

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Fundamentals of geodesy</b>		Code <b>1010101221010125118</b>
Field of study <b>Environmental Engineering First-cycle Studies</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>1 / 2</b>
Elective path/specialty <b>-</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>30</b> Classes: <b>-</b> Laboratory: <b>15</b> Project/seminars: <b>-</b>		No. of credits <b>3</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art <b>technical sciences</b>		ECTS distribution (number and %) <b>3 100%</b>
<b>Responsible for subject / lecturer:</b>  dr hab. inż. Ireneusz Wyczalek email: Ireneusz.Wyczalek@put.poznan.pl tel. +48 61 6652420 Faculty of Civil and Environmental Engineering ul. Piotrowo 5 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Fundamentals of analytical geometry, trigonometry and differential calculus.
2	<b>Skills</b>	The calculation using trigonometric functions, with the use of calculator and computer programs
3	<b>Social competencies</b>	Diligence, the ability to take on new tasks, awareness of the need to update and supplement knowledge and skills.
<b>Assumptions and objectives of the course:</b> The course is designed to familiarize students with large-scale maps and other sources of spatial data, developing the ability to use these data as well as with the basic geodetic works used in the construction and interpretation and elaboration of survey data.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b> 1. basic characteristics of large-scale maps and spatial information systems based on large-scale map, - [- K_W09] 2. basic surveying methods and equipment used for these measurements, as well as the development of mathematical methods of observation, especially in engineering applications, - [- K_W09] 3. specifics of geographic information systems (GIS) data for spatial analysis, and methods of using these data using the tools in the system. - [- K_W09]		
<b>Skills:</b> 1. reading maps or spatial data and the use of the acquired information to perform spatial analysis, - [- K_U01, K_U07, K_U10, K_U15] 2. operation on surveying equipment and measurements in accordance with the rules defined in geodesy, - [- K_U08, K_U10, K_U15] 3. the use of measurement data to calculate the geometrical quantities that describe the measured object and the calculation of the size used to elevate the project area, - [- K_U08, K_U10, K_U15]		
<b>Social competencies:</b> 1. student understands, can interpret the use of the available cartographic materials in engineering tasks undertaken - [- K_K01, K_K07] 2. the student is aware of teamwork in the performance of measurements and solving geometrical problems - [- K_K03] 3. student sees the need to deepen his/her knowledge and develop skills in the description of space - [- K_K01, K_K02]		

<b>Assessment methods of study outcomes</b>	
<p>Problem test on the use of methods of measurement or cartographic materials to solve engineering problems - 1 hour. in the middle of the semester (max. 7 points - Fraction)</p> <p>Test of knowledge of GIS, spatial data sources and methods of information processing (analysis) - 1 hour. at the end of the semester (max. 3 points)</p> <p>Measuring performance of individual tasks - gradually within the laboratory (5 points)</p> <p>Execution and defense of the project using measurement data and maps and calculations - settlement at the end of the semester (5 points).</p> <p>Grading Scale:            The number of assessment            20 excelled            19 very good (A)            18 good plus (B)            17 good (C)            16 sufficient plus (D)            Sufficient 15 (E)            below 15 insufficient (F)</p>	
<b>Course description</b>	
<p>Spatial information in engineering practice. Geodetic spatial coordinate systems, classification of surveys. Map as a source of spatial information. Classification of maps based on the criteria of content and scale studies. Methodology of cartographic presentation. Geographic Information Systems. Photogrammetric methods in obtaining and processing information about the area. Aerial and satellite images for measurement purposes and fotointerpretacyjnych. Fotomaps, orthophotomap and thematic maps.</p> <p>Methods of planar and vertical measurements. Using the geodetic instruments. Interpretation, evaluation and development of precision measurement data. Geodetic satellite navigation technology and laser scanning.</p> <p>The geodetic and cartographic law. The centers of geodetic and cartographic. Basic map. Elements of the cadastre, land registers, local development plan. Geodetic Network Registry utilities. Geodetic documentation of reconciliation project. Realization surveys: warp execution, and maintenance of construction stakeout, as-built measurements and control.</p> <p>ACTIVITY DESIGN: Using the basic map in engineering issues</p> <p>LABORATORY EXERCISE TOPICS</p> <ol style="list-style-type: none"> <li>1) Measurement of horizontal angles</li> <li>2) Measurements of length and situational details</li> <li>3) Coordinate computation</li> <li>4) The height measurements and calculations</li> <li>5) Surveying, GNSS</li> </ol>	
<p><b>Basic bibliography:</b></p> <ol style="list-style-type: none"> <li>1. Geodezja, Wójcik M., Wyczałek I., WPP, Poznań, 2004</li> <li>2. Geodezja (z płytą CD), Kosiński W. wyd. PWN, 2011</li> </ol>	
<p><b>Additional bibliography:</b></p> <ol style="list-style-type: none"> <li>1. Pomiary geodezyjne w praktyce inżynierskiej, Gil J., UZ, Zielona Góra, 2007</li> <li>2. Geodezja dla inżynierii środowiska, Przewłocki S. , PWN, Warszawa, 1997</li> <li>3. Geodezja i miernictwo budowlane, Gałda M., Kujawski E., Przewłocki S., PPWK, Warszawa, 1994</li> </ol>	
<b>Result of average student's workload</b>	
<b>Activity</b>	<b>Time (working hours)</b>
1. Uczestnictwo w wykładach	30
2. Udział w ćwiczeniach projektowych i laboratoryjnych	15
3. Przygotowanie się do ćwiczeń	5
4. Wykończenie ćwiczeń w domu	5
5. Konsultacje związane z realizacją ćwiczeń projektowych	3
6. Przygotowanie się do zaliczenia końcowego ćwiczeń	3
7. Przygotowanie się do zaliczenia wykładów	10

<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>
Total workload	71	3
Contact hours	48	2
Practical activities	25	1