

Biophysical Chemistry

Master Chemie, Master Life Science, Master Nanoscience
Winter Semester 2017/2018

Instructors:

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2018: Prof. Dr. Malte Drescher Office: L 804 Phone: 5262 malte.drescher@uni-konstanz.de

Student Assistants:

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2018: Theresa Braun Office: L 834 Phone: 3928 theresa.braun@uni-konstanz.de

Course info in ILIAS

Information about the course, including course materials, problem sets, and announcements can be found in ILIAS.

Course overview

The course will focus on the application of Physical Chemistry concepts and techniques to practical problems in Life Science. We will introduce simple models that give insight into the nature of these problems and enable their quantitative analysis. We will cover spectroscopic techniques that can be used to obtain information on structure and dynamical processes of the biological system at hand.

Assignments

The problem sets are released one week before each working class. The solutions will be discussed in the working classes. During the course, the students will be asked to read a number of recent research papers. These papers will also be discussed in the working classes.

Final grade

The final grade for the course will be based on a 30-min oral exam.

Study Material

The biophysical part of the course is largely covered in the text book "Molecules of Life" by Kuriyan, Konforti, and Wemmer. Miscellaneous study material will be posted in ILIAS.

Credits

The credit for the course is 6 ECTS. The course can be extended with an additional 6 ECTS by doing a research internship (5 weeks full-time) in one of the biophysical chemistry groups: Drescher, Hauser, Kovermann, Mathies, Peter, Zumbusch.

Course Schedule - 2017

	Topic	Date, Time	Room
Lecture 1	Practicalities, Intro Protein Structure Determination, Magnetic Resonance Principles	Wed. Oct 25, 10:00-11:30	C358
Working Class 1		Mon. Nov. 6, 13:30-15:00	L829
Lecture 2	Solution NMR, Magic-angle spinning NMR	Wed. Nov. 8, 10:00-11:30	M901
Working Class 2		Mon. Nov. 13, 13:30-15:00	L829
Lecture 3	X-ray diffraction	Wed. Nov. 15, 10:00-11:30	M901
Working Class 3		Mon. Nov. 20, 13:30-15:00	L829
Lecture 4	Cryo–Electron Microscopy	Wed. Nov. 22, 10:00-11:30	M901
Working Class 4		Mon. Nov. 27, 13:30-15:00	L829
Lecture 5	Interaction (bio)molecules and Light, Absorption Spectra, Fluorescence	Wed. Nov. 29, 10:00-11:30	M901
Working Class 5		Mon. Dec. 4, 13:30-15:00	L829
Lecture 6	Diffusion and Transport, Fluorescence Correlation Spectroscopy	Wed. Dec. 6, 10:00-11:30	M901
Working Class 6		Mon. Dec. 11, 13:30-15:00	L829
Lecture 7	Single-molecule spectroscopy, Super-resolution Techniques	Wed. Dec. 13, 10:00-11:30	M901
Working Class 7		Mon. Dec. 18, 13:30-15:00	L829

Course schedule for 2018 to be announced at a later time.