



UNIVERSITY OF NIŠ

Course Unit Descriptor

Faculty

Faculty of Mechanical Engineering

GENERAL INFORMATION

Study Program	Mechanical Engineering		
Study Module (if applicable)	-		
Course Title	Micro and Nanotechnologies		
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 checked="" type="checkbox"/> Autumn	<input type="checkbox"/> Spring	
Year of Study	II		
Number of ECTS Allocated	10		
Name of Lecturer/Lecturers	Miloš S. Milošević Jelena Z. Manojlović		
Teaching Mode	<input checked="" type="checkbox"/> Lectures	<input type="checkbox"/> Group tutorials	<input checked="" type="checkbox"/> Individual tutorials
	<input checked="" type="checkbox"/> Laboratory work	<input checked="" type="checkbox"/> Project work	<input checked="" type="checkbox"/> Seminar
	<input type="checkbox"/> Distance learning	<input type="checkbox"/> Blended learning	<input type="checkbox"/> Other

Purpose and Overview (max. 5 sentences)

Introducing in micro-and nanotechnologies, materials, principles, physical effects and phenomena important in the micro-and nano-environment. Providing a theoretical basis, reviewing the necessity of application of micro-and nano-systems in different areas and possibilities of further development of micro-and nanotechnologies. Training for understanding phenomena in micro-and nano world (typical physical phenomena such as friction, adhesion, wear, lubrication, etc.). With that knowledge students can have deeper understanding of the causes for the occurrence of such phenomena and for application of the acquired knowledge for designing micro-and nano-elements and systems.

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

Physical basis of micro-and nanomechanics (material properties, physical effects, principles and phenomena in micro-world). The study of phenomenon of friction, adhesion, wear and lubrication at the molecular level. Research of chemical, physical and mechanical properties of surfaces. Instruments for research of phenomena at micro-and nano level. Technologies of micromechanics and nanotechnology. Models of phenomena important for functioning micro-and nanosystems. Small dimensions devices, micro (MEMS) and nanoelectromechanical systems (NEMS). The further development of micro-and nanotechnology. Analysis of physical effects, principles and phenomena in micro-and nanoelectromechanical systems. Modelling and simulation of functional principles of micro-and nano systems. Application of technologies of micromechanics and nanotechnology for designing micro-and nano-elements and systems. Experimental analysis of micro- and nanosystems in the laboratory.

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	10	Written Examination	0
Practical Teaching	10	Oral Examination	20
Teaching Colloquia	60	Overall Sum	100

***Final examination mark is formed in accordance with the Institutional documents**