University of Gdańsk

Subject card

Subject name and code	Dosimetry and Radiation Protection, PG_00182193						
Field of study	Medical Physics						
Date of commencement of studies	October 2027		Academic year of realisation of subject		2027/2028		
Education level	Master'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	2		ECTS credits		2.0		
Learning profile	academic		Assessment form		exam		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Marta Rowińska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15		0.0		35.0	50
Subject objectives	Familiarizing students with methods for detecting ionizing radiation, determining its level and doses, the permissible exposure time to this radiation, and the fundamental parameters of dosimeters and radiation meters.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[FIZMEDMU2_K04] He is ready to take care of the achievements and traditions of the medical physicist profession by improving his competencies and popularising knowledge.	Demonstrates readiness to independently expand knowledge on new dosimetry methods and measuring equipment. Presents the ability to convey knowledge in the field of dosimetry and radiological protection in a manner understandable to non-specialists. Understands the need and is ready to popularize knowledge about the dangers and safe use of ionizing radiation in various fields of science and everyday life.	[SK4] test/exam - oral or written
[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.	Knows and explains the principles of interaction of ionizing radiation (α, β, n, γ, X) with matter. Classifies and describes the operation of different types of ionizing radiation detectors (gaseous, scintillation, semiconductor, etc.). Recognizes and characterizes the construction and functions of dosimetric instruments and types of dosimeters. Explains the methods for measuring individual doses and can describe their operation.	[SW4] test/exam - oral or written
[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.	Defines and calculates physical quantities characterizing radiation sources and ionizing radiation (activity, dose rate, absorbed dose, equivalent dose) and uses their units. Explains and analyzes the relationship between the type of radiation and its detection methods in the context of dosimetric measurements.	[SW4] test/exam - oral or written
[FIZMEDMU2_W07] Knows and understands the principles of occupational health and safety to a degree that allows for independent work in medical facilities and research laboratories.	Knows the principles of radiological protection in practice. Determines and calculates the permissible exposure time to ionizing radiation based on the dose rate.	[SW4] test/exam - oral or written
[FIZMEDMU2_W08] Knows and understands the economic, legal, and ethical conditions related to the activities of a medical physicist.	Explains and applies the procedures for calibrating dosimetric instruments to ensure their measurement reliability. Identifies key legal regulations concerning radiation dose measurements and radiological protection.	[SW4] test/exam - oral or written

Subject contents

1. Interaction of α, β, n, γ, and X-ray radiation with matter in the context of dosimetric measurements.
2. Detection methods for α, β, γ, X-ray, and neutron radiation in the context of dosimetric measurements.
3. Physical quantities characterizing radiation sources and ionizing radiation, and their units.
4. Operating principles and classification of ionizing radiation detectors.
5. Construction of dosimetric instruments, types of dosimeters classification of dosimetric instruments.
6. Methods for measuring individual doses, types of dosimeters.
7. Calibration of dosimetric instruments.
8. Principles of radiological protection.
9. Methods for measuring and calculating doses of ionizing radiation and the permissible exposure time to radiation.

Prerequisites and co-requisites

Assessment methods and criteria

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

Recommended reading

Basic literature	not applicable
Supplementary literature	not applicable
eResources addresses	

Example issues/ example questions/ tasks being completed

Work placement

Not applicable

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