

Module P 108: Biomaterials

(Fak225720)

Learning objectives:

This module focuses on bio-inspired materials and processes. The students will learn about the structure, synthesis, and modification of biopolymers, including biomineralization. Furthermore, the students will gain a comprehensive insight into current research topics and industrial applications. The characterization and analysis of mechanical and structural properties of biomacromolecules also plays an important role in this module.

Course units and temporal allocation:

Module P 108 'Biomaterials' is comprised of the following course units:

	HPW	Semester
Lectures*	2	WS
Laboratory Course	6	WS

This module will be offered by the chair of biomaterials/FAN.

*In winter term the lecture will be given in German. There is the possibility to attend the lecture in Englisch in summer term (Fak615056, lecture "Biomaterials").

Course content:

A major objective of the **lectures** is the applications of nucleic acids, lipids, and proteins in nanotechnology, pharmacology, and industry. Furthermore, the course deals with the science behind the assembly of macromolecules, their man-made imitations and the biomineralization process. Important characterization methods, such as field-flow fractionation, CD-, UV-, IR- and fluorescence spectroscopy, AFM, EM, HPLC, and mechanical testing are presented. Additionally, molecular and microbiological methods and techniques are introduced. The **laboratory course** puts the students in a position to apply these methods, for instance, to spider silk, mussel collagens, and yeast proteins.

Entrance requirements:

None.

Assessment:

The module will be evaluated by an oral or written examination (60 %) and the evaluation of the laboratory course consisting of the practical performance and a report (40 %).

Work load:

In addition to the 2 HPW of lecture, 2 more hours are necessary for the preparation and review of the lecture. This will add up to 60 hours for the entire semester. The laboratory course accounts for 120 hours. Furthermore, preparations for the examination are estimated at an additional 30 hours. This results in a total of 210 hours in the semester.

ECTS Credit points: 7