



## Subject card

Subject name and code	Mechanics for engineers, PG_00061898						
Field of study	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		5.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Institute Of Nanotechnology And Materials Engineering -> Faculty Of Applied Physics And Mathematics -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Jakub Karczewski				
	Teachers		dr hab. inż. Jakub Karczewski				
Lesson types and methods of instruction	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_K01] Understands the need to improve professional and personal competencies; is conscious of own limitations and knows when to turn to experts, properly establishes priorities helping to accomplish tasks defined by oneself or others.		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.		[SK5] Assessment of ability to solve problems that arise in practice [SK2] Assessment of progress of work		
	[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 solve tasks related to the basics of classical physics. Knows basic research methods and ways of defining and determining basic physical quantities		[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information		
	[K6_W02] has knowledge of physics and chemistry, useful for formulating and solving simple problems within the scope of materials science		The student has basic knowledge of classical mechanics, basic optics and thermodynamics.		[SW1] Assessment of factual knowledge		
Subject contents	Vector AlgebraKinematicsDynamicsConservation LawsWavesOpticsFluid MechanicsThermodynamics						

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
	passing physics tasks	50.0%	50.0%
	oral exam	50.0%	30.0%
	written exam	40.0%	20.0%
Recommended reading	Basic literature	<ul style="list-style-type: none"><li>M.Herman, A.Kalestyński, L.Widomski, Podstawy Fizyki dla kandydatów na wyższe uczelnie i studentów, WN PWN, Warszawa</li><li>J. Massalski, M. Massalska Fizyka dla Inżynierów, WNT Warszawa</li></ul>	
	Supplementary literature	D.Halliday, R.Resnick, J.Walker, Podstawy Fizyki, PWN, Warszawa	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"><li>describe the distribution of forces on an inclined plane</li><li>Newton's laws of dynamics</li><li>explain idea of inertial force</li><li>write the equation harmonic motion</li><li>explain the phenomenon of total internal reflection</li></ul>		
Work placement	Not applicable		

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