GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Physics II, PG_00059246		
Field of study	Civil Engineering		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2022/2023
Education level	first-cycle studies	Subject group	Obligatory subject group 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	3.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Tadeusz Miruszewski	
	Teachers	dr inż. Bogumiła Strzelecka, doc. PG dr inż. Bartosz Trawiński dr inż. Marta Prześniak-Welenc	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	15.0	0.0	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

Familiarizing the student with the basic phenomena and laws of physics. Acquisition of skills by the studentexplaining phenomena, drawing conclusions and solving problems.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W01] Demonstrate knowledge and understanding of mathematics as well as sciences and engineering disciplines underlying civil engineering at a level necessary to achieve the other programme outcomes.	The student solves the tasks accounting in physics and interprets obtained results	[SW1] Assessment of factual knowledge
[K6_U01] Apply knowledge and understanding of mathematics as well as sciences and engineering disciplines underlying civil engineering to solve engineering problems and issues.	The student defines the basic the law of physics. The student applies the acquired knowledge to describe physical reality and environmental. The student applies the laws of physics to identifying, formulating and solving problems	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools

Subject contents

Electrostatics - point charges, field lines, field strength vector, principle of superposition of fields, potential energy of electrostatic interactions, field potential, motion of a particle in an electrostatic field, Gauss's law, conductors and dielectrics, capacitors,Cargo transport in conductors, Ohm's law, Kirhchoff's laws,Magnetism: magnetic field - sources of magnetic field, Lorentz force, magnetic field induction vector, Ampere's law. Biot-Savart law,The phenomenon of electromagnetic induction - Faraday's law, alternating current, electromagnetic vibrations, Maxwell's laws, electromagnetic waves.Wave and geometric optics.

Prerequisites and co-requisites

Knowledge of mathematical analysis (differentiation and integration)Knowledge of vector algebra

<table>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Physics exam pass</td><td>51.0%</td><td>50.0%</td></tr>
<tr><td>passing both colloquia</td><td>51.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">Physics for universities -openstax PolskaFundamentals of physics - D.Halliday. R. Resnick, J. Walker</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Collection of tasks in physics Jędrzejewski, KruczekCollection of tasks in physics Irodov</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:
Fizyka II 2022/23 - Moodle ID: 29041
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29041</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">Based on Gauss's law, derive Coulomb's lawDerive the formula for the magnetic field induction in the center of a circular conductor carrying currentProve the law of light reflection based on Fermat's principle</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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