

## 。 GDAŃSK UNIVERSITY OF TECHNOLOGY

## Subject card

Subject name and code	Radiation detectors, PG_00053366							
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering							
Date of commencement of studies	February 2024		Academic year of realisation of subject			2024/2025		
Education level	second-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	1		Language of instruction			Polish		
Semester of study	2		ECTS credits			2.0		
Learning profile	general academic profile		Assessment form			assessment		
Conducting unit	Institute of Physics and Applied Com		puter Science -> Faculty of Applied Physics and Mathematics					tics
Name and surname	Subject supervisor		dr hab. inż. Grażyna Jarosz					
of lecturer (lecturers)	Teachers dr hab. inż. Grażyna Jarosz							
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	aboratory Project		Seminar	SUM
of instruction	Number of study hours	15.0	0.0	15.0 0.0			0.0	30
	E-learning hours included: 0.0							
Learning activity and number of study hours	Learning activity	Participation in classes includ plan	n didactic ed in study	Participation in consultation hours		Self-study		SUM
	Number of study 30 hours			2.0		18.0		50
Subject objectives	To acquaint students with the construction and principles of operation of e-m radiation detectors							
Learning outcomes	Course outcome Subject outcome Method of verification							
	[K/_W02] knows and understands, to an increased extent, selected laws of physics and physical phenomena, as well as methods and theories explaining the complex relationships between them, constituting advanced general knowledge in the field of technical sciences related to the field of study		knows the physical basics of radiation detection			[SW1] Assessment of factual knowledge		
	[K7_U06] can analyse the operation of components, circuits and systems related to the field of study; measure their parameters; examine technical specifications; interpret obtained results and draw conclusions		can measure radiation parameters			[SU5] Assessment of ability to present the results of task		
Subject contents	1. Electromagnetic radiation, sources and interaction with matter. 2. Thermal radiation. 3. Radiation detectors, classification. 4. Detector noise. 5. Detector parameters. 6. Detectors of ionizing radiation. 7. Photographic plates. 8. Thermal detectors: bolometers, thermocouples, pyrometers. 9. Thermo-emission and scintillation detectors. 10. Semiconductor photon detectors. 11. CCD matrices. 12. X-ray and gamma-ray detectors used in medicine. laboratory 1. Investigation of the p-n photodiode 2. Investigation of the radiation thermostat. 3. Examination of the scintillation detector.							
Prerequisites and co-requisites								
Assessment methods	Subject passing criteria		Pass	Passing threshold		Percentage of the final grade		
and criteria			51.0%			70.0%		
			100.0%			30.0%		
Recommended reading	Basic literature Supplementary literat	ure	G.H. Rieke, Detection of Light, Campbridge University Press					
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	eResources addresses	Adresy na platformie eNauczanie: Detektory promieniowania - Moodle ID: 41652 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=41652			
Example issues/ example questions/ tasks being completed	Give the types of noises in the detectors				
Work placement	Not applicable				

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