FSK3551 X-ray Physics and Applications 7.5 credits

Röntgenfysik och tillämpningar

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 FSK3551 valid from Spring 2023

Grading scale

P, F

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

- Calculate X-ray scattering properties of different materials

- Explain different X-ray sources, X-ray optics and X-ray detectors
- Conduct a basic X-ray experiment
- Write a beamtime application for an advanced X-ray experiment
- Evaluate an analytical method using X-rays

Course contents

X-ray basics: X-ray interaction with matter, X-ray sources (including synchrotron radiation and free electron lasers), X-ray optics, X-ray detectors, X-ray coherence X-ray applications: X-ray microscopy, X-ray diffraction, X-ray medical imaging, X-ray fluorescence and absorption spectroscopy, X-ray coherent diffraction imaging.

Examination

- HEM1 - Home assignments, 1.5 credits, grading scale: P, F
- LAB1 - Laboratory work, 1.0 credits, grading scale: P, F
- SEM1 - Seminars, 3.0 credits, grading scale: P, F
- TEN1 - Oral exam, 2.0 credits, grading scale: P, 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

Successful completion of all homework problems, lab, beamtime application and the oral presentation.

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.