



## COURSE DATASHEET

<b>Semester:</b>	2015/16/2
<b>Course:</b>	Servo Drives
<b>Code:</b>	VEMKGEB354S
<b>Responsible department:</b>	Institute of Mechanical Engineering
<b>Department code:</b>	MKGEI
<b>Responsible instructor:</b>	Dr. Dénes Fodor

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### Course objectives:

The aim of the course is to highlight the theoretical background and the types of electrical drive systems used in industrial automation and robotics. The material will cover basic knowledge in power electronics, signal electronics, control theory and on microcontrollers for understanding the complex integrated structure of electrical drives systems.

### Course content:

Introduction, Basic principles  
Dynamics of Electrical Drives, Motion and Torque Equations.  
Power Electronics and Control Devices used in Electric Drives  
Converter Circuits I (AC-DC, AC-AC)  
Converter Circuits II (DC-DC, DC-AC )  
Space Vector Representation  
Principle of Space-Vector Modulation  
Principle of Vector Control of Sinusoidal air-gap flux drives  
Voltage Source Inverter Fed Induction Motor Drives  
Current Source Inverter Fed Induction Motor Drives  
Self Synchronizing inverter Fed Synchronous Drive  
Permanent Magnet synchronous Motor based servo drives  
Switched Reluctance Drives  
Stepping Motor Drives

### Requirements, evaluation and grading:

The whole content of lectures is included in the written examination.  
Grading is based on two written midterm examinations and one written final examination.  
The final mark is determined according to following table based on the weighted average of the three examinations (1st midterm 15%, 2nd midterm 20%, final written examination 65%):

points	final mark
above 80	excellent (5)
70-79	good (4)
60-69	medium (3)
50-59	pass (2)
below 50	fail (1)



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### Required and recommended readings:

Halász S.: Automatizált villamos hajtások I-II., Tankönyvkiadó, 1989  
J.M.D. Murphy: Power-Electronic Control of AC Motors. Pergamon Press, London, 1988