GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Modern surveying, PG_00040228		
Field of study	Civil Engineering		
Date of commencement of studies	February 2024	Academic year of realisation of subject	2023/2024
Education level	second-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	1	ECTS credits	2.0
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. Tadeusz Widerski	
	Teachers	dr inż. Tadeusz Widerski dr inż. Karolina Makowska-Jarosik mgr inż. Kamil Łapiński	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	15.0	15.0	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	2.0	8.0	55

Subject objectives

Acquainting with modern measurement and calculation techniques used in geodesy (in relation to construction).

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U06] is able to choose proper tools (measuring, analytical or numerical) to solve engineering problems, to acquire, filtrate, proces and analyse data	The student has the ability to interpret and use the results of geodetic measurements in construction. The student has the ability to assess the accuracy of geodetic measurements.	[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information
[K7_W01] has knowledge of higher mathematics, physics and chemistry, which is a base of subjects, such as construction theory and advanced material technology	The student has knowledge of calculation methods related to geodesy in the field of equalization calculations and tasks in the field of surveying. The student has knowledge of optics needed when using geodetic measurement methods.	[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge

Subject contents

Advanced geodetic measurements, monitoring methods with the use of precise geodetic measurements in construction.Local, global, horizontal and vertical reference systems.Coordinates, projections and transformations.Global positional systems (GPS, Glonass, Galileo) architecture, functions, methods of precise measurements, geodetic receivers and their applications in construction. Active geodetic networks, ASG-EUPOS, architecture, network structure, functions, methods, services, data processing.Laser scanning: idea, measurements, instruments, data processing, applications in construction.Integrated geodetic measurements: monitoring structure, building displacement, analyzes, practical solutions.Technical leveling and precision adjustment with the use of optical, code and digital levels.Modern surveying instruments used in construction.

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="2"></td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Evaluation of the technical report from field classes.</td><td>60.0%</td><td>100.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. Łyszkowicz A., Geodezja, czyli sztuka mierzenia Ziemi, Wydawnictwo UWM w Olsztynie, 2006.
2. Specht C., System GPS, Biblioteka Nawigacji nr 1, Wydawnictwo Bernardinum, Pelplin, 2007.
3. Jagielski A., Podstawy geodezji inżynieryjnej - standardy, pomiary realizacyjne, trasy, objętości, Geodpis, 2012</td></tr>
<tr><td>Supplementary literature</td><td>1. Osada E., Wykłady z geodezji i geoinformatyki, cz. 1. niwelacja, Wydawnictwo UxLAN, Wrocław, 2016.
2. Osada E., Wykłady z geodezji i geoinformatyki, cz. 2. tachimetria, Wydawnictwo UxLAN, Wrocław, 2016.
3. Osada E., Wykłady z geodezji i geoinformatyki, cz. 3. osnowy geodezyjne, Wydawnictwo UxLAN, Wrocław, 2016.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">Field measurements with the use of modern geodetic instruments.Engineering studies and 3D modeling.Field presentation of equipment or technology (e.g. going to a construction site to learn about the work of surveyors).</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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