

## COURSE DESCRIPTION CARD

Faculty of Civil Engineering and Environmental Sciences										
Field of study								Degree level and programme type		
Specialization/ diploma path								Study profile	Academic profile	
Course name	Concrete technology							Course code	IS-FCEE-00020W	
								Course type	Erasmus	
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	winter	
	15		30					No. of ECTS credits	4	
Entry requirements	Chemistry									
Course objectives	The purpose of this module is to: introduce classification, properties and testing of technical properties of concrete constituents, fresh and hardened concrete; teach how to select proper concrete constituents and design concrete composition; describe processes in concrete production.									
Course content	Aggregates for concrete and mortars. Mineral binders: cements, lime and gypsum. Mixing water for concrete. Additions and admixtures for concrete. Concrete according to the standard EN 206-1 "Concrete – Part 1: Specification, performance, production and conformity". Properties of fresh and hardened concrete and their testing. Concrete mix design calculations. Technological processes in concrete production.									
Teaching methods	A series of lectures to provide students with an overview of the main issues relating to the properties, uses and long-term performance of concrete. A series of laboratory classes covering the testing of concrete constituents, the manufacture and testing of fresh mortar as well as fresh and hardened concrete.									
Assessment method	Written exam									
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study		
LO1	Student (graduate) applies legal regulations related to concrete							K_W15, K_W16, K_U20		
LO2	Student (graduate) identifies phenomena occurring during setting and hardening of concrete, mechanisms of admixtures and additions actions							K_W08		
LO3	Student (graduate) identifies processes and technological requirements in concrete productions							K_W08, K_W15, K_U07		
LO4	Student (graduate) qualitatively and quantitatively selects concrete constituents							K_W08, K_W19 SD, K_U07		

L05	Student (graduate) evaluates technical parameters of concrete in fresh and hardened state	K_W08, K_U08	
L06	Student (graduate) uses Internet and other data bases	K_U23	
L07	Student (graduate) works in team	K_K03	
<b>Symbol of learning outcome</b>	<b>Methods of assessing the learning outcomes</b>	<b>Type of tuition during which the outcome is assessed</b>	
L01	written exam, completion of experimental task, evaluation of the student's reports	L, LC	
L02	written exam	L	
L03	written exam, completion of experimental task, evaluation of the student's reports	L, LC	
L04	written exam, completion of experimental task, evaluation of the student's reports	L, LC	
L05	completion of experimental task, evaluation of the student's reports	LC	
L06	written exam, completion of experimental task, evaluation of the student's reports and written evaluation	L, LC	
L07	completion of experimental task in a team	LC	
<b>Student workload (in hours)</b>		<b>No. of hours</b>	
<b>Calculation</b>	lecture attendance	15	
	participation in laboratory classes	30	
	preparation for laboratory classes	20	
	work on reports	15	
	participation in student-teacher sessions related to the class	2	
	preparation for and participation in exams/tests	20	
	<b>TOTAL:</b>	<b>102</b>	
<b>Quantitative indicators</b>		<b>HOURS</b>	<b>No. of ECTS credits</b>
<b>Student workload – activities that require direct teacher participation</b>		49	1,9
<b>Student workload – practical activities</b>		65	2,5
<b>Basic references</b>	1. EN 206 Concrete – Part 1: Specification, performance, production and conformity. 2. Neville A.M., Properties of concrete, 5th edition, Pearson Education Ltd. 2011. 3. Neville A.M., Brooks J.J., Concrete Technology, 2nd edition, Trans-Atlantic Publications 2010. 4. Sika Concrete Handbook 2013 (pdf)		
<b>Supplementary references</b>	1. Siddique R., Khan M.I., Supplementary Cementitious Materials, Springer 2011		
<b>Organisational unit conducting the course</b>	<b>Department of Construction and Road Engineering</b>	<b>Date of issuing the programme</b>	
<b>Author of the programme</b>	<b>Dorota Małaszkiwicz, PhD, CivEng</b>	<b>05.03.2020</b>	

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar