Course Unit Descriptor

Study Programme: Applied Mathematics (MB)	
Course Unit Title: Modeling Seminar 2	
Course Unit Code: MB23	
Name of Lecturer(s): Dusan Jakovetic	
Type and Level of Studies: Master Academic Degree	
Course Status (compulsory/elective): Elective	
Semester (winter/summer): Summer	
Language of instruction: English	
Mode of course unit delivery (face-to-face/distance learning): Face-to-face	
Number of ECTS Allocated: 3	
Prerequisites: -	

Course Aims:

The aim of the course is that students understand, and are capable of analyzing and implementing simulation and/or modeling methods by using selected software packages.

Learning Outcomes:

Learning selected methods of system modeling and computer simulation. Besides that, the student should prove that he/she is capable to construct and analyze a mathematical or a simulation model of a real world system.

Syllabus:

Theory

Simulation methods; mathematics of digital simulation; system identification; different system model representations: differential equations, input-output representation, transfer function and state-space models; selected topics in numerical optimization.

Practice

Students will gain skills and experience in modeling and/or simulating real-world systems in selected software packages.

Required Reading:

1. S. M. Ross, Simulation, Third Edition, Academic Press, New York 2002

2. S. Lynch, Dynamical Systems with Applications using MATLAB, Birkhauser Verlag, Boston 2004

3. H.-J. Bungartz, S. Zimmer, M. Buchholz, and D. Pflüger: Modeling and Simulation: An Application-Oriented Introduction, Springer, 2014

4. A. Takači, Skripta iz Matematičkog modeliranja, Departman za matematiku i informatiku PMF i WUS, Novi Sad, 2006

Weekly Contact Hours:	**Lectures: 1**	**Practical work: 5**

Teaching Methods:

Lectures; problem-solving sessions; students' team work on a selected real world problem, including oral and written presentation of the results.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	Points	Final exam	points
Course project	50	written exam	50

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.