



## Subject card

Subject name and code	Surveying I (team project), PG_00050189						
Field of study	Geodesy and Cartography						
Date of commencement of studies	October 2021		Academic year of realisation of subject		2021/2022		
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	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		7.0		
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. Marek Zienkiewicz				
			dr inż. Karolina Makowska-Jarosik				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	50.0	50.0	0.0	0.0	0.0	100
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie:						
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	100		15.0		60.0	175
Subject objectives	The aim of the course is to provide the knowledge of the methodology of horizontal and vertical measurements for the purposes of large-scale map developing, including the theoretical knowledge in the field of both measurement technology as well as standards and technical guidelines resulting from applicable regulations. Students learn the specifics of conducting extensive geodetic works as part of teamwork, which is necessary in order to complete a complex and comprehensive geodetic project.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[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 performs: - situational measurements by rectangular offset and by the use of tachymetry, - height measurements by the use of tachymetry, geometric leveling and leveling by the method of distributed points, - adjustment of surveyed polygons with the approximate method, - calculates situational and height coordinates.		[SW3] Assessment of knowledge contained in written work and projects		
	[K6_U11] is able to develop geodetic documentation and perform individually as well as in a group, field and field surveying surveys		The student: - performing of situational and height maps, - completing measurement and technical documentation.		[SU2] Assessment of ability to analyse information [SU5] Assessment of ability to present the results of task [SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		

Subject contents	<p>Lectures:</p> <ol style="list-style-type: none"> <li>1. ITRF / ETRF reference frames and their transfer to the territory of Poland.</li> <li>2. Reference frames in force in Poland</li> <li>3. Coordinate frames in force in Poland</li> <li>4. Plane rectangular coordinates frames in force in Poland</li> <li>5. Transformations between frames</li> <li>6. Gravimetric and Magnetic network</li> <li>7. Methodology of using real-time GNSS measurements in establishing the geodetic network and the performance of situational and height measurements.</li> <li>8. Adjustment of geodetic observations by the approximate method in the C-Geo software (leveling traverse, polygon traverse)</li> <li>9. Adjustment of geodetic observations by the method of least squares estimation in the C-Geo software (leveling traverse, polygon traverse)</li> <li>10. Basic information on mapping and editing a situational and height map.</li> <li>11. Geodetic documentation submitted with the completion of geodetic works.</li> </ol> <p>Laboratories - Development of a situational and height map:</p> <ol style="list-style-type: none"> <li>1. Initial analysis of the measuring object and verification of the location of existing horizontal and height reference points,</li> <li>2. Designing the location of reference points and their stabilization,</li> <li>3. Making sketches of the reference points and its topographic descriptions,</li> <li>4. Situational measurement of geodetic polygons,</li> <li>5. Height measurement of geodetic polygons,</li> <li>6. Adjustment of geodetic polygons by approximate method,</li> <li>7. Situational-height measurement of terrain details,</li> <li>8. Calculation of situational and height coordinates of measurement pickets,</li> <li>9. Performing of situational and height map,</li> <li>10. Making a technical report.</li> </ol>
Prerequisites and co-requisites	Ability to handle traditional and modern geodetic instruments. Basic knowledge of the geodetic softwares that can be used for measurements processing and results visualization. .

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	The correct performance of the report on situational-height measurements.	100.0%	100.0%
Recommended reading	Basic literature	<div>- Jagielski A. 2003. Geodezja I,</div> <div>- Jagielski A. 2014. Geodezja II,</div> <div>- Rozporządzenie Ministra Rozwoju, Pracy i Technologii z dnia 23 lipca 2021 r. w sprawie bazy danych obiektów topograficznych oraz mapy zasadniczej,</div> <div>- Rozporządzenie Ministra Rozwoju z dnia 18 sierpnia 2020 w sprawie standardów technicznych wykonywania geodezyjnych pomiarów sytuacyjnych i wysokościowych oraz opracowywania i przekazywania wyników tych pomiarów do państwowego zasobu geodezyjnego i kartograficznego (as amended),</div> <div>- Rozporządzenie Rady Ministrów z dnia 15 października 2012 w sprawie państwowego systemu odniesień przestrzennych (as amended),</div> <div>- Rozporządzenie Ministra Rozwoju, Pracy i Technologii z dnia 6 lipca 2021 r. w sprawie osnów geodezyjnych, grawimetrycznych i magnetycznych</div>	
	Supplementary literature	<div>- E. Osada Osnowy Geodezyjne UxLan, Wrocław 2014,</div> <div>- E. Osada Geodezyjne pomiary terenowe UxLan, Wrocław 2014.</div> <div>- K. Czarnecki "Geodezja współczesna w zarysie" Gall, 2010</div>	
	eResources addresses		
	Example issues/ example questions/ tasks being completed	<div>1. Height measurement by using the geometric leveling method,</div> <div>2. Measurement of situational details by the method of rectangular offset,</div> <div>3. Measurement of situational details by using tachymetry,</div> <div>4. Adjustment of basic, geodetic measuring structures by the approximate method.</div>	
Work placement	Not applicable		