Module: Bioorganic Chemistry

University/Department/Institute: Freie Universität Berlin/Department of Biology, Chemistry, Pharmacy/Institute of Chemistry and Biochemistry

Module supervisors: Lecturers of the module

Entrance Requirements: none

Goals of Qualification: Students are able to understand important molecular reactions of life. This is built up on a clear understanding of the characteristics and reactions of important natural substance classes. They have acquired knowledge on the structure, characteristics and the synthetic pathways of the substance classes: nucleic acids, proteins, carbohydrates, lipids, vitamins and steroids and they understand the current concepts in bioorganic chemistry. They are able to solve assignments independently and can discuss their solutions in groups.

Contents: Structure of nucleic acids, DNA – replication, mutation, polymerase chain reaction, DNA – sequencing, transcription and translation, chemical synthesis of nucleic acids, amino acids and their biosynthesis, chemical synthesis of peptides and amino acids, characteristics of primary, secondary, tertiary, and quartiary structure, structure and characteristics of proteins, functions of enzymes, importance of coenzymes, vitamins, carbohydrates, characteristics and chemical reactions of monosaccharides, chemical synthesis of disaccharides, synthesis of glykopeptides, characteristics of oligo- and polysaccharides, structure and characteristics of fatty acids, triacylglycerides, phospholipids, prostaglandins, terpenes, steroid hormones, biosynthesis of terpenes, chemical synthesis of lipoproteins.

Teaching methods	**Hours of attendance** (Hours per week)	**Forms of active participation**	**Workload** (hours)	
Lecture	2	-	Presence (L) Pre-, post-preparation (L)	30 30
Tutorial	1	Solving assignments, contributions to topic related discussions	Presence (T) Pre- , post-preparation (T) Exam preparation and examination	15 45 30
Language offer of lecture		German		
Compulsory regular attendance		Attendance is recommended		
Workload (total)		150 hours		5 CP
Length of module		One semester		
Examination		Exam (120 minutes); The exam can also be conducted electronically		
Lecture is offered		Every semester		
Applicability		Bachelor study program Chemistry		