IO2659 Laser Engineering 7.5 credits

Laserteknik

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

Establishment

Course syllabus for IO2659 valid from Autumn 2008

Grading scale

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

Education cycle

Second cycle

Main field of study

Engineering 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 participants should be able to:
- Explain how a laser operates.
- Identify elemental components for a laser to operate.
- Describe properties of a laser beam and its comparison with light from other sources.
- Describe, analyze and coarsely design simple resonator systems required for a laser.
- Analyze and calculate the conditions for lasing in a gain medium.
- Depict the pumping schemes of laser.
- Identify the most common types of laser, and tell the difference.

Course contents

Laser, Laser Beams, Optical Resonators, Spontaneous Emission, Stimulated Emission, Gain media, Pumping, Pulse Lasers, Continuous Wave Lasers, Solid-State Lasers, Gas Lasers, Semiconductor Lasers.

Course literature

O. Svelto: ”Principles of Lasers”, 4th ed, Springer, 1998, ISBN 0-306-45748-2.

Examination

- ANN1 - Assignments, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 6.0 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

Written exam (TEN1;5 hp) A/B/C/D/E/Fx/F
Lab reports (LAB1; 2.5 hp) P/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.