



Subject card

Subject name and code	Ultrasounds in Medicine, PG_00047927						
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2028/2029	
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 Signals and Systems -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Lech Kilian					
	Teachers						
Lesson types	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_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		
	[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		

