

Offered by
ICT Engineering

IT-ELE1

1.0

Basic Electronics (ICT) - 10 ECTS

ECTS
10

Prerequisites
General admittance requirements

Main purpose

The student should acquire knowledge about basic electronic concepts and physical laws. Furthermore, the student should learn how to plan an experiment, perform it, analyse and evaluate the results and report all of this according to the international report-writing standard (IMRAD).

Course secondary purpose:

- Introduction to measurement instruments in electronics
- Make systematic measurements and take precautions to minimize the effect of variance and error
- Analyse and visualize measured data
- Structured reports on experiments and be able to make correct conclusions

Knowledge

Having completed this course, students should have understanding of

- Statistics, Observation variance and error
- Ohm's, Kirchhoff's, Thevenin, Superposition and other laws used in electronics calculations
- Theory of basic analogue electronic components
- Cooling of electronic components (Heatzink, Compound)
- Filter properties
- Strain Gauges in Wheatstone Bridge
- Operation Amplifiers, Instrument Amplifier, transistor (NPN, PNP)

Skills

Having completed this course, students should be able to

- Simulate analogue electronic circuits using simulation software
- Construct active filters with desired property for specific application
- Build and test prototype circuits
- Perform measurements on electronic circuits, using Digital Multi Meter and Pico-scope
- Solder components and wires

Competences

Having completed this course, students should be able to

- Design simple electronic circuits for measurement systems using amplifiers and filters
- Analyse experiment results, using statistical calculations and methods
- Write reports to document engineering experiments

Topics

Electronics, Soldering, Instruments, Statistic, Report writing

Teaching methods and study activities

Lectures by teacher, group and individual work, tests, exercises, assignments, student presentations, class discussion conducted by teacher.

During the course the students will be able to design, simulate, build, test and make report on a simple electronic circuits in the ICT Laboratory.

Resources

Evaluation

Internal examination.

To qualify for the examination, the mandatory assignment/projects must have been carried out during the semester, within the set deadlines and must have been approved.

The evaluation of the course is based on mandatory course work (50%) and the oral exam (50%) at the end of the course. Only students with approved course work will be allowed to attend the exam.

The oral examination is based on electronics syllabus and three mandatory assignment reports:

It is a prerequisite that all of the three course assignment reports have been approved to attend the oral examination.

First two assignments should be performed in groups while the third will be done individually.

Examination

Oral examination. All written and electronic documents as approved aids.

In total the examination lasts for 20 minutes including marking.

Grading criteria

Grading:

Grading is according to the 7-point grading scale.

Mark 12:

Awarded to students who have shown excellent comprehension of the above-mentioned competences. A few minor errors and shortfalls are acceptable.

Mark 02:

Awarded to students for the just acceptable level of comprehension of the required competences.

Additional information

Responsible

Poul Væggemose

Valid from

1.8.2016

Course type

ICT Engineering; Compulsory Course for all ICT Engineering; 4. semester; Embedded Engineering;

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