# SD2505 Biomaterials and Products 7.0 credits

## Biobaserade material och produkter

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 SD2505 valid from Autumn 2007

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

## Specific prerequisites

Basic solid mechanics (beam theory etc).

## Language of instruction

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

## Intended learning outcomes

After the course the student should be able to

- Explain structure-property relationships in biopolymers, biofibers, biocomposites and cellular biomaterials.
- Choose and apply micromechanical models to estimate properties of biocomposites and cellular biomaterials
- Explain Ashby's material property diagrams based on the structure of materials
- Explain concepts such as functional gradient, hierarchical structure, biomimetics, ecodesign and ecoindicator
- Analyze and summarize scientific journal article in the field

## Course contents

Material classes, biological fibers, biopolymers, micromechanics of composites, composites in nature (exoskeleton, shells, teeth, plants), industrial biocomposites, biodegradation, life cycle analysis

## Course literature

Selected chapters from:

Wainwright SA, Biggs WD, Currey JD, Gosline JM, Mechanical design in organisms, John Wiley and Sons, 1976

Gibson LJ, Ashby MJ, Cellular solids, Pergamon Press, 1988

Hull, D, Clyne TW, An introduction to composite materials, 2nd ed, Cambridge University Press, 1996

Berglund L, Biocomposites-lecture notes

## Examination

- LAB1 - Laboratory Work, 1.0 credits, grading scale: P, F
- TEN1 - Examination, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN2 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Assignments, 1.0 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

Midterm exam (2 cr), written final exam (3 cr), homework assignments (1 cr), lab reports (1 cr)

## 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.