

Subject card

Subject name and code	Remote Sensing and Photogrammetry - laboratory classes , PG_00201122										
Field of study	Marine Hydrography										
Date of commencement of studies	October 2027	Academic year of realisation of subject		2028/2029							
Education level	Bachelor's studies	Subject group		Obligatory subject group in the field of study Subject group related to practical vocational preparation							
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		2.0							
Learning profile	practical	Assessment form		credit							
Conducting unit											
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Krzysztof Naus								
	Teachers										
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM				
	Number of study hours	0.0	0.0	25.0	0.0	0.0	25				
	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	25		3.0		22.0	50				
Subject objectives	1. Discussion of the Capabilities and Limitations of Using Photogrammetric Data, Multispectral and Hyperspectral Images, and LiDAR Data (Topographic and Bathymetric) in Hydrography, Acquired Remotely via Satellite, Aerial, and Unmanned Aerial Systems. 2. Introduction of Students to Photogrammetry Methods, Satellite Data Correction, and LiDAR Data Processing. 3. Developing Skills in Creating Bathymetric Maps and Extracting Shorelines Based on Satellite Data and Photogrammetric Data.										

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[HML3-U11] is able to use navigation devices, means of technical observation and communication as well as measuring instruments, as well as apply in practice various techniques of measurement and observation in the field of professional activity related to the field of study	is able to use remote sensing measurement instruments and apply various measurement techniques in professional practice related to their field of study	[SU8] observation of student's independent or team work
	[HML3-W05] knows and understands, at an advanced level, map construction and its symbolism	knows the structure of a map and its symbols	[SW3] text preparation/written work
	[HML3-U14] is able to use the applicable terminology in presenting and discussing problems related to the field of study	is able to use the relevant terminology when presenting and discussing issues related to their field of study	[SU8] observation of student's independent or team work
	[HML3-U07] is able to effectively use information and communication techniques, including utility programs to solve professional problems	is able to effectively use information and communication technologies, including software applications, to solve professional problems	[SU8] observation of student's independent or team work
	[HML3-K02] is ready to correctly determine the priorities in professional work for the implementation of a task specified by himself/ herself or others	is ready to correctly set priorities in their professional work to accomplish tasks set by themselves or others	[SK8] observation of student's independent or team work
	[HML3-K01] is ready to correctly identify and resolve professional dilemmas, especially in the aspects of security and entrusted property	is ready to correctly identify and resolve professional dilemmas, particularly those related to safety and the property entrusted to them	[SK8] observation of student's independent or team work
	[HML3-W08] knows and understands, at an advanced level, principles of operation and use of measuring instruments used in professional activities related to the field of study, including principles for their calibration and accuracy assessment	knows at an advanced level the principles of operation and use of measuring instruments employed in professional activities related to their field of study, including the principles of their calibration and accuracy assessment	[SW3] text preparation/written work
Subject contents	Laboratories: Satellite data acquisition, analysis of satellite data quality flags, creating water transparency maps, correction of reflections in high-resolution satellite imagery, processing and segmentation of point clouds in PIX4D software, generation, export, and processing of aerial orthophoto maps in ArcGIS and PIX4D, determination of shorelines using geodetic and photogrammetric methods, generation of TIN and GRID meshes using data collected during photogrammetric flights, LiDAR data processing.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	51.0%	100.0%
Recommended reading	Basic literature	1. ORCZYŃSKI Z.: Fundamentals of Photogrammetry. Publishing House of Warsaw University of Technology, 2003. 2. KURCZYŃSKI Z.: Aerial and Satellite Imaging of the Earth. Volumes I and II. Publishing House of Warsaw University of Technology, Warsaw 2006.	
	Supplementary literature	1. ADAMCZYK J., BĘDKOWSKI K.: <i>Digital Methods in Remote Sensing</i> . SGGW Publishing House, Warsaw 2007.	
	eResources addresses		

Example issues/ example questions/ tasks being completed	1. Case Study Analysis of a Hydrographic Survey Using Photogrammetric Data. 2. Processing and Correction of a Set of Satellite Images to Improve Data Quality.
Work placement	Not applicable

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