



Subject card

Subject name and code	Mechanics for engineers, PG_00061898						
Field of study	Materials Engineering						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2026/2027	
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				5.0	
Learning profile	general academic profile	Assessment form				exam	
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 hab. inż. Jakub Karczewski				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	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 didactic classes included in study plan	Participation in consultation hours		Self-study	SUM	
	Number of study hours	60	5.0		60.0	125	
Subject objectives	Getting to know the basic laws of classical physics. Acquiring the ability to analyze physical phenomena and technical issues based on the laws of physics.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W02] has advanced knowledge of physics and chemistry, including facts, concepts, methods, and theories that enable the description and explanation of complex mechanical and physical phenomena as well as chemical processes; understands their key role in the advancement of civilization	The student has basic knowledge of classical mechanics, basic optics and thermodynamics.			[SW1] Assessment of factual knowledge		
	[K6_U01] is able to analyse and solve complex and non-standard scientific and technical problems in materials engineering based on his knowledge, using appropriate analytical, computational, numerical, simulation, or experimental methods	The student is able to solve tasks related to the basics of classical physics. Knows basic research methods and ways of defining and determining basic physical quantities			[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools		
	[K6_K01] is ready to continuously expand his knowledge in materials engineering and related sciences, to critically evaluate this knowledge, and to recognise its importance in solving practical and cognitive problems; is aware of his own limitations and knows when to seek expert advice.	The student has knowledge of the basics of classical physics. Understands the need to understand them in the context of solving professional problems. Can independently deepen knowledge in this area.			[SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice		

Subject contents	Course content – lecture Vector Algebra Kinematics Dynamics Conservation Laws Waves Optics Fluid Mechanics Thermodynamics		
Prerequisites and co-requisites	knowledge of basic physics at secondary school level		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written exam	40.0%	20.0%
	oral exam	50.0%	30.0%
	passing physics tasks	50.0%	50.0%
Recommended reading	Basic literature	<ul style="list-style-type: none"> • M.Herman, A.Kalestyński, L.Widomski, Podstawy Fizyki dla kandydatów na wyższe uczelnie i studentów, WN PWN, Warszawa • J. Massalski, M. Massalska Fizyka dla Inżynierów, WNT Warszawa 	
	Supplementary literature	D.Halliday, R.Resnick, J.Walker, Podstawy Fizyki, PWN, Warszawa	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> • describe the distribution of forces on an inclined plane • Newton's laws of dynamics • explain idea of inertial force • write the equation harmonic motion • explain the phenomenon of total internal reflection 		
Practical activities within the subject	Not applicable		

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