



# F3E5055 Polymer Physics Including Polyelectrolytes II 9.0 credits

## Polymerfysik med polyelektrolyter II

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 F3E5055 valid from Spring 2016

## Grading scale

## Education cycle

Third cycle

## Specific prerequisites

Basic courses in polymer technology.

## Language of instruction

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

# Intended learning outcomes

The students (graduate students) should after finished course be able to understand and apply theories/working methods in the following areas: conformation state, rubber elasticity, polymer solutions, polyelectrolytes, glassy polymers, part crystalline polymers and oriented polymer systems.

## Course contents

- Survey of polymer physics
- Chain conformation
- Rubber elasticity
- Polymer solutions and compounds
- Polyelectrolytes: solutions and gels
- Glassy state of polymers
- Part crystalline polymers
- Oriented polymers

These topics are presented in 35 h lectures. 3 homeworks are compulsory.

## Disposition

Schedule (in the Rånby room with one exception – 23/3 9-12 in Ljungberg room; address for both Teknikringen 56)

1. Overview of polymer physics  
19/3, 13–16 (UG)
2. Chain conformation (Homework 1)  
20/3, 9–11 (UG)  
20/3, 12–15 (UG)
3. Rubber elasticity  
21/3, 13–16 (UG)
4. Polymer solutions, polymer blends, polyelectrolytes  
23/3, 9–12 (UG)  
26/3, 13–16 (LW)
5. Polyelectrolytes: Solutions and gels (Homework 2)  
27/3, 13–16 (LW)  
Polyelectrolytes at interfaces 30/3, 13–16 (LW)  
Polyelectrolyte multilayers 2/4. 9–12 (LW)
6. Glassy polymers  
3/4, 9–12 (UG)
7. Crystalline polymers (Homework 3)  
4/4, 9–12 (UG)  
5/4, 9–12 (UG)
9. Examination  
no time set

## Course literature

Polymer Physics, Ulf W. Gedde, Kluwer (1995); Lars Wågberg: Compendium och material från andra källor.

## Examination

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

Written examination (4 credits) and homeworks (2 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.