



Subject card

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|---|---|--|-------------------------------------|------------|---|---------|-----|
| Subject name and code | , PG_00065023 | | | | | | |
| Field of study | Nanotechnology | | | | | | |
| Date of commencement of studies | October 2021 | Academic year of realisation of subject | | | 2024/2025 | | |
| Education level | first-cycle studies | Subject group | | | Optional subject group 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 | 4 | Language of instruction | | | Polish | | |
| Semester of study | 7 | ECTS credits | | | 2.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Department of Materials Engineering and Bonding -> Faculty of Mechanical Engineering and Ship Technology | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Michał Landowski | | | | | |
| | Teachers | dr inż. Michał Landowski prof. dr hab. inż. Dionizy Czekaj | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 15.0 | 0.0 | 15.0 | 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 | 0.0 | | 0.0 | | 30 |
| Subject objectives | Gaining knowledge about manufacturing techniques for polymer, metal and ceramic- matrix composite materials elements | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | K6_W07 | Student has knowledge of the production of nanocomposite and composite materials. | | | [SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects | | |
| | K6_U06 | Knows the basic techniques manufacture of materials Composite. Knows the impact applications of various types reinforcement on properties composite materials. | | | [SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject | | |
| Subject contents | Overview of processing methods for metallic, polymeric, ceramic and composite materials. Examples of glass processing. Stages of ceramics processing. Structural ceramic elements forming methods. Manufacturing SiC brake disc. Polymer composites processing: Processing glass and carbon fibres and BMC and SMC semi-products for composites forming. Vacuum and manual forming of polymer composites elements (hand lay-up, RTM, infusion, autoclave, RIM, SRIM, pipes and continuous elements forming). Carbon fibre car bonnet forming. | | | | | | |
| Prerequisites and co-requisites | | | | | | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | | | Percentage of the final grade | | |
| | test | 50.0% | | | 100.0% | | |

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| Recommended reading | Basic literature | <ol style="list-style-type: none"> 1. Dobrzański L.A.: Podstawy nauki o materiałach i metaloznawstwo. WNT, Warszawa, 2002. 2. Sobczak, Kompozyty metalowe, Ed.. Instytut Odlewnictwa 2002 3. K.E. Oczos, Kształowanie ceramicznych materiałów technicznych, Oficyna wydawnicza Politechniki Rzeszowskiej 1996 4. J. Śleziona, Kompozyty, Politechnika Śląska 2000 |
| | Supplementary literature | M. Reyne, Composite solutions, JEC Group 2006 |
| | eResources addresses | Adresy na platformie eNauczenie: Materiały kompozytowe i nanokompozytowe, PG_00065023, W/L, Nano, I stopień, sem. 07, zimowy 24/25 - Moodle ID: 42499 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=42499 |
| Example issues/ example questions/ tasks being completed | <p>Define the types of semi-products for manufacturing composite materials elements.</p> <p>List the advantages and disadvantages of contact and vacuum forming.</p> | |
| Work placement | Not applicable | |

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