University of Gdańsk

Subject card

Subject name and code	Nuclear Physics, PG_00205531						
Field of study	Medical Physics						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2028/2029			
Education level	Bachelor's 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	3		Language of instruction	Polish			
Semester of study	5		ECTS credits	3.0			
Learning profile	academic		Assessment form	exam			
Conducting unit	Faculty of Mathematics, Physics and Informatics -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Angelina Łobejko				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	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	45.0	90	
Subject objectives	not applicable						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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 use the laws and models of nuclear physics to formulate and analyse problems related to the structure of atomic nuclei, radioactive decay processes and nuclear reactions. They are able to apply basic mathematical formalism to solve computational tasks and interpret nuclear phenomena relevant to medical applications.	[SU2] presentation/project/paper/ report [SU3] text preparation/written work [SU4] test/exam - oral or written
[FIZMEDL3_W01] Knows and understands at an advanced level the phenomena, principles, laws and theories specific to physics and biophysics.	The student has an advanced knowledge and understanding of the phenomena, laws and models of nuclear physics, such as the structure and properties of atomic nuclei, mechanisms of radioactive decay and nuclear reactions. They understand the interactions of ionising radiation with matter and their significance for biophysics and medical physics. They know the basic applications of nuclear physics in diagnostics (e.g. nuclear medicine, isotopic imaging), therapy (e.g. radiotherapy, brachytherapy), as well as other branches of medical physics and biophysics, understanding their physical basis and limitations.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report [SW3] text preparation/written work
[FIZMEDL3_W09] Knows at an advanced level the construction and operating principles of measurement instruments, electronic systems, and diagnostic and therapeutic equipment used in physics research and in medical diagnosis and therapy.	The student knows the advances types of measuring instruments used in nuclear physics research, understands the principle of operation of simple ionising radiation detection systems and their role in measuring nuclear quantities. The student has knowledge of the basics of the construction of diagnostic and therapeutic equipment using ionising radiation, understanding its significance and limitations in medical applications.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[FIZMEDL3_U05] Can program and use specialised software for calculations and data analysis, including in the field of imaging diagnostics, radiotherapy and biomedical signal analysis.	The student is able to use advanced programming tools and specialised software for calculations and analysis of experimental data in nuclear physics, such as radiation spectrum analysis, activity determination and half-life calculation. They know how to use software that supports data processing and visualisation and are able to relate the results obtained to simple applications in diagnostic imaging and radiotherapy, understanding their significance in the context of medical physics.	[SU2] presentation/project/paper/ report [SU3] text preparation/written work [SU4] test/exam - oral or written

Subject contents

not applicable

Prerequisites and co-requisites

not applicable

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
not applicable	51.0%	20.0%
not applicable	51.0%	25.0%
not applicable	51.0%	55.0%

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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