

Subject card

Subject name and code	Introduction to Medical Physics (Lecture), PG_00182140						
Field of study	Medical Physics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
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	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		2.0		
Learning profile	academic		Assessment form		exam		
Conducting unit	Division of Biomaterials and Medical Physics -> Institute of Experimental Physics -> Faculty of Mathematics, Physics and Informatics -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Justyna Strankowska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	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	30		0.0		30.0	60
Subject objectives	Course Objectives: Introduction to Medical Physics The objective of this course is to familiarize students with the key role of a medical physicist in healthcare facilities and to introduce them to: • The physical principles of imaging methods used in medical diagnostics (e.g., Magnetic Resonance Imaging, Computed Tomography, Ultrasonography). • The methods and techniques utilized in radiotherapy and the fundamental principles of radiation protection. • The diagnostic and therapeutic methods applied in nuclear medicine.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[FIZMEDL3_K05] He is ready to care for the legacy and traditions of the medical physics profession by popularising knowledge.	Demonstrates awareness of the importance of the professional ethos and historical traditions in medical physics, striving to preserve and pass them on. Is prepared to communicate medical physics concepts in an accessible way to individuals outside of the academic and medical communities, while ensuring the accuracy and clarity of the information.	[SK1] oral statement/conversation/discussion
	[FIZMEDL3_W07] Knows and understands at an advanced level the concepts of diagnostic and therapeutic methods and their quality control in medical applications.	The student possesses advanced knowledge of the physical principles, operating procedures, clinical applications, and quality control of the most common diagnostic imaging methods, such as Magnetic Resonance Imaging (MRI), Computed Tomography (CT), Ultrasonography (USG), as well as Positron Emission Tomography (PET) and Single-Photon Emission Computed Tomography (SPECT).	[SW4] test/exam - oral or written
	[FIZMEDL3_W08] Knows and understands the mechanisms of general and specific pathology, the pathogenesis of diseases and dysfunctions, the fundamentals of clinical examination, and the role of radiological and radioisotope studies in clinical diagnosis.	Demonstrates knowledge of the connections between the physical aspects of diagnostic procedures and the biological and pathological changes in the human body. Understands the physical and biological mechanisms underlying radiotherapy, nuclear medicine, and radiology (diagnostics and therapy). Additionally, the student knows and can describe the therapeutic and diagnostic methods and techniques applied in these fields.	[SW4] test/exam - oral or written
	[FIZMEDL3_W12] Knows and understands the fundamental dilemmas of modern civilisation in the context of medical physics development, particularly concerning healthcare, the financing of medical facilities, the organisation of the healthcare system, and the role of the medical physicist within this system.	Knows and understands advanced topics related to the role and responsibilities of a medical physicist in healthcare facilities, including their accountability for the safety and quality of medical procedures. Demonstrates knowledge of the principles of radiation protection, including its physical and legal aspects, in the context of ensuring the safety of both patients and medical personnel.	[SW4] test/exam - oral or written
Subject contents	1. Role and responsibilities of a medical physicist in healthcare facilities. 2. Medical imaging an overview of the physical principles, operating procedures, and applications of commonly used diagnostic imaging methods (magnetic resonance imaging, computed tomography, ultrasonography, PET, SPECT). 3. Radiotherapy therapeutic methods and physical aspects of treatment. 4. Nuclear medicine diagnostics and therapy. 5. Radiation protection physical and legal aspects of safety.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	discsusion	0.0%	10.0%
	exam	51.0%	90.0%
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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