



Subject card

Subject name and code	Concrete Structures III, PG_00069276						
Field of study	Civil Engineering						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2026/2027		
Education level	first-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	4		Language of instruction		Polish		
Semester of study	7		ECTS credits		1.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Engineering Structures -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Małgorzata Lachowicz				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	15		1.0		9.0	25
Subject objectives	The course objective is to understand the principles of determining internal forces in cross-reinforced slabs and designing reinforcement procedures. Students will acquire the skills to apply loads to supporting elements of slabs operating in two directions. Students will acquire knowledge of designing reinforcement for columns subjected to biaxial eccentric compression. Students will also learn the principles of shaping reinforcement in reinforced concrete stairs.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U07] Design and build engineering structures in a sustainable manner, with care for the natural environment and a minimum carbon footprint		The student is able to design a reinforced concrete element working in two directions by economically selecting concrete cross-sections and reinforcement.		[SU4] Assessment of ability to use methods and tools		
	[K6_W06] Demonstrates practical knowledge and understanding of materials, devices and tools, processes and technologies in the field of civil engineering (and their limitations).		The student is able to prepare a reinforcement drawing for a designed reinforced concrete element.		[SW3] Assessment of knowledge contained in written work and projects		
	[K6_W07] Understand the investment's impact on the environment and the interrelationships and dependencies between the building structure and the natural environment		The student is able to design a reinforced concrete element working in two directions in accordance with the guidelines of design standards.		[SW3] Assessment of knowledge contained in written work and projects		
	[K6_K01] Is aware of the key aspects of professional, ethical and social responsibility related to management, business operation, decision making and opinion formulation in civil engineering.		The student makes independent design decisions and selects optimal construction solutions.		[SK5] Assessment of ability to solve problems that arise in practice		
	[K6_U06] Conduct engineering activities in civil engineering subject area, using and applying practical knowledge and understanding of materials, equipment and tools, processes and technologies.		The student has the ability to use computer programs and estimate the correctness of the obtained results.		[SU4] Assessment of ability to use methods and tools		

Subject contents	Course content – lecture Discuss the principles of determining internal forces using the table method for single- and multi-field cross-reinforced slabs. Compare the obtained results with computer methods. Present issues relevant to the design and shaping of reinforcement in slabs supported by beams operating in two directions. Understand the principles of load transfer from cross-reinforced slabs to supporting beams. Present procedures for determining the load-bearing capacity of reinforced concrete columns and the principles of calculating elements subjected to biaxial eccentric compression.		
Prerequisites and co-requisites	The student is able to design bending cross-sections working in one direction and unidirectional reinforced concrete elements under eccentric compression.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		70.0%	70.0%
		100.0%	30.0%
Recommended reading	Basic literature	J. Kobiak, W. Stachurski, Konstrukcje żelbetowe. Arkady, Warszawa 1987. (możliwe inne wydania). M. Knauff, Obliczanie konstrukcji żelbetowych według Eurokodu 2. PWN, Warszawa 2012. M. Knauff i inni,, Tablice i wzory do projektowania konstrukcji żelbetowych z przykładami obliczeń. PWN, Warsawa 2013. J. Pędziwiatr, Projektowanie słupów żelbetowych. PWN, Warszawa 2019. A. Łapko, B. Ch. Jensen, Podstawy projektowania i algorytmy obliczeń konstrukcji żelbetowych. Arkady, Warszawa 2006. W. Starosolski. Konstrukcje żelbetowe według Eurokodu 2 i norm związanych. PWN, Warszawa 2011. Konstrukcje żelbetowe : atlas rysunków / red. nauk. Adam Zybura ; [aut. Katarzyna Domagała et al.]. PWN, Warszawa 2009.	
	Supplementary literature	Podstawy projektowania konstrukcji żelbetowych i sprężonych według Eurokodu 2, praca zbiorowa. Dolnośląskie Wydawnictwo Edukacyjne, Wrocław 2006.	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Practical activities within the subject	Not applicable		

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