



# SK2551 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

The headmaster at the SCI school has 2021-1013 decided to establish this syllabus to apply from Autumn 2022, registration number: S-2021-1218.

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Engineering Physics

## Specific prerequisites

Completed degree project at the undergraduate level in technical physics or medical technology.

English B / English 6

## Language of instruction

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

## Intended learning outcomes

After passing the course, the student should be able to:

- calculate X-ray scattering properties for different materials
- explain different X-ray sources, X-ray optics and X-ray detectors
- perform a basic experiment with X-rays
- evaluate and justify analysis methods that use X-rays

## Course contents

Basic knowledge of X-rays: 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, medical imaging, X-ray fluorescence and absorption spectroscopy, 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: 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.