



Subject card

Subject name and code	Ultrasounds in Medicine, PG_00047927						
Field of study	Biomedical Engineering						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2024/2025		
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	5	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Marine Electronic Systems -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Lech Kilian				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	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		4.0		51.0	100
Subject objectives	The aim of the course is to acquaint students with physical properties of sound fields, energy of ultrasound, problems of transmitting, processing, and displaying ultrasonic signals, and with the structure of diagnostic and therapeutic ultrasonic equipment.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U07] can apply methods of process and function support, specific to the field of study		Student discusses properties of acoustic waves and the specificity of their propagation in human body. He defines the concept of directivity of ultrasonic transducers and presents methods of scanning and multibeam systems. He discusses ultrasonic techniques used in medical ultrasound, Doppler methods and types of imaging. He uses basic diagnostic equipment, and analyses and interprets measurement data.		[SK1] Assessment of group work skills [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment		
	[K6_W03] Knows and understands, to an advanced extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum		Student discusses methods of ultrasonic signal generation and echo signal processing in simple and complex diagnostic and therapeutic systems. Is able to point out and discuss important technical and functional parameters determining the value of a particular system.		[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge		

