



Subject card

Subject name and code	Spatial Data Processing and Presentation, PG_00047779						
Field of study	Informatics						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2025/2026		
Education level	second-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Part-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Geoinformatics -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Marcin Kulawiak				
	Teachers		dr hab. inż. Marcin Kulawiak				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	12.0	0.0	0.0	15.0	0.0	27
	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	27		10.0		63.0	100
Subject objectives	Students know the basics of spatial data processing: basic types, storage, and usage in Geographical Information Systems (GIS).						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_U41] can select methods of modelling and analysis of information systems and applications using selected elements of theoretical computer science and modern programming tools	The student can create a simple application presenting a three-dimensional analysis of spatial data.			[SU1] Assessment of task fulfilment		
	[K7_W06] Knows and understands, to an increased extent, the basic processes taking place in the life cycle of devices, facilities and technical systems.	The student knows and understands the evolution of methods of three-dimensional visualization of spatial data.			[SW1] Assessment of factual knowledge		
	[K7_U02] knows and understands, to an increased extent, selected laws of physics and physical phenomena, as well as methods and theories explaining the complex relationships between them, constituting advanced general knowledge in the field of technical sciences related to the field of study	The student knows and understands the principles of computer spatial graphics generation.			[SW3] Assessment of knowledge contained in written work and projects		
	[K7_U02] can perform tasks related to the field of study as well as formulate and solve problems applying recent knowledge of physics and other areas of science	The student is able to create a simple system of three-dimensional visualization of spatial data.			[SU1] Assessment of task fulfilment		
[K7_U07] can apply advanced methods of process and function support, specific to the field of study	The student is able to use available libraries and applications to realize three-dimensional visualization of spatial data.			[SU4] Assessment of ability to use methods and tools			

Subject contents	Spatial data: types, Geographical Information systems, data models, visualization, tools; 3D Graphics: rendering techniques, scene graph, world and local coordinate systems, colors, textures, materials, lights, particle systems, programmable pipeline - shaders, OO design of 3D applications, WebGL,		
Prerequisites and co-requisites	Recommended: some experience in object oriented programming		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written exam	60.0%	50.0%
	Project	60.0%	50.0%
Recommended reading	Basic literature	A. Abdul-Rahman, M. Pilouk: Spatial Data Modelling for 3D GIS R. Wright, B Lipchak, N. Haemel: OpenGL SuperBible	
	Supplementary literature	No requirements	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Building three-dimensional data visualization using anaglyph.  Creating a three-dimensional geographic information system using Web technologies.		
Work placement	Not applicable		