

Module: Lab Training in Organic 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: successful completion of the modules „Basic and Inorganic Chemistry“ and „Basics of Organic Chemistry“			
Goals of Qualification: The students are able to assemble and to operate standard laboratory equipment used in organic synthesis safely. They know basic rules how to avoid potential hazards which may occur on handling hazardous compounds and on operating standard laboratory equipment. They know about specific hazards for pregnant and breastfeeding women. They can independently research the theoretical background of an experiment and can give a qualified oral or written description of the theory. They are able to analyze simple compounds by spectroscopic methods like $^1\text{H-NMR}$ -, IR-, UV- and mass spectroscopy.			
Contents: $^1\text{H-NMR}$ -Spectroscopy, IR-Spectroscopy, Mass spectroscopy, UV-Spectroscopy (Sample preparation, theoretical background, interpretation of spectra), general laboratory techniques (Adding of liquids, refluxing, distillation, recrystallization, Chromatography, balloon technique, laboratory safety), analytical methods (Thin layer chromatography, performing the spectroscopic methods mentioned above)			
Teaching methods	Hours of attendance (Hours per week)	Forms of active participation	Workload (hours)
Lecture	2	Spectroscopy examination	Presence (L) 30 Pre-, post-preparation (L) 30 Presence (Lab)
Safety relevant lab training	10	Work safety exam, research on theoretical background, preparation and conduction of experiment (14-18 experiments)	<i>supervised lab training</i> 150 <i>self-study in lab</i> 60 Pre-, post-preparation (Lab) 40 Exam preparation and examination 50
Language offer of lecture		German, if required by circumstances: English	
Compulsory regular attendance		Lecture attendance is recommended, Lab training: yes	
Workload (total)		360 hours	12 CP
Length of module		One semester	
Examination		Practical examination (Presentation of theoretical background, experimental results and protocols)	
Lecture is offered		Every semester	
Applicability		Bachelor study program Chemistry	