University of Gdańsk

Subject card

Subject name and code	Introduction to Medical Physics (Lecture), PG_00182140						
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	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_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
[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_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_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

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
exam	51.0%	90.0%
disscusion	0.0%	10.0%

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