GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00043299		
Field of study	Coastal and Offshore Engineering, Coastal and Offshore Engineering		
Date of commencement of studies	February 2022	Academic year of realisation of subject	2022/2023
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study 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	2	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Geodesy -> Faculty of Civil and Environmental Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Krystyna Michałowska	
	Teachers	dr inż. Krystyna Michałowska	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	15.0	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	5.0	25.0	75

Subject objectives

Introduction to methods of remote data acquisition, digital image processing techniques and the creation of selected remote sensing studies.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_U11	The student has basic skills in digital processing of remote sensing data. The student is able to use methods of image data classification, calculating indicators, color compositions to create thematic maps.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
K7_W02	The student has knowledge of the physical basics of remote sensing. Knows selected methods of acquiring data from the air and satellite ceiling. The student has a basic knowledge of the methods of digital processing and analysis of aerial and satellite images. The student has knowledge of the methods of creating basic remote sensing products.	[SW1] Assessment of factual knowledge
K7_U05	The student has skills in the use of remote sensing methods and technologies for information extraction and data acquisition to build thematic databases.	[SU4] Assessment of ability to use methods and tools

<table>
<tr><td>Subject contents</td><td>1. Basics of electromagnetic radiation, multispectral image, spectral curve, vegetation index, spectral and radiometric range and resolution, spatial resolution.

2. Types of remote sensing data. Data sources and methods of obtaining remote sensing data. Passive and active methods. Sentinel and Landsat systems

3. Simple operations on spectral channels. Spectral compositions - selection of channels for colored compositions, development of normalized vegetation index, humidity index, etc., interpretation of results.

4. Development of thematic maps.

5. Classification of multispectral images, unsupervised / supervised classification.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></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>Report 1</td><td>70.0%</td><td>20.0%</td></tr>
<tr><td>Report 3</td><td>60.0%</td><td>20.0%</td></tr>
<tr><td>Report 2</td><td>60.0%</td><td>20.0%</td></tr>
<tr><td>Control work</td><td>51.0%</td><td>40.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Adamczyk J., Będkowski K .: Digital methods in remote sensing. SGGW publisher. Warsaw 2005.
Kurczyński Z .: Aerial and satellite imaging of the Earth; Publishing House of Warsaw University of Technology, Warsaw 2006,
Sanecki J. (red): Remote sensing: data acquisition. WNT, 2006.</td></tr>
<tr><td>Supplementary literature</td><td>Bernasik J .: Lectures on photogrammetry and remote sensing, Kraków 2008,
Mularz S .: The basics of remote sensing. Introduction to GIS. PK Publishing House, 2004.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>Performing the classification of multispectral images, the course of unsupervised / supervised classification on the example of data concerning the Baltic zone.Development of thematic maps with the use of satellite remote sensing data.Performance of spectral composition - selection of channels for color compositions, development of a normalized vegetation index, humidity index, etc., interpretation of the results based on the data on the Baltic Sea.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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