

Subject card

Subject name and code	Practical classes in elution counting, PG_00210345						
Field of study	Medical Physics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2026/2027		
Education level	Master's 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	4		ECTS credits		3.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Anna Synak				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	45.0	0.0	0.0	45
	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	45		0.0		30.0	75
Subject objectives	The aim of the course is to familiarize students with the practical aspects of calculating and analyzing the elution of radiopharmaceuticals, as well as the parameters related to their behavior in biological and technical systems. The course is designed to develop students' skills in the quantitative analysis of measurement data, interpretation of elution curves, and evaluation of the quality of processes involved in the preparation and quality control of radiopharmaceuticals used in nuclear medicine.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[FIZMEDMU2_K03] He is ready to take a scientific approach to the issues being solved, using scientific literature, as well as expert opinions, in case of difficulties in solving the problem on his own.	The student is prepared to critically evaluate calculation results and measurement data related to the elution process and to apply current scientific knowledge in the analysis and assessment of radiopharmaceutical quality.	[SK1] oral statement/conversation/discussion
	[FIZMEDMU2_U01] Can apply the scientific method in solving physical and medical problems, carrying out experiments and drawing conclusions in the field of physics, medical physics and other fields, based on in-depth knowledge, appropriate selection of sources, and mathematical and computer science methods and tools.	The student is able to analyze measurement data, calculate the elution efficiency of radionuclide generators, account for measurement uncertainties, and interpret the obtained results in the context of radiopharmaceutical quality control.	[SU2] presentation/project/paper/report
	[FIZMEDMU2_U02] Can plan and conduct an experiment using new or adapt existing methods and tools, and critically analyse the results of measurements, observations or numerical calculations, assessing the accuracy of the results using known methods and tools.	The student is able to analyze measurement and calculation results related to the radionuclide generator elution process, evaluate their accuracy by taking measurement uncertainty into account, and draw conclusions regarding the quality of the elution process.	[SU2] presentation/project/paper/report
	[FIZMEDMU2_U04] Can formulate and test hypotheses related to simple research problems within the scope of acquired knowledge in physics and medicine.	The student is able to formulate and test hypotheses concerning the results of the radionuclide generator elution process based on the analysis of experimental data, taking measurement uncertainties into account.	[SU2] presentation/project/paper/report
	[FIZMEDMU2_W04] Knows and understands in depth the theoretical foundations and principles of operation of measurement systems and research, diagnostic and therapeutic equipment specific to the field of physics and medicine.	The student understands the theoretical foundations of measurement methods and the operating principles of the equipment used to assess the elution parameters of radionuclide generators and the quality control of radiopharmaceuticals, as well as the principles for interpreting the obtained results.	[SW2] presentation/project/paper/report
Subject contents	• Basic concepts related to elution in nuclear medicine. • Calculation of radionuclide generator elution efficiency (e.g., ⁹⁹Mo/⁹⁹Tc generators). • Measurement errors and uncertainty analysis in elution calculations. • Practical exercises involving calculations based on experimental data.		
Prerequisites and co-requisites	None		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	report	51.0%	100.0%
Recommended reading	Basic literature	Author's own materials	
	Supplementary literature	Author's own materials	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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