



## Subject card

Subject name and code	Spatial Data Processing Technologies, PG_00048291						
Field of study	Informatics						
Date of commencement of studies	February 2025	Academic year of realisation of subject			2024/2025		
Education level	second-cycle studies	Subject group			Optional subject group Specialty subject group Subject group related to scientific research 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			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. Zbigniew Łubniewski					
	Teachers	dr inż. Marek Kulawiak dr hab. inż. Zbigniew Łubniewski dr hab. inż. Marcin Kulawiak					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	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		8.0		47.0	100
Subject objectives	Learning by students on knowledge and practical skills on technologies for spatial data acquisition, representation and processing						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_W10] knows and understands, to an increased extent, the basic processes occurring in the life cycle of equipment, objects and technical systems, as well as methods of supporting processes and functions, specific to the field of study	The students knows and understands, to an increased extent, the architecture and technologies of modern solutions in spatial data processing, and is prepared to develop, maintain and modify software intended for this purpose.	[SW1] Assessment of factual knowledge
	[K7_U07] can apply advanced methods of process and function support, specific to the field of study	The student can use, and also develop by himself, the software for specific tasks in spatial data processing.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
	[K7_W02] 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 has advanced knowledge on technology used in acquisition, representing, processing, analysis, presentation and sharing of geodata	[SW1] Assessment of factual knowledge
	[K7_K02] is ready to provide critical evaluation of received content and to acknowledge the importance of knowledge in solving cognitive and practical problems	The student critically evaluates the received contents and recognizes the role of knowledge in solving problems in the area of geospatial data processing.	[SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice
Subject contents	Introduction to GIS, definitions, basic functionality, data types and sources, popular GIS software (Quantum GIS, GRASS, ArcGIS, ER Mapper, other), standards for spatial data representation: shapefile, GML, KML, WMS, WFS, WCS, CSW, satellite Earth observation data: Earth observing satellites (series, programs), data formats, processing methods, laser 3D scanning data and processing methods, review of open technologies for spatial data processing (GeoTools, Geoserver, OpenLayers, GeoEXT, Nominatim, Routino, Google Maps API, Cesium), raster and vector databases, SQL spatial extensions, vector data processing in PostGIS		
Prerequisites and co-requisites	No requirements		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Practical exercise	60.0%	50.0%
	Midterm colloquium	60.0%	20.0%
	Written exam	60.0%	30.0%
Recommended reading	Basic literature	1. Longley P., Goodchild M., Maguire D., Rhind D. "Geographic Information Systems and Science", John Wiley & Sons Ltd., West Sussex 2005 2. Richards J. "Remote Sensing Digital Image Analysis", Springer-Verlag Berlin Heidelberg 1986 and 1993	
	Supplementary literature	No requirements	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Not provided.		
Work placement	Not applicable		

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