Linnæus University

Dnr: 2017/5122-3.1.2.2

Course syllabus

Faculty of Technology

Department of Physics and Electrical Engineering

1ED061 El- och reglerteknik, 7,5 högskolepoäng
1ED061 Electrical and Control Engineering, 7.5 credits

Main field of study
Electrical Engineering

Subject Group
Electrical Engineering

Level of classification
First Level

Progression
G1F

Date of Ratification
Approved 2009-08-11
Revised 2017-09-04 by Faculty of Technology. Prerequisites are revised.

Removal of ECTS-grading scale. (17-11-13)
The course syllabus is valid from spring semester 2018

Prerequisites
Basic Mathematics for engineers 7.5 credits or the equivalent.

Objectives

Upon completion of the course, the student should be able to:

- have acquired basic knowledge in the field of electrical and control theory
- do simple calculations whitin electricity, measurements and control techniques
- be able to design a simple system using electronic components
- be able to analyze and explain the construction of a simple technical process.

Content

The course comprises the following topics:
Electric systems:

- electric circuits with both DC and AC currents
- electric three-phase-power systems, the synchronous generator and the induction motor

- electronics, semiconductors, OP-amplifiers
- Boolean algebra, A/D and D/A converters
- measurements technique, transducers
- introduction to the LabVIEW system
- PLC with Siemens S 7-LAD.

Control systems:

- dynamic models for systems of the first and second order
- analysis in the time domain, the Laplace transform
- different types of analogue controllers like PWM and PID
- analyses for stability control.

Type of Instruction
Teaching consists of lectures, tutorials and laboratory sessions. Activity at some sessions is mandatory.

Examination
The course is assessed with the grades U, 3, 4 or 5.

Course Evaluation
A course evaluation will be carried out at the end of the course in accordance with the guidelines of the University. The result of the course evaluation will be filed at the department.

Required Reading and Additional Study Material
Required reading
Franzén, Lundgren: Elkraftteknik, Studentlitteratur, 2002, ISBN 91-44-01804-5. 250 (300) pages.