University of Gdańsk

Subject card

Subject name and code	The Oncological Treatment Process from Screening to Radiotherapy, PG_00210341						
Field of study	Medical Physics						
Date of commencement of studies	October 2025		Academic year of realisation of subject	2026/2027			
Education level	Master'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			
Semester of study	3		ECTS credits	3.0			
Learning profile	academic		Assessment form	credit			
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Anna Synak				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	45.0	0.0	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	Presentation of the oncology treatment process with respect to the equipment used, with particular emphasis on devices employed in radiotherapy						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[FIZMEDMU2_W06] Knows and understands the current directions of development of physics and medical sciences, especially in the field of medical physics, and the fundamental dilemmas of modern civilisation.	The student is familiar with current developments in equipment used for cancer diagnosis and treatment, particularly in radiotherapy, and understands their impact on the effectiveness and safety of therapy.	[SW2] presentation/project/paper/ report
[FIZMEDMU2_K03] He is ready to take a scientific approach to the issues being solved, using scientific literature, as well as expert opinions, in case of difficulties in solving the problem on his own.	The student is prepared to critically analyze information on equipment and technologies used in oncology and to justify their conclusions based on current scientific evidence.	[SK2] presentation/project/paper/ report
[FIZMEDMU2_W01] Knows and understands in depth selected issues in the field of physics and medicine, the complex relationships between them, and development trends in the exact and natural sciences, health sciences, and others.	The student understands cancer screening and diagnostic methods, the stages of the cancer treatment process, and the role and application of medical equipment used in the planning and delivery of radiotherapy, brachytherapy, and proton therapy.	[SW2] presentation/project/paper/ report
[FIZMEDMU2_W04] Knows and understands in depth the theoretical foundations and principles of operation of measurement systems and research, diagnostic and therapeutic equipment specific to the field of physics and medicine.	The student understands the operating principles of diagnostic, treatment planning, and therapeutic equipment used in oncology, with particular emphasis on devices employed in radiotherapy, brachytherapy, and proton therapy.	[SW2] presentation/project/paper/ report

Subject contents

1. Overview of Cancer Screening Methods
2. Overview of Diagnostic Techniques Used in Oncology
3. Treatment Planning and Simulation Systems
4. Radiotherapy Management Systems
5. Equipment for Brachytherapy, External Beam Radiotherapy, and Proton Therapy
6. Safety Principles in the Diagnostic and Therapeutic Process

Prerequisites and co-requisites

Understanding of the physical phenomena governing the interaction of ionizing and non-ionizing radiation with matter and biological tissue, with particular emphasis on the energy ranges and types of radiation used in medicine.
Basic knowledge of the structure and operating principles of medical equipment, including X-ray imaging systems.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
presentation	51.0%	100.0%

Recommended reading

Basic literature	https://fundacjaonkologiczna.pl/wp-content/uploads/2023/03/Poradnik_02032023.pdf https://www.siemens-healthineers.com/en-us/molecular-imaging/mi-news/imaging-life-publications https://cancercare.siemens-healthineers.com/resources-support/blogs
Supplementary literature	author's own materials
eResources addresses	

Example issues/ example questions/ tasks being completed

Work placement

Not applicable

Document generated electronically. Does not require a seal or signature.