GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Contemporary Physics, PG_00064134		
Field of study	Mechanical and Medical Engineering		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2027/2028
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	3	Language of instruction	Polish
Semester of study	5	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Institute Of Naval Architecture -> Faculty Of Mechanical Engineering And Ship Technology -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Małgorzata Śmiałek-Telega	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	15.0	15.0	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	10.0	55.0	125

Subject objectives

N/A

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U04] is able to utilize empirical, analytical, simulation, and computer-based methods to formulate and solve engineering tasks in the field of medical and mechanical engineering	can write a simple program to control the device he has built. Is able to analyze the signal received from the device and analyze it	[SU3] Assessment of ability to use knowledge gained from the subject
[K6_U01] is able to acquire knowledge and self-studying, he/she is able to find needed information in specialist books, databases and other sources, he/she is able to integrate information and draw conclusions, he/she is able to communicate by using different technics in work and outside	The student is able to work individually and in a team during laboratory classes and communicate using various techniques in a professional environment, as well as document, analyze and present the results of his work, and is able to estimate the time needed to complete the assigned task.	[SU3] Assessment of ability to use knowledge gained from the subject
[K6_W01] has knowledge in the field of natural sciences, including mathematics, contemporary physics, chemistry, and human anatomy with physiology	The student has basic knowledge of physics including: technical mechanics, fluid mechanics, solid state physics, optics and acoustics necessary to understand the basic physical phenomena occurring in ocean engineering	[SW3] Assessment of knowledge contained in written work and projects

<table>
<tr><td>Subject contents</td><td>1. Mechanical waves
2. Thermodynamics and heat,
3. Kinetic theory of gases
4. Electric charge and electric field
5. Electric capacity, current and resistance
6. Magnetic field, induction and inductance
7. Electromagnetic waves
8. Optics; Interference and diffraction
9. Elements of condensed phase physics
10. Elements of physics and nuclear energy
11. project management
12. construction and testing of the test system
13. system programming elements
14. simple programmable systems</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Fundamentals of differential calculus and geometry. Fundamentals of classical mechanics. Basic skills in programming</td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Lecture</td><td>50.0%</td><td>50.0%</td></tr>
<tr><td>Laboratory</td><td>50.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>David Halliday, Robert Resnick, Jearl Walker, Podstawy fizyki.
T. 1-5, Wydawnictwo Naukowe PWN, 2012
J. Orear, Fizyka, tom 1 i 2, Warszawa 1998
A. Januszajtis, Fizyka dla Politechnik, tom 1-3, Warszawa 1991
J. Massalski, M. Massalska, Fizyka dla Inżynierów, tom 1 i 2, Warszawa 2013</td></tr>
<tr><td>Supplementary literature</td><td>Paul A. Tipler, Ralph A. Llewellyn, Fizyka współczesna, Wydawnictwo Naukowe PWN, Warszawa 2012;
I.W. Sawieliew, Wykłady z fizyki, tom 1. i 2., Wydawnictwa Naukowe PWN, Warszawa, 2003</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
</table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>1. EM wave polarity (linear and unpolarized polarized wave, Malus' law) 2. Law of refraction (pattern with description and drawing) 3. Concave spherical concave mirrors (drawing, diagram of radii, which we get images depending on the placement of the object relative to the mirror) 4 Diffusing lens (drawing, diagram of rays, which we get images depending on the placement of the object in relation to the lens) 5. Constructive event (in which situation it takes place, drawing with description) 6. Young's experiment on two slits (drawing with description, when there are bright colors) when dark stripes, pattern)</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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