SK2330 Optical Systems Design 6.0 credits

Optisk design

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 SK2330 valid from Spring 2010

Grading scale

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

Education cycle

Second cycle

Main field of study

Engineering Physics,Physics

Specific prerequisites

Recommended previous knowledge:

Optical physics SK2300, or comparable knowledge

Language of instruction

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

Intended learning outcomes

After completing this course, the students should be able to

- Apply geometrical optics methods, such as lens formulas, graphical methods and ray-tracing, to analyze optical systems.
- Identify and calculate third-order Seidel and first-order chromatic aberrations, and apply standard design methods to minimize these aberrations.
- Describe tools (for example MTF, PDF, spot diagrams, or lists of aberration coefficients) for system evaluation, and apply these tools to judge the suitability of an optical system for a specific task.
- Use ray-tracing software to analyze and optimize optical systems.
- Discuss different approaches and methods of optical design.

Course contents

Geometrical optics, aberration theory, evaluation of optical systems, ray-tracing using commercial software, methods of optical design

Course literature

Posted on the course homepage at least a month before the course starts.

Examination

- LABA - Laboratoy Work, 2.0 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.

Other requirements for final grade

Written examination (TEN1; 4,0 hp, grading scale A-F) determines the grade. One laboration and five computer exercises must be completed (LAB1; 2,0 hp, grading scale 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.