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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty of Technology** |  |
| **GENERAL INFORMATION** |
| Study program  | Undergraduate studies: Food Technology and Biotechnology, Chemical Technologies and Textile Technologies |
| Study Module (if applicable) | Food Technology, Biotechnology, Pharmaceutical and Cosmetic Engineering, Organic Chemical Technology and Polymer Engineering and Ecological Engineering |
| Course title | Mechanical Operations |
| Level of study | [x] Bachelor [ ]  Master’s [ ]  Doctoral |
| Type of course | [x]  Obligatory [ ]  Elective |
| Semester  |  [x]  Autumn [x] Spring |
| Year of study  | II |
| Number of ECTS allocated | 7 |
| Name of lecturer/lecturers | Prof. Vlada Veljković |
| Teaching mode |  [x] Lectures [x] Group tutorials [x]  Individual tutorials [x] Laboratory work [ ]  Project work [ ]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| Students gain the necessary knowledge of fluid mechanics and mechanical operations. The aim of the course is to present to students the basic momentum transport phenomena, the mechanics of homogeneous and heterogeneous fluid systems and different mechanical operations, in order to learn how to calculate basic unit operations and to use the literature in this field. Students are able to independently calculate basic mechanical operations and devices. Students develop skills to solve problems by using the phenomena of momentum transport and fluid mechanics. Students acquire knowledge which enables them to work in real conditions. By comprehensive understanding of the problems students are able to solve them. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| 1. Introduction to the mechanical operations. Fundamentals of Fluid Mechanics - 3 hours; 2. Fluid Statics - 3 hours; 3. Fluid Dynamics. The ideal fluid flow equation - 3 hours; 4. The real fluid flow equation. Emptying of tanks - 3 hours; 5. Mechanisms of momentum transport - 3 hours; 6. Boundary layer. Analysis of fluid flow. - 3 hours; 7. Transport of fluids - 3 hours; 8. Pumps, fans and compressors - 3 hours; 9. Fundamentals of mechanics of heterogeneous fluid system - 3 hours; 10. Filtration - 3 hours; 11. Precipitation and hydraulic classification - 3 hours; 12. Centrifugation and fluidization - 3 hours; 13. Agitation and dispersion operations - 3 hours; 14. Operation of the mechanical treatment of solid materials: grounding, screening and transport of solid materials and other methods of treatment of solid material - 4 hours; 15. Review of mechanical operations through animations - 2 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** | **5** | **Written examination** | **40** |
| **Practical teaching** | **15** | **Oral examination** | **40** |
| **Teaching colloquia** | **40** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |