

Polymer technology

Polymerteknologi

7.5 credits

7.5 högskolepoäng

Ladok Code: A530TA

Version: 3.0

Established by: Committee for Education in Technology 2021-10-08

Valid from: Spring 2022

Education Cycle: First cycle

Main Field of Study (Progressive Specialisation): Polymeric Technology (G2F)

Disciplinary Domain: Technology

Prerequisites: Meets the requirements for admission to the Master's programme in Resource Recovery

Subject Area: Chemical Engineering

Grading Scale: Seven-degree grading scale (A-F)

Content

Polymer materials have become an important part of modern society. Polymers come in many forms and materials consisting of polymers are now indispensable in our everyday lives. Examples of polymer materials are plastics, textiles, rubber, and composites. These materials are very important and form an integral part of modern society. The utilisation of polymers requires understanding and knowledge regarding their manufacture, chemical composition, and properties as well as processing.

The course aims to provide basic knowledge in polymer technology. The course covers the definitions and key concepts of polymer technology, the properties of polymers and processing into plastics and fibres. The structural classification and systematics of polymers, polymerisation, as well as morphology and phase transitions are dealt with. The most important processing methods (compression moulding, extrusion, injection moulding, fibre extrusion, and film blowing) are described and discussed. The course will provide the necessary basic knowledge for the other courses in the programme so that students are able to evaluate and understand the role of polymer materials when it comes to modern circular economy. The course also includes an oral presentation based on scientific literature addressing a question relevant to the course.

Learning Outcomes

After completing the course, the student will be able to:

Knowledge and understanding

- 1.1 understand the basic concepts and definitions of polymer materials,
- 1.2 classify polymer materials based on structure, processing, and properties,
- 1.3 describe the most important processing methods for polymer materials.

Skills and abilities

- 2.1 assess the role of polymer materials in the circular economy based on composition and properties,
- 2.2 discuss the relationship between the structure and properties of polymer materials.

Evaluation ability and approach

- 3.1 choose a polymer, taking into account the material specifications of the final product, economic conditions, and environmental requirements,
- 3.2 choose the processing method for a polymeric material, taking into account the material specifications of the end product, economic conditions, and environmental requirements.

Forms of Teaching

The course consists of:

- Lectures
- Seminars

The language of instruction is English.

Forms of Examination

The course is examined through the following components:

- Examination
Learning outcomes: 1.1–1.3, 2.1-2.2, 3.1-3.2
Credits: 6.0
Grading scale: A-F
- Seminar
Learning outcomes: 1.1-1.4, 2.1-2.2, 3.1-3.2
Credits: 1.5
Grading scale: Pass/Fail

The examination component “Examination” determines the final grade of the course, which is issued only when all components have been passed.

Grading scale for the course is: Seven-point grading scale (A-F)

If the student has received a decision/recommendation regarding special pedagogical support from the University of Borås due to disability or special needs, the examiner has the right to make accommodations when it comes to examination. The examiner must, based on the objectives of the course syllabus, determine whether the examination can be adapted in accordance with the decision/recommendation.

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

Literature and Other Teaching Materials

Student Influence and Evaluation

The course is evaluated in accordance with current guidelines for course evaluations at the University of Borås in which students' views are to be gathered. The course evaluation report is published and returned to participating and prospective students in accordance with the above-mentioned guidelines, and will be taken into consideration in the future development of courses and education programmes. Course coordinators are responsible for ensuring that the evaluations are conducted as described above.

Miscellaneous

The course is primarily intended for students in the Master Programme in Resource Recovery - Polymer Materials for the Circular Economy, but is also offered to exchange students. This syllabus is a translation from the Swedish original.