UNIVERSITY OF PANNONIA

COURSE DATASHEET

Semester:	2012/13/1
Course:	Simulation of Mechatronical Systems
Code:	VEMKFOM433S
Responsible department:	Department of Process Engineering
Department code:	MKFO
Responsible instructor:	dr. Béla Lakatos

Course objectives:

The aim is to introduce the fundamentals and practice of accurate modelling and efficient simulation of mechatronic components and systems, in support of greatly reduced de-velopment cycle time and cost.

Course content:

1. The goal and methods of simulation of engineering systems: analysis, design, control. Guidelines for carrying out of simulation.
2. Basic techniques and available tools for modelling and simulation. Matlab/Simulink, 20-sim.
3. Electromechanical systems for mechatronic applications.
4. Electrical machines.
5. Fluid power systems for mechatronic applications.
6. Hydraulic and pneumatic actuation systems.
7. Case study: Simulation of an integrated mechatronic system.
8. Design optimization of mechatronic systems

Requirements, evaluation and grading:

Grading is based on two midterm examinations and the results of solving two home problems. Each examination consists of 2 general questions and 2-4 problems to be solved. The final mark is determined according to following table based on the weighted average of the points obtained for the midterm examinations and the home work. The weights of midterm exams and home work are=0.4, 06

% final mark
above 85 excellent (5)
75-84 good (4)
65-74 medium (3)
50-64 pass (2)
below 50 fail (1)

Required and recommended readings:

Alciatore, D.G., M.B. Histand, 2003, Introduction to Mechatronics and Measurement Systems.

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Required and recommended readings:

McGraw-Hill, Boston.
Damic, V., J. Montgomery, 2003, Mechatrinics by Bond Graphs. Springer_Verlag, Berlin.
Cellier, F.E., 1991, Continuous System Modeling. Springer, New York.
Bishop, R.H. (Ed.), 2002, The Mechatronics Handbook. CRC Press, Boca Ranton.
Karnopp, D.C., Margolis, D.L. & Rosenberg, D.L., System Dynamics: Modeling and Simulation of Mechatronic Systems.
Nesculescu, D., 2002, Mechatronics. Prentice-Hall, New York.