

Modules M.Sc. Biochemistry and Molecular Biology

Titel of the module	Bioorganic Chemistry			
Term/semester	Winter term / semester 1			
VAK-Number	02-317-7-406			
Credit points	9			
Compulsory/ elective course	Elective compulsory course (Wahlpflichtkurs)			
Teaching methods	Method	SWS	Factor	CP
	Lecture	0		
	Seminar	3		
	Practica	3		
Self study	Preparation of the topics of the seminars	86 hours		
	Establishing an experimental method	30 hours		
	Learning for the exam	70 hours		
Instructor	Ralf Dringen, Ingo Grunwald			
Examiner	Ralf Dringen, Ingo Grunwald			
Objectives	<p>The course aims to substantially improve the basic knowledge on the chemical principles underlying the cell metabolism. The gaining of theoretical knowledge in seminars will be accompanied by experimental training. The students will gain expertise in the establishment of reliable and robust (bio)chemical assay systems for the analysis/quantification of chemical substances. In addition, students will be trained in the preparation of understandable protocols that can be used by others to successfully address an analytical problem. Furthermore, the students will improve their communication, presentation as well as team and lab working skills.</p>			
Content of teaching	<p>Multiple aspects of bioorganic chemistry will be the content of the seminars. Topics addressed in the seminars include for example:</p> <ul style="list-style-type: none"> • Energetics of chemical reactions • Functional groups and bonds • Redox reactions • Mechanisms involved in enzymatic catalysis • Chemistry of basic metabolic pathways • (Bio)chemical assays • Laboratory safety <p>In teams, students will establish (bio)chemical assay systems to solve analytical problems. The protocol for the methods established by one team will be used by the other students to analyse and/or quantify the content of biomolecules in unknown samples.</p>			
Educational objectives	<p>The following skills of the students will be improved by this course:</p> <ul style="list-style-type: none"> • Knowledge on the chemistry that underlies cell metabolism • Recognition of repetitive chemical principles in metabolism • Teamwork and presentations • Ability to present and discuss complex scientific topics at the white board • Knowledge how to establish an assay system from the literature • Experience in preparing a useful protocol description for an analytical method • Experience in supervising fellow students during their work with the established assays 			
Evaluation of learning progress	Intensive discussions with white board presentations, unannounced written test, discussion by the students of the protocol of the established assays, self-evaluation of the progress			
Assessment	Final oral exam (100%)			
Frequency	Each winter term			
Usage in other degree programmes	No			
Premise	Attendance and successful contributions in seminars, preparation times and lab hours			