



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	<table border="1" data-bbox="448 524 1487 557"> <thead> <tr> <th data-bbox="448 524 794 557">Subject passing criteria</th> <th data-bbox="794 524 1141 557">Passing threshold</th> <th data-bbox="1141 524 1487 557">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 557 794 591">exam</td> <td data-bbox="794 557 1141 591">60.0%</td> <td data-bbox="1141 557 1487 591">40.0%</td> </tr> <tr> <td data-bbox="448 591 794 624">report</td> <td data-bbox="794 591 1141 624">60.0%</td> <td data-bbox="1141 591 1487 624">25.0%</td> </tr> <tr> <td data-bbox="448 624 794 658">project</td> <td data-bbox="794 624 1141 658">60.0%</td> <td data-bbox="1141 624 1487 658">35.0%</td> </tr> </tbody> </table>			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%
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	exam	60.0%	40.0%												
	report	60.0%	25.0%												
project	60.0%	35.0%													
Basic literature	<p data-bbox="794 665 1487 721">Adamczyk J., Będkowski K.: Metody cyfrowe w teledetekcji. Wydawnictwo SGGW, Warszawa 2005</p> <p data-bbox="794 788 1487 844">Kurczyński Z.: Lotnicze i satelitarne obrazowanie Ziemi; Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2006</p> <p data-bbox="794 896 1487 922">Sanecki J. (red): Teledetekcja: Pozyskiwanie danych. WNT, 2006</p>														
Supplementary literature	<p data-bbox="794 956 1487 990">Bernasik J.: Wykłady z fotogrametrii i teledetekcji, Kraków 2008,</p> <p data-bbox="794 1057 1487 1113">Mulasz S.: Podstawy z teledetekcji. Wprowadzenie do GIS. Wydawnictwo PK, 2004</p>														
eResources addresses	Adresy na platformie eNauczenie:														
Example issues/ example questions/ tasks being completed	Interpretation of the NDVI value Development of a thematic map for a selected area using the results of classification														
Work placement	Not applicable														

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