



Subject card

Subject name and code	DESIGN OF COMPLEX ENGINEERING STRUCTURES, PG_00041239						
Field of study	Civil Engineering						
Date of commencement of studies	February 2025	Academic year of realisation of subject			2025/2026		
Education level	second-cycle studies	Subject group			Optional subject group		
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			assessment		
Conducting unit	Department of Building Structures and Material Engineering -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Michał Wójcik					
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	15.0	0.0	45
	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	45	5.0		25.0		75
Subject objectives	Acquisition of advanced knowledge in the field of modeling, design and construction of engineering structures						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W14] knows and applies building codes and obeys the Construction Law; has knowledge on environmental impact of investment realisation	The student can apply construction standards and building codes.			[SW1] Assessment of factual knowledge		
	[K7_W15] has deep and adequate knowledge of civil engineering, within offered specialization and profile	The student has knowledge of civil engineering.			[SW1] Assessment of factual knowledge		
	[K7_U02] can design and dimension complex steel, concrete (including reinforced), wood and masonry constructions and its details	The student knows the principles of analysis and construction of complex reinforced concrete and steel structures.			[SU1] Assessment of task fulfilment		
	[K7_W02] knows principles of analysis, design and dimensioning of complex constructions and its elements	The student knows the principles of analysis and construction of complex reinforced concrete and steel structures.			[SW1] Assessment of factual knowledge		
Subject contents	Examples of realisation of advanced engineering structures. Analysis of selected problems in modelling engineering structures with the aid of Finite Element Method. Calculation, technological and construction aspects of design of engineering structures.						
Prerequisites and co-requisites	Basic information about reinforced concrete, steel and industrial structures. Knowledge of Finite Element Method.						
Assessment methods and criteria	Subject passing criteria	Passing threshold			Percentage of the final grade		
	Project	50.0%			50.0%		
	Ćwiczenie	50.0%			50.0%		
Recommended reading	Basic literature	1. W. Starosolski: „Wybrane zagadnienia komputerowego modelowania konstrukcji inżynierskich”, Gliwice 2003.					
		2. W. Starosolski: „Komputerowe modelowanie betonowych ustrojów inżynierskich: wybrane zagadnienia”, tom 1 i 2, Gliwice 2010.					

	Supplementary literature	1. O. C. Zienkiewicz, R. L. Taylor: „The finite element method for solid and structural mechanics”, Amsterdam 2005. 2. G. Rakowski, Z. Kacprzyk: „Metoda elementów skończonych w mechanice konstrukcji”, Warszawa 2005.
	eResources addresses	Adresy na platformie eNauczenie:
Example issues/ example questions/ tasks being completed	1 the use of advanced constitutive laws for concrete 2 the use of FEM modeling the reinforced concrete and steel structures	
Work placement	Not applicable	

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