

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Soil Mechanics and Foundations I		Code 1010101131010100068
Field of study Sustainable Building Engineering First-cycle	Profile of study (general academic, practical) general academic	Year /Semester 2 / 3
Elective path/specialty -	Subject offered in: English	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 15 Classes: - Laboratory: 15 Project/seminars: 15		No. of credits 2
Status of the course in the study program (Basic, major, other) major		(university-wide, from another field) university-wide
Education areas and fields of science and art		ECTS distribution (number and %)
Responsible for subject / lecturer: dr inż. Andrzej Wojtasik email: andrzej.wojtasik@put.poznan.pl tel. 616652429 Faculty of Civil and Environmental Engineering ul. Piotrowo 5 60-965 Poznań		Responsible for subject / lecturer: dr inż. Andrzej Wojtasik email: andrzej.wojtasik@put.poznan.pl tel. 616652429 Faculty of Civil and Environmental Engineering ul. Piotrowo 5 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge in field of soil mechanics.
2	Skills	Ability to assess the suitability of the construction ground for the foundation of building structures.
3	Social competencies	Cooperation within the group in the field of solving engineering tasks.
Assumptions and objectives of the course: Acquisition by the student of basic knowledge and skills in the field of land mechanics and foundations.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Knows the basics of geology, has knowledge in soil mechanics and foundation engineering of construction works - [KSB_W09]		
Skills:		
1. Knows how to retrieve information from literature, databases and other properly selected sources; knows how to integrate the information thus retrieved, how to interpret it and how to draw conclusions and formulate and justify opinions. - [KSB_U01]		
2. While formulating and solving engineering tasks knows how to perceive their systematic and non-technical aspects. - [KSB_U03]		
3. Knows how to correctly select numerical, analytical, simulation and experimental methods to solve engineering tasks in the area of sustainable building engineering; to obtain and verify their verification. - [KSB_U07]		
4. Knows how to plan and organize work both individual and in teams, knows how to collaborate with others, is prepared to work in team, is prepared to collaborate with other individuals in interdisciplinary design teams (specialists in different areas). - [KSB_U26]		
5. Has a diversity of skills to carry out design tasks such as work in the area of sustainable building engineering including technical skills such as conventional techniques (hand drawing), specialist design software packages (of CAD type) and specialist software in BIM technology. - [KSB_U27]		
Social competencies:		
1. Takes responsibility for reliability of results and their interpretation. - [KSB_K02]		
2. Has the skill of critical assessment of results of his work. - [KSB_K08]		

Assessment methods of study outcomes
<p>Lectures</p> <p>Written exam (open questions) - the need to obtain at least 50 % of points in order to obtain a positive evaluation. The following rating scale shall be used when exams are tested and final grade is issued:</p> <p>91 - 100 % very good (5.0) 81 - 90 % plus good (4.5) 71 - 80 % good (4.0) 61 - 70 % plus satisfactory (3.5) 51 - 60 % satisfactory (3.0) 50 % insufficient (2.0)</p> <p>Projects</p> <p>Computational project for independent implementation.</p> <p>Laboratories</p> <p>"Entrance tests" - a short written form of checking the preparation for current classes, final written colloquium (open questions) - the need to obtain at least 50 % of points in order to obtain a positive evaluation and a computational projects for independent implementation.</p>
Course description
<p>Lecture 1</p> <p>Soil mechanics - basic concepts and theoretical fundamentals.</p> <p>Lecture 2</p> <p>Soil as a three-phase medium: mineral skeleton, water, gas.</p> <p>Lecture 3</p> <p>The soil constitutive models and mechanisms of destruction.</p> <p>Lecture 4</p> <p>Ground water movement.</p> <p>Lecture 5</p> <p>Stresses in the soil medium.</p> <p>Lecture 6</p> <p>Load capacity and deformability of the construction ground. Soil pressure on retaining walls.</p> <p>Lecture 7</p> <p>Expansive and frost phenomena in the soil.</p> <p>Laboratory 1</p> <p>Classification of building soils according to PN-86/B-02480 and according the PN-EN ISO 14688-1</p> <p>Laboratory 2</p> <p>Macroscopic examination of soil samples. Soil texture and areometric grain size analysis. Basic and derived physical characteristics of the soil.</p> <p>Laboratory 3</p> <p>Consistency and states of cohesive soils.</p> <p>Laboratory 4</p> <p>Degree of compaction of non-cohesive soils. Compacting of embankment soils.</p> <p>Laboratory 5</p> <p>Primary stresses in the construction substrate.</p> <p>Laboratory 6</p> <p>Shear strength of soils. Compatibility and consolidation in soils.</p> <p>Laboratory 7</p> <p>Expansive phenomena in soils. Water permeability, active and passive capillarity of soils. The filtration coefficient.</p>
<p>Basic bibliography:</p> <ol style="list-style-type: none">1. Principles of Geotechnical Engineering; Braja M.Das. Thomson2. Basic Geotechnical Engineering; Richard P.Weber, CED Engineering
<p>Additional bibliography:</p> <ol style="list-style-type: none">1. Craig's Soil Mechanics; R.F.Craig; SPON

Result of average student's workload		
Activity	Time (working hours)	
1. Udział w wykładach (godziny kontaktowe)	15	
2. Udział w projektach (godziny kontaktowe i praktyczne)	15	
3. Udział w laboratoriach (godziny kontaktowe i praktyczne)	15	
4. Przygotowanie się do ćwiczeń/laboratoriów (praca samodzielna)	5	
5. Realizacja projektu w domu (praca samodzielna, godziny praktyczne)	5	
6. Przygotowanie do zaliczenia wykładów/egzaminu	4	
7. Udział w egzaminie (obecność na zaliczeniu pisemnym) (godziny kontaktowe)	1	
Student's workload		
Source of workload	hours	ECTS
Total workload	60	2
Contact hours	46	1
Practical activities	35	0