|  |  |  |  |
| --- | --- | --- | --- |
| **Course title**  Water analysis – ERASMUS  Analiza wody – ERASMUS | | | **ECTS code**  13.3.1284 |
| **Name of unit administrating study**  Faculty Chemistry | | | |
| **Studies**   |  |  |  |  | | --- | --- | --- | --- | | **Field of study** | **Type** | **Form** |  | | Chemistry | Bachelor | Full-time studies |  | | Chemistry | Master | Full-time studies |  | | Environmental sciences | Bachelor | Full-time studies |  | | | | |
| **Teaching staff**  dr Aleksandra Bielicka-Giełdoń | | | |
| **Forms of classes, the realization and number of hours** | | **ECTS credits 4**  classes 30 h  tutorial classes 20 h  student’s own work 50 h  TOTAL: 100 h - 4 ECTS | |
| 1. **Forms of classes, in accordance with the UG Rector’s regulations**   lecture | |
| 1. **The realization of activities**   In-class or on-line | |
| 1. **Number of hours**   30 h - lecture | |
| **The academic cycle**  summer | | | |
| **Type of course**  facultative | **Language of instruction**  English | | |
| **Teaching methods**  Lecture with multimedia presentation | **Form and method of assessment and basic criteria for evaluation or examination requirements** | | |
| **A. Final evaluation, in accordance with the UG study regulations**  course completion (with a grade) | | |
| **B. Assessment methods**  Writing test | | |
| **C. The basic criteria for evaluation** or exam requirements  Evaluation criteria in accordance with the UG Studies Regulations; | | |
| **Required courses and introductory requirements**  no requirements | | | |
| **Aims of education**  To acquaint students with standardized indicators of water quality and methods of their research  **Convergent to**: general chemistry, analytical chemistry, environmental sciences | | | |
| **Course contents**  Water as a chemical compound. The water cycle in nature. Pollutants occurring in natural waters. Legal Requirements water quality according to their purpose. Physicochemical and sanitary water quality control. Usefulness of water for consumption and economic purposes. General classification of water quality. Industry standards for waters used in various industries. Activities of the Polish Committee Standardization. Use of reference methods in water analysis. Normalized physicochemical and bacteriological indicators in water. Techniques used in water analysis. Diagram of the analytical procedure. Sampling and preparation of water samples for physico-chemical analysis: water sampling devices; sources of potential changes in the composition of the tested water sample; sources of errors related to the download stage and water sample treatments; principles and methods of preserving water samples before further stages of the analytical process. Physical and organoleptic parameters water: color, smell, taste, turbidity, transparency, electrical conductivity, temperature. Physico-chemical parameters: suspensions, dry residue, dissolved substances, pH, water acidity, water alkalinity, water hardness, oxygen parameters (oxygen dissolved / oxygen saturation degree, BOD5, CODr, Oxidability-CODn), the content of individual organic substances, the content of nitrogen compounds (ammonium nitrogen, Kjeldahl nitrogen, nitrates, nitrites), phosphorus (phosphates, total phosphorus), the content of metallic elements and metalloids, content of inorganic anions, THM-trihalomethanes. Sequence of analyzes of individual water quality parameters. | | | |
| **Bibliography of literature**  Materials from the teacher. | | | |
| **Knowledge**  1. lists the types of water pollution and the sources of their formation;  2. defines the parameters and describes the methods of their determination for water quality assessment;  3.describes the rules for collecting and preparing water samples for physical and chemical;  4. recalls the legal acts in force for the assessment of water quality;  5. describes the scheme of the analytical procedure and the sequence of performing the analyzes individual water quality parameters. | | | |
| **Skills**  1. performs water quality laboratory tests according to the instructions and prepares written reports on their implementation;  2. Follow applicable rules when sampling environmental for physico-chemical analyzes;  3. plans, executes and interprets basic physical and chemical analyzes of water samples;  4. uses basic analytical techniques: UV-Vis spectroscopy, analysis titration, weight analysis, potentiometry  5. applies the legal acts in force in the assessment of the quality of natural waters  6. independently searches for information from various sources and gives a presentation on environmentally friendly technologies | | | |
| **Social competence**  1. follows the safety rules in force in the laboratory chemical;  2.cooperates with the team during laboratory tests and development and presentation of results;  3. connects the importance of reliable physico-chemical analyzes with proper quality assessment the environment | | | |