|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **UNIVERSITY OF NIŠ** | | | | | | |
| **Course Unit Descriptor** | | **Faculty** | | | Faculty of Science and Mathematics | |
| **GENERAL INFORMATION** | | | | | | |
| Study program | | | | **Applied Chemistry** | | |
| Study Module (if applicable) | | | | Environmental Chemistry | | |
| Course title | | | | Environmental Chemistry | | |
| Level of study | | | | Bachelor  Master’s  Doctoral | | |
| Type of course | | | | Obligatory  Elective | | |
| Semester | | | | Autumn Spring | | |
| Year of study | | | | 2nd | | |
| Number of ECTS allocated | | | | 8 | | |
| Name of lecturer/lecturers | | | | Tatjana Andjelkovic | | |
| Teaching mode | | | | Lectures Group tutorials  Individual tutorials  Laboratory work  Project work  Seminar  Distance learning  Blended learning  Other | | |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** | | | | | | |
| To provide knowledge of the most important reactions in the atmosphere, lithosphere, hydrosphere and biosphere.  Development of skills for solving theoretical and experimental problems in pollutants distribution. Application of software in geochemical modeling. | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| 1. The Earth’s atmosphere. Regions, profile, reactions and calculations in atmospheric chemistry. Stratospheric chemistry. Oxygen-only chemistry – formation and turnover of ozone 2. Processes for catalytic decomposition of ozone Tropospheric chemistry – smog. Photochemical smog. Exhaust gases from the internal combustion engine. 3. Precipitation. Atmospheric aerosols. 4. Physical and chemical characteristics of soil. Leaching and erosion of soil. Acidification and salt affected soils. 5. Kinetics of chemical processes in soil. Redox processes in soil. Metals in soil. 6. Hydrosphere. Physical and chemical properties of water. Distribution of species in aquatic systems (single variable diagrams, two variable diagrams – pE/pH diagrams). Measurements of pE. 7. Gases in water. Gases that reacts with water and does not react with water) 8. Organic matter in water (aquatic humic substances). 9. Metals and semi-metals in hydrosphere (aqueous complexes of metals, classification of metals, three metals – behavior in the environment, metals associated with suspended matter in water) 10. Environmental chemistry of colloids and surfaces (surface properties of colloidal materials, quantitative description of adsorption, colloidal material in the natural environment) 11. Microbiological processes (classification of microorganisms, microbiological processes – carbon, nitrogen and Sulphur cycle) 12. Water pollution and water treatment (wastewater treatment processes) 13. Organic biocides ( chemical stability, mobility, leaching) 14. Transformation processes of organic biocides (hydrolysis, redox reactions, direct and indirect photolysis, biological transformations). | | | | | | |
| **LANGUAGE OF INSTRUCTION** | | | | | | |
| Serbian (complete course)  English (complete course)  Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course)  Serbian with English mentoring Serbian with other mentoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | |
| **ASSESSMENT METHODS AND CRITERIA** | | | | | | |
| **Pre exam duties** | **Points** | | **Final exam** | | | **points** |
| **Activity during lectures** | **4** | | **Written examination** | | | **/** |
| **Practical teaching** | **18** | | **Oral examination** | | | **30** |
| **Teaching colloquia** | **40** | | **OVERALL SUM** | | | **100** |
| **Homework assessment** | **8** | |  | | |  |
| **\*Final examination mark is formed in accordance with the Institutional documents** | | | | | | |