



# IH2652 Methods and Instruments of Analysis 7.5 credits

Analysmetoder och analysinstrument

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

## Establishment

Course syllabus for IH2652 valid from Autumn 2007

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Electrical Engineering

## Specific prerequisites

**Basic knowledge in Optics, Thermodynamics, Electromagnetism, Solid State Physics and Semiconductor Physics**

## Language of instruction

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

## Intended learning outcomes

After finishing the course, the students should be able to

- identify materials and processing issues;
- select adequate measurement techniques with appropriate sensitivity and resolution;
- operate the chosen instruments for analysis;
- correlate and cross-examine measurement results obtained using different techniques;
- analyze and interpret the measurement results;
- recommend and comment on further analyses if applicable.

## Course contents

**The lectures cover the theory and laborations ( \*-marked) for the following characterization techniques: X-ray diffraction\*, Atom Force Microscopy (AFM), Rutherford backscattering analysis, Secondary Ion Mass spectroscopy (SIMS), Scanning Electron Microscopy (SEM)\*, Transmission Electron Microscopy (TEM), Four-probe measurement\*, Hall measurement\*, Capacitance-Voltage measurement\*, Current-Voltage measurement (IV)\***

## Course literature

**The lecture notes will be distributed by the teachers during the course**

## Examination

- TEN1 - Examination, 5.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Course, 2.5 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.

If the course is discontinued, students may request to be examined during the following two academic years.

## Other requirements for final grade

**Pass in all laborations (LAB1; 3 credit points) and the written exam (2 credit points). The exam consists of 8 tasks and to get a pass-level it is necessary to solve half of them. To obtain a pass-level in laborations it is demanded to**

**participate in the labs and to write well-constructed reports illustrating the results and interpretations. Grades: A/B/C/D/E/Fx/F**

## **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.