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| **Study program** Applied chemistry with the management basics | | | | |
| **Course title** Industrial chemistry 1 (H247C) | | | | |
| **Name of lecturer/lecturers** Aleksandra Lj. Bojić, Jelena Z. Mitrović | | | | |
| **Type of course** Obligatory | | | | |
| **Number of ECTS allocated** 6 | | | | |
| **Course objectives**  Acquiring systematized advanced knowledge about the principles of chemical-technological processes.  Training students for the selection and modeling of processes and reactors from the aspect of speed control,  selectivity, mass, and heat transfer.  Developing the ability to solve problems in chemical technological processes and their improvement. | | | | |
| **Course outcomes**  Upon successful completion of this course, the student is able to define speed factors of chemical-technological process and explain their influence on speed, analyze the stages of homogeneous and heterogeneous chemical-technological processes and define the slow stage of the process, explain the nature of mass exchange and heat transfer in chemical-technological processes and define the critical stage of the process, propose the type of reactor for the execution of a certain chemical technological process and analyze problems and propose the improvement of chemical technological process. | | | | |
| **SYLLABUS**  *Lectures*  Increasing the speed of chemical-technological processes. Principles of homogeneous chemical-technological process. Principles of heterogeneous chemical-technological processes. Principles of mass transfer in heterogeneous chemical-technological processes. Principles of heat transfer in heterogeneous chemical-technological processes. Models of chemical reactors. Choice of reactor and selectivity process. Reactors for homogeneous chemical-technological processes. Reactors for heterogeneous chemical technological processes. Principles of catalytic chemical-technological processes. Principles of interactions of solid bodies with reactants in the liquid and vapor phase. Principles of plasma chemistry and photochemical processes. Principles and interconnection of redox processes, corrosion, oxidation, burning and detonation. Principles of mass crystallization processes in the chemical industry.  *Laboratory work*  Determination of the order of the H2O2 degradation reaction. Effect of convection and ultrasound on speed heterogeneous process. Removal of CO2 from the gas phase by Ca(OH)2. Comparison of efficiency processes in batch and flow reactors. Examination of the quality of artificial fertilizers. The content of water in industrial products. Resistance testing of organic coatings. Superficial active substances and oxygen in detergents. Synthesis of phenol-formaldehyde resin by homogenization by catalysis. Polythermal and isothermal crystallization. Tour of industrial plants. | | | | |
| **References**  1. M. Purenović, A. Bojić, Osnovni principi i procesi u industrijskoj hemiji, Prirodno-matematički fakultet, Niš, 2005.  2. D. Vitorović, Hemijska tehnologija, Naučna knjiga, Beograd, 1990.  3. Grupa autora, Hemijsko tehnološki priručnik, tom 5., Hemijsko inženjerstvo, Rad, Beograd, 1987.  4. S. Stanišić, Tehnološke operacije, Tehnološki fakultet, Novi Sad, 1978.  5. A. Bojić, A. Zarubica, Praktikum za vežbe iz industrijske hemije, Prirodno-matematički fakultet, Niš, 2007. | | | | |
| **Active teaching classes** | **Lectures** 45 | | **Laboratory work** 45 | |
| **Teaching mode**  Lectures, interactive teaching, laboratory exercises, field teaching, consultations. | | | | |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** | | | | |
| **Pre exam duties** | **Points** | **Final exam** | | **Points** |
| Activity during lectures | 5 | Written examination | | 40 |
| Practical teaching | 25 | Oral examination | |  |
| Teaching colloquia | 30 |  | |  |
| Seminar |  |  | |  |