SK2400 Quantum Electronics with Electro Optics 12.0 credits

Kvantelektronik inkl elektrooptik

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

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

Establishment

Course syllabus for SK2400 valid from Autumn 2007

Grading scale

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

Education cycle

Second cycle

Main field of study

Engineering Physics,Physics

Specific 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 student should understand and have knowledge in quantum optics, laser tools, electro-optics and non-linear optics to the extent that the student with necessary literature is able to solve practical or theoretical problems within the given fields.

Course contents

Quantum mechanics directed towards quantization of the electromagnetic field, coherent states. Gaussian beams, optical resonators and rate equations. Types of lasers. Electro-optic and acousto-optic modulation. Non-linear optical formalism and parametric processes. Higher order nonlinearities and phase conjugation. Q-switching and mode-locking. Wave-guiding.

Course literature

A. Yariv, Quantum electronics, John Wiley & Sons (the edition used will be announced on the course home page at least four weeks prior to the start of the course).

Examination

- INL1 - Hand in Assignments, 12.0 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.

Other requirements for final grade

Examination by hand-in assignments (INL1; 12 credits, grading scale A-F).

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.