

## SDAŃSK UNIVERSITY 的 OF TECHNOLOGY

## Subject card

Subject name and code	Science of Mechanics and Strength of Materials, PG_00048442								
Field of study	Chemistry in Construction Engineering								
Date of commencement of studies	October 2022		Academic year of realisation of subject			2023/2024			
Education level	first-cycle studies		Subject group			Obligatory subject group in the field of study			
						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	2		Language of instruction			Polish			
Semester of study	3		ECTS credits			4.0			
Learning profile	general academic profile		Assessment form			exam			
Conducting unit	Department of Energy Conversion and Storage -> Faculty of Chemistry								
Name and surname	Subject supervisor		dr inż. Katarzyna Januszewicz						
of lecturer (lecturers)	Teachers								
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	:t	Seminar	SUM	
of instruction	Number of study hours	30.0	30.0	0.0	0.0		0.0	60	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity Participation in classes include plan		didactic Participation in ed in study consultation hours		Self-study SUM		SUM		
	Number of study hours	60		5.0		35.0		100	
Subject objectives	Introduce students to issues related to technology, engineering, manufacturing technology in relation to the construction industry.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	K6_U05		The student is able to use industry standards. The student can select the basic elements of the chemical industry fittings to the tank/reactor used in the industry. Calculates the basic dimensions of the tank or installation components.			[SU4] Assessment of ability to use methods and tools			
			basic mechanical stresses (tensile stresses, shear stresses, buckling stresses and stresses). Classifies, describes and draws the basic connections used in the chemical industry. Calculates the basic dimensions of the tank or installation components. Recognizes the basic types of valves and fittings in the chemical industry. The student knows the division of construction materials used in the construction of chemical industry installations. The student can draw an object in three projections and in axonometry and cross-section.		solve problems that arise in practice				

Subject contents	- Selected sections of the strength of materials for structural components of the building and its installation (sanitary, heating, gas, air conditioning).						
	- Connections used in construction technology,, among which are listed: disjoint (threaded, flush mounted) and inseparable (welded, riveted).						
	<ul> <li>Construction materials used in industry, including: metals (ferrous and non-ferrous), natural materials (wood, leather, cork, rubber), and materials (ceramics, glass, plastics, insulation, materials change type</li> <li>Fittings and equipment installed in the building: warmer water storage tanks, pipelines, valves, fittings.</li> </ul>						
	- Solving engineering problems/ taska, selection of fittings. The ability to read and analyze technical drawnings of devices and installations.						
Prerequisites and co-requisites							
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade				
and criteria	Exam	51.0%	50.0%				
	Tests	51.0%	50.0%				
Recommended reading	Basic literature	re Praca zbiorowa, Mały Poradnik Mechanika t.I i II, WNT, Warszawa, 1988,					
	W.Lewandowski, Maszynoznawstwo chemiczne, Ćwiczenia projektowe, Wyd. PG., 1979, W.Lewandowski, A.Melcer, Zadania z maszynoznawstwa chemicznego, Wyd.PG, 2011.						
	Supplementary literature	No requirements					
	eResources addresses	Adresy na platformie eNauczanie:					
Example issues/ example questions/ tasks being completed	1. Analysis of the state of stresses affecting the used structural element (transport screw, hook).						
	2. Steiner theorem general formula and explanation on the example of a square.						
	3. Buckling.						
	4. The cord polygon method (graphical method) to determine the resultant of the system of forces.						
	5. Draw a selected structural element in the half-view and in the half-section.						
	6. Calculation of the tank wall thickness.						
	7. Tasks concerning the beam: reactions of statistically determinate beams, bending and torsional moments.						
Work placement	Not applicable						