GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

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|---|---|---|---|
| Subject name and code | , PG_00070382 | | |
| Field of study | Materials Engineering, Materials Engineering | | |
| Date of commencement of studies | October 2025 | Academic year of realisation of subject | 2026/2027 |
| Education level | first-cycle studies | Subject group | Obligatory subject group in the field of study<br>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 | 4 | ECTS credits | 5.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. inż. Agnieszka Witkowska | |
| | Teachers | dr hab. inż. Agnieszka Witkowska | |

**Lesson types**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 0.0 | 0.0 | 0.0 | 45.0 | 6.0 | 51 |

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 | 51 | 4.0 | 70.0 | 125 |

**Subject objectives**

Preparing to work in a group by carrying out a project consisting of a team analysis of an issue in the field of functional materials, presenting a proposal of a solution of the problem using various microscopic, spectroscopic and thermal analysis methods, perfoming tests/measurements and preparing a report and presentation on the team's work results.

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K6_U01] Can properly use selected analytical, simulation and experimental methods, as well as devices for measuring the fundamental properties of materials and technological processes. | The student has the knowledge and skills needed to work in a physics laboratory, select appropriate experimental methods and conduct research and measurements as well as engineering work related to the implemented project task. | [SU4] Assessment of ability to use methods and tools<br>[SU1] Assessment of task fulfilment |
| [K6_U10] Can work in a group in order to solve problems typical of materials engineering. | When implementing and developing a group project in the field of materials engineering, the student works in a team of 2 or 3 people, thus acquiring the ability to cooperate in a team and to collectively develop and prepare a report and presentation of the results obtained during the project. | [SU1] Assessment of task fulfilment<br>[SU5] Assessment of ability to present the results of task |
| [K6_U03] Can critically analyze and evaluate the functioning – particularly in the context of materials engineering –existing technical solutions, particularly equipment, objects, systems, processes. | When implementing and developing a group project in the field of materials engineering, the student is able to develop a proposal for its solution/ implementation based on a critical analysis of the functioning of devices and the possibilities of research techniques in the field of microscopy, spectroscopy and thermal analysis methods. | [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>Course content – project<br>The team projects being implemented concern issues in the field of experimental materials engineering and are focused on the study of the structural properties of functional materials and the correlation of these properties with other physicochemical properties. During the implementation of the project, each team has at its disposal research equipment available in the CNA laboratories.<br>Course content – seminar<br>• Presentation of proposed research topics and problems to be analyzed and investigated as part of the team project.<br>• Brainstorming searching for appropriate methods and tools.<br>• Development of a methodology and implementation schedule for selected team projects.<br>• Presentation and discussion of the results of the team projects.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></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>Preparation of the slideshow and oral presentation of the project results</td><td>100.0%</td><td>20.0%</td></tr>
<tr><td>Development of a methodology and schedule for project implementation and project realization</td><td>100.0%</td><td>80.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Scientific literature and specialist reports related to the group project.</td></tr>
<tr><td>Supplementary literature</td><td>Scientific literature and specialist reports related to the group project.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>1. Resorbability study of bioglasses and bioceramics used in implantology.<br>2. The microscopic beauty of air pollution.<br>3. Baltic amber (succinite) vs other fossil resins.<br>4. Characteristics of thin CVD-grown films on RVC electrodes for the use in an electrolyzer.<br>5. Influence of the synthesis procedure on the structure of YBCO and its levitation properties</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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