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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  |  |
| **GENERAL INFORMATION** |
| Study program  | Postgraduate PhD Study: Technological Engineering |
| Study Module (if applicable) | - |
| Course title | Advanced Biochemical Engineering |
| Level of study | [ ] Bachelor [ ]  Master’s [x]  Doctoral |
| Type of course | [ ]  Obligatory [x]  Elective |
| Semester  |  [x]  Autumn [x] Spring |
| Year of study  | Second |
| Number of ECTS allocated | 8 |
| Name of lecturer/lecturers | Vlada Veljković |
| Teaching mode |  [x] Lectures [ ] Group tutorials [x]  Individual tutorials [ ] Laboratory work [ ]  Project work [x]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| The techniques and methods involved in the design and operation of bioreactors, taking into account all relevant biological and process-engineering factors, will be presented. Students will understand the interaction between biological and process engineering factors of importance for the design and operation of bioreactors and will be capable to design, formulate and optimize the nutrient medium, to select the type of bioreactor and to design and manage the bioreactor. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| **1. Introduction to bioprocess design system - 2 hours; 2. Influence of microbial culture and its characteristics on the design and operation of bioreactors - 4 hours; 3. Design, formulation and optimization of the nutrient medium - 4 hours; 4. Principles of bioreactor design - 4 hours; 5. Scale-up of bioreactors - 4 hours; 6. Agitated bioreactors - 4 hours; 7. Bubble column bioreactors - 4 hours; 8. Special types of bioreactors - 4 hours** |
| **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** | **10** | **Written examination** |  |
| **Seminar work** | **60** | **Oral examination** | **30** |
| **Teaching colloquia** |  | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |