



Subject card

Subject name and code	Laboratory Diagnostic Systems, PG_00049343						
Field of study	Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	October 2021	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	4	Language of instruction			Polish		
Semester of study	7	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Biomedical Engineering -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Piotr Jasiński					
	Teachers	prof. dr hab. inż. Piotr Jasiński dr inż. Karolina Cysewska mgr inż. Justyna Ignaczak					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	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	3.0		42.0		75
Subject objectives	The aim of the course is to acquaint students with the basic methods of laboratory diagnostics						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W54] Knows and understands, to an advanced extent, selected aspects of biomedical diagnostics		The student will know selected aspects of biomedical diagnosis in laboratory diagnostics systems		[SW1] Assessment of factual knowledge		
	[K6_W06] Knows and understands the basic processes occurring in the life cycle of devices, facilities and systems specific to a given field of study.		The student will know the measurement procedures used in laboratory diagnostics systems		[SW1] Assessment of factual knowledge		
Subject contents	Clasfication of contamination and measurement parameters. Organization of environmental monitoring services. Methods of environmental monitoring. Analyzers and meters of environmental monitoring. Impedance spectroscopy - definitions and equipment. Impedance spectroscopy - measurement of materials and electrochemical phenomena. Biosensors in analytical chemistry. Dry and wet tests. Basic quantities in medical analytics. Optical and fiber optics methods. Spectrophotometry. Mass spectroscopy. Electrochemical analyzers. Microsystems in analytical chemistry. Lab on chip.						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Laboratory		50.0%		30.0%		
	Test		50.0%		70.0%		

Recommended reading	Basic literature	Nowakowski A., Materiały pomocnicze do wykładu i laboratorium, Gdańsk 2010 Tomaszewski J., Diagnostyka Laboratoryjna, PZWL, 1993 Nałęcz M. [red.] Biocybernetyka i Inżynieria Biomedyczna, t. 2 Biopomiary, Exit, 2001
	Supplementary literature	J. S. Wilson, Sensor Technology Handbook, Elsevier, 2005 Y.B. Gianchandani, O. Tabata, H. Zappe, eds., Comprehensive Microsystems, , Elsevier, 2008
	eResources addresses	Adresy na platformie eNauczanie: Systemy diagnostyki laboratoryjnej_2024/2025 - Moodle ID: 41294 https://enauzanie.pg.edu.pl/moodle/course/view.php?id=41294
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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