Faculty of Health Science and Technology
Materials Engineering

Syllabus

Scanning Electron Microscopy and X-ray Microanalysis

Course Code: 7MTT100
Course Title: Scanning Electron Microscopy and X-ray Microanalysis
Svepelektronmikroskopi och röntgenanalys
Credits: 10
Degree Level: Doctoral

Major Field of Study:
MTT (Materials Engineering)

Course Approval
The syllabus was approved by the Faculty Board of Health, Science and Technology, 28, November, 2016 and is valid from the autumn semester 2016.

Prerequisites
Admission to a doctoral programme in material sciences, and other areas after approval of the examiner. The course is also open to non-doctoral students subject to individual approval by examiner.

Learning Outcomes
To give knowledge on working principles and functions of a modern analytical scanning electron microscope (SEM) as well as hands-on experience of running a SEM.

Course Content
The course consists of lectures, laboratory exercises and project work.

Lectures:
The lectures will treat the working principles of a SEM, different analysis methods and interpretation of results.

Laboratory exercises:
The laboratory exercises will cover: fractography, EDS/WDS analysis, imaging by SE and ECCI and EBSD analysis.

Project work:
This is an individual project on characterization of microstructure, phases, chemical composition distribution or other properties that can be obtained from using a modern SEM. A written report is to be submitted to the course responsible for approval. The specimen(s) can be from one's own research project, however, the work and report should reflect how knowledge learned from the course are applied to obtain useful information; the principles and theories behind the performed SEM analyses should be explained in the report.

Reading List
See separate document.

Examination
Presentation, participation in the laboratory work and approved written examination give 7 ECTS. Approved project report gives an additional 3 ECTS.

Grades
One of the grades Fail (U) or Pass (G) is awarded in the examination of the course.

Quality Assurance
The course convenor has a duty to encourage a continuous dialogue on learning processes and goal fulfilment. A written evaluation is carried out at the conclusion of the course combined with a joint student-teacher discussion of all aspects commented on. The result of the evaluation is collated and made available in accordance with *The Higher Education* Ordinance, Chapter 1, section 14.

Course Certificate
Course certificate is issued on request.

Reg. No.: HNT 2016/185

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Reading List

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Books
Scanning Electron Microscopy and X-ray Microanalysis by Goldstein et al. 3rd Edition, 2007, Springer

Neueste Anwendungen der Rasterelektronenmikroskopie, Sten Johansson et. al Pract. Metallogr. 50 (2013) 12

Approval
Approved by the Faculty Board of Health, Science and Technology, 28, November, 2016.

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