



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	<input type="checkbox"/> Bachelor <input type="checkbox"/> Master's <input checked="" type="checkbox"/> Doctoral
Type of course	<input type="checkbox"/> Obligatory <input checked="" type="checkbox"/> Elective
Semester	<input type="checkbox"/> Autumn <input checked="" type="checkbox"/> Spring
Year of study	First
Number of ECTS allocated	10
Name of lecturer/lecturers	Dr Milos S. Stojkovic
Teaching mode	<input checked="" type="checkbox"/> Lectures <input checked="" type="checkbox"/> Group tutorials <input type="checkbox"/> Individual tutorials <input type="checkbox"/> Laboratory work <input checked="" type="checkbox"/> Project work <input type="checkbox"/> Seminar <input type="checkbox"/> Distance learning <input type="checkbox"/> Blended learning <input type="checkbox"/> 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

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
 - a. Bone implants
 - b. Dental and otologic implants

- c. Scaffolds
- d. 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

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