

Module Name Advanced Biochemistry						
Type of Module Advanced Module				Module Code AM-C-BC		
Identification Number	Workload	Credit Points	Term	Offered Every	Start	Duration
MN-C-A-BC	180 Hours	6 CP	1. – 3. Semester	SuSe/WiSe	both	1 Semester
1	Course Types a) Lecture b) Seminars		Contact Time 60 h	Private Study 120 h		Planned Group Size 20-30 Students
2	Module Objectives and Skills to be Acquired Students who successfully completed this module... <ul style="list-style-type: none"> • have acquired detailed knowledge on actual aspects of biochemistry, • have acquired knowledge about main research fields related to biochemistry • are able to recognize advanced and demanding problems in the field of biochemistry and to independently develop solutions to these problems, • are able to perform an in-depth analysis of a specific publication to identify its relevant contents and to bring into context with other studies in this area, and to present the results to in form of a brief presentation and discuss them with other students and docents. 					
3	Module Content One basic and self-contained lecture out of the four subjects A-D: A) Structural Biology <ul style="list-style-type: none"> • Protein folding and protein stability • Methods to determine 3D structure of proteins • X-ray structure determination • Protein Structure-Function relationships B) Biogenesis and function of enzyme co-factors <ul style="list-style-type: none"> • Protein expression and affinity chromatography techniques • Assembly of protein complexes • Fermentation and purification of co-factor precursors • Synthesis of metal co-factors and insertion in apo-enzymes • Structure-function analysis of multifunctional proteins • Protein modifications C) Neurobiochemistry <ul style="list-style-type: none"> • Structure and function of neurons • voltage-gated and ligand-gated ion channels • post-synaptic proteins and structures • neuron receptors in health and disease • methods to visualize cellular structures and protein interactions (<i>in vitro</i> and <i>in vivo</i>) D) Synthesis and application of bioactive peptides <ul style="list-style-type: none"> • Solid phase peptide synthesis • Protecting group strategies and attachment of functional groups • Analytical methods for investigating identity, purity and activity of peptides • Use of peptides as therapeutics 					

4	<p>Teaching/Learning Methods</p> <p>Lectures, seminars</p>
5	<p>Prerequisites (for the Module)</p> <p>Formally: WP Biochemistry (practical course) or equivalent</p> <p>Contents: proven basic knowledge of biochemistry and molecular biology</p>
6	<p>Type of Examination</p> <p>Written (or oral) exam (after successful completion of the seminar)</p>
7	<p>Credits Awarded</p> <p>Passed written (or oral) exam</p>
8	<p>Compatibility with other Curricula</p> <p>MSc Biology, MSc Biochemistry</p>
9	<p>Proportion of Final Grade</p> <p>6/114</p>
10	<p>Module Coordinator</p> <p>Prof. Dr. G. Schwarz, Prof. Dr. U. Baumann, Prof. Dr. I. Neundorf, Prof. Dr. S. Waffenschmidt, Prof. Dr. J. Riemer, Prof. Dr. K. Niefind</p>
11	<p>Further Information</p> <p>Literature as well as seminar topics will be provided via ILIAS.</p>