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| **Study program:** Chemistry (PhD) |
| **Course title: Process Equilibrium and Kinetics (H329C)** |
| **Name of lecturer/lecturers: Snežana S. Mitić** |
| **Type of course: elective** |
| **Number of ECTS allocated 10** |
| **Course objectives****To provide students theoretical and practical knowledge of key laws and applications of principles of chemical kinetics** |
| **Course outcomes****After successful completion of this course, the student is able to: define the most important kinetic laws and phenomena,applies basic techniques for monitoring reaction rates, processes experimental results, calculates****kinetic parameters and sets the foundations of the reaction mechanism.** |
| **SYLLABUS***Lectures**Speed of chemical reactions. Kinetic parameters. Complex kinetic systems. Equilibrium processes in complex kinetic systems. Complex systems and intermediate species. Equilibria and kinetics processes in heterogeneous environments. Catalytic reactions on surfaces. Adsorption and adsorption isotherms. Activation energy of heterogeneous catalytic reactions. Kinetics and solid-liquid modeling extractions. Equilibrium and kinetics of ion exchange. Equilibrium and kinetics of reactions in solutions. The effect of solvent. Effect of diffusion on reactions in solutions. Kinetics of ionic reactions in solutions. Kinetic aspects of analytical application of chemical reactions. Indicator reactions in chemical analysis. Contemporary instrumental methods for monitoring kinetic reactions, as well as the processing of experimental results determination of kinetic parameters and reaction mechanism. Sensitivity, selectivity, detection limit and the limit of determination of kinetic methods of analysis.* |
| **References**1. В. Дондур, Хемијска кинетика,Факултет за физичку хемију, 1992 2. D. Perez-Bendito, M. Silva, Kinetics Methods in Analytical Chemistry, Wiley, 1988 3. H.E. Avery, Basic Reaction Kinetics and Mechanisms,MACMILLAN, 1971 |
| **Active teaching classes** | **Lectures** | **Laboratory work** |
| **Teaching mode: Interactive lectures, homework, seminar work, panel discussions** |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** |
| activity during the lecture - 5 points; seminar work – 30 points; written exam 15points; oral exam - 45 points |