



## Subject card

Subject name and code	High concrete buildings and steel, PG_00044332						
Field of study	Civil Engineering						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2025/2026		
Education level	second-cycle studies		Subject group		Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Part-time studies		Mode of delivery		e-learning		
Year of study	2		Language of instruction		Polish		
Semester of study	4		ECTS credits		3.0		
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		dr hab. inż. Andrzej Ambroziak				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	10.0	0.0	0.0	0.0	25
	E-learning hours included: 25.0						
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	25		5.0		45.0	75
Subject objectives	The aim of the course is to familiarize students with the principles of designing tall buildings, to learn the methods of calculating and dimensioning basic structural elements, as well as to develop the skills to determine the load-bearing capacity of reinforced concrete elements.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W02] knows principles of analysis, design and dimensioning of complex constructions and its elements		The student is able to use the principles of construction and dimensioning of reinforced concrete elements in a practical way.				
	[K7_U02] can design and dimension complex steel, concrete (including reinforced), wood and masonry constructions and its details		The student has knowledge of the construction of concrete structural elements.				
	[K7_K01] is aware of necessity of professional competences improvement; obeys the professional ethics code		The student understands the need to improve professional qualifications and observe the rules of professional ethics.				
Subject contents	Preliminary issues - historical outline of tall buildings. Structural systems of residential, hotel and office buildings. Factors influencing the formation of the structure (object function, construction materials, technology, durability). Basic and exceptional loads. Building spatial stiffness - resistance to horizontal and vertical forces. Static diagrams and static quantities - classical analytical methods, FEM. Dimensioning of structural elements on the basis of existing standards and regulations, reinforcement shaping. Examples of completed tall buildings.						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Exam		60.0%		50.0%		
	Passing exercises		60.0%		50.0%		

Recommended reading	Basic literature	<p>Pawłowski A.Z., Cała I.: Budynki wysokie, Wydawnictwo Politechniki Warszawskiej 2006.</p> <p>Sieczkowski J.: Projektowanie budynków wysokich z betonu, Arkady, Warszawa 1976.</p> <p>Starosolski W.: Konstrukcje żelbetowe, Wydawnictwo Naukowe PWN, Warszawa 2008.</p> <p>Kiernożycki W.: Betonowe konstrukcje masywne, Polski Cement, Kraków 2003.</p> <p>Zienkiewicz O.C.: <i>Metoda elementów skończonych</i>. Arkady 1972 (i inne wydania w języku np. angielskim).</p> <p>Bródka J, Kozłowski A.: Stalowe budynki szkieletowe, OWPR 2003</p> <p>Machowski A., Murzewski J.: Szkielety stalowe budynków wielokondygnacyjnych, Kraków 1988</p>
	Supplementary literature	Ambroziak A., Kłosowski P.: <i>Autodesk Robot Structural Analysis podstawy obliczeń</i> . Wyd. PG, 2010.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	