

Subject card

| Subject name and code | Electrochemistry I, PG_00039804 | | | | | | | | |
|---|---|---|--|-------------------------------------|--|--|---------|-----|--|
| Field of study | Materials Engineering, Materials Engineering | | | | | | | | |
| Date of commencement of studies | October 2021 | | Academic year of realisation of subject | | | 2023/2024 | | | |
| 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 | 3 | | Language of instruction | | | Polish | | | |
| Semester of study | 5 | | 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 | Subject supervisor | | prof. dr hab. inż. Kazimierz Darowicki | | | | | | |
| of lecturer (lecturers) | Teachers | | prof. dr hab. inż. Kazimierz Darowic | | | ki | | | |
| Lesson types and methods | Lesson type | Lecture | Tutorial | Laboratory | Projec | t | Seminar | SUM | |
| of instruction | Number of study hours | 30.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 30 | |
| | E-learning hours included: 0.0 | | | | | | | | |
| Learning activity and number of study hours | Learning activity | Participation in classes include plan | | Participation in consultation hours | | Self-study | | SUM | |
| | Number of study hours | 30 | | 1.0 | | 19.0 | | 50 | |
| Subject objectives | familiarizing students with the phenomena occurring at the interface between a metallic electrode and an electrolyte | | | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | | | |
| | K6_K01 | | familiarizing students with the phenomena occurring at the interface between a metallic electrode and an electrolyte | | [SK2] Assessment of progress of work | | | | |
| | K6_W02 | | familiarizing students with the phenomena occurring at the interface between a metallic electrode and an electrolyte | | [SW3] Assessment of knowledge contained in written work and projects | | | | |
| | K6_U01 | | familiarizing students with the phenomena occurring at the interface between a metallic electrode and an electrolyte | | [SU1] Assessment of task fulfilment | | | | |
| Subject contents Prerequisites | -Inner, outer and surface potentialDouble electric layer and its structure: Helmoltz, Stern and Guy-Chapman modelsAdsorption at electrodes: surface excess, adsorption isoterms, zero charge potential Chemical and electrochemical processesDetermination of thermodynamic parameters and equilibrium conditionsElectrode reaction current dependence of potential: Butler theory and Marcus theoryCharge transfer coefficient: phenomena occurring insiede a sphere and outside a sphereElectron tunneling Activation and diffusion control of electrodic processesMulti-electrode processesHydrogen evolution reaction on solid electrodes - kinetic analysisChloride evolution reactions - kinetic analysis Electrochemical dissolution of iron. Basics of thermodynamics and chemical kinetics. | | | | | | | | |
| and co-requisites | | | | | | | | | |

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| Assessment methods | Subject passing criteria | Passing threshold | Percentage of the final grade | | | |
|--|---|--|-------------------------------|--|--|--|
| and criteria | | | | | | |
| Recommended reading | Basic literature | A. Kisza, Elektrochemia t.I i II , WNT, Warszawa 2000 Z. Galus, Elektroanalityczne metody wyznaczania stałych fizykochemicznych, PWN Warszawa 1979 Z. Galus, Teoretyczne podstawy elektroanalizy chemicznej. PWN Warszawa 1977 | | | | |
| | Supplementary literature | No requirements | | | | |
| | eResources addresses | Adresy na platformie eNauczanie: | | | | |
| Example issues/ example questions/ tasks being completed | Chemical and electrochemical processes determination of thermodynamic parameters activation and diffusion control | | | | | |
| Work placement | Not applicable | | | | | |

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