GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

| | | | |
|---|---|---|---|
| Subject name and code | Physics, PG_00064174 | | |
| Field of study | Transport | | |
| Date of commencement of studies | October 2025 | Academic year of realisation of subject | 2025/2026 |
| 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 | 4.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Institute Of Nanotechnology And Materials Engineering -> Faculty Of Applied Physics And Mathematics -> Wydziały Politechniki Gdańskiej | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Anna Rybicka | |
| | Teachers | | |

**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 | 15.0 | 55.0 | 100 |

**Subject objectives**

Knowledge of basic principles of thermodynamisc, hydromechanisc and moderm physics.

Ability of analyzing physical phenomena, solving of technical problems.

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K6_W02] has knowledge of physics, mechanics, electrical engineering, hydromechanics, thermodynamics, materials science, and measurement techniques necessary to understand the phenomena occurring in transportation, as well as the principles of construction and operation of infrastructure and means of transport | Student knows basic problems of thermodynamics, hydromechanics and modern physics; understands physical laws and analyzes technical problems. | [SW1] Assessment of factual knowledge |
| [K6_U06] able to plan and conduct simple laboratory and operational experiments and simulations in the area of transport; able to interpret the results and formulate conclusions | Student can analize experimental results and formulate conclusions. | [SU3] Assessment of ability to use knowledge gained from the subject<br>[SU2] Assessment of ability to analyse information |

<table>
<tr><td>Subject contents</td><td>Ideal gas. Fundamental laws of macroscopic thermodynamics.<br><br>Fundamental laws of hydromechanisc: Pascal law, Archimedes law, Bernoulli equation.<br><br>Elements od special relativity theory,<br><br>Corpuscular and wave character id electromagnetic radiation.<br><br>Atom models.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Continuation of the physics course, given during the first semester - knowledge od basic laws of classical physics is necessary.</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>Exercises - two practical tests</td><td>50.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>https://openstax.org/details/books/university-physics<br><br>Halliday, Resnick, Walker, Fundamentals of Physics</td></tr><tr><td>Supplementary literature</td><td>Tipler Llellewyn, Modern Physics, 6ed, Freeman 2012</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>First and second thermodynamics laws in ideal gas<br><br>Application of the Bernoulli equation.<br><br>Lorentz transformations: lenght contraction, time dylatation, relativistic velocity addition.<br><br>Photoelectric effect.<br><br>Postulates of Bohr model of atom</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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