



# 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 Autumn 2023

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Electrical Engineering

## Specific prerequisites

2 years of university studies in natural science or technical subjects. 4 credits in anatomy and/or physiology and 4 credits in electrical science. English B/6.

## 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:

1. Describe the terminology for the fields of transplantation, biomaterials, and implants as well as describe the law and regulations concerning transplants and implants.
2. Describe the characteristics, function, and clinical use of biomaterials and implants as well as the physiology and physiological interactions governing the function.
3. Reflect over and solve problems related to the function of implants and biomaterials by applying fundamental physical and physiological principles.
4. Critically review an implant or biomaterial and its application.

## Course contents

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

## 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.