



SK2530 Introduction to Biomedicine 6.0 credits

Introduktion till biomedicin

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

Establishment

Course syllabus for SK2530 valid from Autumn 2007

Grading scale

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

Education cycle

Second cycle

Main field of study

Engineering Physics, Biotechnology

Specific prerequisites

Language of instruction

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

Intended learning outcomes

The overall aim of the course is to give an introduction to biomedicine to students with background in physics, interested in the interdisciplinary field between physics, biology and medicine.

After the course the student should be able to:

- describe the structure of the human body at the level of integrative systems, organs and tissues, and at the cellular and molecular level
- recognize the major processes and structural constituents in the basis for neuronal signaling, respiration, immune defence, energy generation, regulation of acid-base and water-salt balance
- identify the major processes and structures involved in the transport within the animal cells
- classify the major driving forces for transport of various substances between the cells and extracellular space
- describe the processes that enable cells to reproduce themselves
- understand the major processes that allow the organism to function as a whole (neuronal signaling, immune defense, hormone action)
- in their future professional practice, successfully communicate with colleagues that have a biological background
- recognize the biological objects and processes that are discussed in the following courses within the program of biological physics (for example, plasma membrane, a phospholipid, an ion transporter, intracellular signaling, DNA, a motor protein etc)

Course contents

Anatomy (3 hours): Main structures and features of the human body (systems, organs, tissues).

Physiology (13 hours): Basic principles of the human body functions, covering the nervous system, respiration, digestion, immune and endocrine system, acid-base homeostasis, water and salt balance.

Cellular and molecular biology (12 hours): The structural components of the cells. Basic principles of cellular functions: transport, metabolism, signaling, reproduction. The main molecules that mediate these processes.

Course literature

1. Matt M., Ziemian J., Human Anatomy Coloring Book, Dover Publ.
2. Despopoulos A., Silbernagl S., Color Atlas of Physiology, Thieme.
3. Alberts B. et al., Essential Cell Biology, Garland Science.

(The editions used will be announced on the course homepage at least four weeks prior to start of the course).

Examination

- TEN1 - Examination, 6.0 credits, grading scale: A, B, C, D, E, FX, 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

The course is examined by a five-hour written exam (TEN1; 6 university credits, grading A/B/C/D/E/Fx/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.