FSK3330 Optical Design 6.0 credits

Optisk design

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

Establishment

Course syllabus for FSK3330 valid from Autumn 2014

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

Admitted to PhD studies in Physics, Biological Physics, or related fields of study.

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 and develop 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 in accordance with customer specifications.
- Apply different approaches and methods of optical design.
- Present material relating to optical design in an organized way.

Course contents

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

Course literature

To be posted on course homepage at least one month before the course starts.

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.

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

Other requirements for final grade

Written examination (TEN1; 4,0 hp, grading scale P/F). Two laborations, five computer exercises, and one home task must be completed (LAB1; 2,0 hp, grading scale P/F).

Gradefor the entire courserequirespassing gradeon all parts.

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.