

Module P 208: Sustainable polymer chemistry and polymer materials

Learning objectives:

Polymers contribute significantly to the three pillars of sustainability, which are environment, economy, and society. The students will be exposed to these three pillars of sustainability with the focus on the detailed knowledge about sustainability and sustainable processes in polymer chemistry, polymer applications, and their disposal.

The laboratory course will provide the students a hand-on-experience and skills in sustainable polymer preparation procedures, processing to light-weight polymer objects, their structural, physical, chemical and mechanical properties, and use of the relevant polymer analytical techniques.

Course units and temporal allocation:

Module P 208 ,sustainable polymer chemistry and polymer materials are comprised of the following units:

	HPW	Semester
Lecture	2	SS
Laboratory Course	8	SS

This module will be offered by lecturers of macromolecular chemistry.

Course content:

The **lecture** will cover the basics of sustainability pillars, sustainable polymers from natural resources, biodegradable polymers, lightweight porous and bionic (biomimetic) polymer materials, green processes for the preparation of monomers, and polymers, recycling of polymers.

The associated **laboratory course** will be performed in the macromolecular chemistry research groups or in collaboration with other polymer sustainability-related research groups.

Entrance requirements:

Participation in P101 (Polymer Synthesis) and P102 (Physical Chemistry of Polymers) is recommended.

Assessment:

An oral (or written) examination of the contents of the lecture. This examination will amount to 50 % of the grade. The laboratory course will be evaluated by the average of two independent grades: Practical performance and the written report, and a seminar amounting to 50 % of the grade.

Workload:

In addition to the 2 HPW for the lecture, 2 hours are planned for individual studies. Four additional hours are necessary for the preparation of the experiments and the protocol of the 8 HPW laboratory course. Given 15 weeks per semester, this adds up to 240 hours. Together with 30 hours for the preparation of the final examination and talk, a workload of 270 hours for the whole semester is calculated.

ECTS Credit points: 9