

***title of module***

Lecture Series in the Focal Point Program Biomolecular Chemistry

***credit points***

5

***available in semester(s)***

2

***hours per week***

2

***compact course***

***lecturer(s)***

Faculty participating in the focal point program Biomolecular Chemistry

***teaching methods***

lecture: 2 hours per week

***evaluation of learning progress***

active participation during lectures

***mode of examination***

30 - 45 min end-of-term oral exam or 2-hour end-of-term written exam

***learning objectives***

students acquire advanced knowledge on the molecular foundations in biochemistry with an emphasis on bio-inorganic, bio-organic, and bio-physical aspects including theoretical methods necessary to describe biochemical phenomena.

***soft skills***

notetaking during lectures, active participation in discussions, independent post-preparation of module contents, independent consultation of the relevant literature

## ***contents of module***

The detailed contents of the module will depend on the lecturers contributing. A general outline can be given as follows:

- spectroscopic methods in biophysical chemistry,
- biomolecular reaction mechanisms,
- surface plasmon resonance spectroscopy,
- basics of photosynthesis,
- near field microscopy,
- FRET,
- single molecule spectroscopy,
- metalloenzymes,
- medical inorganic chemistry,
- methods in NMR,
- macroscopic material properties of aqueous biopolymers,
- molecular modelling and molecular dynamics
- molecular bioinformatics,
- electronic structure calculations,
- quantum chemical methods,
- programmable biomolecular nanostructures,
- self replication, preconditions for evolution, and the origin of life