



Subject card

Subject name and code	, PG_00050108						
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject				2022/2023	
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				2.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Zakład Spektroskopii Układów Złożonych -> Instytut Fizyki i Informatyki Stosowanej -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Brygida Mielewska				
	Teachers		dr Brygida Mielewska dr inż. Ireneusz Linert				
Lesson types and methods of instruction	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						
Fizyka jądrowa 2022/23 - Moodle ID: 25675 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=25675							
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 show experimental aspects of dozymetry of ionizing radiation						
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		- ability of performing experiments including radioactive sources and proper data presentation - ability of estimating experimental uncertainties directly measured or determined indirectly, - ability of analysis of correlations and its estimation			[SU4] Assessment of ability to use methods and tools	
	[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		- improvement in understanding nuclear physics, dosimetry and radiological protection, -ability of physical analysis of functions and phenomena appearing in the presence of ionizing radiation - improvement in understanding methods of graphical data presentation and its analysis, interpretation and concluding from graphs illustrating physical processes - ability of applying of simple physical models - student describes problem on the basis of recommended literature			[SU1] Assessment of task fulfilment	

Subject contents	<p>Solving problems:</p> <ul style="list-style-type: none"> • Health Physics Instrumentation • Radiation Detectors • Particle-Counting Instruments • Dose-Measuring Instruments • Neutron Measurements • Calibration • Counting Statistics <p>List of Experiments:</p> <ol style="list-style-type: none"> 1. Parameters of photon beam profile 2. Determination of accelerator's dose rate 3. Clinical dosimetry 4. Dose measurements in presence of water and plexi phantoms 											
Prerequisites and co-requisites	Physics - elementary course, Nuclear Physics, Radiological Protection											
Assessment methods and criteria	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Subject passing criteria</th> <th style="width: 30%;">Passing threshold</th> <th style="width: 30%;">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>4 laboratory exercises positively assessed</td> <td>50.0%</td> <td>50.0%</td> </tr> <tr> <td>problem solving exam</td> <td>50.0%</td> <td>50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	4 laboratory exercises positively assessed	50.0%	50.0%	problem solving exam	50.0%	50.0%
Subject passing criteria	Passing threshold	Percentage of the final grade										
4 laboratory exercises positively assessed	50.0%	50.0%										
problem solving exam	50.0%	50.0%										
Recommended reading	Basic literature	<p>W. Łobodziec "Dozymetria promieniowania jonizującego w radioterapii"</p> <p>INTRODUCTION TO Health Physics, H.Cember, T.,ed. McGrawHill Medical</p>										
	Supplementary literature	<p>E.B. Podgorsak "Review of Radiation oncology physics"</p> <p>Technical Reports series No 398 IAEA "Absorbed dose determination in external beam brachytherapy"</p>										
	eResources addresses											
Example issues/ example questions/ tasks being completed	<p>What is the LLD for a 30-minute sample count if a blank gives 45 counts in 30minutes?</p>											
Work placement	Not applicable											