GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Three-dimensional Visualisation of Spatial Data, PG_00038897		
Field of study	Space and Satellite Technologies, Space and Satellite Technologies		
Date of commencement of studies	February 2023	Academic year of realisation of subject	2023/2024
Education level	second-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
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 inż. Marek Kulawiak dr hab. inż. Marcin Kulawiak	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	15.0	0.0	45

E-learning hours included: 0.0

Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=1327
Adresy na platformie eNauczanie:
Trójwymiarowa Wizualizacja Danych Przestrzennych (TKiS) - Moodle ID: 12936
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=12936

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	0.0	0.0	45

Subject objectives

The goal is to teach students the manual as well as programming methods of 3D spatial data visualization.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_U08	Student is able to implement a three-dimensional Geographical Information System and to create a three-dimensional simulation of the movement of objects in the Earth's orbit.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment
K7_W12	Student has the knowledge on representation and visualisation of spatial data.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
[K7_K03] Can analyse and implement assigned tasks while maintaining high technical standards. Is able to work and interact in a group, taking on different roles. Adheres to the principles of professional ethics and respects the diversity of views and cultures.	Student can implement assigned tasks from the area covered by this course while maintaining high technical standards and deing prepared to co-operate with others.	[SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice [SK4] Assessment of communication skills, including language correctness [SK3] Assessment of ability to organize work

<table>
<tr><td>Subject contents</td><td>Genesis and basics of 3D graphics

Methods of 3D data visualization

Coordinate systems for spatial data

Three-dimensional data formats

Selected elements of the OpenGL standard

3D graphics packages on the Java platform

3D graphics in Web browsers

Acquisition of high quality 3D data using Agisoft Photoscan</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Basic knowledge of Java and Javascript programming languages.</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>33.0%</td></tr>
<tr><td>Exam</td><td>60.0%</td><td>34.0%</td></tr>
<tr><td>Project</td><td>60.0%</td><td>33.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Bruce Eckel, Thinking in Java (4th edition)
Richard S. Wright, Benjamin Lipchak, Nicholas Haemel: OpenGL SuperBible: Comprehensive Tutorial and Reference Addison-Wesley Professional; 5 edition
Preston Prescott, JavaScript Programming: A Beginners Guide to the Javascript Programming Language</td></tr>
<tr><td>Supplementary literature</td><td>none</td></tr>
<tr><td>eResources addresses</td><td>Trójwymiarowa Wizualizacja Danych Przestrzennych (TKiS) - Moodle ID: 12936
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=12936</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>Creating a 3D GIS using HTML5

Generating a 3D representation of a physical object using photogrammetry</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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