

Subject card

Subject name and code	Mathematics in Physics, PG_00210397						
Field of study	Medical Physics						
Date of commencement of studies	October 2026		Academic year of realisation of subject			2026/2027	
Education level	Bachelor's studies		Subject group			Optional subject group 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			4.0	
Learning profile	academic		Assessment form			credit	
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Joanna Gondek				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	45.0	0.0	0.0	0.0	45
	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	45		0.0		30.0	75
Subject objectives	The aim of the course 'Mathematics in Physics' is to consolidate and deepen students' understanding of the mathematical concepts previously covered in the 'Mathematics' course (first semester). Mathematical concepts will be discussed from the perspective of their applications in physics, and physical equations will be discussed as examples of mathematical concepts.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[FIZMEDL3_W03] Knows and understands at an advanced level the most important topics of higher mathematics, including statistics, to the extent necessary for the quantitative description, understanding and modelling of physical and medical processes.	The student knows and understands the concepts of differential, integral in the context of their applications to the description of mechanical, electromagnetic, and nuclear phenomena. They understand the role and importance of mathematics in the development of physics and science in general.	[SW1] oral statement/ conversation/discussion [SW3] text preparation/written work
	[FIZMEDL3_W01] Knows and understands at an advanced level the phenomena, principles, laws and theories specific to physics and biophysics.	The student knows and understands the regularities of physical phenomena classified as mechanics, electromagnetism, nuclear physics, and the theories and models used to describe them.	[SW1] oral statement/ conversation/discussion [SW3] text preparation/written work
	[FIZMEDL3_K01] He is ready for a critical evaluation of his own knowledge and the information he receives, and understands the need for further education and for improving professional and personal competencies.	The student is aware of the limitations of: – their own knowledge and abilities, – physics as a science. The student is aware of the importance of: – their own work in studying, – critical thinking skills, – discussion skills, – rigorous reasoning and precise formulation of issues.	[SK1] oral statement/conversation/ discussion [SK3] text preparation/written work
	[FIZMEDL3_U01] He can formulate, analyse, and solve complex problems in physics and medicine, using mathematical formalism, based on the physical phenomena, principles, and theories he has learned.	The student is able to – consciously apply appropriate mathematical concepts in describing physical phenomena (mechanical, electromagnetic, nuclear), – mathematically solve problem-based and quantitative problems in physics and interpret the results obtained.	[SU1] oral statement/conversation/ discussion [SU3] text preparation/written work
Subject contents	Differential calculus, integral calculus, matrix calculus, complex number calculus in mechanics, electromagnetism, and nuclear physics		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		51.0%	95.0%
		0.0%	5.0%
Recommended reading	Basic literature	-	
	Supplementary literature	-	
	eResources addresses		
Example issues/ example questions/ tasks being completed	-		
Work placement	Not applicable		

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