



FSK3411 Laser Physics - Advanced Course 12.0 credits

Laserfysik fk

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 FSK3411 valid from Spring 2010

Grading scale

Education cycle

Third cycle

Specific prerequisites

MSc degree in physics or equivalent education.

Language of instruction: English only

Language of instruction

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

Intended learning outcomes

After completing the course the student should be able to:

- demonstrate a thorough understanding of the theory of modern laser physics,
- describe in detail the inherent behavior and functionality of the many different types of modern lasers,
- describe the detailed properties of coherent laser light,
- formulate reasonably complicated problems in laser physics and proved solutions to the same, and
- prepare and subsequently give a 2 h lecture on a topic outside the main areas of the course.

Course contents

Physical background of lasers. The laser cavity. The laser medium. Mode-controlled techniques. The properties of coherent laser light. The time- and spatial-dependent behavior of lasers.

Course literature

Anthony E Siegman: "Lasers" (1986 or later editions)

Examination

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.

1. Solving a large number of homework problems. Designing some problems of his/her own. Correcting the other students' homework solutions. Give a 2 h presentation of selected number of chapters in the main text.
2. Prepare and present a 2 h lecture on a topic outside the main text of the course.

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.