



# FSK3530 Introduction to Biomedicine 6.0 credits

## Introduktion till biomedicin

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 FSK3530 valid from Autumn 2012

## Grading scale

## Education cycle

Third cycle

## Specific prerequisites

Admitted to PhD studies in Physics, Chemistry, Medical Technology, Computer Science, or related fields. No previous knowledge, except high-school biology, is required.

The course corresponds to the first part of the more extensive course SK3531, Biomedicine for engineers.

## Language of instruction

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

## Intended learning outcomes

The overall objective of this course is to provide a general introduction to biomedicine to graduate students with a background in physics or mathematics, who are interested in the interdisciplinary area between physics / mathematics and biomedicine.

After the course the student should be able to:

- in their studies and future professional practice, successfully communicate with colleagues who have a biological background
- describe the structure of the human body at the level of integrative systems, organs, tissues and cells
- recognize the key processes and structural elements that make up the background of neuronal signaling, respiratory and immune function, energy production, regulation of acid-base and water-salt balance
- identify the key processes and structures involved in transport within cells
- classify the driving forces for the transport of various substances between cells and the extracellular space
- understand the key processes that allow the organism to function as a whole (immune defense, hormone action)

## Course contents

Physiology and anatomy (14 hours): The main structures and functions of the human body (systems, organs, tissues). Basic principles of the human body functions, including the nervous, respiratory, digestive, immune and endocrine systems, acid-base homeostasis, water and salt balance.

Cell biology (8 hours): The structural components of cells. Basic principles of cellular functions: transport, metabolism, signaling.

## Disposition

Lectures: 22 h

The course is given in English.

## Course literature

Despopoulos A., Silbernagl S. Color Atlas of Physiology, 6th edition. Thieme, 2009. Alberts B. et al. Essential Cell Biology, 3rd edition. Garland Science, 2009.

## 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.

## Other requirements for final grade

The course is examined by a written exam.

Written exam: TEN1, 6.0 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.