

Subject card

Subject name and code	Quantum Physics, PG_00210200						
Field of study	Medical Physics						
Date of commencement of studies	October 2025		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	2		Language of instruction		Polish Polish		
Semester of study	4		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	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		0.0		50.0	110
Subject objectives	an introduction to quantum mechanics that discusses the fundamental characteristics of this physical theory; helping students develop the intuition needed to understand quantum phenomena and make informed use of the achievements of quantum mechanics.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[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: – phenomena that demonstrate the discrete nature of properties and the physical characteristics of the world, – the principles underlying the quantum description of physical phenomena, – the basic mathematical tools used in quantum physics, – the fundamental equations of quantum physics.	[SW1] oral statement/ conversation/discussion [SW3] 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 can: – qualitatively interpret simple physical objects and systems based on quantum physics equations, – use quantum physics equations to quantitatively describe simple physical objects and systems	[SU1] oral statement/conversation/ discussion [SU3] text preparation/written work
	[FIZMEDL3_U04] He can independently search for information in Polish and English professional and popular science literature, databases, and on the Internet, as well as from other sources. He can integrate and interpret this information, draw conclusions, and formulate opinions.	The student can: – search for, verify, and apply knowledge regarding topics described by the formalism of quantum physics from various sources.	[SU1] oral statement/conversation/ discussion
Subject contents	1. Physical phenomena that reflect the quantization of the world. 2. The mathematical foundations of quantum mechanics. 3. Schrödinger's equation. 4. The uncertainty principle. 5. A quantum approximate description of “simple” physical objects and systems.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	not applicable	51.0%	80.0%
	not applicable	51.0%	20.0%
Recommended reading	Basic literature	not applicable	
	Supplementary literature	not applicable	
	eResources addresses		
Example issues/ example questions/ tasks being completed	not applicable		
Work placement	Not applicable		

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