GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Remote Sensing, PG_00061767		
Field of study	Geodesy and Cartography		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2024/2025
Education level	first-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	2	Language of instruction	Polish
Semester of study	4	ECTS credits	4.0
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. Anna Sobieraj-Żłobińska	
	Teachers	dr inż. Anna Sobieraj-Żłobińska mgr inż. Małgorzata Andrzejewska	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	15.0	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	10.0	45.0	100

Subject objectives

Getting to know the methods of remote data acquisition, digital image processing techniques and creating selected remote sensing studies.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U14] can apply the necessary skills to conduct independent work in the field of topographic surveys along with the elaborating of results, geodetic investment service, surveying and inventory measurement, photogrammetry and remote sensing, and making the maps and elaborations for legal purposes including delimitation and subdivision of real estate	The student has basic skills in digital processing of remote sensing data. He can use the methods of image classification, calculation of indices, color compositions to create thematic maps.	[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools
[K6_U08] can use modern measurement technologies to solve common tasks in 3D modeling	The student has knowledge and skills in the use of remote sensing methods and technologies for information extraction and data acquisition for the construction of thematic databases.	[SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment
[K6_W07] has a well-established knowledge and understands concepts in the field of engineering geodesy including the use of calculations and measurements methods carried out with the use of geodetic instruments and photogrammetric and remote sensing technologies related to geodetic support for investment, surveying and inventory measurements and photogrammetry with remote sensing	The student has knowledge of the physical basics of remote sensing. He knows selected methods of acquiring data from the airborne and satellite platforms. He also has basic knowledge of digital processing and analysis of aerial and satellite images. He has knowledge of the methods of creating basic remote sensing products.	[SW1] Assessment of factual knowledge

Subject contents	Fundamentals of: electromagnetic radiation, multispectral image, spectral characteristics, vegetation index, spectral and radiometric range and resolution, spatial resolution.Types of remote sensing data. Data sources and remote sensing data acquisition methods. Passive and active methods. Sentinel and Landsat systems.Simple operations on spectral channels. Spectral compositions - selection of channels for color compositions, development of a normalized vegetation index, humidity index, etc., interpretation of the results.Development of thematic maps.Classification of multispectral images. Process of unsupervised / supervised classification.
Prerequisites and co-requisites	Basic knowledge of mathematics and physics.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
exam	60.0%	40.0%
report	60.0%	25.0%
project	60.0%	35.0%

Recommended reading

Basic literature	Adamczyk J., Będkowski K.: Metody cyfrowe w teledetekcji. Wydawnictwo SGGW, Warszawa 2005 Kurczyński Z.: Lotnicze i satelitarne obrazowanie Ziemi; Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2006 Sanecki J. (red): Teledetekcja: Pozyskiwanie danych. WNT, 2006
Supplementary literature	Bernasik J.: Wykłady z fotogrametrii i teledetekcji, Kraków 2008, Mulasz S.: Podstawy z teledetekcji. Wprowadzenie do GIS. Wydawnictwo PK, 2004
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	Interpretation of the NDVI valueDevelopment of a thematic map for a selected area using the results of classification
Work placement	Not applicable

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