[C3.1]	Methods for structural biology and biophysics	Elective module in the core area C3	3-7 CP (total) = 90 - 210 h		2-4 SWS
			Contact hours 2-4 SWS / 30-60 h	Independent study 60 - 150 h	

Content

To understand the function of biological molecules, knowledge of their 3D structure is essential. In this module, the most important methods are introduced and the necessary physical principles are taught.

Lecture:

- General principles of spectroscopy
- Fluorescence spectroscopy and microscopy (single molecule fluorescence, anisotropy, FCS, FRET, super resolution microscopy)
- EPR spectroscopy
- NMR spectroscopy in solution and solids
- X-ray structural analysis
- Cryo-electron microscopy
- Methods of data acquisition and data analysis as well as structural calculation.

Seminar (optional): In the seminar, the subject matter of the lecture is deepened through the discussion of concrete application examples. Presentations to be given by the students, which either deepen topics from the lecture or present current application examples from the literature, play a central role here.

The lecture can optionally be combined with the seminar.

Learning outcomes and skills

After completing the module, students can:

- critically assess the methods and technical details taught
- choose the right methods for specific questions
- calculate with produced data and discuss the results
- present current topics and application examples from the literature to a specialist audience

Admissions requirements/Conditions for participation in the module/courses

None

Recommended prior knowledge

None

Organizational details

Module allocation (degree programme/faculty)	Master Biochemistry / FB14
Module transferrable to other degree programmes	
Module offered	winter semester
Duration	1 semester
Module coordinator	Prof. Clemens Glaubitz
Course requirements for credits	
Participation record	Seminar: regular and active participation, processing of exercises
Coursework	Seminar: presentation
Forms of teaching / learning	Lecture, seminar
Language teaching and instruction	English
Module assessment	**Form / duration / content, if applicable**
Final module assessment	Oral exam for the lecture (45 min.)
Cumulative module assessment consisting of	
Composition of the module grade for cumulative module assessment	

	Mode of teaching / study	Semester hours per week	Semester CP			
			1	2	3	4
Methods for determining the structure of biomolecules	L	2	3			
Optional: Methods for determining the structure of biomolecules	S	2	4			
TOTAL		2-4	3-7			