



Subject card

Subject name and code	Physics laboratory I (electricity and magnetism), PG_00020721						
Field of study	Technical Physics						
Date of commencement of studies	October 2023	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	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Institute of Physics and Applied Computer Science -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marcin Dampc					
	Teachers	dr inż. Marcin Dampc mgr inż. Michał Jurkowski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	45.0	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	5.0		25.0		75
Subject objectives	To get knowledge about performing of basic experiments and estimation of various quantities within electricity and magnetism						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W08] Has knowledge of planning and conducting physical experiments, and critical analysis of its results.	Knows how to plan and conduct physical experiments and how to assess experimental results properly.			[SW3] Assessment of knowledge contained in written work and projects		
	[K6_W07] Has knowledge of the construction and operation of physical instruments, measurement and research equipment.	Has basic knowledge of the structure and the operating principles of physical instruments, and measuring devices.			[SW3] Assessment of knowledge contained in written work and projects		
	[K6_U04] Can plan and conduct experiments, critically analyze their results, draw conclusions and form opinions. Has laboratory work experience.	Is able to set and perform experiments, critically analyze their results, and draw conclusions.			[SU4] Assessment of ability to use methods and tools		
[K6_W12] Knows basic health and safety rules.	Knows principles of occupational safety and hygiene			[SW1] Assessment of factual knowledge			
Subject contents	1. Investigation of electric field distribution. 2. Determination of dielectric constant of various materials. 3. Measuring resistance with the use of the Wheatstone's bridge. 4. Measuring a capacitance of a capacitor with the use of the Wheatstone's bridge. 5. Measuring a force acting on a current-carrying conductor in a magnetic field. 6. Determination of a magnetic moment of a loop carrying a current. 7. Determination of a magnetic field of circular conductors carrying a current. 8. Magnetic field around current-carrying conductors: a long <i>straight wire</i> or a <i>loop</i> . 9. Determination of magnetic permeability and hysteresis. 10. Performance of a transformer. 11. Determination of an RC charging circuit curve. 12. Investigation of a series RLC circuit. 13. Determination of the horizontal component of the Earth's magnetic field. 14. Measurement of the electrochemical equivalent of copper and the Faraday constant. 15. Curie temperature determination.						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Acceptance of reports of 10 exercises	100.0%	70.0%
	credit theory on each of the exercises	50.0%	30.0%
Recommended reading	Basic literature	1. K. Kozłowski, R. Zieliński I Laboratorium z fizyki cz.1 Wyd.PG 2. Materials for students available at the website of the Faculty https://ftims.pg.edu.pl/laboratorium-z-fizyki-i-pracownia 3. D. Halliday, R. Resnick Fizyka t.2	
	Supplementary literature	No requirements	
	eResources addresses	Adresy na platformie eNauczanie: Pracownia fizyczna I (elektryczność i magnetyzm) - Moodle ID: 39987 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=39987	
Example issues/ example questions/ tasks being completed	1. Give the definition of the electric field and electric potential 2. Definition of the magnetic induction 3 .Structure, the principle of operation and the use of a transformer		
Work placement	Not applicable		

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