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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | **Faculty of Science and Mathematics** |
| **GENERAL INFORMATION** |
| **Study program**  | **Chemistry**  |
| Study Module (if applicable) |  |
| Course title | Industrial chemistry |
| Level of study | [ ] Bachelor [x]  Master’s [ ]  Doctoral |
| Type of course | [x]  Obligatory [ ]  Elective |
| Semester  |  [ ]  Autumn [x] Spring |
| Year of study  |  |
| Number of ECTS allocated | 7 |
| Name of lecturer/lecturers | Aleksandra R. Zarubica |
| Teaching mode |  [x] Lectures [ ] Group tutorials [ ]  Individual tutorials [x] Laboratory work [x]  Project work [ ]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| *Student should know different chemical principles and physico-chemical laws, which are bases for chemical reactors work; fundamental elements of heterogeneous processes, mass transport processes and energy exchange processes; principles that are taking place in numerous interactions of reactants at interfaces/surface reactions, which present an essence of different technological processes in modern chemical industry. By applying the acquired theoretical and practical knowledge, student develops the ability to individually or in groups/team work to solve problems in the production processes of inorganic and organic compounds, and to contribute to the development of new, unconventional technologies in terms of sustainable development, as well as to improve existing technologies by implementation of new ones.* |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| LecturesPrinciples of chemical reactors – general approach (4 cl); Principles of heterogeneous processes – general approach (4 cl); Principles of interaction of solid phase with reactants in liquid and/or gaseous phases (catalytic and/or adsorption processes) – general approach (4 cl); Principles of catalytic processes (4 cl); Principles of mass transport in heterogeneous technological processes (2 cl); Principles of heat and energy transfer/exchange – general approach (2cl); Principles of crystallization processes (2 cl); Principles of photochemical and plasma-chemical processes – general approach (2 cl); Principles and interconnection of redox processes and corrosion processes, and oxidation processes, burning and detonations (4 cl); Chemical technologies of (artificial) fertilizers (6 cl), Chemical technology of ceramics and glasses (6 cl); Chemical technology of cellulose and paper (4 cl); Chemical technologies for production of explosives (4 cl); Chemical technology of (modern) plastics/plastic masses (6 cl); Ecological problems of modern chemical industry, modern technologies to overcome them (6 cl); Selected chemical technologies in agroindustry (6 cl)Practices Analysis of fertilizers; Obtaining/production of ceramics-based materials, Synthesis of phenol-formaldehyde resin, Examination/test of chemical resistance of organic coatings to chemical agents; Determination of water content in final industrial products by Dean-Stark distillation method/procedure; Removal of heavy metals from water by selected catalytic materials; Removal of cationic pollutants form water by selected adsorptive materials; Hydrogen-treating of aromatic compounds from modern industry; Reformulated fuels obtaining; Visits/practices to/in industry of fertilizers, Visits/practices to/in industry of plastics |
| **LANGUAGE OF INSTRUCTION** |
| [x] 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** | 15 | **Written examination** | 40 |
| **Practical teaching** | 15 | **Oral examination** |  |
| **Teaching colloquia** | 30 | **OVERALL SUM** | 100 |
| **\*Final examination mark is formed in accordance with the Institutional documents** |