

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Fundamentals of geodesy		Code 1010101121010125118
Field of study Sustainable Building Engineering First-cycle	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 2
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 30 Classes: - Laboratory: 15 Project/seminars: -		No. of credits 2
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 2 100% 2 100%
Responsible for subject / lecturer: dr hab. inż. Ireneusz Wyczalek email: ireneusz.wyczalek@put.poznan.pl tel. +48 616652420 Wydział Budownictwa i Inżynierii Środowiska ul. Piotrowo 5 60-965 Poznań		Responsible for subject / lecturer: dr inż. Artur Plichta email: artur.plichta@put.poznan.pl tel. +48 616652421 Wydział Budownictwa i Inżynierii Środowiska ul. Piotrowo 5 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	basic knowledge of mathematics and geography
2	Skills	the use of available sources of information the ability to calculate mathematics in the field of trigonometry
3	Social competencies	communication responsibility group work
Assumptions and objectives of the course: Acquiring by the Student the basic knowledge about geodetic-cartographic studies and surveying activities related to the implementation of construction works, as well as social skills and competences in the field of basic geodetic activities, development of measurements and evaluation and critical interpretation of their results.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. has knowledge of coordinate calculus (COGO) - [P6S_WG] 2. knows the rules for creating and reading a basic map and derivative maps - [P6S_WG] 3. knows how cartographic mapping is defined and what are the basic geodetic works in sustainable construction - [P6S_WG] 4. knows selected issues in the field of spatial planning and the use of mpzp for the needs of implementation measurements - [P6S_WG]		
Skills:		

<p>1. can acquire information from cartographic and design databases; can integrate the obtained information, interpret them - [P6S_UW]</p> <p>2. is able to use traditional and electronic optical and geodetic instruments, perform measurements related to geodetic service during assembly of building structures, which do not require geodetic education - [P6S_UW; P6S_UK]</p> <p>3. can read geodetic drawings and prepare graphic documentation in a traditional way and in the BIM environment - [P6S_UW; P6S_UK]</p> <p>4. mastered the ability to communicate in a foreign language (also other than English), including knowledge of elements of technical language in the field of sustainable construction - [P6S_UK]</p> <p>5. is able to plan and organize work - individual and in a team, has the ability to interact with other people, is prepared for teamwork, is prepared to interact with other people as part of interdisciplinary teams (specialists from various industries) - [P6S_UO; P6S_UK]</p>
<p>Social competencies:</p> <p>1. is responsible for the reliability of the results of his work and their interpretation - [P6S_KK]</p> <p>2. alone complements and extends the knowledge of modern techniques, processes and technologies - [P6S_KR]</p> <p>3. has the ability to critically evaluate the results of his own work - [P6S_KK]</p>

Assessment methods of study outcomes	
<p>Written lecture - open questions (40% of the grade) and closed (60% of the grade) - test in the eLearning Moodle mode (80% of the grade), personal credit (20% of the grade)</p> <p>Completion of laboratory exercises based on active participation in the implementation of measurement tasks and developed measurement and calculation or cartographic documentation (80%), including the assessment of the lectures confirming the acquisition of the appropriate theoretical preparation (20%)</p>	
Course description	
<p>Lecture 1 (2 hours) Introduction. Coordinate systems, mappings, spatial reference system Cartographic databases, basic map, cadastral map, utilities</p> <p>Lecture 2 (2 hours) Measurements of distance, horizontal and vertical angles. Measurements of field details and their development</p> <p>Lecture 3 (2 hours) Geodetic calculations on the plane. Measurement errors? ways of their identification and correction</p> <p>Lecture 4 (2 hours) Fundamentals of height measurements, leveling, measurement tasks and their development, control and rectification of the leveler</p> <p>Lecture 5 (2 hours) Basics of situational and altitude measurements, total station, tacheometry, processing of measurement data</p> <p>Lecture 6 (2 hours) GNSS satellite measurement systems, 3D laser scanning and photogrammetry - applications, processing of measurements Checking test for situational, altitude and situational-height measurements (MOODLE)</p> <p>Lecture 7 (2 hours) General principles of implementation, diagnostic and control measurements; examples, applications. Staking routes: horizontal and vertical curves, methods of staging and control</p> <p>Lecture 8 (1 hour) Measurements and calculations of earth masses. Passing lectures</p>	
<p>Basic bibliography:</p> <p>1. Uren J., Price B., Surveying for Engineers, Wyd. CPI Antony Rowe Ltd., Chippenham and Eastbourne, 2010</p> <p>2. Wójcik M., Wyczalek I., Podstawy geodezji, Wyd. Politechniki Poznańskiej, 2005</p> <p>3. Wyczalek I., Plichta A. Mrówczyńska M., Pomiary sytuacyjne w praktyce inżynierskiej, (2018, w druku)</p>	
<p>Additional bibliography:</p> <p>1. Hycner R., Dobrowolska-Wesołowska M., Geodesy, Surveying and Professional Ethics, Wyd. Gall, 2008</p> <p>2. Jagielski A., Geodezja I w teorii i praktyce część 1i 2, Wyd. GEODPIS, 2010</p> <p>3. Kosiński W., Geodezja (z płytą CD), PWN, 2006</p>	
Result of average student's workload	
Activity	Time (working hours)

1. Participation in lectures	15	
2. Active participation in laboratory exercises	15	
3. Extension of the lecture knowledge, preparation for passing lectures	10	
4. Completing the exercises, preparing the report. Passing exercises	10	
Student's workload		
Source of workload	hours	ECTS
Total workload	50	2
Contact hours	30	1
Practical activities	25	1