



Subject card

Subject name and code	First Engineering Prosect, PG_00062838						
Field of study	Civil Engineering						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2023/2024		
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	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 Engineering Structures -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Przemysław Kalitowski				
	Teachers		dr inż. Przemysław Kalitowski mgr inż. Mikołaj Binczyk				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	30.0	0.0	30
	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	30		0.0		0.0	30
Subject objectives	<ul style="list-style-type: none">Organizing and expanding students' knowledge of the theory behind engineering structure design.Acquainting students with the practices and principles of engineering structure design.Assessing the knowledge students have in mechanics and material strength to design a real structure.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U05] Conducts research (obtaining information, simulations, experimental methods) in the field of construction in order to solve specific tasks and report research results.		The student is able to plan, prepare, conduct, and report an experimental study aimed at investigating the deflection of a beam under load.		[SU5] Assessment of ability to present the results of task [SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		
	[K6_K02] Can work effectively in a group, as well as function in teams, which may consist of representatives of various branches and levels.		The student effectively collaborates in a team, actively participating in group work and supporting other team members		[SK3] Assessment of ability to organize work [SK1] Assessment of group work skills		
	[K6_K03] Can effectively, clearly and unambiguously convey information, describe activities and communicate their results/ outcomes to engineers or a wider audience using appropriate communication methods and tools.		The student is able to present the created documentation and defend the results of analyses and research, before an audience.		[SK5] Assessment of ability to solve problems that arise in practice [SK4] Assessment of communication skills, including language correctness		
	[K6_W05] Demonstrate knowledge and understanding of research methods (obtaining information, simulations, experimental methods) in the field of civil engineering.		The student can predict potential weaknesses in the adopted structural solution and analytically assess the stress and deformation of a simple structure.		[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		

Subject contents	<p>Design</p> <p>Design a wooden structure based on the static scheme of a simply supported beam. The beam should have a specified span (about 3-4 m) and carry a given load (about 20-100 kg) located in the middle of the span. The beam has a rectangular cross-section and consists of connected planks. In groups of about 3-4 people, appropriate assumptions and design methodology should be adopted. Perform the necessary static and strength calculations. Prepare documentation complemented by structural drawings.</p> <p>Laboratory</p> <p>During the laboratory, each group constructs the designed beam and conducts an experiment by applying the specified load. During the tests, the displacements of the beam are measured. After completing the tests, a report should be prepared and a critical assessment of the measured values and the assumptions, made in the design, should be conducted.</p>											
Prerequisites and co-requisites	<p>Knowledge of mechanics in the field of calculating forces and deflections of statically determinate structures.</p> <p>Knowledge and ability to apply the laws and principles of material strength.</p>											
Assessment methods and criteria	<table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Correctness of the tests and laboratory reports</td><td>60.0%</td><td>50.0%</td></tr><tr><td>Correctness of the prepared project</td><td>60.0%</td><td>50.0%</td></tr></table>	Subject passing criteria	Passing threshold	Percentage of the final grade	Correctness of the tests and laboratory reports	60.0%	50.0%	Correctness of the prepared project	60.0%	50.0%		
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Recommended reading	<table><tr><td>Basic literature</td><td>Taylor, John Robert, and John R. Taylor. <i>Classical mechanics</i>. Vol. 1. Sausalito: University Science Books, 2005.Mott, Robert L. <i>Applied strength of materials</i>. 1996.Timoshenko, Stephen. <i>History of strength of materials: with a brief account of the history of theory of elasticity and theory of structures</i>. Courier Corporation, 1983.</td></tr><tr><td>Supplementary literature</td><td>Taylor, J. R, Introduction to Error Analysis, Second Edition: The Study of Uncertainties in Physical Measurements, University Science Books, 1997</td></tr><tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie: Pierwszy Projekt Inżynierski sem. IV 2023/2024 - Moodle ID: 37544 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37544</td></tr></table>	Basic literature	Taylor, John Robert, and John R. Taylor. <i>Classical mechanics</i> . Vol. 1. Sausalito: University Science Books, 2005.Mott, Robert L. <i>Applied strength of materials</i> . 1996.Timoshenko, Stephen. <i>History of strength of materials: with a brief account of the history of theory of elasticity and theory of structures</i> . Courier Corporation, 1983.	Supplementary literature	Taylor, J. R, Introduction to Error Analysis, Second Edition: The Study of Uncertainties in Physical Measurements, University Science Books, 1997	eResources addresses	Adresy na platformie eNauczanie: Pierwszy Projekt Inżynierski sem. IV 2023/2024 - Moodle ID: 37544 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37544					
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Example issues/ example questions/ tasks being completed	Selection of the cross-section of a bending beam: determination of normal and shear stresses.Investigation of deflections of a simply supported beam.											
Work placement	Not applicable											

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