GDAŃSK UNIVERSITY OF TECHNOLOGY

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 observating 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-Vergal 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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