

# Module P 101: Polymer Synthesis

(Fak225719)

## Learning objectives:

The major objective of the module is to provide fundamental knowledge about the different polymerization methods and the theoretical background and polymer terminology. In addition, the students learn about the synthesis and structure-property relation of selected engineering plastics. In the laboratory course, the students learn how to carry out polymerization reactions practically based on selected experiments.

### Course units and temporal allocation:

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

	HPW	Semester
Lectures	2	WS
Laboratory Course	6	WS

This module will be offered by lecturers of macromolecular chemistry.

#### Course content:

The **lectures** provide a broad knowledge of the basic polymerization techniques, including radical polymerization, cationic and anionic polymerization, polycondensation, and poly-addition. Special emphasis is placed on modern synthetic procedures. In addition, selected polymers for special applications, such as polyurethanes, polycarbonates, and fluoropolymers, will be presented.

The **laboratory course** intensifies the knowledge of the different polymerization techniques in selected experiments from the fields of copolymerization, controlled radical polymerization, anionic polymerization, and polycondensation. The polymers prepared 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 lectures and 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 lectures, 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