



# HL2005 Implants and Biomaterials 6.0 credits

## Implantat och biomaterial

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 HL2005 valid from Spring 2013

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Electrical Engineering

## Specific prerequisites

HL2006 Medical engineering, basic course or corresponding course

## Language of instruction

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

# Intended learning outcomes

The course participants should after finished course be able to:

- Describe: the terminology of the field; the differences between transplantations; prevailing legislation and rules
- Outline the different types of transplantations, clinical problems, and organ supply.
- Explain what a biomaterial is and describe differences between biomaterials.
- Choose a biomaterial for a given application and motivate the reasons.
- Discuss and analyse different implants: their function; limitations and associated risks; medical background and clinical need
- From basic physiological principles reflect over: the function of implants and biomaterials; procedures for clinical application

# Course contents

- Implantation, Transplantation, Legislation
- Passive/Active Implants, EU Quality Aspects
- Implant Biomaterials
- Orthopaedic Implants
- Cardiovascular Implants (Passive)
- Active Implants (artificial hearts, pacemaker etc.)
- Implantable Stimulators and Sensors
- Neural Prostheses

# Course literature

Lecture material

Additional reading: Biomaterials Science, 3rd edition, Buddy Ratner, Allan Hoffman, Frederick Schoen, Jack Lemons. ISBN: 9780123746269

# Examination

- RED1 - Presentation of Individual Work, 1.0 credits, grading scale: P, F
- TENA - Examination, 5.0 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.

# Other requirements for final grade

Written exam

Presentation of individual work

## 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.