



# Programme syllabus

Master's Programme, Biomedical Materials, 120 credits

Masterprogram, biomedicinska material

*120.0 credits*

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*Valid for students admitted to the education from autumn 08 (HT - Autumn term; VT - Spring term).*

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

## Programme objectives

To receive master in Biomedical Materials the student will:

### Knowledge and understanding

- understanding of the interaction between materials and biological systems
- development of new materials, processes and devices for analysis, diagnostics and treatment of injuries
- developments of new testing procedures for estimating and predicting materials behaviour in a physiological environment

### Skills and abilities

- explain and evaluate properties of biomedical polymers from their structure (atomic, nano-, micro- and macro)
- describe routes of synthesis of new biomedical materials
- suggest product design and materials selection, based on a suggested implant function, and analyze potential problems
- explain, evaluate and model structure and properties of biological composites such as bone, teeth, tendon, cartilage, muscle, skin and blood vessels
- describe processing strategies, and expected nanostructures in the context of medical devices
- understand medical and medical engineering problems and communicate with physicians, medical engineers and representatives from research and development as well as industry
- basic understanding for the structure and function of the human body
- basic understanding of tissue physiology and pathology as well as the influence of biomaterials (biocompatibility) and the effects of different pharmacological agents

### Ability to make judgements and adopt a standpoint

- conduct literature and patent surveys on biomedical materials and applications in medical devices, analyze results
- have a basic knowledge in developing a venture and in writing a business plan
- suggest product design and materials selection, based on a suggested biomaterial function, and analyze potential problems

## **Extent and content of the programme**

### **Eligibility and selection**

Bachelor's degree containing courses in chemistry and material sciences equivalent to at least 90 ECTS. Basic knowledge in Mathematics and Computer sciences, at least 20 ECTS. Applicants must provide proof of their proficiency in English, which is most commonly established through an internationally recognised test. KTH accepts a TOEFL test score of a minimum of 550, 213 in the computer-based test, 79 in the internetbased test (TOEFL code: 9520), or an IELTS score of at least 6.0, no band lower than 5.0, both general and academic accepted.

### **Implementation of the education**

#### **Courses**

The programme is course-based. Lists of courses are included in [appendix 1](#).

#### **Grading system**

Courses in the first and the second cycle are graded on a scale from A to F. A-E are passing grades, A is the highest grade. The grades pass (P) and fail (F) are used for courses under certain circumstances.

[Appendix 1 - Course list](#)

[Appendix 2 - Programme syllabus descriptions](#)



# Appendix 1: Course list

Master's Programme, Biomedical Materials, 120 credits (TBIMM),  
Programme syllabus for studies starting in autumn 2008

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## General courses

### Year 1

#### Mandatory courses (60.0 Credits)

Course code	Course name	Credits	Edu. level
<a href="#">HL1010</a>	<a href="#">Systems Biology</a>	7.5 hp	First cycle
<a href="#">HL2006</a>	<a href="#">Medical Engineering, Basic Course</a>	7.5 hp	Second cycle
<a href="#">HL2020</a>	<a href="#">Tissue Physiology and Pharmacology</a>	15.0 hp	Second cycle
<a href="#">KD2300</a>	<a href="#">Biomedical Materials</a>	7.5 hp	Second cycle
<a href="#">KF2360</a>	<a href="#">Characterization of Polymers and Advanced Products</a>	7.5 hp	Second cycle
<a href="#">KF2370</a>	<a href="#">Biological Composites and Implants</a>	7.5 hp	Second cycle
<a href="#">ME2801</a>	<a href="#">Planning - Developing a Venture</a>	7.5 hp	Second cycle

### Year 2

#### Mandatory courses (30.0 Credits)

Course code	Course name	Credits	Edu. level
<a href="#">AK2036</a>	<a href="#">Theory and Methodology of Science with Applications (Natural and Technological Science)</a>	7.5 hp	Second cycle
<a href="#">KF2430</a>	<a href="#">Functional and Nanostructured Polymers</a>	7.5 hp	Second cycle
<a href="#">KF2440</a>	<a href="#">Biomedical Materials, Project Course</a>	7.5 hp	Second cycle
<a href="#">ME2806</a>	<a href="#">From Science to Business</a>	7.5 hp	Second cycle



## Appendix 2: Specialisations

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This programme has no specialisations.