



Subject card

Subject name and code	Safety issues in radiation physics , PG_00060255						
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2024/2025		
Education level	second-cycle studies		Subject group				
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 Computer Science -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Brygida Mielewska				
	Teachers		dr Brygida Mielewska				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	8.0	7.0	0.0	0.0	0.0	15
	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	15		0.0		0.0	15
Subject objectives	The aim of the course is to familiarize students with the conditions of safe work with high-energy radiation sources, in particular accelerators, including radiotherapeutic ones						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W08] knows and understands, to an increased extent, the fundamental dilemmas of modern civilisation, the main development trends of scientific disciplines relevant to the field of education		The student develops and discusses selected issues in the field of work safety with accelerators		[SW3] Assessment of knowledge contained in written work and projects		
	[K7_U09] can carry out a critical analysis of the functioning of existing technical solutions and assess these solutions, as well as apply experience related to the maintenance of advanced technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment		The student learns the specifics of the hazards and conditions of safe work in an environment using accelerators and other advanced medical and industrial devices		[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information		

Subject contents	1. Introduction to work safety - risks and hazards in accelerator technology 2. Magnets and cryogenic devices 3. Radio frequencies 4. Lasers 5. Beam hazards and ionizing radiation 6. Electrical safety 7. Mechanical safety 8. Systemic solutions - work safety		
Prerequisites and co-requisites	the knowledge of issues of high energy physics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written exam	50.0%	50.0%
	quizzes	50.0%	50.0%
Recommended reading	Basic literature	T. Otto "Safety accelerators" (Springer Open access 2021)	
	Supplementary literature	Radiation at Home, Outdoors and in the Workplace Editors: Dag Brune, Ragnar HellborgBertil R. R. Persson, Rauno Pääkkönen, Scandinavian Science Publisher 2001	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	What are the risks associated with the use of the cryogenic technique? Assessment of the risk of working with a laser beam.		
Work placement	Not applicable		

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