Summary
The student has a basic understanding of the physical and physicochemical principles which result from the chainlike structure of synthetic macromolecules. The student can predict major characteristics of a polymer from its chemical structure and molecular architecture.

Content
- Introduction
- Dilute solutions
- Concentrated solutions and phase behavior
- The amorphous state
- The crystalline state
- The glass-rubber transition
- Rubber elasticity
- Viscoelastic properties

Keywords
dilution solutions
concentrated solutions
glass transition
rubber elasticity
viscoelastic behaviour

Learning Prerequisites
Recommended courses
General chemistry, Inorganic chemistry, organic and polymer chemistry

Learning Outcomes
By the end of the course, the student must be able to:
- Predict polymer characteristics based on chemical structure and molecular architecture
- Discuss dilute and concentrated solution and bulk behaviour of synthetic polymers
• Use insights from physicochemical experiments to discuss the composition and architecture of polymers
• Discuss dilute and concentrated solutions and bulk behaviour of synthetic polymers

Transversal skills
• Use a work methodology appropriate to the task.
• Assess one's own level of skill acquisition, and plan their on-going learning goals.
• Continue to work through difficulties or initial failure to find optimal solutions.

Teaching methods
Lectures and exercises

Assessment methods
written

Resources
Ressources en bibliothèque
• Polymer Chemistry / Hiemenz
• Introduction to Physical Polymer Science / Sperling