



Subject card

Subject name and code	Concrete Structures, PG_00048227						
Field of study	Civil Engineering						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2026/2027		
Education level	second-cycle studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Part-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Structural Mechanics -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		mgr inż. Marek Kin				
	Teachers		dr hab. inż. Andrzej Ambroziak				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	10.0	0.0	10.0	0.0	20
	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	20		5.0		25.0	50
Subject objectives	The aim of the course is to familiarize students with the principles of designing and spatial dimensioning of buildings. As part of the course, students for a given type of building structure (building element) perform static calculations (numerical, analytical), make dimensions of the main structural elements and prepare construction drawings of the designed elements.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_K01] is aware of necessity of professional competences improvement; obeys the professional ethics code		The student learns diligence and responsibility in carrying out engineering tasks in their future professional career.		[SK5] Assessment of ability to solve problems that arise in practice [SK3] Assessment of ability to organize work		
	[K7_U01] can evaluate and list any loads acting on constructions		The student defines the loads acting on the building structure at the ultimate and serviceability limit states.		[SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task		
	[K7_W02] knows principles of analysis, design and dimensioning of complex constructions and its elements		The student understands the scope of applicability of calculation procedures and the impact of adopted assumptions on calculation results.		[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects		
	[K7_W04] has knowledge on advanced strength of materials, modeling and optimisation of materials and constructions; has knowledge of fundamentals of Finite Element Method and general nonlinear analysis of engineering constructions and systems		The student is able to use standards, calculation procedures, and engineering software.		[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation		

Subject contents	Course content – exercises The course includes classes in the following areas: construction and execution of reinforcement in reinforced concrete elements, structural conditions of reinforcement of elements, designing tanks for liquids, errors in anchoring in construction, designing airport pavement structures, frost resistance of concrete pavements, designing and dimensioning of protective barriers and barrier rails, expansion joints in concrete pavements.		
	Course content – project The course covers the following topics: the design of selected structural elements of reinforced concrete buildings; the practical application of structural reinforcement requirements (using liquid storage tanks as an example); anchorage in construction; airport pavement structures; the frost resistance of concrete pavements; safety barriers and railings; and expansion joints in concrete pavements.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Final test	60.0%	40.0%
	Design task	60.0%	60.0%
Recommended reading	Basic literature	A.Ajdukiewicz J.Mames: Konstrukcje z betonu sprężonego, Polski Cement, Kraków 2004 T.Godycki-Ćwirko, A.Czkwianianc: Konstrukcje sprężone, Politechnika Łódzka 1984 J.Kobiak W. Stachurski: Konstrukcje żelbetowe, t.2,t.4 Arkady 1991 W.Starosolski: Konstrukcje żelbetowe, t1, PWN, Warszawa 2010 A.Halicka, D.Franczak: Projektowanie zbiorników żelbetowych, PWN, Warszawa 2011 K.Grabiec: Żelbetowe konstrukcje cienkościenne PWN 1999	
	Supplementary literature	A. Ambroziak, P.Kłosowski: Autodesk Robot Structural Analysis podstawy obliczeń. Wydawnictwo Politechniki Gdańskiej, Gdańsk 2010. A. Ambroziak, P.Kłosowski: Autodesk Robot Structural Analysis. Wymiarowanie konstrukcji stalowych i żelbetowych - przykłady obliczeń. Wydawnictwo Politechniki Gdańskiej, Gdańsk 2014.	
	eResources addresses		
	Example issues/ example questions/ tasks being completed	No additional educational components or elective courses are envisaged.	
Practical activities within the subject	Not applicable		

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