Introductory lecture

- How study work is organized?
- Content/ Preliminary plan
- Exam / evaluation criteria
Study work

Groups: MAHM31 + Exchange students

Lectures + practices

Lectures: ICT–A2– EVEN WEEKS

Even weeks are for Your individual works

Exam is practical – in the laboratory.
First possibility to take the exam is 16th study week

http://www.a–lab.ee/edu/ISS0023
Study work

Lectures: ICT–A2– EVEN WEEKS
Weeks nr. 2, 4, 6, 8, 10, 12, 14, 16(consultation)

Practices: laboratories ICT–501 – ODD WEEKS (case studies starting from week 5)
Even weeks are for Your individual works

Case study weeks:
2 (optional), 4(no report required), 5, 7, 9, 11, 13, 15
NB! No practice on week 3!
Semester plan

- Adaptive Systems
- Artificial Neural Networks
  - Structures of artificial neural networks and training algorithms;
  - Artificial neural networks based identification of nonlinear systems;
  - Artificial neural networks based control of nonlinear systems;
  - Artificial neural networks based image recognition and pattern classification;
  - Self-organizing systems;
Preliminary semester plan by weeks

- Dynamic Feedback Linearization based Control of Nonlinear Systems
- Introduction to Fuzzy Systems and Genetic algorithms, combined approach;
- Fractional order modelling and control (see http://fomcon.net/)

Week nr. 16 – exam
Control

Control Task/ user interface

Decision algorithm controller

Controlled plant/ process/ system/ object

Measurements and Data
Control
Control
Control
Control
Control
Actual Problems and main challenges in the field of control system design

- Distributed networked control systems
- Data–driven modelling and control
- Complexity of controlled systems and processes
- Cyber–Physical Systems of Systems
- Cyber–Physical and Human System

MATLAB/SIMULINK

www.mathworks.com

TalTech Campus License

Installation guide

You need to have @ttu.ee address
MATLAB/SIMULINK

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See

https://matlabacademy.mathworks.com

For online MATLAB courses
Lab reports

5 labs = 5 reports
Each report gives up to 1 point.
Each report has to be presented during 2 weeks after the lab!
Later presented reports (before December 21) – multiplied by coefficient 0.8
After December 21 – coefficient 0.6

5 report give up to 5 points.
All 5 reports have to be submitted.
Guidelines for preparation of laboratory reports

- Page limit of the report is 10 pages maximum.

- Each report must have a proper title page.

- Each report must contain a clear problem statement, step by step explanation of the solution, answers to the questions provided in the laboratory task (if any) and critical analysis of the results.
Guidelines for preparation of laboratory reports

- Using screenshots or photos of the screen is strictly prohibited!

- All results must be presented in clear, compact, analyzable and comparable form. For example, if a number of similar experiments were performed, the results should be presented in a table form.

- All figures and schematic diagrams must have captions and be referenced and explained in the text of the report.
Guidelines for preparation of laboratory reports

- All figures should have a legend or the meaning of each line should be explained in the text.

- All axes should have proper labels (measured parameter, unit, etc.).

- If a part of a program code is presented, it has to be commented.

- All blocks in presented schematic diagrams must have proper captions.
Guidelines for preparation of laboratory reports

- Each report is individual. Reports cannot contain absolutely identical results and conclusions.

- Reports have to be presented electronically in PDF, DOC or DOCX format by the deadline given on the web page http://www.a-lab.ee/edu/iss0023

- You do not need to submit source files, Matlab scripts, simulation models, etc. All the results have to be explained in your report.
Exam

Exam prerequisites:
- Course ISS0023 is declared (included into Your semester plan),
- Laboratory trainings are performed,
- Reports are presented and accepted

Exam – up to 72 hours
- Small practical project – design of a control system according to given control criteria;
- Simulation of the control system;
- Analysis of results and writing a report;
- 2 tasks – each one gives maximum 5 points.

Average of 2 exam tasks and labs = YOUR COURSE GRADE