SK2511 Cellular Biophysics II 6.0 credits

Den biologiska cellens fysik II

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

Establishment

Grading scale

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

Education cycle

Second cycle

Main field of study

Biotechnology, Engineering Physics, Physics

Specific prerequisites

Mathematics corresponding to F2. Cellular Biophysics (SK2510) or equivalent.

Language of instruction

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

Intended learning outcomes

The course intends to provide

- Knowledge of the fundamental physical principles for the electrical properties of living cells.
- Mathematical models describing membrane and action potentials
- An introduction to electrophysiological measurement techniques

Course contents

Seminars:

The course is given as a series of seminars where the participants are expected to take an active role. The topics to be discussed: cellular electrical potential, mechanisms generating electrical potential, action potentials, model descriptions, the cable model, the Hodgkin-Huxley model, neuronal cells, voltage gated ion channels.

Laboratory exercise:

Electrophysiological measurement of membrane potential.

Course literature

Weiss TF, “Cellular Biophysics, vol 2:Electrical properties”, MIT Press 1997

Examination

- INL1 - Assignments, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 1.5 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.

Other requirements for final grade

Hand-in assignments (INL1; 1,5 cr).
Laboratory exercise (LAB1; 1,5cr).
Written examination (TEN1; 3 cr)

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.