

<b>Study program / course:</b> Mechanical Engineering			
<b>Type and level of study:</b> Master academic studies			
<b>Course:</b> Dynamic Systems Modeling			
<b>Lecturer:</b> Dragan I. Milosavljevic			
<b>Status of course:</b> Obligatory for module M5, I semester			
<b>Number of ECTS:</b> 6			
<b>Precondition:</b> No			
<b>The objective of course</b> The objective of course is to develop computer modeling of dynamic technical systems to enable students to apply contemporary software methods in analysis and design of systems. Special attention is devoted to physical understanding of tasks in engineering applications.			
<b>The outcome of course</b> Students will, upon passing exams, will be able to understand methods of dynamic systems modeling and for solving and optimization of given models with the aim to use results in design technical constructions and to solve problems in engineering applications.			
<b>Syllabus</b>			
<b>Theoretical study:</b> The aim of theoretical and practical study is to make students capable to develop basic skills for understanding of following subjects: <ul style="list-style-type: none"> <li>- Modeling of engineering systems and analogy,</li> <li>- Fundament of numerical methods and simulation using computer programs such as Matlab Simulink etc.,</li> <li>- Examples of analytic modeling,</li> <li>- Rigid body modeling,</li> <li>- Fluid mechanics modeling,</li> <li>- Electric and Electromagnetic systems modeling,</li> <li>- Modeling of coupled problems and analogy.</li> </ul>			
<b>Practical classes</b> Practical solutions of chosen examples will be presented by lecturer, and students are asked to solve two given examples by themselves, to present and interpret those personally, using above mentioned computer programs.			
<b>Recommended reading</b> <ol style="list-style-type: none"> <li>1. Milić Stojić, Kontinualni sistemi automatskog upravljanja, Nauka, Baograd, 1993.</li> <li>2. Katsuhiko Ogata, Modern Control Engineering, Prentice Hall, New Jersey, 1997.</li> <li>3. Ljung, L. and Glad, T., Modeling of Dynamic Systems, Prentice Hall, 1994.</li> </ol>			
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 conducted through lectures, practical classes and independent work of students. Within lectures students receive basic theoretical knowledge. In practical classes students is asked to solve given technical problem using Matlab Simulink etc.			
<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:	<b>10</b>	Oral examination	<b>30</b>
Practical classes/ Home works:			
Colloquiums(s)/ Tests:			
Seminar(s) :	<b>60</b>		