



LUND
UNIVERSITY

Faculty of Science

BIOS08, Biology: Microscopy - Bio-Imaging, 7.5 credits

Biologi: Mikroskopi - Bio-Imaging, 7,5 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2009-02-04 to be valid from 2009-02-04, autumn semester 2009.

General Information

The course is an optional second-cycle course for a degree of Bachelor or Master of Science in Biology and Molecular Biology. The language of instruction is English.

Language of instruction: Swedish and English

Main field of studies

Biology

Molecular Biology

Depth of study relative to the degree requirements

A1N, Second cycle, has only first-cycle course/s as entry requirements

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Learning outcomes

On completion of the course the student shall be able to:

- carry out studies where biological structures or functions are visualised using methods based on fluorescence microscopy.
- understand the limitations and possibilities when using different methods based on light and fluorescence microscopy.
- master basic methodology in histology, histochemistry, immunocytochemistry, and in situ hybridisation.
- master basic methodology using microscopy analysis of living cells.
- produce digital images of microscopy preparations.
- plan a study where biological structures or functions are visualised using microscopy.

- use various types of advanced research microscopes, and imaging methods which are not based on optical microscopes.

Course content

A theoretical introduction to microscopy with an emphasis on fluorescence microscopy. Theoretical principles of confocal microscopy and deconvolution microscopy. Overview of various types of advanced research microscopes and imaging methods which are not based on optical microscopes. Production and optimisation of both fixed and living microscope preparations. Microscopical visualisation of cellular structures and physiological functions using fluorescent markers. Theoretical introduction to digital visualisation with an emphasis on fluorescence-based methods and digital image processing. Practical project: production, documentation, and analysis of a microscope preparation, with oral and written presentation.

Course design

The teaching consists of lectures, seminars, demonstrations, laboratory sessions, and a project. Participation in seminars, laboratory sessions, project, and thereby other integrated teaching, is compulsory.

Assessment

A written examination takes place at the end of the course. For students who have not passed the regular examination, an additional examination in close connection to this is offered.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.

To pass the entire course, approved examination, approved project report including presentation, and participation in all compulsory parts, are required.

The final grade is decided through a weighing of the results of the parts that are included in the examination.

Entry requirements

For admission to the course, English B/English 6, and 90 credits of scientific studies including knowledge corresponding to MOBA01 Cell Biology 15 credits, BIOA01 Genetics and Microbiology 15 credits, and Chemistry 15 credits, are required.

Further information

Subcourses in BIOS08, Biology: Microscopy - Bio-Imaging

Applies from H08

0901 Microscopy - Bio-Imaging, 7,5 hp
Grading scale: Fail, Pass, Pass with distinction