



HL2005 Implants and Biomaterials 6.0 credits

Implantat och biomaterial

Course syllabus for HL2005 valid from Autumn 07

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

Grading scale: A, B, C, D, E, FX, F

Education cycle: Second cycle

Main field of study: Electrical Engineering

Intended learning outcomes

The objective of the course is to give the students an overview of implants, a basic knowledge of biomaterials and the special technical and clinical circumstances applicable to implants.

Course main content

Active Implants: Active implants are implants for the diagnosis or treatment of disease containing an energy source. The cardiac pacemaker is a typical and maybe the most common active implant. This part of the course discusses: implants/transplants, cardiomechanics – a comparison with mechanical pumps, left ventricular support, the artificial heart, cardiac electrophysiology, implantable stimulators and sensors with emphasis on pacemakers.

Biomaterials: The materials used for implants must fulfill very special criteria. They must in interaction with the living body lead to the desired result and at the same time resist the hostile chemical environment. This part of the course covers basal material physics, characteristics of materials and the use of metals, ceramics, polymers and composites in implants.

Passive implants: Orthopaedic implants are taken as a starting point for a discussion of the special clinical and technical conditions applicable to passive implants.

Field trip: Pacemaker AB.

Language of instruction

Language of instruction is specified in the course offering information in the course and programme directory.

Eligibility

HL2006 Medical engineering, basic course.

Literature

Biomaterials Science: An Introduction to Materials in Medicine, Buddy D. Ratner (Editor), Allan S. Hoffman (Editor), Fred Schoen, Fredenck J. Scheon (Editor). (ISBN: 0125824610, available at course start)

Material distributed during lectures.

Examination

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

