HL2031 Subcellular Imaging 9.0 credits

Subcellulär avbildning

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

Establishment

Course syllabus for HL2031 valid from Autumn 2012

Grading scale

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

Education cycle

Second cycle

Main field of study

Biotechnology, Medical Engineering

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, paritcipants should be able to:

- Apply mathematical concepts for imaging techniques.
- Describe different techniques for specimen preparation.
- Describe modern light microscopy techniques.
- Understand the principels of electron micrcoscopy.
- Understand the basic concepts of structure determínation 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 principals of the methods. Computer-based exercises. The course is similar to "Subcellular imaging, smaller course", but contains a supplementary project work on a specific topic.

Course literature

Compendium and hand-outs

Examination

- PRO1 - Project Presentation, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 5.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB2 - Computer Exercise, 0.5 credits, grading scale: P, F
- LAB1 - Lab Work, 0.5 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.

LAB1 - Practical exercise: 0.5 hp, grading scal: P/F

LAB2 - Computer exercise: 0.5 hp, grading scale: P/F

TEN1 - Written exam: 5 hp, grading scale: A-F

PRO1 - Project presentation: 3 hp, grading scale: P/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.