



FKD3300 Nanostructured Materials 6.0 credits

Nanostrukturerade material

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

Establishment

Course syllabus for FKD3300 valid from Spring 2021

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Eligible for studies at the third-cycle level.

Language of instruction

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

Intended learning outcomes

After completion of the course the doctoral student should

- demonstrate for the level of the course adequate acquired knowledge in the area of nanostructured materials, including environmental and health aspects of nanoparticles and how nanostructured materials can contribute to sustainable development.
- have the knowledge and ability to design, plan and carry out a project to address a scientific problem in the area of nanostructured materials.
- Be able to present the project orally and in text in a pedagogical way.

Course contents

- Lectures, Seminars, Own oral and written presentations covering:
- Self-assembly processes and the molecular interactions driving these processes
- Mesoporous materials, from butterfly wings to templating techniques
- Responsive coatings, controlled and sustained release
- AFM and wettability – focus on instrumentations
- Industrial applications
- Nanomechanical properties of nanocomposites and seashells
- The special properties of spider silk, the nanostructure gives record toughness
- Superhydrophobicity and superadhesion, Lotus leaf and gecko feet
- Nanoparticles – environmental and health aspects
- Biolubrication and the nanostructure of cartilage

Examination

- SEM1 - Seminarier, 1.5 credits, grading scale: P, F
- TEN1 - Written exam, 4.5 credits, grading scale: P, 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.

If the course is discontinued, students may request to be examined during the following two academic years.

Approved written examination, written report and oral presentation.

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.

