



## Subject card

Subject name and code	Engineering surveying, PG_00041524						
Field of study	Civil Engineering						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2022/2023		
Education level	second-cycle studies		Subject group		Optional subject group		
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		mgr inż. Mariusz Chmielecki				
	Teachers						
Lesson types and methods of instruction	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		5.0		40.0	75
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_U06] is able to choose proper tools (measuring, analytical or numerical) to solve engineering problems, to acquire, filtrate, proces and analyse data		can choose the tools (measurement, analytical or numerical) to solve engineering problems, acquire, filter, process and analyze data		[SU1] Assessment of task fulfilment		
	[K7_K03] can think and act creatively and enterprisingly and works for society		can think and act creatively and enterprisingly		[SK5] Assessment of ability to solve problems that arise in practice		
	[K7_W15] has deep and adequate knowledge of civil engineering, within offered specialization and profile		has an organized and in-depth knowledge of the field of construction, within the offered specialties and diploma profiles		[SW1] Assessment of factual knowledge		
	[K7_K05] can manage a team in a responsible way, regarding the rules of occupational safety and health		knows how to lead a team in a responsible manner		[SK5] Assessment of ability to solve problems that arise in practice		
	[K7_W13] has knowledge on state of the art methods on knowledge acquisition, filtration, processing and analysis		has knowledge of modern methods of data acquisition as well as their filtration, processing and analysis		[SW1] Assessment of factual knowledge		
Subject contents	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 techniques, 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.						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Midterm colloquium	50.0%	70.0%
	Surveys and Mathcad	100.0%	30.0%
Recommended reading	Basic literature	A. Łyszkowicz, S. Łyszkowicz: Surveying, Oficyna Wydawnicza Politechniki Warszawskiej, 2010. W. G. Crowford. Construction Surveying and Layout, Publishing Inc., 2003 Illinois Department of Transportation Bureau of Design and Environmental, Surveying Manual, 2003. (available in internet)	
	Supplementary literature	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).	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	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.		
Work placement	Not applicable		