



Subject card

Subject name and code	Experimentarium I, PG_00068287						
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2027/2028	
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	2	Language of instruction				Polish	
Semester of study	4	ECTS credits				3.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Division of Complex Systems Spectroscopy -> Institute of Physics and Applied Computer Science -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Ireneusz Linert				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	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	30		2.0		43.0	75
Subject objectives	The aim of the course is to develop habits of scientific methods and explorations together with experimental work in the environment of a physical and biophysical laboratory, as well as to enable students to independently plan and carry out demonstration experiments in the field of biophysics.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U04] can apply knowledge of programming methods and techniques as well as select and apply appropriate programming methods and tools in computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study		The student plans and develops an experimental system and its control methodology.		[SU1] Assessment of task fulfilment		
	[K6_U09] can carry out a critical analysis of the functioning of existing technical solutions and assess these solutions, as well as apply experience related to the maintenance of technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment		the student carries out measurements related to the assigned topic, analyzes and presents the results, critically evaluates the technical solutions used		[SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task		
	[K6_U03] can design, according to required specifications, and make a simple device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment		The student designs or modifies a measurement system in accordance with the given specification and taking into account safety standards.		[SU1] Assessment of task fulfilment		

Subject contents	Course content – laboratory Laboratory exercises and problems: 1. Measurements of the viscosity coefficient and surface tension of liquids 2. Electromyography 3. Thermographic imaging 4. Hering's respiratory model 5. Middle ear model 6. Measurements of hemoglobin absorption spectra 7. Optical systems, microscopy 8. Assessment of visual defects		
Prerequisites and co-requisites	Physics 1 and Physics 2, Biophysics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	tests and reports for laboratory exercises	50.0%	50.0%
	group experimental project	50.0%	50.0%
Recommended reading	Basic literature	University Physics, Openstax	
	Supplementary literature	A. Kostrzewska, Biophysics laboratory exercises (2005)	
	eResources addresses		
Example issues/ example questions/ tasks being completed	What are the stages of the respiration process? What is the absorption spectrum of a solution and what parameters describe it?		
Practical activities within the subject	Not applicable		

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