



## COURSE DATASHEET

<b>Semester:</b>	2013/14/2
<b>Course:</b>	Mechatronic Systems
<b>Code:</b>	VEMKFIB413R
<b>Responsible department:</b>	Institute of Physics and Mechatronics
<b>Department code:</b>	MKFI
<b>Responsible instructor:</b>	dr. István Szalai

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### Course objectives:

The main objectives of this subject is to recognise the elements of mechatronic systems

### Course content:

1. Analog and switched-mode power supplies, transient behavior noise filtering 2. Power transistors, power FETs, IGBTs, diodes and rectification, power resistors 3. High power, high current operational amplifiers, grounding problems of power amplifiers, cooling of power electronic components 4. Current and voltage generator circuits with transistors and operational amplifiers 5. Inductive-load switching, low side and high side drivers, half and full bridge circuits, unipolar and bipolar PWM driver circuits, open and closed loop PWM 6. Stepper motor driving 7. Front-end driving circuits 8. Interfacing logic to power electronics, DC/DC converters, opto and inductive couplers 9. Closed-loop controllers 10. On/off control with microcontrollers, digital control of linear systems 11. Analog and digital PID control 12. Motion of a load, motion profiles kinematics 13. Motion control of linear strays 14. PLC hardware and software 15. Mechatronics systems: bathroom scales, automatic camera, washing machine

### Requirements, evaluation and grading:

exam

### Required and recommended readings:

W. Bolton: Mechatronics. Electronic control systems in mechanical and electrical engineering. (Pearson Education, 2008)