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	October 2022	Academic year of realisation of subject	2023/2024
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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Instytut Fizyki i Informatyki Stosowanej -> Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Grażyna Jarosz	
	Teachers	dr hab. inż. Grażyna Jarosz	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
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 didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	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
[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
[K7_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

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 and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
	100.0%	30.0%
	51.0%	70.0%

Recommended reading

Basic literature	G.H. Rieke, Detection of Light, Campbridge University Press
Supplementary literature	G.H. Rieke, Detection of Light, Campbridge University Press

	eResources addresses	Uzupełniające Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Give the types of noises in the detectors	
Work placement	Not applicable	