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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** | Faculty of Mechanical Engineering |
| **GENERAL INFORMATION** |
| Study program  | Mechanical Engineering |
| Study Module (if applicable) | Manufacturing & Information Technologies  |
| Course title | Design of Medical Devices and Implants (MDI) |
| Level of study | ☐Bachelor ☐ Master’s × Doctoral |
| Type of course | ☐ Obligatory× Elective |
| Semester  | ☐ Autumn ×Spring |
| Year of study  | First |
| Number of ECTS allocated | 10 |
| Name of lecturer/lecturers | Dr Milos S. Stojkovic |
| Teaching mode | ×Lectures ×Group tutorials ☐ Individual tutorials☐Laboratory work × Project work ☐ Seminar☐Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| *Course aim: Provide student with the necessary level of knowledge regarding the specific design of medical devices and implants in order to introduce him with the challenges in the field and induce him for future research and development.* *Course outcome: After the course completing and passing the exam, the student will:*1. *Master the basic techniques of computer-aided redesign of tissue,*
2. *Understand the design rules for the cases of implant, fixation, surgical instrumentation and medication applicators*
3. *Understand the standards and techniques in testing of MDI*
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| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| 1. **Introduction – MDI: classification and challenges**
2. **Biocompatibility and biodegradability**
3. **Methods for tissue redesign**
4. **Designing the implants**
	1. **Bone implants**
	2. **Dental and otologic implants**
	3. **Scaffolds**
	4. **Soft tissue implants**
5. **Medication applicators**
6. **Fixation and surgical instrumentation**
7. **Standards in MDI**
8. **Testing and exploration of MDI**
9. **Actual research challenges in the field**
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| **LANGUAGE OF INSTRUCTION** |
| ×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** |  | **Project tasks I, II (Written examination)** | **50** |
| **Practical teaching** |  | **Discussion (Oral examination)** | **15** |
| **Quiz** | **35** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents***Realization of two projects as well as regular attending to lectures are mandatory* |