Courses

Compulsory courses
Concept courses
Full year courses
551-0397-00 Molecular and Structural Biology I: Protein Structure and Function 3
551-0397-00 Molecular and Structural Biology II: From Gene to Protein 3

Master courses (one of the three listed is compulsory; the remaining can be taken simultaneously under the category “elective compulsory” where they are listed again)
Spring semester
551-1412-00 Molecular and Structural Biology IV: Visualizing Macromolecules by X-ray Crystallography and EM 4
551-1416-00 Molecular and Structural Biology VI: Studying Macromolecules by NMR and EPR 4
551-1402-00 Molecular and Structural Biology V: Biophysical Analysis of Macromolecules Mechanisms 4

Elective compulsory courses
Concept courses
Full year courses
551-0319-00 Cellular Biochemistry (Part I) 6
551-0320-00 Cellular Biochemistry (Part II) 6
551-0313-00 Microbiology (Part I) 6
551-0314-00 Microbiology (Part II) 6

Autumn semester
529-0731-00 Nucleic Acids and Carbohydrates 6
551-1295-00 Introduction to Bioinformatics: Concepts and Applications 6
551-0309-00 Concepts in Modern Genetics 6

Spring semester
529-0732-00 Proteins and Lipids 6
551-0324-00 Systems Biology 6

Master courses
Autumn semester
551-1411-00 Molecular and Structural Biology III: Current Topics 2
529-0733-00 Enzymes 7
551-1105-00 Biochemistry 4
551-1411-00 Advanced Protein Engineering 2
551-1153-00 Systems Biology of Metabolism 4
529-0800-00 Computer Simulation in Chemistry, Biology and Physics 7
401-0649-00 Applied Statistical Regression 4
401-0650-00 Using R for Data Analysis and Graphics (Part I) 1
529-0841-00 Medizinische Massenspektrometrie, gekoppelter Analysenmethoden, Chemometrie 6

Spring semester
551-1412-00 Molecular and Structural Biology IV: Visualizing Macromolecules by X-ray Crystallography and EM 4
551-1414-00 Molecular and Structural Biology VI: Studying Macromolecules by NMR and EPR 4
551-1402-00 Molecular and Structural Biology V: Biophysical Analysis of Macromolecules Mechanisms 4
551-0224-00 Advanced Proteomics 4
551-1618-00 Correlative Structural Biology with a Main Focus on Electron Microscopy 4
551-0364-00 Functional Genomics 4
551-1120-00 From Genetic Systems and Genomes to Systems Genetics 4
551-1100-00 Infectious Agents: From Molecular Biology to Disease 4

Elective courses (free choice)
Master or concept courses (from any of the nine elective majors or outside upon approval)

Elective courses in Humanities, Social or Political Sciences
(min. 2 CP)

About this major
The Master programme in Structural Biology & Biophysics provides a strong background in the molecular life sciences, with a particular emphasis on structural and mechanistic aspects of biology. The major is anchored in the Institute for Molecular Biology & Biophysics, where research groups investigate central cellular processes such as transcription, splicing and translation as well as protein folding and degradation with a focus on the participating molecular machines. We also study membrane transport proteins and molecular assemblies involved in cell-to-cell adhesion and communication.

Participants of the program will become experts in experimental biochemistry, which includes protein production, purification, and recombinant DNA techniques. These classes can be flexibly combined with courses from other majors to model the degree to suit individual interests.

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The successful completion of the Master programme in Structural Biology & Biophysics opens up opportunities for students for a professional career in scientific research areas concerned with biological and biomedical questions on the molecular level. It provides the Master graduates with a solid scientific background for further academic studies towards a PhD, but also with the skills to obtain competitive positions in biotechnology and in the chemical, biomedical and pharmaceutical industry.