


KAPITAŁ LUDZKI
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez
 Unię Europejską w ramach
 Europejskiego Funduszu
 Społecznego

UNIA EUROPEJSKA
 EUROPEJSKI
 FUNDUSZ SPOŁECZNY


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|---|--------------------------|---|-------------------------|
| Course title | | ECTS code | |
| Basic chemical equilibria in aqueous solution | | 13.3.1200 | |
| Name of unit administrating study | | | |
| null | | | |
| Studies | | | |
| faculty | field of study | type | first tier studies (BA) |
| Faculty of Chemistry | Chemical Business | form | full-time |
| | | specialty | all |
| | | specialization | all |
| Faculty of Chemistry | Chemistry | type | first tier studies (BA) |
| | | form | full-time |
| | | specialty | all |
| Faculty of Chemistry | Environmental Protection | specialization | all |
| | | type | first tier studies (BA) |
| | | form | full-time |
| | | specialty | all |
| | | specialization | all |
| Teaching staff | | | |
| dr hab. Dariusz Wyrzykowski | | | |
| Forms of classes, the realization and number of hours | | ECTS credits | |
| Forms of classes | | 2 classes - 15 h tutorial classes - 15 h student's own work - 20 h TOTAL: 50 h - 2 ECTS | |
| Lecture | | | |
| The realization of activities | | | |
| classroom instruction | | | |
| Number of hours | | | |
| Lecture: 15 hours | | | |
| The academic cycle | | | |
| 2024/2025 summer semester | | | |
| Type of course | | Language of instruction | |
| an elective course | | english | |
| Teaching methods | | Form and method of assessment and basic criteria for evaluation or examination requirements | |
| multimedia-based lecture | | Final evaluation | |
| | | Graded credit | |
| | | Assessment methods | |
| | | - written exam with open questions - written exam (test) | |
| | | The basic criteria for evaluation | |
| Method of verifying required learning outcomes | | | |
| Required courses and introductory requirements | | | |
| A. Formal requirements | | | |
| lack | | | |
| B. Prerequisites | | | |
| lack | | | |
| Aims of education | | | |
| presenting basic issues in solution chemistry familiarize students with fundamental properties of the electrolytes in aqueous solutions familiarize students with the basis of chemical calculations in the field of solution chemistry | | | |

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| Course contents | |
| Topics: acid-base equilibria Buffer solutions and polyprotic acids Complexation equilibria (complex equilibria, competing equilibria, stepwise complexation) Species distribution diagrams | |
| Bibliography of literature | |
| Extracurricular readings Robert de Levie, How to Use Excel® in Analytical Chemistry And in General Scientific Data Analysis, Cambridge University Press (2001) Jean-Louis Burgot, Ionic Equilibria in Analytical Chemistry, Springer Science+Business Media (2012) Brian M. Tissue, Basics of Analytical Chemistry and Chemical Equilibria, John Wiley & Sons, Inc. (2013) | |
| The learning outcomes (for the field of study and specialization) | Knowledge |
| | Skills |
| | Social competence |
| | |
| <p>Chemical Business: K_BCh_W03: describes in an advanced level the techniques of higher mathematics and IT tools necessary to describe and model chemical phenomena and technological processes K_BCh_W07: describes the construction and operating principles of scientific, technological and control-measuring apparatus K_BCh_U08: uses the chemical nomenclature and engineering terminology properly</p> <p>Chemistry: K_W02: describes in an advanced level the properties of electrolytes in aqueous solutions K_W08: demonstrates knowledge of computational methods to solve problems in chemistry, physics, mathematics K_U01: identifies, analyses and solves problems in the field of broadly understood solution chemistry on the basis of the acquired knowledge K_U08: presents in an understandable way the facts about chemistry using a scientific language typical of chemical sciences K_U09: is able to learn independently K_K06: raises her/his professional and personal competences by using information provided in various sources</p> <p>Environmental Protection: K_OŚI_W01: describes in an advanced level physical, chemical and biological phenomena occurring in nature K_OŚI_U04: uses specialist language in the discussion and properly uses the nomenclature in the field of environmental protection and individual disciplines related to it K_OŚI_K05: identifies the level of her/his knowledge and skills, demonstrates the need to update knowledge about the environment and its protection, demonstrates the need for continuous professional training and personal development</p> | <p>Students know the basic properties of electrolytes (acids, bases, complex compounds) in aqueous solutions</p> <p>Students present plainly the impact of a different environmental conditions (temperature, pH, the presence of other species) on equilibria of electrolytes in aqueous solutions; explain similarities and differences in properties of different types of electrolytes, notice causal links in chemical processes performed in aqueous solutions, where typical chemical equilibrium reactions occur; explain course of different phenomena from everyday life with the use of chemical knowledge in correlation with other sciences; interpret information, formulates conclusions and explain opinions</p> <p>Students are aware of existing connections between the environment and chemistry; understand social aspects of practical use of knowledge and abilities as well as connected with them responsibility.</p> |
| Contact | |
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