GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Engineering Surveying, PG_00072571		
Field of study	Civil Engineering		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	second-cycle studies	Subject group	Obligatory subject group 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	1	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Geodesy -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	mgr inż. Mariusz Chmielecki	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	15.0	0.0	30

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	30	2.0	18.0	50

Subject objectives

understand advanced engineering surveying methods and its possibilities,
use selected surveying instruments and applying them form measurements,
ability to interpret and use surveying results in civil engineering practice,
geodetic instrument accuracy determination.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U05] evaluates and critically verifies documentation, results of calculations, tests, measurements and monitoring of advanced structures and buildings	correctly processes and present the results of measurements of a building structure.	[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools
[K7_W04] analyses in-depth complex problems on the basis of reliable data and appropriately chosen methods, reaching logical conclusions	correctly analyzes data obtained from measurements.	[SW3] Assessment of knowledge contained in written work and projects

Subject contents

Course content – lecture

Introduction to topographic surveys: methods and instruments. Advanced geodetic surveying, precise monitoring methods in civil engineering and construction. Local, global, horizontal and vertical datum systems. Coordinates, projections and transformation. Global Navigation Satellite Systems (GPS, Glonass, Galileo): architecture, functions, precise measurement techiques, geodetic receivers and its application in engineering surveying. Active Geodetic Networks, ASG-EUPOS: architecture, networking structure, functions, services, data processing. Geodetic Laser Scanning: idea, measurements, instruments, data processing. Bathymetric surveys: methods, idea, instruments, data acquisition and processing. Integrated Engineering Geodesy Surveys: structure monitoring, movements of constructions, analysys, practical solutions. Data teletransmission systems in engineering surveying: digital and analog emission, binary transmission, ASCII codes. Fundamentals of GIS.

Course content – project

Geodetic Laser Scanning: idea, measurements, instruments, data processing. Bathymetric surveys: methods, idea, instruments, data acquisition and processing. Integrated Engineering Geodesy Surveys: structure monitoring, movements of constructions, analysys, practical solutions. Data teletransmission systems in engineering surveying: digital and analog emission, binary transmission, ASCII codes. Fundamentals of GIS.

Prerequisites and co-requisites

<table>
<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>Surveys and Mathcad</td><td>100.0%</td><td>30.0%</td></tr>
<tr><td>Midterm colloquium</td><td>50.0%</td><td>70.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>A. Łyszkowicz, S. Łyszkowicz: Surveying, Oficyna Wydawnicza Politechniki Warszawskiej, 2010.
W. G. Crowford. Construction Surveying and Layout, Publishing Inc., 2003
Illinois Department of Transportation Burea of Design and Environmental, Surveying Manual, 2003. (available in internet)</td></tr>
<tr><td>Supplementary literature</td><td>Department of the US Army, Engineering and Design NAVSTAR Global Positioning System Surveying, US Department of Defence, 2003 (available in internet).
J. Wahr, Geodesy and Gravity, Samizdat Press, 1996 (available in internet).
International Hydrographic Organization, Manual oh Hydrography, Monaco, 2005. (available in internet).
J. Bossy, W. Graszka, M. Leonczyk, ASG-EUPOS The Polish Contribution to the EUPOS Project, Symposium on GNSS, 2008 (available in internet).</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">1. Levelling, parts of a level, levelling an instrument.

2, Measuring the elevations, staking out the elevations.

3. What is a levelling line, how to coduct it.

4. How to calculate an levelling line.

5. Parts of total station.

6. How to measure a construction's deviations from vertical plane.</td></tr>
<tr><td>Practical activites within the subject</td><td colspan="2">Not applicable</td></tr>
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