SI1410 Basic Modeling in Biotechnology 6.0 credits

Grundläggande modellering inom bioteknologi

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

Establishment

Course syllabus for SI1410 valid from Autumn 2015

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Knowledge corresponding to Calculus, Algebra and Geometry, SF1524 Basic numerical methods and programming.

Language of instruction

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

Intended learning outcomes

1. Create simple models for systems of relevance in biotechnology such as product formation in bacterial culture, metabolic processes in the cell and protein interaction.

2. Solve these models both analytically and numerically by primarily using course materials Matlab codes with own edits.

3. Visualize the solutions graphically.

4. Analyze and discuss the plausability of the results.

Course contents

Cells: growth, interaction, diffusion, neurons, biopolymers. Systems and disease. Genetics and Genomics.

Course literature

1. Ronald W. Shonkwiler, James Herod: Mathematical Biology: An Introduction with Maple and Matlab.

2. Joan Mata-Alvarez, David A. Mitchell: Mathematical modeling in Biotechnology

3. Erich Steiner: The Chemistry Math Book

Examination

- LAB2 - Laboration 2, 1.5 credits, grading scale: P, F
- TEN1 - Exam, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboration 1, 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

Completed laborations and passed written exam.

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.