

Module P 101: Polymer Synthesis

Learning objectives:

The major objective of the module is to provide basic knowledge about the different polymerization methods and the theoretical background. In addition the students learn about the synthesis and structure-property relation of selected engineering plastics and high performance polymers. In the laboratory course the students learn how to carry out polymerization reactions practically on the basis of selected experiments.

Course units and temporal allocation:

Module P 101 ‚Polymer Synthesis‘ is comprised of the following units:

	HPW	Semester
Lecture	2	WS
Laboratory Course	6	WS

This module will be offered by lecturers of Macromolecular Chemistry

Course content:

The **lecture** provides broad knowledge of the basic polymerization techniques including radical polymerization, cationic and anionic polymerization, polycondensation, and polyaddition. Special emphasis is given to modern synthetic procedures. In addition selected polymers for special applications like polyurethanes, polycarbonates, and fluoropolymers will be presented.

In the **laboratory course** the knowledge on the different polymerization techniques is intensified in selected experiments from the fields of copolymerization, controlled radical polymerization, anionic polymerization, and polycondensation. The prepared polymers will be characterized by methods such as GPC, MALDI-TOF and viscosimetry.

Entrance requirements:

none

Assessment:

A written (or oral) examination on the contents of the lecture and the laboratory course after the first semester. This amounts to 60% of the final grade. A second grade is given for the laboratory course and amounts to 40% of the final grade. The kind of examination (written or oral) and the date are given at the beginning of the semester.

Work load:

In addition to the 2 HPW for the lecture 1 hour is planned for individual studies. Accordingly, 3 additional hours are necessary for the preparation of the experiments and the protocol of the 6 HPW laboratory course. Given 15 weeks per semester this adds up to 180 hours. Together with 30 hours for the preparation of the final examination a total work load of 210 hours for the whole semester is calculated.

ECTS Credit points: 7