



Subject card

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|---|--|--|---|-------------------------------------|--|------------|-----|
| Subject name and code | Fundamentals of Material Science , PG_00018188 | | | | | | |
| Field of study | Chemistry in Construction Engineering | | | | | | |
| Date of commencement of studies | October 2022 | | Academic year of realisation of subject | | 2022/2023 | | |
| Education level | first-cycle studies | | Subject group | | Obligatory subject group in the field of study 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 | 1 | | Language of instruction | | Polish | | |
| Semester of study | 2 | | ECTS credits | | 2.0 | | |
| Learning profile | general academic profile | | Assessment form | | assessment | | |
| Conducting unit | Department of Electrochemistry, Corrosion and Materials Engineering -> Faculty of Chemistry | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | prof. dr hab. inż. Kazimierz Darowicki | | | | |
| | Teachers | | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 15.0 | 0.0 | 0.0 | 0.0 | 15.0 | 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 | | 2.0 | | 18.0 | 50 |
| Subject objectives | Knowledge of relationships between metal and alloys structures and its properties. | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | |
| | K6_U01 | | Students can obtain information from literature, can integrate the information obtained, interpret the data, as well as draw conclusions and formulate and justify opinions | | [SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject | | |
| | K6_W05 | | Knowledge of relationships between metal and alloys structures and its properties. | | [SK1] Assessment of group work skills [SU3] Assessment of ability to use knowledge gained from the subject | | |
| Subject contents | -Energy band theory of metals, semiconductors and dielectrics. -Electric, magnetics and thermal properties of metals. -Types of crystal lattice of solids. -Solid solutions. -Alloys and phase transitions, heat treatment. -Iron-carbon phase diagram. -Classifications of steels and cast irons. -Basics of thermodynamics and chemical kinetics. -Types of corrosion failures. -Corrosion: general, selective, intergranular, pitting, crevice. -Stress corrosion cracking and corrosion fatigue. | | | | | | |
| Prerequisites and co-requisites | Chemical bonds, theory of solutions, chemical thermodynamics, basics of quantum chemistry. | | | | | | |
| Assessment methods and criteria | Subject passing criteria | | Passing threshold | | Percentage of the final grade | | |
| | Lecture | | 60.0% | | 50.0% | | |
| | Seminars | | 60.0% | | 50.0% | | |
| Recommended reading | Basic literature | | Ch.A.Wert, R.M. Thomson, Fizyka ciała stałego, PWN Warszawa 1974 J. Dereń, J. Chaber, R. Pampuch, Chemia ciała stałego, PWN Warszawa 1977 L.L. Shreier, R.A. Barman, G.T. Burstein, Corrosion , Butterworth, London 1994 P.A. Schweitzer, Fundamentals of Metallic Corrosion, CRC Press, London 2007 | | | | |
| | Supplementary literature | | No requirements | | | | |
| | eResources addresses | | Adresy na platformie eNauczanie: | | | | |

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| Example issues/ example questions/ tasks being completed | Describe a diagram illustrating the durability of the water. What is ferrite. |
| Work placement | Not applicable |