GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Photogrammetry , PG_00044805		
Field of study	Geodesy and Cartography		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2022/2023
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	3	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Geodesy -> Faculty of Civil and Environmental Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Paweł Tysiąc	
	Teachers	dr inż. Paweł Tysiąc	

Lesson types and methods of instruction							
	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	15.0	0.0	60
	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	60	9.0	31.0	100

Subject objectives	Preparing the student for the development and analysis of photogrammetric products by introducing theoretical issues and practical work related to the modern techniques and methods of photogrammetry.

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	Student is able to plan and acquire data and to develop them using photogrammetry methods.	[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 knows photogrammetric methods and technologies (types of cameras/ sensors), an example of software used to process data. The student knows the methods of measuring photopoints using classic geodetic equipment. The student understands the differences between the use of classical geodetic methods and photogrammetry for the purpose of measuring the geometry of objects.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
[K6_U08] can use modern measurement technologies to solve common tasks in 3D modeling	The student is able to make a 3D model of an object using (data acquisition, processing, model development, analysis) along with its interpretation. Knows the limitations of 3D modeling methods using photogrammetric techniques.	[SU1] Assessment of task fulfilment
[K6_U12] can perform topographic-bathymetric maps of ports, wharf and coastal areas, and can interpret marine charts and maps of coastal regions	The student is able to measure the coordinates of points (2D and 3D) on the basis of photogrammetry products.	[SU4] Assessment of ability to use methods and tools

Subject contents

1. Definition and history of photogrammetry.2. Advantages and disadvantages of using photogrammetric techniques and methods.3. Principles of central and orthogonal projection.4. Geometric principles used when developing the photogrammetric task.5. Cameras used in photogrammetry.6. Stereoscopic vision.7. Development of orthophotomap.8. Development of the 3D model9. Application of photogrammetry in other fields.10. Analysis of photogrammetry products.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Laboratory	60.0%	20.0%
Project	60.0%	20.0%
Examination	60.0%	20.0%
Test	60.0%	40.0%

Recommended reading

Basic literature	1.Kurczyński Z., Preuss P.: Podstawy fotogrametrii, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2003, 2.Kurczyński Z.: Lotnicze i satelitarne obrazowanie Ziemi; Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2006, 3. Kurczyński Z., Fotogrametria, PWN, Warszawa 2014,
Supplementary literature	1. Bernasik J.: Wykłady z fotogrametrii i teledetekcji.

	eResources addresses	Adresy na platformie eNauczanie: Fotogrametria III, I 2022 - Moodle ID: 27018 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=27018
Example issues/ example questions/ tasks being completed	1. Repeat the definition of photogrammetry.2. Briefly discuss the history of photogrammetry.3. Characterize the principles of the perspective and orthogonal projection.4. Briefly characterize the digital image.5. List and discuss cameras used in photogrammetry.6. Describe the procedure for developing an orthophotomap.7. Give examples of the use of photogrammetry in other fields.8. Discuss the geometrical principles to be used in the development of a photogrammetric task.9. Make a fly project.	
Work placement	Not applicable	