

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Special foundations</b>		Code <b>1010102121010126022</b>
Field of study <b>Civil Engineering Second-cycle Studies</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>1 / 2</b>
Elective path/specialty <b>Bridges and Underground Engineering</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>Second-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>-</b> Project/seminars: <b>15</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		ECTS distribution (number and %)
<b>Responsible for subject / lecturer:</b>		
dr inż. Sławomir Janiński email: slawomir.janinski@put.poznan.pl tel. 61 665 2 417 Wydział Budownictwa i Inżynierii Środowiska ul. Piotrowo 5 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	physics, mathematics, theory of elasticity and plasticity (level I and II studies degree) engineering geology, soil mechanics, foundation (level I studies degree)
2	<b>Skills</b>	building computational models of the subsoil on the basis of geotechnical data use of computer-aided tools (spreadsheet, drawing program, CAD) design of foundations in simple ground conditions correct use of language Polish
3	<b>Social competencies</b>	need to continuously increase knowledge and improve skills
<b>Assumptions and objectives of the course:</b>		
to acquaint students with modern technology foundation of objects of general construction and building communication. Student learns of design of different deep foundations. Through individual design of foundations on piles, students gain practical skills in analysis of different concepts		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. Has knowledge of various branches of mathematics, physics, chemistry and other scientific areas which are useful to formulate and solve problems connected with civil engineering - [K_W01] 2. Is acquainted with construction law, national norms and EN standards and technical conditions for of structure construction - [K_W06] 3. Knows geology fundamentals, soil mechanics and foundations construction structures - [K_W08]		
<b>Skills:</b>		
1. Can evaluate and list loads acting on structures - [K_U02] 2. Can appropriately define computational models used for the structure analysis - [K_U03] 3. Can make an adequate choice of tools for solving problems related to the analysis and design of structures and planning construction works, can obtain and verify results - [K_U05]		
<b>Social competencies:</b>		
1. Bears responsibility for reliability and correct interpretation of own results - [K_K02] 2. Independently complements and extends knowledge of modern techniques, processes and technologies - [K_K03] 3. Is aware of own health and fitness - [K_K04]		

<b>Assessment methods of study outcomes</b>		
<ul style="list-style-type: none"> <li>- execution of the exercise project for the foundation of the foundation on piles,</li> <li>- written and oral tests as part of the evaluation of the continued</li> <li>- execution of studies written on the geotechnical issues</li> </ul>		
<b>Course description</b>		
1.Methods for geotechnical investigations in situ and interpretation of results. 2.Methods of designing foundation piles according to content of Standards PN-EN. 3.Methods of designing the shape walls. 4.Methods of designing columns in not supporting subsoil. 5.Discussion of the rules of monitoring structures.		
<b>Basic bibliography:</b>		
1. Gwizdała K.: Fundamenty palowe. Technologie i obliczenia, PWN, Warszawa 2010 2. Jarominiak A.: Lekkie konstrukcje oporowe, Wydawnictwo Komunikacji i Łączności, Warszawa 2002 3. Pisarczyk St.: Geoinżynieria. Metody modyfikacji podłoża gruntowego, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2005 4. Siemińska-Lewandowska A.: Głębokie wykopy. Projektowanie i wykonawstwo, WKŁ, Warszawa 2010 5. Stilger-Szydło E.: Posadowienia budowli infrastruktury transportu lądowego: teoria, projektowanie, realizacja, Dolnośląskie Wydawnictwo Edukacyjne, Wrocław 2005		
<b>Additional bibliography:</b>		
1. Wiłun Z.: Zarys geotechniki, WKiŁ, Warszawa 2010 i późniejsze wydania. 2. Grabowski Z., Pisarczyk St., Obrycki M.: Fundamentowanie, Oficyna Wyd. PW, Warszawa 1999. 3. Jeż J.: Biogeotechnika, Wyd. Politechniki Poznańskiej, Poznań 2008 4. Wysokiński L., Kotlicki W., Godlewski T.: Projektowanie geotechniczne według Eurokodu 7, Wydawnictwo ITB, Warszawa 2011 5. Puła O.: Projektowanie fundamentów bezpośrednich według Eurokodu 7, Dolnośląskie Wydawnictwo Edukacyjne, Wyd. 2., Wrocław 2012 6. Puła O. Fundamenty palowe według eurokodu 7, DWE, 2013 7. Dąbska A., Gołębiowska A.: Podstawy geotechniki. Zadania według Eurokodu 7, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2012 8. Uwaga: aktualne dane bibliograficzne podstawowych norm, aktów prawnych, instrukcji, wytycznych i poradników będą przekazywane studentom w toku zajęć.		
<b>Result of average student's workload</b>		
Activity	Time (working hours)	
1. Participation in classes	45	
2. Individual work	45	
<b>Student's workload</b>		
Source of workload	hours	ECTS
Total workload	90	3
Contact hours	60	2
Practical activities	30	1