



Subject card

Subject name and code	Laboratory of Ionizing Radiation Dosimetry, PG_00068257						
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2028/2029	
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				3.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Division of Complex Systems Spectroscopy -> Institute of Physics and Applied Computer Science -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr Brygida Mielewska					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	15.0	15.0	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		4.0		41.0	75
Subject objectives	To show experimental aspects of dosimetry of ionizing radiation						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U12] can analyze the operation of components, circuits and systems related to the field of study, as well as measure their parameters and examine technical specifications, and plan and conduct experiments related to the field of study, including computer simulations and measurements, and interpret obtained results and draw conclusions	student performs typical measurements using radiometers and radiation counters, understands their construction, operating principle, and limitations. The student uses physical models to more complex systems, uses calibration and simulation methods to illustrate the processes			[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information		
	[K6_U02] can perform tasks related to the field of study in an innovative way as well as solve complex and nontypical problems, applying knowledge of physics, in changing and not fully predictable conditions	The student is able to use in practice the knowledge from the physics course, especially nuclear physics, dosimetry, and radiological protection The student is able to analyze phenomena occurring with the participation of ionizing radiation The student uses and understands the methods of graphical interpretation of physical processes and quantities and analyzes and draws conclusions based on graphs illustrating physical processes.			[SU1] Assessment of task fulfilment [SU5] Assessment of ability to present the results of task		

Subject contents	Course content – exercises List of Experiments:  1. Parameters of photon beam profile  2. Determination of accelerator's dose rate  3. Clinical dosimetry  4. Experimental functional imaging		
Prerequisites and co-requisites	Physics - elementary course, Atomic and Nuclear Physics, Radiological Protection		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	4 lab exercises positively marked and accepted reports	50.0%	50.0%
	task-solving exam	50.0%	50.0%
Recommended reading	Basic literature	W. Łobodziec "Dozymetria promieniowania jonizującego w radioterapii"  Technical Reports series No 398 IAEA "Absorbed dose determination in external beam brachytherapy"	
	Supplementary literature	E.B. Podgorsak "Review of Radiation oncology physics"	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Beam profiles and its parameters in radiotherapy		
Practical activities within the subject	Not applicable		

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