UNIVERSITY OF BORÅS

Polymer technology
Polymerteknik
7.5 credits

Ladok Code: 52PT01
Version: 2.0
Established by: The Teaching Committee 2012-06-12
Valid from: Autumn 2011

Education Cycle: Second cycle
Main Field of Study (Progressive Specialisation): Textile Engineering (A1N), Mechanical Engineering (A1N)
Disciplinary Domain: Technology
Prerequisites: These prerequisites do not apply to students within the programme Science without Borders
Bachelor's Degree in Textile Technology (or equivalent). Technology (or equivalent). For admission the applicant shall have passed 15 credits in mathematics, 7.5 credits in chemistry with at least half in organic chemistry, 7.5 credits in materials science with at least half in polymers and also 15 credits in textile manufacturing methods. The applicant shall also have documented English skills at B level.
Subject Area: Textile Technology
Grading Scale: ECTS-credits

Content
The course covers the following aspects of polymer physics and chemistry:
- Nomenclature, and fundamental concepts
- Polymerization
- Polymer stereochemistry
- Polymers in solution
- Characterization
- Crystallinity and the glass transition
- Rheological and mechanical properties including viscoelasticity
- Copolymers, polymer blends and alloys
- Processing

Learning Outcomes
After completing and passing the course, students should be able to:
- explain central concepts within the fields of polymer physics and polymer technology
- describe temperature and frequency dependence of rigidity
- describe phenomena in terms of properties of polymer systems at molecular level
- describe the relationship between microscopic and macroscopic levels for polymer systems
- account for different classes of additives' impact mechanisms
- solve simple polymer-related problems arising in industrial contexts

Forms of Teaching
The course consists of workshops and laboratory work. Each seminar ends with a short exam.
The course is given in English.

Forms of Examination
The course is examined through:
- Written exam, 6.5p Betygskala: EC
- Laboratory work, 1.0p Betygskala: EC

To receive the grade the student must pass both practicals and the written examination. The grade is determined by the written examination and it is possible to add points to the total score from the short exams that follow each seminar. The added score of the short tests is weighted equal to the result of the written examination.

Student rights and obligations at examination are in accordance with guidelines and rules for the University of Borås.

Literature and Other Teaching Materials

Cowie J.M.G. & Arrighi V., Polymers: Chemistry and Physics of Modern Materials, 3rd Ed. Taylor and Francis Group 2008, ISBN-10: 0-8493-9813-4

Sections from various e-books available at the university library, scientific papers and practicals hand out.

Student Influence and Evaluation

The students' opinions are collected systematically and regularly through written course evaluations once the course is completed. One time per semester, student representatives, together with the Director of studies and Programme Directors, evaluate completed courses.

For addition materials, please refer to the University's policy on course evaluation and documents established by the Department board, the Director of studies and the Course director.

Miscellaneous

This course is primarily a programme course in the Master programme in textile engineering.