GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Mechanics and heat laboratory, PG_00061899
Field of study	Materials Engineering

Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
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

Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Jakub Karczewski
	Teachers	Daniel Jaworski
		dr hab. inż. Jakub Karczewski

Lesson types and methods of instruction	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						

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

Subject contents	• 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

Prerequisites and co-requisites	knowledge of basic physics in high school

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	report on the implementation of the exercise	50.0%	100.0%

Recommended reading	Basic literature	instructions for tasks of the PG physical laboratory I
	Supplementary literature	-
	eResources addresses	Podstawowe
		https://ftims.pg.edu.pl/strona-glowna/wydzial/laboratoria-wydzialowe/ipracownia-fizyczna - instructions for tasks of the PG physical laboratory I
		Adresy na platformie eNauczanie:
		Laboratorium z mechaniki i ciepła - Moodle ID: 45469 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=45469

Example issues/ example questions/ tasks being completed	• determine Young's modulus using the deflection arrow method
	• determine the gravitational acceleration using the free fall time measurement

Work placement	Not applicable

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