

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Planning of radiation therapy, PG_00053352								
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	2		Language of instruction			Polish			
Semester of study	3		ECTS credits			2.0			
Learning profile	general academic profile		Assessment form			assessment			
Conducting unit	Institute of Physics ar	nd Applied Corr	nputer Science	-> Faculty of A	pplied I	Physics	and Mathema	tics	
Name and surname of lecturer (lecturers)	Subject supervisor Teachers								
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
of instruction	Number of study hours	15.0	0.0	0.0	15.0		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	dactic Participation in in study consultation hours		Self-study SUM			
	Number of study hours	30		2.0		18.0		50	
Subject objectives	The aim of the course is to present the current methods and tools for treatment planning in radiotherapy with the use of photos, electrons as well as with ions and neutrons								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	[K7_U03] can design, according to required specifications, and make a complex device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment		Student works with the codes of practise and protocols in radiotherapy			[SU4] Assessment of ability to use methods and tools			
	[K7_W05] Knows and understands, to an increased extent, methods of process and function support, specific to the field of study.		Student is aware of the resposibility of the medical physicist in treatment planning			[SW3] Assessment of knowledge contained in written work and projects			
	[K7_U05] can plan and conduct experiments related to the field of study, including computer simulations and measurements; interpret obtained results and draw conclusions		Student analyses the distribution of isododes			[SU2] Assessment of ability to analyse information			

Subject contents	1. Interaction of ionizing radiation with matter							
	2. Fundamentals of radiotherapy	2. Fundamentals of radiotherapy						
	3. Target definition in treatment planning							
	4. Beam DefinitionVirtual Simulation							
	5. Photon-Beam Treatment Planning Techniques							
	6. Electron-Beam Treatment Planning Techniques							
	7. Dose Evaluation of Treatment Plans							
	 8.Biological Evaluation of Treatment Plans 9. Quality Assurance of the Treatment Planning Process 10. Quality Control of Treatment Delivery 							
Prerequisites and co-requisites	Nuclear medicine and radiotherapy	- fundamentals						
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade					
and criteria	written report	50.0%	50.0%					
	written exams/test	50.0%	50.0%					
Recommended reading	Basic literature	Handbook of radiotherapy Pjusics, (ed. P. Mayles, wyd Taylor&Francis					
	Supplementary literature Praca zbiorowa pod redakcją A. Z. Hrynkiewicza i E. Rokity "Fizyczne metody diagnostyki medycznej i terapii" G. J. Kutcher, C. Burman "Calculation of complication probability factors for non-uniform normal tissue irradiation; the effective volume method" Int. J. Radiat. Oncol. Biol. Phys., 16, 1623-1630, 1989							
	eResources addresses Adresy na platformie eNauczanie:							
Example issues/ example questions/ tasks being completed	 Probability of healing Probability of damage of normal tissue 							
Work placement	Not applicable							

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