



Subject card

Subject name and code	Concrete Engineering Structures, PG_00042241						
Field of study	Civil Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Concrete Structures -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marek Wesolowski					
	Teachers	dr inż. Małgorzata Lachowicz mgr inż. Maciej Solarczyk dr inż. Marek Wesolowski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	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		10.0	75
Subject objectives	Design the prestressed elements in critical conditions and all load conditions.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W02] knows principles of analysis, design and dimensioning of complex constructions and its elements	Student designs the prestressed elements in critical conditions and all load conditions. Student explains structure solutions applied in constructions.			[SW1] Assessment of factual knowledge		
	[K7_U02] can design and dimension complex steel, concrete (including reinforced), wood and masonry constructions and its details	Student designs the prestressed elements in critical conditions and all load conditions. Student explains structure solutions applied in constructions.			[SU4] Assessment of ability to use methods and tools		
	[K7_K01] is aware of necessity of professional competences improvement; obeys the professional ethics code	Student designs the prestressed elements in critical conditions and all load conditions. Student explains structure solutions applied in constructions.			[SK4] Assessment of communication skills, including language correctness		
	[K7_W15] has deep and adequate knowledge of civil engineering, within offered specialization and profile	Student designs the prestressed elements in critical conditions and all load conditions. Student explains structure solutions applied in constructions.			[SW1] Assessment of factual knowledge		
Subject contents	Review of basic information of prestressed concrete structures: structure classification, prestress technics and prestress force loss estimation. Ultimate limit states and serviceability limit states of prestressed structures during construction and maintenance. Composite structures. Statically undetermined prestressed structures: prestressed beam of double and triple span. Arch roofs (the economical beams).						
Prerequisites and co-requisites	No requirements						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	50.0%	30.0%
	Written exam	50.0%	60.0%
	Laboratory	50.0%	10.0%
Recommended reading	Basic literature	<p>A.Ajdukiewicz J.Mames, <i>Betonowe konstrukcje sprężone</i>, Wydawnictwo Politechniki Śląskiej, Gliwice 2001</p> <p>A.Ajdukiewicz J.Mames, <i>Konstrukcje z betonu sprężonego</i>, Polski Cement, Kraków 2004</p> <p>T.Godycki-Ćwirko, A.Czkwianianc, <i>Konstrukcje sprężone</i>, Politechnika Łódzka 1984</p> <p>Z.A.Zieliński, <i>Prefabrykowane betonowe dźwigary sprężone</i>, Arkady, Warszawa 1962</p>	
	Supplementary literature	<p>W.Olszak i in., <i>Teoria konstrukcji sprężonych</i>, PWN, Warszawa 1961</p> <p>S.Kaufman i in., <i>Konstrukcje sprężone</i>, Monografia: Budownictwo Betonowe, t.III, Arkady, Warszawa 1962</p> <p><i>Konstrukcje betonowe, żelbetowe i sprężone. Komentarz naukowy do normy PN-B-03264</i>, ITB, Warszawa 2005</p> <p>F.Leonhardt, <i>Spannbeton für die Praxis</i>, Ernst & Sohn Verlag, Berlin 1973</p>	
	eResources addresses	<p>Adresy na platformie eNauczanie: Konstrukcje Sprężone 2023 - Moodle ID: 33083 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33083</p>	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		