



Subject card

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|---|--|--|-------------------------------------|------------|---|---------|-----|
| Subject name and code | Damage Mechanisms of Construction Materials, PG_00039743 | | | | | | |
| Field of study | Materials Engineering, Materials Engineering, Materials Engineering | | | | | | |
| 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 | Zakład Materiałoznawstwa I Technologii Materiałowych -> Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. Agata Lisińska-Czekaj | | | | | |
| | Teachers | dr hab. Agata Lisińska-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 | 5.0 | | 15.0 | | 50 |
| Subject objectives | Introducing students with the issues of material strength in the context of degradation of their properties, wear and tear. | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | K6_K01 | The student understands the need to improve professional competence | | | [SK4] Assessment of communication skills, including language correctness [SK1] Assessment of group work skills [SK5] Assessment of ability to solve problems that arise in practice | | |
| | K6_U06 | The student is able to use scientific databases, acquire relevant information and critically analyze their usefulness for the implementation of a selected engineering problem | | | [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information | | |
| | K6_W07 | The student has knowledge of the structure and basic properties of materials. | | | [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge | | |
| Subject contents | <ol style="list-style-type: none">1. Comparison of the application properties of engineering materials under wear conditions.2. Strength of materials at elevated or reduced temperatures. Thermal conductivity and thermal expansion of materials.3. Mechanical properties of materials. Research on the mechanical properties of materials.4. Types of destruction mechanisms (corrosion, cracking, fatigue, erosion (cavitation), wear).5. Corrosion resistance of materials.6. Corrosion protection methods.7. Destruction of technical materials by microorganisms. Biodeterioration of construction and finishing materials. | | | | | | |
| Prerequisites and co-requisites | Basic knowledge in the field of materials engineering. | | | | | | |

| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
|--|--------------------------|---|-------------------------------|
| | | 51.0% | 50.0% |
| | | 51.0% | 50.0% |
| Recommended reading | Basic literature | <ol style="list-style-type: none"> 1. Ashby M., Jones D., Materiały inżynierskie. Tom I Właściwości i zastosowanie. WNT, Warszawa 1995 2. Ashby M., Jones D., Materiały inżynierskie. Tom II Kształtowanie struktury i właściwości, dobór materiałów. WNT, Warszawa 1996 3. Blicharski M., Wstęp do inżynierii materiałowej. WNT, Warszawa 2004 4. Blicharski M., Inżynieria materiałowa. Stal. WNT, W-wa 2004. 5. Dobrzański L.A., Podstawy nauki o materiałach i metaloznawstwo. WNT, Gliwice-Warszawa 2002. 6. Dobrzański L.A., Metaloznawstwo z podstawami nauki o materiałach. WNT Warszawa 1996 7. D.Rozumek, Mieszane sposoby pęknięcia zmęczeniowego materiałów konstrukcyjnych, Politechnika Opolska, Opole, 2009 | |
| | Supplementary literature | <ol style="list-style-type: none"> 1. Dobrzański L.A., Metalowe materiały inżynierskie. WNT Warszawa 2004. 2. Grabski W., Kozubowski J., Istota inżynierii materiałowej geneza, istota, perspektywy. Oficyna Wyd. Politechniki Warszawskiej, Warszawa 2003. 3. Praca zbiorowa pod red .M. Głowackiej, Metaloznawstwo. Wyd. Politechniki Gdańskiej, Gdańsk 1996. 4. Prowans S., Metaloznawstwo. PWN, W-wa 1988. 5. Przybyłowicz K., Metaloznawstwo. WNT, Warszawa 2003. 6. Pampuch R., Materiały ceramiczne. Zarys nauki o materiałach nieorganiczno-niemetalicznych, WN PWN, Warszawa, 1988 | |
| | eResources addresses | <p>Adresy na platformie eNauczanie: Mechanizmy niszczenia materiałów, W, IM, sem.7, zimowy 2024/25 - Moodle ID: 42125 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=42125</p> | |
| Example issues/ example questions/ tasks being completed | | | |
| Work placement | Not applicable | | |

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