

Subject card

Subject name and code	Ultrasonography, PG_00090050						
Field of study	Medical Physics						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2025/2026		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Optional subject group		
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		1.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Małgorzata Grzywińska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	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	- To familiarize students with the physical principles of ultrasonography. - To present the construction and operation of modern ultrasonographic devices. - To explain the principles and clinical applications of conventional and Doppler ultrasonography. - To introduce advanced ultrasonographic techniques such as intravascular, intracoronary, and endoscopic ultrasonography. - To explain the mechanisms and applications of ultrasonic lithotripsy. - To present the therapeutic applications of ultrasonography, particularly in ophthalmology.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	FIZMEDL3_W32	The student knows and understands advanced concepts related to the physical methods used in medical ultrasonography, including the principles of ultrasound generation and propagation, the interactions of ultrasound waves with biological tissues, and their applications in both diagnostics and therapy.	[SW2] presentation/project/paper/report
	[FIZMEDL3_K01] knows the limitations of his own knowledge and understands the need for further education	The student is aware of the limitations of their own knowledge and skills in the field of the physical basis of ultrasonography and modern ultrasonic diagnostic methods, and understands the need for continuous learning and further professional development in this area.	[SK2] presentation/project/paper/report
Subject contents	Physical fundamentals of ultrasonography. Ultrasonographic devices. Conventional and Doppler ultrasonography. Intravascular and intracoronary ultrasonography. Endoscopic ultrasonography. Ultrasonic lithotripsy. Therapeutic ultrasonography in ophthalmology.		
Prerequisites and co-requisites	brak		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	presentation/report	51.0%	100.0%
Recommended reading	Basic literature	1. Nowicki, Andrzej. <i>Ultrasonografia medyczna. Podstawy fizyczne</i> . Wydawnictwo Naukowe PWN, Warszawa, 2010. 2. Rumack, Carol M., Wilson, Stephanie R., Charboneau, J. William. <i>Diagnostic Ultrasound</i> . Elsevier, 2018 3. versus Angiography IU. Intravascular Ultrasound: Principles and Clinical Applications. The Practice of Clinical Echocardiography. 2007:152. 4. Poggi C, Palavecino M. Ultrasound principles and instrumentation. Surgery Open Science. 2024 Mar 1;18:123-8. 5. Erikson KR, Fry FJ, Jones JP. Ultrasound in medicine-a review. IEEE Transactions on Sonics and Ultrasonics. 1974 Jul 31;21(3): 144-70.	
	Supplementary literature	original teaching materials published on the UG portal and in the GUMed Extranet	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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