



# UNIVERSITY OF NIŠ

**Course Unit Descriptor**

**Faculty**

Faculty of Mechanical Engineering in Nis

## GENERAL INFORMATION

Study Program	<b>Mechanical Engineering</b>		
Study Module (if applicable)	-		
Course Title	TISSUE ENGINEERING		
Level of Study	Bachelor	<input type="checkbox"/> Master's	x Doctoral
Type of Course	<input type="checkbox"/> Obligatory	<input checked="" type="checkbox"/> Elective	
Semester	Autumn	x Spring	
Year of Study	I		
Number of ECTS Allocated	10		
Name of Lecturer/Lecturers	Miroslav D. Trajanovic		
Teaching Mode	<input checked="" type="checkbox"/> Lectures	<input type="checkbox"/> Group tutorials	<input type="checkbox"/> Individual tutorials
	<input checked="" type="checkbox"/> Laboratory work	x Project work	x Seminar
	<input type="checkbox"/> Distance learning	<input type="checkbox"/> Blended learning	<input type="checkbox"/> Other

## Purpose and Overview (max. 5 sentences)

To introduce students to the basics of tissue engineering. To provide students with knowledge that will enable them to research in the field of scaffolds, tissue engineering of bones, skin and cardiovascular organs

## Syllabus (brief outline and summary of topics, max. 10 sentences)

- *Theory*
  - Tissue engineering and mechanical engineering
  - Biomaterials: metals, ceramics, polymers (natural and synthetics), biodegradable materials
  - Cells. Cell culture. Sterilization techniques. Reactors and criptopreservation
  - Biomolecules (growth factors, differentiation factors)
  - The growth of tissue (2D and 3D tissue growth, bioreactors, vascularization)
  - Scaffolda
  - Biomechanical aspects of tissue design
  - Cardiovascular Tissue Engineering
  - Bone Tissue Engineering
  - Tissue engineering of Skin
- *Practice*  
Defining requests, design, manufacturing proces planning of of devices in the field of tissue engineering.  
Reengineering of existing systems. Development of new technologies in the field of tissue engineering.

## Language of Instruction

- Serbian (complete course)       English (complete course)       Other \_\_\_\_\_ (complete course)
- Serbian with English mentoring       Serbian with other mentoring \_\_\_\_\_

<b>Assessment Methods and Criteria</b>			
<b>Pre exam Duties</b>	<b>Points</b>	<b>Final Exam</b>	<b>Points</b>
<b>Activity During Lectures</b>		<b>Written Examination</b>	
<b>Practical Teaching</b>		<b>Oral Examination</b>	<b>30</b>
<b>Teaching Colloquia</b>	<b>70</b>	<b>Overall Sum</b>	<b>100</b>
<b>*Final examination mark is formed in accordance with the Institutional documents</b>			