



Subject card

Subject name and code	Mechanics for engineers, PG_00061898						
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				5.0	
Learning profile	general academic profile	Assessment form				exam	
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		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_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		
	[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		[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools		
	[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.		[SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice		
Subject contents	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	Adresy na platformie eNauczenie: Mechanika dla inżynierów - Moodle ID: 45467 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=45467	
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 		
Work placement	Not applicable		

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