



FSK3881 Advanced Topics in Materials Science 6.0 credits

Avancerade ämnen i materialvetenskap

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

Establishment

Course syllabus for FSK3881 valid from Autumn 2018

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

Enrolled as PhD student.

Language of instruction

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

Intended learning outcomes

Fundamental understanding of:

- energetic electrons interaction with matter

- primary and secondary signals sources and utility of such interactions
- qualitative and quantitative analytical techniques associated with the interaction
- basic physics of interaction
- interrelations between transmission, diffraction, absorption and reflection phenomena

Course contents

The course is based on the books listed below and on additional literature provided during the course. It is organized as a series of seminars, where student active participation is required. The seminar classes develop through discussions and analyses, dealing with how to interpret and extract relevant information (topography, morphology, structure and crystallography) on the specimen from the experimental data recorded by scanning and transmission electron microscopy.

Disposition

The course is planned in form of seminar modules. Students will do seminars during the course and it is compulsory to attend all seminar events during the active period of the course.

Course literature

Selected research articles and the following books:

Scanning Electron Microscopy and X-Ray Microanalysis. Joseph I. Goldstein et al. 1992

Electron Backscatter Diffraction in Materials Science. Adam J. Schwartz et al. 2000

Electron Energy Loss Spectroscopy Rik Brydson 2006

Electron Crystallography Xiaodong Zou etl. 2011

Examination

- SEM1 - Seminars, 6.0 credits, grading scale: G

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.

SEM1: presentation/lecture in one of the seminars, 6 credits, grading scale: P/F

Other requirements for final grade

Participation participation to all (75%) seminars. Students will give a seminar at the end of the course on specific related topic.

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.