UNIVERSITY OF PANNONIA

COURSE DATASHEET

Semester:	2015/16/1
Course:	Simulation of Mechatronical Systems
Code:	VEMKFOM433S
Responsible department:	Department of Process Engineering
Department code:	MKFO
Responsible instructor:	dr. Lajos Nagy

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.The final mark is determined according to following table based on the weighted average of the points obtained for the midterm examinations. The weights of 1th and 2nd midterm exams are 0.4, 0.6, final mark above 80 excellent (5) 70-80 good (4) 60-70 medium (3) 50-60 pass (2) below 50 fail (1)

Required and recommended readings:

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

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Required and recommended readings:

Mechatronic Systems.
Nesculescu, D., 2002, Mechatronics. Prentice-Hall, New York.