



## Subject card

Subject name and code	Engineering Problems in Cardiology, PG_00064127						
Field of study	Mechanical and Medical Engineering						
Date of commencement of studies	October 2025	Academic year of realisation of subject			2026/2027		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study 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			1.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. lek. Janusz Siebert					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	15.0	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	1.0	9.0	25		
Subject objectives	Diagnostic tools in cardiology						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U08] is able to assess the human body physic and functioning of the body organs and is able to use medical knowledge to solve mechanical-medical problems in the scope of the study	performs complete and targeted physical examination of adult patients			[SU4] Assessment of ability to use methods and tools		
	[K6_W01] has knowledge in the field of natural sciences, including mathematics, contemporary physics, chemistry, and human anatomy with physiology	1. knows morfology and human physiology 2. possesses the skill of acting in conditions of uncertainty or stress			[SW2] Assessment of knowledge contained in presentation		
	[K6_K02] is aware of importance of professional dealing and to fulfill ethics obligations, he/she understands other (nontechnical) abilities of mechanical engineering professional, their influence on the society and security of environment, he/she is aware of importance of social cooperation	1. complies with the medical secrecy obligation and honours all patient's rights 2. abides by the model codes of ethics in professional activity			[SK5] Assessment of ability to solve problems that arise in practice		

Subject contents	<p>Course content – laboratory <i>Diagnostic tools in cardiology</i></p> <p>1. <i>Basic concepts of electrocardiography /ECG/</i></p> <p>2. <i>Basic concepts of impedance cardiography /ICG/.</i></p> <p>3. Basic concepts of echocardiography.</p> <p>4. Basic concepts of ultrasonography</p> <p>5. Basic concepts of electrotherapy /pacemaker therapy (AAI, VVI, DDD)/</p> <p>6. <i>Invasive procedures in cardiology / PTCA/</i></p> <p>7. <i>Principles of cardiosurgery</i></p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Essej	60.0%	100.0%
Recommended reading	Basic literature	<p><i>Seminar multimedia presentations updated yearly</i></p> <p>1. <i>"ECGs by Example" Dean Jenkins, Stephen Gerred, Elsevier, 3rd edition, 2011,</i></p>	
	Supplementary literature	<p><b>B. Supplementary literature</b> <i>Guidelines of the European Society of Cardiology (ESC) -</i> <a href="http://www.escardio.org">www.escardio.org</a></p>	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<p>Physical principles of ECG</p> <p>Physical principles of USG</p> <p>Pacemarcer therapy</p>		
Practical activites within the subject	Not applicable		

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