KF2190 Polymeric Materials: Structure and Properties 7.5 credits

Polymera material: Struktur och egenskaper

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

Establishment

Course syllabus for KF2190 valid from Spring 2011

Grading scale

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

Education cycle

Second cycle

Main field of study

Chemical Science and Engineering, Chemistry and Chemical Engineering

Specific prerequisites

Admission requirements for independent students:
75 university credits (hp) in chemistry or chemical engineering, 20 university credits (hp) in mathematics and 6 university credits (hp) in computer science or corresponding. Documented proficiency in English corresponding to English B.

**Admission requirements for programme students at KTH:
**At least 150 credits from grades 1, 2 and 3 of which at least 110 credits from years 1 and 2,

and bachelor's work must be completed, within a programme that includes:
75 university credits (hp) in chemistry or chemical engineering, 20 university credits (hp) in mathematics and 6 university credits (hp) in computer science or corresponding.

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 the relation between structure and properties for volume and construction plastics and rubber materials
- Analyse polymer properties from the structure for volume and construction plastics and rubber materials
- Propose suitable polymers for different applications in polymer technology; biomaterials, packaging, film and fiber, materials for electronics and IT-applications.

Course contents

The aim of the course is to provide detailed knowledge of the structure/properties of polymeric materials and their applications. The relation between synthesis/production and technical properties and use are emphasized for commercial use of plastics materials like fibers, rubbers, foils, film, thermosets and thermoplasts. Explanations are given to variations in properties depending of mixtures, additives and /or reinforcing. The development of new bulk polymers and special polymers and ways of thinking for design and formulation of new polymeric materials is discussed.

Course literature

- Brydson: Plastics materials
- Ulrich: Introduction to Industrial Polymers
- Dyson: Speciality polymers

The course literature can be lent againt a deposition fee as long as the books last

Examination

- ÖVN1 - Exercises, 0.8 credits, grading scale: P, F
- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 3.7 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.

Other requirements for final grade

Examination (TEN1; 3,0 credits)
Laboratory work (LAB1; 3,7 credits)
Exercises (ÖVN1; 0,8 credits)

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.