



# FCK3109 Electron Microscopy Analysis of Fibre and Poly- mer-based Materials 7.5 credits

Elektronmikroskopianalys av fiber- och polymerbaserade material

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 FCK3109 valid from Autumn 2020

## Grading scale

P, F

## Education cycle

Third cycle

## Specific prerequisites

Eligible for studies at the third-cycle level.

## Language of instruction

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

## Intended learning outcomes

After completion of the course the doctoral student should have the knowledge and ability to

- Explain the basic principles for electron microscopy (scanning electron and transmission electron microscopy), and demonstrate for the level of the course adequate acquired knowledge in the specialized topics of the course.
- Suggest and explain, plan and carry out different types of electron microscopy related experiments.
- Suggest, plan and perform sample preparation of a material so that it can be imaged with electron microscopy. Reflect on the selected sample preparation technique.
- Present and orally motivate the selected electron microscopy instrumentation for a selected sample.

## Course contents

The course presents the basic principles of different types of:

- Electron microscopy techniques: scanning electron microscopy (SEM), table top-SEM, transmission electron microscopy (TEM), cryo-SEM, cryo-TEM, focused ion beam (FIB), Dual Beam (SEM-FIB), energy dispersive X-ray spectroscopy (EDS).
- More advanced analysis techniques (in situ analysis) and 3D tomography.
- Different types of sample preparation techniques for optimal analysis of a specific sample.
- Hands-on experience of electron microscopy imaging.

## Examination

- LAB1 - Laboratory work, 4.5 credits, grading scale: P, F
- SEM1 - Seminars, 3.0 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.

Approved oral presentation and written project description (home assignment), min. 80% seminar attendance

## 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.