GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Mechanics of Materials A, PG_00069306		
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	Full-time studies	Mode of delivery	at the university
Year of study	4	Language of instruction	Polish
Semester of study	7	ECTS credits	1.0
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	prof. dr hab. inż. Jacek Chróścielewski	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	5.0	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	0.0	0.0	20

Subject objectives

Determining the influence of time and environment on the strength properties of materials. Discussing the concepts of creep, relaxation and fatigue. 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_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	[SK5] Assessment of ability to solve problems that arise in practice [SK3] Assessment of ability to organize work
[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_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

<table>
<tr><td>Subject contents</td><td>Course content – lecture
The influence of time and environment on the strength properties of materials.
Selected issues related to creep and relaxation.
Selected issues related to fracture.
Selected issues related to the stability of frame elements.
Selected issues related to modern materials, such as composites and auxetics.
Course content – project
Study of material properties taking into account rheological effects</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Basic knowledge of:
- structural mechanics
- strength of materials
- experimental methods in the strength of materials</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>laboratory</td><td>60.0%</td><td>20.0%</td></tr>
<tr><td>test</td><td>60.0%</td><td>80.0%</td></tr>
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</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Bielewicz E.: Wytrzymałość materiałów. Politechnika Gdańska, Gdańsk 1968, 1972, 1977, 1980, 1984, 2001, 2006.
Dyląg Z., Jakubowicz A., Orłoś Z.: Wytrzymałość materiałów, tom I, Wydawnictwa Naukowo-Techniczne, 2003.
Dyląg Z., Jakubowicz A., Orłoś Z.: Wytrzymałość materiałów, tom II, Wydawnictwa Naukowo-Techniczne, 2003.
Chróścielewski J.: Materiały pomocnicze do wykładu z Mechaniki Materiałów (na portalu eNauczanie).</td></tr>
<tr><td>Supplementary literature</td><td>Jastrzębski P., Mutermilch J., Orłowski W.: Wytrzymałość materiałów. Arkady, Warszawa 1974.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>A design task involving the design, production and testing of a sample made of a selected material</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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