FSK3517 Simulations of Cellular Biophysics with Virtualcell 4.0 credits

Simulering av cell fysik med virtualcell

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

Establishment

Course syllabus for FSK3517 valid from Autumn 2018

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

The student should be enrolled to PhD studies.

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 for the student to be able to use Virtual Cell to explain and illustrate complex relationships between different control systems in a cell. In addition, the student should be able to analyze and predict how a change in the control system will affect the cell response and design attempts with living cells to test the prediction.

Course contents

The course will provide skills in using the virtual cell simulation and modeling environment. Virtual Cell is a NIH-initiated tool for modeling and analysis in cell biology developed at the National Resource Center for Cell Analysis and Modeling at Univ of Connecticut

Disposition

The course cosnists of two parts:

1. Learning to use the tools by using examples from FRAP analysis, calcium diffusion and membrane potential
2. Working on one's own model.

A basic requirement is that one's own model should be based on experimental data collected in an ongoing research project, where Virtual Cell is an appropriate tool for analysis.

Course literature

Artcles as well as online material from NRCCAM

Examination

- SEM1 - Seminar, 2.0 credits, grading scale: P, F
- RAP1 - Report, 2.0 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.

SEM1) Seminar, 2.0 credits, grading scale: P/F;

RAP1) Report, 2.0 credits, grading scale: P/F;

Other requirements for final grade

Seminar and written report

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.