

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Structural Engineering</b>		Code <b>1010102121010103704</b>
Field of study <b>Structural Engineering Second-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>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>30</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 inż. Agnieszka Ślosarczyk email: agnieszka.slosarczyk@put.poznan.pl tel. 616652166 Wydział Budownictwa i Inżynierii Środowiska ul. Piotrowo 5, 60-965 Poznań		<b>Responsible for subject / lecturer:</b> mgr inż. Maria Ratajczak email: maria.ratajczak@put.poznan.pl tel. 616652165 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>	The basic knowledge from the construction materials.
2	<b>Skills</b>	Best to design the construction materials in the building.
3	<b>Social competencies</b>	The consciousness of the necessity of continuous updating and supplementings of the building knowledge and engineer skills.
<b>Assumptions and objectives of the course:</b> The delivery the maximum of the knowledge from the contemporary construction materials.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. Student knows the industrial production rule and technical parameters of modern construction materials. - [K_W05] 2. Student knows at present applied construction materials and basic elements of the technology of their production. - [K_W07] 3. Student knows current directions of the development of construction materials. - [K_W07] 4. Students knows standards related to proper construction materials. - [K_W14]		
<b>Skills:</b>		
1. Student can select materials for the realization of the ecological and sustainable construction objects. - [K_U16] 2. Student can select materials for the realization of the energy-saving, passive and zeroenergeting construction objects. - [K_U08] 3. Student can prepare elaborations preparing him to undertake the scientific work. - [K_U18] 4. Student has a skill of communicating in English, together with the familiarity of elements of technical language from construction engineering. - [K_U14]		
<b>Social competencies:</b>		

<p>1. Student independently supplements and extends the knowledge of modern construction materials. - [K_K03]</p> <p>2. Student is responsible for the honesty of obtained results of his own works and the estimation of works of the team subjected to him. - [K_K02]</p> <p>3. Student has a consciousness of the necessity of the lifting of professional and personal competences. - [K_K06]</p> <p>4. Student has a consciousness of the need of the sustainable development in construction. - [K_K04]</p> <p>5. Student understands the need of the transfer to the society of the construction knowledge. - [K_K08]</p>
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<b>Assessment methods of study outcomes</b>
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<p>Assessment of knowledge:  activity during classes and a lecture,  colloquium at the auditorium exercises,  project.</p> <p>The grading scale determined from:  Points:            grade:  higher then 100    excellent (A+)  91                  very good (A)  81                  good plus (B)  71                  good plus (C)  61                  adequate plus (D)  51                  adequate (E)  Lower then 50     inadequate (F)</p>
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<b>Course description</b>
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<p>Functions of construction materials.  Basic parameters and criteria of the choice of construction materials.  New trends in cement and concrete technology.  SCC and photocatalytic concretes.  HSC, UHSC and fiber-concretes.  Light transmitting and glass concretes.  Geopolymer concretes.  Elastic and self-repairing concretes.  Corrosion and durability of construction materials.  Nanotechnologies in construction.  Glass as the modern construction material.  Timber as the modern construction material.  Steel as the modern construction material  Ceramics as the modern construction material.  Modern waterproofing materials.  Modern thermal insulation materials.</p>
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<p><b>Basic bibliography:</b></p> <p>1. P. Domone, J. Illston, Construction Materials Their Nature and Behaviour, 4th edition, 2010  2. J. Newman, B.S. Choo, Advanced Concrete Technology II, 2003  3. M. A. Caldarone, High strength Concrete, 2009.  4. K. Gopalakrishnan, B. Birgisson, P. Taylor, N. Attoh-Okira, Nanotechnology in Civil Infrastructure, 2011</p>
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<p><b>Additional bibliography:</b></p>
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<b>Result of average student's workload</b>
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<b>Activity</b>	<b>Time (working hours)</b>
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1. Participation in lectures	30	
2. Participation in laboratory classes	30	
3. Preparation to the laboratory classes and project	20	
4. Preparation to attend and pass the examination from lecture	10	
<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>
Total workload	90	3
Contact hours	60	2
Practical activities	30	1