



HL2030 Subcellular Imaging, smaller course 6.0 credits

Subcellulär avbildning, mindre kurs

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 HL2030 valid from Autumn 2012

Grading scale

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

Education cycle

Second cycle

Main field of study

Biotechnology

Specific prerequisites

General knowledge of Medical engineering, Anatomy, Physiology and Cell Biology.

Language of instruction

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

Intended learning outcomes

The course in subcellular imaging will give an insight into methods that can be used to obtain a detailed picture of biological structure. Interactions with biotechnological materials like implants and nanoparticles will also be studied. After the course, participants should be able to:

- Apply mathematical concepts for imaging techniques.
- Describe different techniques for specimen preparation.
- Describe modern light microscopy techniques.
- Understand the principles of electron microscopy.
- Understand the basic concepts of structure determination with X-rays.
- Understand the principles of magnetic resonance spectroscopy.
- Understand the principles of mass spectrometry.
- Apply relevant image processing methods.
- Apply relevant methods for modelling.
- Assimilate the contents of literature in the field of structural biotechnology.

Course contents

Description of the different techniques that are applied for subcellular imaging. Applications of basic knowledge in mathematics that are used for imaging. Merging of results from the different technologies. Practical exercises demonstrating principles of the methods. Computer-based exercises.

Course literature

Kompendium och utdelat material på föreläsningarna/Compendium and hand-outs

Examination

- LAB1 - Lab Work, 0.5 credits, grading scale: P, F
- LAB2 - Computer Exercise, 0.5 credits, grading scale: P, F
- TEN1 - Examination, 5.0 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.