GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	ENGINEERING SURVEYING and GIS APPLICATIONS, PG_00060004						
Field of study	Environmental Engineering						
Date of commencement of studies	February 2023		Academic year of realisation of subject		2023/2024		
Education level	second-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	1		Language of instruction		English		
Semester of study	2		ECTS credits		3.0		
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				

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	0.0	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	5.0	30.0	80

Subject objectives	To get familiar with modern measuring methods used in engineering surveying. Get to know the elementary knowledge of photogrammetry and remote sensing and GIS.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_W12] has knowledge of contemporary and useful principles on data acquisition, filtration, processing and analysis	The student has knowledge on the methods and instruments used in geodesy and civil engineering. He knows local and global horizontal and vertical reference systems. Student has knowledge about coordinate systems, their transformation and projections. He has elementary knowledge on GNSS (Global Navigation Satellite System). Student has elementary knowledge on laser scanning, photogrammetry and remote sensing. He knows the basics of GIS Geographic Information System. He can acquire, process and analyze data.	[SW1] Assessment of factual knowledge
	[K7_U05] can rely on scientific sources for modern methods and technologies, and propose trends in the development of methods and rules for acquiring, filtering, processing and analyzing data	Student knows how to read and interpret the content of survey maps, orthophotos, aerial and satellite imagery developed in different technologies, can make a thematic map based on databases.	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools

Subject contents	Introduction to methods and instrument used in surveying. Advanced geodetic surveying in civil engineering. Local, global, horizontal and vertical datum systems. Coordinates, projections and transformation. Global Navigation Satellite Systems (GPS, Glonass, Galileo):architecture, functions, measurement techiques, geodetic receivers and its application in engineering surveying. Active Geodetic Network ASG-EUPOS: architecture, networking structure, functions, services, dataprocessing. Laser Scanning: idea, measurements, instruments, data processing. Fundamentals of GIS.
Prerequisites and co-requisites	Elementary knowledge on mathemathics and physics.

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	report	60.0%	10.0%
	practical task	60.0%	25.0%
	project	60.0%	35.0%
	test	60.0%	30.0%

Recommended reading	Basic literature	1.Crowford W. G.: Construction Surveying and Layout, Publishing Inc., 2003. 2.Łyszkowicz A., Łyszkowicz S.: Surveying, Oficyna Wydawnicza Politechniki Warszawskiej, 2010. 3.Department of the US Army:Engineering and Design NAVSTAR Global Positioning System Surveying, US Department of Defence, 2003 (available in internet). 4.International Hydrographic Organization,Manual oh Hydrography, Monaco, 2005. (available in internet). 5.Illinois Department of Transportation Burea of Design and Environmental:Surveying Manual, 2003. (available in internet). 6.Bossy J., Graszka W., Leonczyk M.:ASG-EUPOS The Polish Contribution to the EUPOS Project, 7. Symposium on GNSS, 2008 (available in internet). 8. Introduction to Remote Sensing, James B. Campbell, Guildford Press, 2008
	Supplementary literature	Wahr J.:Geodesy and Gravity, Samizdat Press, 1996 (available in internet). Advances in Environmental Remote Sensing Edited by Qihao Weng, 2011
	eResources addresses	Adresy na platformie eNauczanie: 2023_2024winter-Engineering Surveying and GIS Applications - Moodle ID: 25231 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=25231

Example issues/ example questions/ tasks being completed	Influence of obstacles on DOP values. Supervised and unsupervised classification as a tool for land cover analyses.

Work placement	Not applicable