

Study program: Mechanical engineering			
Type and level of studies: Bachelor studies			
Course unit: Theory of Mechanisms			
Teacher in charge: Bošković Marina			
Language of instruction: English			
ECTS: 6			
Prerequisites: passed the exam in Mechanics (Kinematics and Dynamics)			
Semester: Winter semester			
Course unit objective: Introduction to the basic terms and problems of structural, kinematic and dynamic analysis as well as the synthesis of mechanisms and machines. An introduction to methodologies for solving tasks that demonstrate the practical application of theoretical assumptions.			
Learning outcomes of the course unit Ability to calculate and apply kinematic and dynamic analysis and synthesis of mechanisms in the implementation of appropriate functions in devices and machines.			
Course unit contents			
<i>Theoretical classes</i>			
Structural analysis, basic terms, degree of freedom of movement, forming of mechanisms, conditions of assembly and mobility. Kinematic analysis of the path, speed and acceleration of the mechanism using the graphic method and the method of current centers. Kinematic analysis by the method of complex numbers and its application for analysis using a computer. Dynamic analysis: inertial forces, determination of kinetostatic pressures, balancing of mechanisms and machines, angle of pressure. Dynamics of mechanisms: reduced mass and moment of inertia, reduced force and moment, the procedure for determining the equations of motion, flywheel. Cam mechanisms: partition, movement of the working element - the lifter, kinematics of cam mechanisms, construction of the cam profile, pressure angle at the cam mechanism. The Maltese Mechanism. Synthesis of mechanisms - kinematic synthesis.			
<i>Practical classes</i>			
In the practical classes, student should do a seminar paper and present it.			
Literature			
1. Zlokolica M., Cavic M., Kostic M., Mechanics of machines, FTN Novi Sad, 2005.			
2. Zlokolica M., Cavic M., Kostic M., Selected examples in mechanics of machines, FTN Novi Sad, 2005.			
3. Bulatovic R., Modern approaches in mechanism design, University textbook, Faculty of mechanical and civil engineering Kraljevo, University of Kragujevac, 2016.			
4. Norton L. R., Design of Machinery – An introduction to the Synthesis and analysis of Mechanisms and Machines, McGraw – Hill, 2004.			
Number of active teaching hours			Other classes
Lectures: 3	Practice: 1	Other forms of classes:	Independent work: 1
Teaching methods			
Theoretical teaching is in the form of lectures. Practical teaching: auditory and independent exercises and preparation of a seminar paper.			
Examination methods (maximum 100 points)			
Exam prerequisites	No. of points:	Final exam	No. of points:
Student's activity during lectures	5	oral examination	
practical classes/tests		written examination	65
Seminars/homework		
Project	30		
Other			
Grading system			
Grade	No. of points	Description	
10	95-100	Excellent	

9	85-94	Exceptionally good
8	75-84	Very good
7	65-74	Good
6	55-64	Passing
5	Less than 55	Failing