



## Subject card

<b>Subject name and code</b>	Concrete Structures, PG_00054170						
<b>Field of study</b>	Coastal and Offshore Engineering, Coastal and Offshore Engineering						
<b>Date of commencement of studies</b>	February 2022	<b>Academic year of realisation of subject</b>	2021/2022				
<b>Education level</b>	second-cycle studies	<b>Subject group</b>	Obligatory subject group in the field of study Subject group related to scientific research in the field of study				
<b>Mode of study</b>	Full-time studies	<b>Mode of delivery</b>	at the university				
<b>Year of study</b>	1	<b>Language of instruction</b>	Polish				
<b>Semester of study</b>	1	<b>ECTS credits</b>	3.0				
<b>Learning profile</b>	general academic profile	<b>Assessment form</b>	assessment				
<b>Conducting unit</b>	Department of Concrete Structures -> Faculty of Civil and Environmental Engineering						
<b>Name and surname of lecturer (lecturers)</b>	<b>Subject supervisor</b>	dr inż. Małgorzata Lachowicz					
	<b>Teachers</b>	dr inż. Małgorzata Lachowicz					
<b>Lesson types and methods of instruction</b>	<b>Lesson type</b>	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	<b>Number of study hours</b>	30.0	15.0	0.0	0.0	0.0	45
	E-learning hours included: 0.0						
<b>Learning activity and number of study hours</b>	<b>Learning activity</b>	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study		SUM	
	<b>Number of study hours</b>	45	5.0	25.0		75	
<b>Subject objectives</b>	Analyses and designs one-way R-C slab systems and beams.						
<b>Learning outcomes</b>	<b>Course outcome</b>	<b>Subject outcome</b>				<b>Method of verification</b>	
	K7_W03	Student can design bending concrete beam.				[SW3] Assessment of knowledge contained in written work and projects	
	K7_W06	The student knows how to design a reinforced concrete element taking into account the environmental conditions.				[SW3] Assessment of knowledge contained in written work and projects	
	K7_U01	Student can design selected concrete element.				[SU1] Assessment of task fulfilment	
<b>Subject contents</b>	Introduction: general view about R-C structures. Mechanical properties of concrete (strength and stress-strain relation of concrete in axial and biaxial stress: compression and tension under short time loading, confined concrete). Steel reinforcement: types, strength, stress-strain relationship. Strains and stresses according to linear theory of reinforced section subjected to bending moment. Cracking moment. Stiffness in I and II phase. Ultimate limit state flexure: design methods for bending rectangular and T-beam section. Serviceability limit states: deformation and cracks.						
<b>Prerequisites and co-requisites</b>							
<b>Assessment methods and criteria</b>	<b>Subject passing criteria</b>	<b>Passing threshold</b>			<b>Percentage of the final grade</b>		
	Presentation of the selected issue	50.0%			50.0%		
	Homework	50.0%			50.0%		
<b>Recommended reading</b>	<b>Basic literature</b>	W Starosolski, Konstrukcje żelbetowe, t.I, t.II, Wydawnictwo Naukowe PWN, Warszawa 2003 A. Łapko, Projektowanie konstrukcji żelbetowych, Arkady, Warszawa 2000 M. Kamińska, J. Pędziwiatr, D. Styś, Konstrukcje betonowe, Dolnośląskie Wydawnictwo Edukacyjne, Wrocław 2000					
	<b>Supplementary literature</b>	A.Łapko B.C.Jensen, Podstawy projektowania i algorytmy obliczeń konstrukcji żelbetowych, Arkady, W-wa 2005 K.Grabiec, Konstrukcje betonowe. Przykłady obliczeń statycznych, Wydawnictwo Naukowe PWN, Warszawa 2002					
	<b>eResources addresses</b>						

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable