IO2655 Photonics 7.5 credits

Fotonik

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for IO2655 valid from Spring 2011

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

Not relevant, see "Prerequisites"

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After the course the students should have

- In depth knowledge of optical communication devices and the related technological issues, including: photonic integrated circuits, optical amplifiers, semiconductor lasers, and opto-electronic integration techniques.

- Introductory knowledge of plasmonics and photonic state manipulation at the quantum level.

- Overview of recent progress in nanophotonics.

Course contents

- Optical Amplifiers
- Silicon Photonics
- Plasmon based Nanophotonics
- Emerging Areas in Photonics
- Numerical Methods - FDTD & FEM, CAD
- Semiconductor Lasers
- Optoelectronic Integration

Course literature

Saleh & Teich, Fundamentals of Photonics, 2nd edition. Other course material includes lecture notes and lab instructions. Some relevant chapters of the following reference books can also be helpful: Agrawal, Fiber-Optic Communication Systems, Mayer, Plasmonics : Fundamentals and Applications.

Examination

- ANN1 - Assignments, 3.5 credits, grading scale: P, F
- TEN1 - Examination, 4.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Other requirements for final grade

- **Home assignments: max 14 points, 50% needed to pass**
- **Written examination: max 16 points, 40% needed to pass**

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.