GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Laboratory of Ionizing Radiation Dosimetry, PG_00068257		
Field of study	Biomedical Engineering		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2027/2028
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

<table>
<tr><td>Subject contents</td><td>Course content – exercises
List of Experiments:

1. Parameters of photon beam profile

2. Determination of accelarator's dose rate

3. Clinical dosimetry

4. Experimental functional imaging</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Physics - elementary course, Atomic and Nuclear Physics, Radiological Protection</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>4 lab excercises positively marked and accepted reports</td><td>50.0%</td><td>50.0%</td></tr>
<tr><td>task-solving exam</td><td>50.0%</td><td>50.0%</td></tr>
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<tr><td>Recommended reading</td><td>
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<tr><td>Basic literature</td><td>W. Łobodziec "Dozymetria promieniowania jonizującego w radioterapii"

Technical Reports series No 398 IAEA "Absorbed dose determination in external beam brachytherapy"</td></tr>
<tr><td>Supplementary literature</td><td>E.B. Podgorsak "Review of Radiation oncology physics"</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>Beam profiles and its parameters in radiotherapy</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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