GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Mechanics and heat laboratory, PG_00061899		
Field of study	Materials Engineering, Materials Engineering		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2025/2026
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	1	Language of instruction	Polish
Semester of study	2	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Jakub Karczewski	
	Teachers	dr inż. Daniel Jaworski	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	30.0	0.0	0.0	30

E-learning hours included: 0.0

eNauczanie source addresses:

Moodle ID: 4874 Mechanika dla inżynierów
https://enauczanie.pg.edu.pl/2025/course/view.php?id=4874

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	5.0	15.0	50

Subject objectives

Getting to know the basic methods of collecting and analyzing measurement data on the example of exercises in the first physical laboratory

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U10] Can work in a group in order to solve problems typical of materials engineering.	The student is able to measure basic physical quantities and analyze the collected data while working in a research group	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU5] Assessment of ability to present the results of task
[K6_U01] Can properly use selected analytical, simulation and experimental methods, as well as devices for measuring the fundamental properties of materials and technological processes.	The student is able to apply appropriate data analysis methods, determine measurement uncertainties, and uses appropriate measurement data analysis tools	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools
[K6_W02] has knowledge of physics and chemistry, useful for formulating and solving simple problems within the scope of materials science	the student, based on basic knowledge of classical physics, understands the operation of simple scientific experiments, is able to use appropriate measurement tools and draw conclusions from the obtained results	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects

<table>
<tr><td>Subject contents</td><td>Course content – laboratory
• M3 - Uniformly accelerated rectilinear motion
• M4 Free fall of bodies - analysis of motion and determination of gravitational acceleration
• M9 Determination of the moment of inertia M12 Determination of Young's modulus using the deflection arrow method
• M14 Investigation of centrifugal force
• C1a Determination of the coefficient of linear expansion of solids
• C2 Investigation of the dependence of the boiling point of water on pressure
• O3 Measurement of the dependence of the refractive index on wavelength
• O5 Determination of the sizes of gaps and obstacles using laser light
• O6 Determination of the radius of curvature of a lens using Newton's rings</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>knowledge of basic physics in high school</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>report on the implementation of the exercise</td><td>50.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>instructions for tasks of the PG physical laboratory I</td></tr>
<tr><td>Supplementary literature</td><td>-</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>• determine Young's modulus using the deflection arrow method
• determine the gravitational acceleration using the free fall time measurement</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
</table>

Document generated electronically. Does not require a seal or signature.