

Study program / course: Mechanical Engineering				
Type and level of study: Master academic studies				
Course: Engineering and analysis of systems				
Lecturers: Ilija Nikolić, Vesna Ranković, Milan Matijević				
Status of course: Elective, joint for modules M ₅ and M ₇ , III semester				
Number of ECTS: 6				
Prerequisite: None				
The course objective: To provide students with the insight into the modern analysis of systems, both technical as well as economic, social, biological and ecological. Especially important is application of the space state theory for mathematical models of those systems and their solving.				
The course outcome: Students are capable to recognize such problems and models in the similar disciplines. They are able to represent them with the adequate mathematical models and to present the description of the solution.				
Syllabus				
Theoretical study: Introduction - definition and types of systems. The state space concept. The state space and the state vector. System response. Technical-technological systems and models. Social systems and their models. Techno-economic systems and their models. Closed ecological systems and their models. Macro and micro models and systems. The epidemics and rumors propagation model. Expanded models. The products advertising and selling models.				
Practical studies: Problems solving, homeworks, tests and colloquia. (Same areas as for theoretical lecturing).				
Recommended reading 1. Stojić, M., "Continuous systems of automatic control", Science, Belgrade, 1993. 2. Lecture notes in E-form				
The number of hours of active teaching:				Other classes: Final test 1
Theory: 3	Practical classes: 1.4	Other forms of teaching: Consultations 0.6	Research study:	
Methods of teaching Lecturing, Practical work, Laboratory work, Consultations (group and individual)				
Evaluation of knowledge				
Pre-final exam obligations	Points	Final exam	Points	
Activities during the classes:	10	Final test*	30*	
Practical classes:				
Colloquium (a):	40			
Seminar paper:	20			
Additional remarks: *The final test is taken only by candidates that are not satisfied with their score on pre-final exam obligations.				