



HL2024 X-ray Crystallography and X-ray Microscopy 7.5 credits

Röntgenkristallografi och röntgenmikroskopi

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 HL2024 valid from Autumn 2010

Grading scale

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

Education cycle

Second cycle

Main field of study

Medical Engineering

Specific prerequisites

Bachelor's degree in Engineerin Physics, Electrical Engineering, Computer Science or equivalent. Basic knowledge of anatomy.

Language of instruction

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

Intended learning outcomes

X-rays are useful for determining structural properties of biological molecules and cells. Diffraction from crystalline material can provide atomic details of molecules, while direct imaging applied to cells and other large objects resolves structures at the nano- or micrometer scales. The purpose of this course is to describe how X-rays are being applied in different ways in disciplines that in a broad sense can be categorized as bioimaging. The properties of X-rays will be put into context by making comparisons to other types of radiations such as visible light, electrons and neutrons that can also be used for structure analysis.

Course contents

Topics that will be covered include:

Interaction between X-rays and matter

Absorption and diffraction

X-ray sources

Crystal growth

X-ray crystallographic data collection

Structure determination of biological macromolecules

Validation

Course literature

To be decided.

Examination

- TEN1 - Examination, 7.5 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.

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.