



Subject card

Subject name and code	Mechanics of Marerials, PG_00069433						
Field of study	Civil Engineering						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2026/2027		
Education level	first-cycle studies		Subject group				
Mode of study	Part-time studies		Mode of delivery		at the university		
Year of study	4		Language of instruction		Polish		
Semester of study	7		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Mechanics of Materials and Structures -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Tomasz Ferenc				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	5.0	0.0	0.0	0.0	20
	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	20		3.0		27.0	50
Subject objectives	Understanding the elements of plasticity theory and plastic body models. Determining the influence of time and environment on the strength properties of materials. Discussing the concepts of creep and relaxation. Discussing fracture. Understanding materials such as composites and auxetics.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W07] Understand the investment's impact on the environment and the interrelationships and dependencies between the building structure and the natural environment		The student has knowledge of the impact of materials used in the investment process on the environment		[SW1] Assessment of factual knowledge		
	[K6_U07] Design and build engineering structures in a sustainable manner, with care for the natural environment and a minimum carbon footprint		The student is able to design building structures made of various building materials, knows their properties and impact on the natural environment.		[SU1] Assessment of task fulfilment		
	[K6_U06] Conduct engineering activities in civil engineering subject area, using and applying practical knowledge and understanding of materials, equipment and tools, processes and technologies.		The student solves design tasks and problems. He or she is able to prepare a report on the activities performed, such as calculations or design tasks.		[SU1] Assessment of task fulfilment		
	[K6_W06] Demonstrates practical knowledge and understanding of materials, devices and tools, processes and technologies in the field of civil engineering (and their limitations).		The student has theoretical and practical knowledge of materials used in the construction industry, understands their properties, and is able to determine them.		[SW1] Assessment of factual knowledge		
	[K6_K01] Is aware of the key aspects of professional, ethical and social responsibility related to management, business operation, decision making and opinion formulation in civil engineering.		The student has knowledge of professional, ethical and social responsibility related to activities in the construction industry		[SK3] Assessment of ability to organize work [SK5] Assessment of ability to solve problems that arise in practice		

Subject contents	Course content – lecture Material constants, plastic body models		
	Elements of rheology - creep, relaxation, fatigue		
	Fracture		
	Composites		
	Auxetics		
	Course content – exercises Experimental study of the properties of materials		
Prerequisites and co-requisites	Basic knowledge of:		
	- structural mechanics		
	- strength of materials		
	- experimental methods in the strength of materials		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test	60.0%	60.0%
	project	60.0%	40.0%
Recommended reading	Basic literature	Bielewicz E.: Wytrzymałość materiałów. Politechnika Gdańska, Gdańsk 1968, 1972, 1977, 1980, 1984, 2001, 2006. Dyląg Z., Jakubowicz A., Orłóś Z.: Wytrzymałość materiałów, tom I, Wydawnictwa Naukowo-Techniczne, 2003. Dyląg Z., Jakubowicz A., Orłóś Z.: Wytrzymałość materiałów, tom II, Wydawnictwa Naukowo-Techniczne, 2003. Chróścielewski J.: Materiały pomocnicze do wykładu z Mechaniki Materiałów (na portalu eNauczanie).	
	Supplementary literature	Jastrzębski P., Mutermilch J., Orłowski W.: Wytrzymałość materiałów. Arkady, Warszawa 1974.	
	eResources addresses		
	Example issues/ example questions/ tasks being completed	A design task involving the design, production and testing of a sample made of a selected material	
Practical activities within the subject	Not applicable		

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