



UNIVERSITY OF NIŠ

Course Unit Descriptor**Faculty**

Faculty of Mechanical Engineering

GENERAL INFORMATION

Study Program	Engineering Management		
Study Module (if applicable)	Management of innovation and product development		
Course Title	Tools and Technologies in Product Development		
Level of Study	<input type="checkbox"/> Bachelor	<input checked="" type="checkbox"/> Master's	<input 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	I		
Number of ECTS Allocated	7		
Name of Lecturer/Lecturers	Dragan S. Milčić, Mijajlović M. Miroslav		
Teaching Mode	<input checked="" type="checkbox"/> Lectures	<input checked="" type="checkbox"/> Group tutorials	<input type="checkbox"/> Individual tutorials
	<input checked="" 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)

Students acquire knowledge in application of various CA technologies in product development. The aim of the subject is that the students can independently use CA computer technologies (CAD, CAM, CAE, RP, VR) in the product development process.

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

Definition of product development. Phases of product development. The role of computers in product development. Product Life cycle. Effects of using CAx tools in product development. Hardware development. Input-output devices which are used in product development. Software used in product development. Information systems. CAD as basic tool in product development. Geometric modelling. Modelling of Products. Visualization and interaction. Rapid Prototyping (RP) and Rapid Manufacturing. CAD / CAM. Simulation (CAE). Finite Element Method (FEM). Deformation method. Definition of finite element. Classification of elements. Stiffness matrix. Governing equations. FEM modelling. Pre-processing - Generation of finite element mesh, Definition of loads and constraints, Post processing. Discretization error. Static structural analysis. Modal analysis, Integration of CAx tools in product development. Systems based on knowledge (Knowledge Systems). Optimization in product development. FMEA / FMECA (Failure Mode and Effects Analysis / Failure Mode, Effects and Criticality Analysis) methods in product development. FTA (Fault Tree Analysis) method in product development.

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	5	Written Examination	50
Practical Teaching	5	Oral Examination	40
Teaching Colloquia	–	Overall Sum	100
*Final examination mark is formed in accordance with the Institutional documents			