

Subject card

Subject name and code	Remote sensing and photogrammetry - laboratory exercises, PG_00131493						
Field of study	Marine Hydrography						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2025/2026		
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	<ol style="list-style-type: none"> 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-K01] correctly identify and resolve professional dilemmas, especially in the aspects of security and entrusted property	Is Prepared to: - Correctly Identify and Resolve Dilemmas Related to Professional Practice, Especially in Aspects of Safety and Entrusted Property.	[SK8] observation of student's independent or team work
	[HML3-U14] use the applicable terminology in presenting and discussing problems related to the field of study	Skills: - Utilize the Current Terminology in Presenting and Discussing Problems Related to the Field of Study.	[SU8] observation of student's independent or team work
	[HML3-U11] 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	Skills: - Operate Measurement Instruments in the Field of Remote Sensing, and Apply Various Measurement Techniques in Professional Activities Related to the Field of Study.	[SU8] observation of student's independent or team work
	[HML3-W08] 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	Knowledge: - Principles of Operation and Utilization of Measurement Instruments Used in Professional Activities Related to the Field of Study, Including Principles of Their Calibration and Accuracy Assessment.	[SW3] text preparation/written work
	[HML3-W05] map construction and its symbolism	Knowledge: - Map Construction and Its Symbolism.	[SW3] text preparation/written work
	[HML3-U07] effectively use information and communication techniques, including utility programs to solve professional problems	Skills: - Effectively Utilize Information and Communication Technologies, Including Software Applications, to Solve Professional Problems.	[SU8] observation of student's independent or team work
[HML3-K02] correctly determine the priorities in professional work for the implementation of a task specified by himself/ herself or others	Is Prepared to: - Correctly Determine Priorities in Professional Work to Achieve Tasks Set by Themselves or Others.	[SK8] observation of student's independent or team 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.		

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