GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Selected Issues of Human Radiobiology, PG_00050106		
Field of study	Biomedical Engineering		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2025/2026
Education level	first-cycle 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	3	Language of instruction	Polish
Semester of study	6	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Atomic, Molecular and Optical Physics -> Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Paweł Możejko	
	Teachers		

Lesson types and methods of instruction

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	1.0	9.0	25

Subject objectives

To provide basic and fundamental information about physical methods used in radiobiology.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U05] can plan and conduct experiments related to the field of study, including computer simulations and measurements; interpret obtained results and draw conclusions	- Knowledge of the structure of matter at the level of elementary particles and atomic nucleus - Knowledge of radioactive decay - Knowledge of the interaction of ionizing radiation with matter - Knowledge about radiation interaction with cellular systems - Knowledge of methods for detection of ionizing radiation.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
[K6_W02] Knows and understands, to an advanced extent, selected laws of physics and physical phenomena as well as methods and theories explaining the complex relationships between them, constituting the basic general knowledge in the field of technical sciences related to the field of study	- Knowledge of the structure of matter at the level of elementary particles and atomic nucleus - Knowledge of radioactive decay - Knowledge of the interaction of ionizing radiation with matter - Knowledge about radiation interaction with cellular systems - Knowledge of methods for detection of ionizing radiation.	[SW1] Assessment of factual knowledge

Subject contents

Lectures: The structure of matter Radioactive decays The interaction of the radioactive decay products with matter Ionizing radiation detectors Simple biological systems The effect of alpha radiation interaction with biological systems The effect of beta radiation interaction with biological systems The effect of gamma radiation interaction with biological systems Methods for study the interaction of the ionizing radiation with living organisms Direct effects of the ionizing radiation on cellular systems Indirect effects of the ionizing radiation on cellular systems Basic dosimetric quantities Determination of radiation doses Dosimetry of ionizing radiation Radiological protection Classes: The atomic nucleus Types of radioactive decay Law of radioactive decay Kinetics of radioactive decay The interaction of alpha radiation with matter The interaction of beta radiation and matter The interaction of gamma radiation with matter Basic biological systems. Effects of the interaction of ionizing radiation with bio-matter. Basic dosimetric quantities. Natural radioactivity in the environment Artificial radioactivity in the environment

Prerequisites and co-requisites

No requirements

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	final exam	50.0%	50.0%
		50.0%	50.0%
Recommended reading	Basic literature	Skrypt z materiałami do przedmiotu „Radiobiologia i Ochrona Radiologiczna” “Człowiek i promieniowanie jonizujące” Red. Z.A. Hrynkiewicz PWN Warszawa 2001	
	Supplementary literature	Jerzy Sobkowski „Chemia jądrowa” PWN Warszawa 1981 Wojciech Szymański „Chemia jądrowa” PWN Warszawa 1996	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		