

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Ground-shell structures</b>		Code <b>1010102131010106058</b>
Field of study <b>Civil Engineering Second-cycle Studies</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>2 / 3</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>15</b> Classes: <b>-</b> Laboratory: <b>-</b> Project/seminars: <b>-</b>		No. of credits <b>1</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 hab.inż. Arkadiusz Madaj email: arkadiusz.madaj@put.poznan.pl tel. 61 647 5830 Faculty of Civil and Environmental Engineering 61-138 Poznań, Piotrowo 5		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	The basics of ground mechanics and foundations. The statics of layer constructions. Information about the strength of materials and steel constructions. The loads of bridges.
2	<b>Skills</b>	Calculation of action on the construction. Knowledge of rules of calculating the forces acting on the construction buried in the ground. The calculation of geometrical characteristics of the construction.
3	<b>Social competencies</b>	The awareness of constant gaining knowledge. The ability to form ideas and communicate among the group. The proper use of polish language.
<b>Assumptions and objectives of the course:</b> -Getting to know the rules of soil-steel composite structures. Gaining skills to form them, design and determine durability.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. The term 'soil-steel structure' and its characteristic features - [K_W02] 2. The classification of soil-steel structures and methods of production - [K_W07] 3. Methods of design of soil-steel structures - [K_W03]		
<b>Skills:</b>		
1. To choose the construction type depending on its function and loadings, determine the geometry - [K_U02] 2. To carry out the calculations of the chosen type of the structure - [K_U04] 3. To determine the technological requirements during the realization - [K_U12]		
<b>Social competencies:</b>		
1. The awareness of constant gaining knowledge. - [K_K06] 2. The communication among the group in terms of communicational engineering. - [K_K01] 3. The ability to justify the chosen construction solutions. - [K_K09]		
<b>Assessment methods of study outcomes</b>		
-A written test.		
<b>Course description</b>		

<p>-The history of soil-steel constructions and its general characteristics. Cross-section types and restrictions in use. The durability of soil-steel structures and anticorrosive protection. The technology of production of soil-steel structures. The loads of soil-steel structures and methods of calculation of forces acting on the construction. Carrying capacity criteria. Methods of design of soil-steel composite structures.</p>		
<p><b>Basic bibliography:</b></p> <p>1. . L.Janusz., A.Madaj. Obiekty inżynierskie z blach falistych, WKŁ, Warszawa</p>		
<p><b>Additional bibliography:</b></p> <p>1. J.Jeż: Grunoznawstwo budowlane. Wyd. PP, Poznań, 2005                  2. Z. Wiłun: Zarys geotechniki, WKŁ, Warszawa 2000                  3. Zalecenia projektowe i technologiczne dla konstrukcji inżynierskich z blach falistych, IBDiM, Żmigród, 2004</p>		
<p><b>Result of average student's workload</b></p>		
<p><b>Activity</b></p>		<p><b>Time (working hours)</b></p>
<p><b>Student's workload</b></p>		
<p><b>Source of workload</b></p>	<p><b>hours</b></p>	<p><b>ECTS</b></p>
Total workload	25	1
Contact hours	17	1
Practical activities	15	1