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| **UNIVERSITY OF NIŠ** | | | | | | |
| **Course Unit Descriptor** | | **Faculty** | | | Faculty of Science and Mathematics | |
| **GENERAL INFORMATION** | | | | | | |
| Study program | | | | PhD studies | | |
| Study Module (if applicable) | | | | Applied chemistry | | |
| Course title | | | | Nanostructured materials | | |
| Level of study | | | | ☐Doctoral | | |
| Type of course | | | | ☒ Elective | | |
| Semester | | | | ☐Spring | | |
| Year of study | | | | 1nd | | |
| Number of ECTS allocated | | | | 8 (eight) | | |
| Name of lecturer/lecturers | | | | Aleksandra Zarubica and Marjan Ranđelović | | |
| Teaching mode | | | | ☒Lectures , ☒Laboratory work , Project work, Seminar  ☐ | | |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** | | | | | | |
| This course provides students with the highest level of knowledge in the field of chemical and physico-chemical aspects of nanostructured materials and their processing technologies. Moreover, students acquire the ability to use the knowledge to set up and solve a specific problems and projects that are based on the synthesis, characterization and application of nanostructured materials.  Students are trained to:  professionally set up the project plan on appropriate topic in the field of nanostructured materials and align it with the principles of sustainable development; establish appropriate relation between the selected nanomaterial parameters (texture, structure, morphology) and achieved effects in the test-processes; discusse the physical-chemical, thermodynamic and kinetic parameters of processes in which nanomaterials are used (adsorption and / or catalysis); independently perform the necessary analysis (theoretical-mathematical or software approach), and establish optimized process parameters in the sinthesis and application of nanomaterials. | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| Nanotechnology - a theoretical approach; The application of nanotechnology in various fields; The chemical approach to nanostructured materials; The synthesis of nanostructured materials; The processing of three-dimensional nanostructured materials; Types of semiconductor nanomaterials; Application of semiconductor nanomaterials; Characterization of semiconductor nanomaterials; The synthesis of nanotubes and / or nanofibers with different chemical composition; The structure of nanotubes / nanofibers; Characterization of nanotubes / nanofibers; The application of nanotubes and nanofibers; Synthesis and structure of nanomaterials of various dimensionality (films and coatings); Application of nanomaterials of various dimensionality (films and coatings); The synthesis and structure of the zeolites; Application of zeolites. | | | | | | |
| **LANGUAGE OF INSTRUCTION** | | | | | | |
| ☒Serbian (complete course) ☐ English (complete course)  ☐Serbian with English mentoring ☐ | | | | | | |
| **ASSESSMENT METHODS AND CRITERIA** | | | | | | |
| **Pre exam duties** | **Points** | | **Final exam** | | | **points** |
| **Activity during lectures** | **0** | | **Written examination** | | | **50** |
| **Practical teaching** | **0** | | **Oral examination** | | | **50** |
| **Teaching colloquia** | **0** | | **OVERALL SUM** | | | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** | | | | | | |