject	Not applicable		

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