



FSK3510 Cellular Biophysics I

8.0 credits

Den biologiska cellens fysik I

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 FSK3510 valid from Autumn 2010

Grading scale

Education cycle

Third cycle

Specific prerequisites

PhD Student

Language of instruction

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

Intended learning outcomes

After the course the student should be able to:

- describe the fundamental physical principles that define the function of cells
- define mathematical models describing the transport of water, ions and solutes in cells and through the cellular membranes
- describe how water and ion homeostasis is maintained and affected by the microenvironment
- calculate membrane potential in different cellular environments
- perform measurements of some cell-physical parameters in living cells using microscopy based measurement techniques.

Course contents

Membranes. Electrical and mechanical properties of cells. Active and passive transport of water, ions and metabolites. Measurement techniques for cell-physical parameters.

Course literature

Weiss TF. Cellular Biophysics, vol 1: "Transport", MIT Press, 1996

Examination

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.

A homework assignment, lab, and a written test.

Other requirements for final grade

INL1 - Assignments, 1.0 credits, grade scale: P, F

LAB1 - Laboratory Experiments, 2.0 credits, grade scale: P, F

TEN1 - Examination, 5.0 credits, grade 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.

