



Subject card

Subject name and code	Fundamentals of engineering concrete structures, PG_00044247						
Field of study	Civil Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2024/2025		
Education level	first-cycle studies	Subject group			Optional 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			5.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Concrete Structures -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Krystyna Nagrodzka-Godycka				
	Teachers		prof. dr hab. inż. Krystyna Nagrodzka-Godycka dr inż. Paweł Piotrkowski dr inż. Małgorzata Lachowicz				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	15.0	0.0	60
	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	60		5.0		60.0	125
Subject objectives	Acquiring the ability to design and construct reinforcement for basic reinforced concrete engineering structures						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W16] Has deeper and adequate knowledge of civil engineering, within offered specialization	Defines complex stress states in engineering structures, such as reinforced concrete arches, crane beams, stairs, reinforced deep beams, knows the methods of their dimensioning and the way of their construction.					
	[K6_K02] is responsible for reliability of obtained results of research and its interpretation, formulates conclusions and describes results of own work	Student designs two-way R-C structure. All the results given in the project are justified in detail and the drawings are precisely described.					
	[K6_U04] can correctly choose tools (analytical or numerical) to solve engineering problems in design of structures or construction process	He knows the basic computer programs supporting the design of reinforced concrete structures and the standard procedures in accordance with European recommendations					
	[K6_W06] knows the rules of constructing and dimensioning of building elements of: steel, reinforced concrete, wood, masonry.	Correctly defines the impact on engineering structures, correctly applies calculation procedures in accordance with European standards and makes detailed construction drawings					
Subject contents	Design of stairs; types of stairs, reinforcement details. Crane Beams: fatigue problem regarding to EN Code rules. Design of R-C arches. Deep beams based on theory and experimental tests, application in engineering structures, design methods and construction details. Tanks for fluid above and underground, loads, static calculation, design methods and construction details. Retaining walls. Types of retaining walls. Forces on retaining walls. Stability against overturning. Design requirements.						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test	50.0%	50.0%
	design	50.0%	50.0%
Recommended reading	Basic literature	<p>M. Knauff, Obliczanie konstrukcji żelbetowych według Eurokodu 2, PWN Warszawa 2018 (ew. poprzednie wydania 2012, 2014)</p> <p>M. Knauff, A. Golubińska, P. Knyziak: Tablice i wzory do projektowania konstrukcji żelbetowych z przykładami obliczeń, PWN 2013</p> <p>M. Knauff, B. Grzeszczykowski, A. Golubińska, Przykłady obliczania konstrukcji żelbetowych Zarysowanie, Zeszyt 3, PWN, Warszawa 2018</p> <p>Wandzik G., Bula A., Hulimka J.: Szybkie projektowanie konstrukcji żelbetowych zgodnie z EUROKODEM 2, Dolnośląskie Wydawnictwo Edukacyjne, Wrocław 2017</p> <p>A. Halicka, D. Franczak, <i>Projektowanie zbiorników żelbetowych t. i 2</i>, Wydawnictwo Naukowe PWN, Warszawa 2011, 2012</p> <p>Podstawy projektowania konstrukcji żelbetowych i sprężonych wg Eurokodu 2 praca zbiorowa pod red. M. Knauffa, Dolnośląskie Wydawnictwo Edukacyjne, 2006</p> <p>W. Starosolski, Konstrukcje żelbetowe według Eurokodu 2 i norm związanych , tom 1,2,3 Wydawnictwo Naukowe PWN, Warszawa 2011-2012</p> <p>J. KobiakW.Stachurski, <i>Konstrukcje żelbetowe</i>, t.1, Arkady, Warszawa 1984</p> <p>J.KobiakW.Stachurski, <i>Konstrukcje żelbetowe</i>, t.2, Arkady, Warszawa 1987</p> <p>J.KobiakW.Stachurski, <i>Konstrukcje żelbetowe</i>, t.3, Arkady, Warszawa 1989</p> <p>J.KobiakW.Stachurski, <i>Konstrukcje betonowe</i> , t.4, Arkady, Warszawa 1991</p>	
	Supplementary literature	<p>N.1. Żelbetowa norma europejska EN-1992-1-1:2004, oraz PN-EN-1992-1-1:2008. Projektowanie konstrukcji z betonu</p> <p>N.2. Norma żelbetowa PN-B-03264:2002, Konstrukcje betonowe. Obliczenia statyczne i wymiarowanie</p> <p>N.3. Norma PN-EN-1992-3 Projektowanie konstrukcji z betonu, cz. 3- Silosy i zbiorniki na ciecze,</p> <p>N.4. PN-EN 1991-4 Eurokod 1. Oddziaływanie na konstrukcje, cz. 4- Silosy i zbiorniki</p> <p><i>N.5. PN-89/B-03262 Zbiorniki żelbetowe na materiały sypkie i kieszonki. Obliczenia statyczne i wymiarowanie</i></p> <p>oraz normy obciążeń</p>	
	eResources addresses	<p>Adresy na platformie eNauczanie: Podstawy inżynierskich konstrukcji betonowych 2024 2025 - Moodle ID: 41481 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=41481</p>	

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

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