Other material

All other course material except lectures and exercises.

Course Related Material

Simulink for beginners PDF

Quick guide for how to use Simulink by Heikki Koivo (updated by Aljoo Kuusisto).

Exercise and MyCourses instructions

Instructions and rules on how to do the exercises on this course. Everyone must read this in the beginning of the course.

How to change Simulink variable export settings PDF

Introduction to Mechanics PDF

An extended equation collection of the most commonly used mechanical equations.

Introduction to Electrics PDF

The very basics of electric circuits.

English - Finnish Mechatronics glossary

Download Matlab and Simulink

Matlab and Simulink are available for all Aalto students to install on your personal computer. It is advised to install all included packages if you have enough disk space.

Discussion about external links

Suggest good tutorials, report dead links, comment on the quality of linked web pages etc.

Books for additional info

Some books related to the course that are available online. These are not official course books but you can probably find useful information related to the exercises in these. Some of these may not be available outside Aalto campus network or you may need to at least sign in through Aalto library...

Introduction to Mechatronics. E-book Introduction to Mechatronics available in Knovel. This is not the course book but with a quick browsing, looks pretty good.

Sensors for Mechatronics Ebook available in Knovel. More in depth stuff about different sensors.

Electric Motors and Drives - Fundamentals, Types and Applications. Available in Knovel. The link probably does not work outside Aalto campus network.

Time of Flight Cameras: Principles, Methods, and Applications Miles Hansard, Seungkyu Lee, Ouk Choi, Radu Horaud

The Scientist and Engineer's Guide to Digital Signal Processing By Steven W. Smith, Ph.D.

Study material provided by someone else

A collection of links to increase the amount of information provided by the lectures and the course book. The quality varies.

Electrical

Sparkfun's really basic tutorial on voltage & ohm's law etc.
DC circuits chapter of some MIT study guide. Looks like good stuff.
A well arranged site with electrical formulas
Sparkfun: Voltage dividers
Sparkfun: Series and parallel circuits

Sensors

WHAT IS AN LVDT?
Basics of rotary encoders by machinedesign.com
Linear encoders - machinedesign.com
Linear Position and Displacement Measurement With Capacitive and Eddy-Current Sensors
Comparing Capacitive and Eddy-Current Sensors
Optical methods for distance and displacement measurements
Capabilities of Machine Vision: Part I
Strain gages by Penn State University

Electric motors

Electrical Machines - Electric Drives (Fundamentals)
Electrical motor in electrical4u.com. The site actually seems to have a tutorial about everything containing electricity.
Brushless DC Motor Fundamentals
Speed control of BLDC motor
Motor sizing calculations
Lessons In Electric Circuits — Volume II Chapter 13 AC MOTORS. BLDC, induction, steppers etc.
Stepper motors
Step Motor Basics Guide

Control systems

Wikipedia: PID controller
PID without PhD A pretty good tutorial to PID control.

A video about PID control explaining the equations and pseudo code of the controller.

Measurement systems

Fundamentals of Sampled Data Systems From The Data Conversion Handbook, 2005
Low pass filters
Electrical disturbance coupling
Wikipedia: Electromagnetic compatibility
Introduction to Electromagnetic Compatibility (EMC)
Noise Reduction and Isolation

A good lecture with animations about Fourier transform.

Hydraulics

Hydraulic fundamentals
Intro to Hydraulics Introduction to hydraulics with a simple interactive simulation. Explanations of circuit symbols etc.
Hydraulic cylinders in hydraulicspneumatics.com
Hydraulic pumps

Video 1/16 of the series.

Other electric actuators

Voice coils

Miscellaneous educational videos

Some interesting or educational videos that we have run into.

A video about automation replacing human workers.
Youtube channel: Learn Engineering A Youtube channel with some good electric motor videos.

"Making robots" seminar. 5 min presentations from several robotic "gurus". Starting 26:10 founder of Boston Dynamics. Boston Dynamics makes probably the most advanced hydraulic robots in the world.