

<b>Study program / course:</b> Mechanical Engineering				
<b>Type and level of study:</b> Master academic studies				
<b>Course:</b> Mechatronics				
<b>Lecturers:</b> Todorović M. Petar; Milan S. Matijević				
<b>Status of course:</b> Obligatory for module M <sub>6</sub> , II semester				
<b>Number of ECTS:</b> 6				
<b>Precondition:</b> None				
<b>The objective of course</b> Introducing of students with the basics of Mechatronics and with Mechatronics approach in the product designing, introducing with the most important sensor types and actuators, as same as introducing of students with the position and the role of programmable logical controllers. By combining of teaching lessons, which will be performed within the course, a student should be able to understand what is necessary to be done in order to design one Mechatronics device.				
<b>The outcome of course</b> After successfully ended obligations, each student should be able to understand the concept of mechatronics and mechatronics approach, to know the role and position of microprocessors and microcontrollers and to be able to replace them, to know the basic controlling system elements, to know the basic types of modern sensors and actuators, to know the basic elements for data acquisition, to be able to apply them and to know the basic types of industrial manipulators and robots.				
<b>Syllabus</b> <b>Theoretical study</b> Introducing in mechatronics, mechatronics approach in product designing, mechanical system modeling for mechatronics appliance, the basic passive and active electronic components (resistors, condensers, inductors, diodes and transistors), microprocessors and microcontrollers, sensors, actuators (electromechanical relay, step motors, D/A and A/C motors, as well as hydraulic and pneumatic), the concept of the signal and data acquisition. The basis of digital controlling systems, programmable logical controllers, industrial manipulators and robots.				
<b>Practical Studies:</b> Sensors, Atuators – step and D/C servo motors, signal acquisition. Students are capable to perform some basic examinations within the course field.				
<b>Recommended reading</b> 1. Matijević M., Jakupović G., Car J., Računarski podržano merenje i upravljanje, Mašinski fakultet u Kragujevcu, 2005.				
The number of hours of active teaching:				Other classes:
Theory: 2	Practical classes: 1.6	Other forms of teaching: 0.4	Research study: 0	1
<b>Methods of teaching</b> Teaching is performed through lectures, auditorium and laboratory exercises. For teaching presentation a modern teaching facilities-video presentations and teaching movies are used. For each teaching filed a variety of different industrial field examples are taken in consideration through different case studies. In this way students are capable to obtain a very wide range of practical knowledge which is necessary to solve the predicted mechatronics teaching matter For examination performing the most modern training equipment sensors, actuators and PLC's are used.				
<b>Evaluation of knowledge</b>				
<b>Pre-final exam obligations</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>	
Activities during the classes:	10			
Practical classes:	10	Verbal exam	30	
Colloquiums(s) :	35			
Seminar(s) :	15			