

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Technology of Concrete		Code 1010101131010101404
Field of study Sustainable Building Engineering First-cycle	Profile of study (general academic, practical) (brak)	Year /Semester 2 / 3
Elective path/specialty -	Subject offered in: Polish	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: -		No. of credits 2
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art technical sciences		ECTS distribution (number and %) 2 100%
Responsible for subject / lecturer: dr inż. Agnieszka Ślosarczyk email: agnieszka.slosarczyk@put.poznan.pl tel. 616652166 Wydział Budownictwa i Inżynierii Środowiska ul. Piotrowo 5 60-965 Poznań		Responsible for subject / lecturer: mgr inż. Maria Ratajczak email: maria.ratajczak@put.poznan.pl tel. 616652165 Wydział Budownictwa i Inżynierii Środowiska ul. Piotrowo 5 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge of the following subjects: mathematic, physics, chemistry.
2	Skills	Ability to gain information from literature and other sources. Capability to combine obtained information.
3	Social competencies	Awareness of the necessity for constant updating and complementing one's knowledge and skills.
Assumptions and objectives of the course: To gain the engineering knowledge regarding design of concrete mixes, classification and scope of applications in construction as well as carrying out standard concrete work.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Student knows basic principles of designing concrete mixes - [KSB_W01] 2. Student knows the principles of preparing, transporting and applying concrete mix - [KSB_W01]		
Skills:		
1. Student is able to design concrete mixes for making common concrete meeting required characteristics - [KSB_U01] 2. Student is able to carry out simple laboratory tests of aggregates and cements - [KSB_U08]		
Social competencies:		
1. Student is able to indicate the aims during realisation of task in group, taking into account e.g. in the social interest - [KSB_K01] 2. Student has the ability to plan team work, to divide tasks among the members of the research team, to critically discuss the results and formulate collaborative conclusions (conclusions based on the team work) - [KSB_K02]		
Assessment methods of study outcomes		

<p>Lecture</p> <p>The colloquium in the last lecture - the date given at the beginning of the semester. Colloquium meant to check the knowledge of concrete properties and technology.</p> <p>Laboratory classes</p> <p>A colloquium at the end of the semester covering the material of the concrete technology and the examination of project.</p> <p>Grade scale:</p> <p>100-90% of the maximum points - 5.0 90-80% of the maximum points - 4.5 80-70% of the maximum points - 4.0 70-60% of the maximum points - 3.5 60-50% of the maximum points - 3.0</p>		
Course description		
<p>Lectures</p> <p>Basic information on standardization and classification of cement concrete types. Concrete composition/ ingredients, properties of concrete mix and hardened concrete. Methods of designing concrete composition. Basic technological processes connected with preparation, transport, application and maintenance of concrete. Quality control of concrete. Admixtures (division, study methods, evaluation and discussing major varieties). Additives (ashes, bits, complex admixtures). Design of concrete with additives and admixtures, concrete application at low temperatures, application of large masses of concrete. Special concretes. Light concrete (distribution, application, basic components). Basic principles of lightweight concrete design.</p> <p>Laboratory classes</p> <p>Design of concrete mix (one of the four methods) with selected characteristics of consistency and strength class. Study of ingredients (aggregates, cement, water) with focus on suitability (compliance with relevant standards) to make concrete. Preparation of concrete mix. Study of basic characteristics of the mix (texture, volume) preparation of concrete samples. Testing the impact of various types of additives on the mix characteristics (plasticizing, binding time). Study of the compressive strength of concrete by destructive method. Determining the actual strength of the designed concrete.</p>		
<p>Basic bibliography:</p> <p>1. A.M. Neville, Concrete technology. 2. J. Newman, Advanced Concrete Technology, Constituent Materials and Concrete Properties.</p>		
<p>Additional bibliography:</p>		
Result of average student's workload		
Activity		Time (working hours)
1. Participation in the lectures		15
2. Participation in the laboratory classes		15
3. Preparation to the laboratory classes		5
4. Preparation of project.		5
5. Preparation to the colloquium at the laboratory classes		5
Student's workload		
Source of workload	hours	ECTS
Total workload	55	2
Contact hours	30	1
Practical activities	15	1