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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty of Technology** |  |
| **GENERAL INFORMATION** |
| Study program  | Undergraduate studies: Food Technology and Biotechnology and Chemical Technologies |
| Study Module (if applicable) | Food Technology; Biotechnology;, Pharmaceutical and Cosmetic Engineering; Organic Chemical Technology and Polymer Engineering and Ecological Engineering |
| Course title | Heat and Mass Transfer Operations |
| Level of study | [x] Bachelor [ ]  Master’s [ ]  Doctoral |
| Type of course | [x]  Obligatory [ ]  Elective |
| Semester  | [ ]  Autumn [x] Spring |
| Year of study  | 3 |
| Number of ECTS allocated | 7 |
| Name of lecturer/lecturers | Prof. Vlada Veljković |
| Teaching mode |  [x] Lectures [ ] 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 heat and mass transfer. The aim of the course is to present to students the basic heat and mass transport phenomena and different heat and mass transfer operations, in order to learn how to calculate the basic unit operations and to use the literature in this field. Students are able to independently calculate basic heat and mass transfer operations and devices. Students acquire the knowledge which enables them to work in real conditions. By comprehensive understanding of the problems, students are able to use previously acquired knowledge to solve them. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| 1. Introduction to heat transfer operations. Mechanisms of heat transfer. Steady and unsteady heat conduction - 3 hours; 2. Heat convection. Differential equations of unsteady heat convection - 3 hours; 3. The theory of similarity and analogy between heat and momentum transport - 3 hours; 4. Convective heat transfer without phase change - 3 hours; 5. Boiling and condensation - 3 hours; 6. Heating and cooling - 3 hours; 7. Design of condensers - 3 hours; 8. Design of evaporators - 3 hours; 9. Introduction to mass transfer operation. Mechanisms of mass transfer. Mass transfer by diffusion - 3 hours; 10. Convective mass transfer - 3 hours; 11. Differential equations of unsteady mass transfer - 3 hours; 12. Interphase mass transfer. Basic mass transfer operation design - 3 hours; 13. Mass balance of batch and continuous operations --9 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** |