SK2811 Fiber-optical Communication 7.5 credits

Fiberoptisk kommunikation

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

Establishment

Grading scale

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

Education cycle

Second cycle

Main field of study

Engineering Physics

Specific prerequisites

English B / English 6

Bachelor's degree in physics, electrical engineering or equivalent degree

Language of instruction

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

Intended learning outcomes

The course content is knowledge of fibre optical components, links, and systems. The system relevant parameters of devices are derived from a physical description, and these parameters form the basis for designing fibre optic links.

After a completed course the participants should be able to:

- Understand, describe, analyze, compare the most important devices: light sources, fibres and detectors from both physical and system point of view.
- Design digital fibre optic links and.

Course contents

Dielectric wave-guides: Attenuation, wavelength dispersion.

Light sources: Semiconductor laser, light emitting diode, rate equations, output power, modulation, noise, laser amplifiers, chirp.

Detectors: PIN diode, avalanche diode, responsivity, bandwidth, noise,

Systems: Direct detection systems, heterodyne systems, attenuation limitations, dispersion limitations, signal dependent noise, additive noise, bit error rate, optical networks, solitones.

Examination

- TEN1 - Exam, 6.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory work, 1.5 credits, grading scale: P, 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

One written examination (TEN1, 6 credits) and lab course (LAB1, 1.5 credit)

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.