University of Gdańsk

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 2026	Academic year of realisation of subject	2027/2028
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-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-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
[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-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-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-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-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

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.: *Digital Methods in Remote Sensing.* 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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