Freie Universität Berlin

Institut für Chemie und Biochemie
Module descriptions for the bachelor program Chemistry
for teacher candidates

Module: Basic Chemistry Lab Course for Teaching Training Students

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 plan, carry out and document chemical experiments on revised topics, including simple demonstration experiments. They can analyze the received data sets and present them in written or oral form. They know the theoretical background of the conducted experiments, the safety requirements necessary when dealing with lab equipment and hazardous substances, and the general precautionary measures needed to work safely in the lab.

Contents: Introduction to lab safety; Characteristics of different chemical elements and different (mostly inorganic) comounds; Conduction of a classical qualitative (separation process) and quantitative analysis (acid-base-, complexiometric and redox-titration); Introduction to instrumental analysis methods (element and IR – spectroscopy); Conduction of simple experiments relating the Acid-Base Theory, redox-reactions, electrochemistry, kinetics, law of mass action, complex chemistry; Basic preparative lab techniques (e.g. set-up and use of simple lab equipment and apparatus, material separation via vacuum filtration and recrystallization), Synthesis of simple inorganic compounds and characterization of the synthesized product via quantitative-analytical and instrumental analytic methods; Introduction to specialized literature, chemical user- and research software; Analysis and assessment of the analytical data received and written presentation in form of an experimental protocol which is recorded according the accepted conventions of the subject.

Teaching methods	**Hours of attendance** (semester periods per week)	**Forms of active participation**	**Work effort (hours)**	
Safety relevant lab training	8	research on theoretical background, preparation and conduction of experiment (12-16 experiments)	Presence (Lab) *supervised lab training* *self-study in lab* Pre- and post-preparation (Lab) Exam preparation and examination	 120 50 40 30
Language spoken in lecture		German, in some cases English		
Compulsory regular attendance		Yes		
Work effort (total)		240 hours		8 CP
Length of module		One semester		
Examination		Practical examination (presentation of the theoretical background, experimental results and protocol)		
Lecture is offered		Every semester		
Applicability		Bachelor study program Chemistry for Teaching Training Students, 60-CP-Module offer Chemistry		