

Study program: Industrial Engineering			
Course title: Machine Elements			
Professor/assistant: PhD. Miloš S. Ristić			
Type of course: compulsory			
ECTS credits: 7			
Pre-requisites:			
Aims of the course:			
Introducing students to the main groups of machine elements, basic construction shapes, calculation, dimensioning, and operation modes of mechanical elements in a mechanical system.			
Through the teaching process a student is prepared to:			
<ul style="list-style-type: none"> ▪ master the construction and shaping process phases, as well as contemporary approaches in the development of industrial products; ▪ differentiate fasteners and joints of mechanical elements; ▪ complete the project task independently and design the power transmitter by using contemporary CAx systems, and software for calculating mechanical elements; ▪ understand the role of a constructor and his/her responsibility for the product and the production process; 			
understand the life cycle of products and the importance of the process of designing environmentally friendly products.			
Learning outcomes:			
A student who passes this course:			
<ul style="list-style-type: none"> ▪ recognizes, analyzes and solves practical problems and calculation of mechanical elements of general group ▪ is aware of the prerequisites for successful construction of machines and equipment ▪ solves practical problems of determining load, calculation and practical construction of machines and equipment according to the exploitation (working) conditions ▪ defines and describes project task elements and applies them in specific practical conditions ▪ uses modern software programs for calculating and constructing machine elements; ▪ applies the basics of designing environmentally friendly products; analyzes the product from the aspect of the life cycle; 			
uses ISO and EN standards, compares literature, recognizes the difference and defends his/her proposed solutions.			
Syllabus			
<i>Theoretical part</i> Mechanical elements construction basics. Standardization basics. Construction of machines and mechanical elements from the aspect of the directive on machines. Tolerances. Mechanical element loads and tension. Voltage concentration. Factors of safety. Fasteners and joints of mechanical elements. Screw thread. Riveted joints. Soldered joints. Bonded joints. Weld. Power transmission elements. Friction belt, gear, chain conveyors. Software tools for calculating mechanical elements. Shafts and axles. Bearings. Coupling. The guiding and stopping elements. New groups of mechanical elements.			
<i>Practical part</i> -Calculation and practical construction of mechanical elements. Calculation of mechanical elements using modern software.			
<i>Project task:</i> Content, task discussion with the choice of variant solutions, prior and final calculation: analysis of the completed task. Product definition data set using modern CAx software			
Literature			
1. MiltenovićV.,OgnjanovićM., <i>MašinskielementiI,II,III</i> ,Mašinskifakultet u Nišu, Mašinskifakultet u Beogradu, 1995.			
2. RistićS., <i>ZbirkazadatakaizMašinskih elementa</i> , Višatehničkaškola u Nišu, Niš, 2003.			
3. RistićS.,MiltenovićA.,RistićM., <i>Praktikumzaizraduprojektnihzadatakaizmašinskihelemenata</i> , Visokatehničkaškolastrukovnihstudija u Nišu, Niš, 2010.			
Number of active classes			Other forms of teaching:
Lectures: 3	Practical classes: 3	Research work:	
Teaching methods Theoretical teaching is done frontally, using physical models, virtual models and audio-visual presentations. Team project provides basis for product analysis and team development. Project tasks are done individually. Examination will be carried out through colloquiums and written examination at the end of the semester.			
Grading system (maximum 100 points), grading scale from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade7 from 61-70 points, grade8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.			
Pre-exam obligations	points	Final exam	points
activity during theoretical lectures	10	written exam	40
practical training	15	oral exam	
colloquium(s)/seminar papers	20+15		
Sum	60	Sum	40