GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Physics in experiment II, PG_00063336		
Field of study	Nanotechnology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
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	1	Language of instruction	Polish
Semester of study	2	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Division of New Functional Materials for Energy Conversion -> Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Beata Bochentyn	
	Teachers	dr inż. Leszek Wicikowski dr hab. inż. Beata Bochentyn	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	0.0	0.0	0.0	60
	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	60	5.0	60.0	125

Subject objectives	Physics in Experiment II is a consequence of the subject Physics in Experiment I. The aim of the subject is to familiarize students with issues in the field of electrostatics, electricity, magnetism, electromagnetic waves, wave and geometric optics, and to acquire the skills of analyzing physical phenomena and solving technical problems based on the appropriate laws of physics.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W01] has knowledge of materials science and understands its key role in the progress of civilization	Understands the importance of general physics for effective acquisition of skills necessary in technical sciences. Is able to apply computational methods of physics to solve tasks related to material problems.	[SW1] Assessment of factual knowledge
[K6_U04] can plan and conduct experiments, critically analyze their results, draw conclusions and formulate opinions. Has laboratory experience.	Can analyze the described experiments. He can identify key physical experiments that allowed researchers to formulate the appropriate laws of physics. Sees a clear relationship between theoretical knowledge and experiment	[SU3] Assessment of ability to use knowledge gained from the subject
[K6_U01] can learn independently, obtain information from literature, databases and other properly selected sources	Uses the lecture's issues to prepare for solving physical problems in optics, electricity and magnetism-related issues independently. He can use textbooks for this purpose and find reliable sources of information in the Internet	[SU3] Assessment of ability to use knowledge gained from the subject
[K6_W03] has systematic knowledge within the scope of all branches of general physics (mechanics and study of heat, electricity and magnetism, waves, optics, elements of modern physics).	Has knowledge of the physical laws of optics, electricity and magnetism and can describe phenomena related to them occurring in everyday life. Can creatively solve complex problems from various branches of physics.	[SW1] Assessment of factual knowledge

Subject contents

Lecture/exercises:vector operators, electrostatics, electric field from a point and extended charge, electric current, magnetic field, electromagnetic induction, electromagnetic waves, wave and geometric optics.

Prerequisites and co-requisites

Knowledge of vector, differential and integral calculus used in basic calculations of instantaneous values of physical quantities.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Final exam	50.0%	50.0%
Passing the computational classes	50.0%	50.0%

Recommended reading

Basic literature

D.Halliday, R.Resnick, J.Walker, Podstawy Fizyki, PWN, Warszawa W.Moebs, S.J.Ling, J.Sanny, Fizyka dla szkół wyższych, Tom 2, https://openstax.org/details/books/fizyka-dla-szkół-wyższych-polska.J. Massalski "Fizyka dla inżynierów" NTM.Herman, A.Kalestyński, L.Widomski, Podstawy Fizyki dla kandydatów na wyższe uczelnie i studentów, WN PWN, Warszawa 2004Cz. Bobrowski. Fizyka. Krótki kurs. WNT, Warszawa 2004 lub wydania późniejsze.I.W. Sawieliew, Kurs fizyki tom 2, PWN 1989 lub wydania późniejsze.

	Supplementary literature	K. Jezierski, K. Sierański, I.Szlufarska, Fizyka - Repetytorium, zadania z rozwiązaniami, kurs powtórkowy dla studentów I roku i uczniów szkół średnich, Oficyna Wydawnicza Scripta, Wrocław 2005J.Jędrzejewski, W.Kruczek, A.Kujawski, Zbór zadań z fizyki dla uczniów szkół średnich i kandydatów na studia, WNT, Warszawa, 2000D.Halliday, R.Resnick, J.Walker, Podstawy Fizyki, Zbiór zadań, PWN, WarszawaZbiór zadań z fizyki, skrypt Politechniki Gdańskiej, https://ftims.pg.edu.pl/spolecznosc-lokalna/materialy-dydaktyczne/zbior-zadan-z-fizyki/zbior-zadan
	eResources addresses	Adresy na platformie eNauczanie: Fizyka w eksperymencie II - Moodle ID: 45405 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=45405
Example issues/ example questions/ tasks being completed	Using Gauss's law, determine the electric field intensity generated by a plane uniformly charged with a surface charge density .	
Work placement	Not applicable	

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