FSK3515 Optimizing Light Microscopy 4.0 credits

Ljusmikroskopi, teori och praktik

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

Establishment

Course syllabus for FSK3515 valid from Autumn 2018

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

The student should have been accepted as a PhD student

Language of instruction

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

Intended learning outcomes

The aim of the course is to give the students a deeper understanding of the optical principles behind different contrast-enhancing techniques used in modern research microscopes. The course will provide the students with practical skills enabling them to use microscopes for

different studies and to make informed choices of appropriate contrast technologies based on the properties of the samples under investigation and the available functionalities of the microscope available.

Course contents

The following elements are highlighted via seminars and exercises: Köhler illumination, conjugate plane, condenser, diffraction-limited resolution, aberrations, contrast through oblique illumination, phase contrast, Hoffman contrast, polarization microscopy, Nomarski / DIC, fluorescence and confocal microscopy.

Disposition

10 seminars, accompanied by microscope laboratory classes. With the laboratory exercises the students practice and get hands-on experience on the techniques taught in the lecture classes.

Examination

- LAB1 - Laboratory work, 4.0 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) laboratory tasks, 4.0 credits, grading scale: P/F

Other requirements for final grade

The examination consists of a practical knowlegde-test using the microscope.

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.