



FSK3533 New Super-resolution, Light-sheet, STED-FCS and FRET-FCS methods at Scilifelab

3.0 credits

Nya metoder inom superupplösning, ljusplansmikroskopi, STED-FCS och FRET-FCS

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 FSK3533 valid from Spring 2021

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

M. Sc. in Physics or equivalent

Language of instruction

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

Intended learning outcomes

- To understand the theory and methodology behind the techniques MoNaLISA, Lightsheet and lattice light-sheet imaging, and FCS combined with STED and FRET.
- To have hands-on experience of using these techniques on relevant biological samples.

Course contents

- Introduction to fluorescence spectroscopy and imaging
- Principles of fluorescence super-resolution microscopy
- STED- and RESOLFT-based super-resolution microscopy
- The MoNaLISA imaging technique.
- Light-sheet imaging
- Lattice light-sheet imaging
- Introduction to Fluorescence Correlation Spectroscopy (FCS)
- Combination of the super-resolution technique STED with FCS
- Combination of Förster Resonance Energy Transfer (FRET) and FCS

Examination

- PRO1 - Project, 3.0 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.

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.