



## 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 2022	Academic year of realisation of subject			2023/2024		
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	Instytut Fizyki i Informatyki Stosowanej -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marcin Dampc					
	Teachers	mgr inż. Michał Jurkowski dr inż. Marcin Dampc					
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						
	Address on the e-learning platform: <a href="https://teams.microsoft.com/l/team/19%3a9e7c64OSTGPpzig8Q8WYBjAMpsr95P6cfUYhOsr-ka2M1%40thread.tacv2/conversations?groupId=41b54a6c-1ea3-41d0-a12d-fce4134ad6fb&amp;tenantId=86760356-0022-486f-b793-a2d470bba5a5">https://teams.microsoft.com/l/team/19%3a9e7c64OSTGPpzig8Q8WYBjAMpsr95P6cfUYhOsr-ka2M1%40thread.tacv2/conversations?groupId=41b54a6c-1ea3-41d0-a12d-fce4134ad6fb&amp;tenantId=86760356-0022-486f-b793-a2d470bba5a5</a>						
Additional information: in-person mode with the MS Teams support							
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_W02	A student has extended detailed knowledge of electricity and magnetism.			[SW1] Assessment of factual knowledge		
	K6_W08	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_W12	Knows principles of occupational safety and hygiene			[SW1] Assessment of factual knowledge		
	K6_W07	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	Is able to set and perform experiments, critically analyze their results, and draw conclusions.			[SU4] Assessment of ability to use methods and tools			
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 <a href="https://ftims.pg.edu.pl/laboratorium-z-fizyki-i-pracownia">https://ftims.pg.edu.pl/laboratorium-z-fizyki-i-pracownia</a>  3. D. Halliday, R. Resnick Fizyka t.2	
	Supplementary literature	No requirements	
	eResources addresses	Adresy na platformie eNauczanie:	
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		