Anhang 1: Bachelorstudium "Chemie und Molekulare Wissenschaften"

Das Studium beginnt im Herbstsemester

1. Studienjahr: Einführungsstudium 60 ECTS

	Veranstaltungen	1./2. Semester	Std. pro Woche	ECTS	Total ECTS
Modul 1. Studienjahr: Einführungsstudium	Allgemeine Chemie I	HS	3V + 1Ü	4.50	
	Allgemeine Chemie II	FS	3V + 1Ü	4.50	
	Praktikum Allgemeine Chemie I	HS	12P	9.00	
	Praktikum Allgemeine Chemie II	FS	8P	6.00	
	Programmieren für Naturwissenschaften	HS	2V + 1Ü	3.00	
	Mathematik I	HS	3V + 1Ü	4.00	
	Mathematik II	FS	3V + 1Ü	4.00	
	Statistik für Naturwissenschaften	FS	3V + 1Ü	4.00	
	Physik I	HS	4V + 1Ü	6.50	
	Physik II	FS	4V + 1Ü	6.50	
	Praktikum Physik	FS	4P	2.00	
	Einführung in die Chemie und Molekularen Wissenschaften	FS	2V	3.00	
	Zellbiologie I	HS	3V	3.00	
Total ECTS 1. Studienjahr					**60.00**

2. Studienjahr: 60 ECTS

	Veranstaltungen	3./4. Semester	Std. pro Woche	ECTS	Total ECTS
Modul 2. Studienjahr, Vorlesungen	Anorganische Chemie I	HS	3G	4.00	
	Anorganische Chemie II	FS	3G	4.00	
	Biochemie I	HS	3G	4.00	
	Biochemie II	FS	3G	4.00	
	Organische Chemie I	HS	3G	4.50	
	Organische Chemie II	FS	3G	4.50	
	Physikalische Chemie I	HS	3G	4.50	48.00
	Physikalische Chemie II	FS	3G	4.50	
	Symmetrielehre	HS	0.5 V	1.00	
	Quantenchemie	FS	3G	5.00	
	Spektroskopische Strukturaufklärung I	FS	3G	4.00	
	Wahlvorlesungen Chemie/Biochemie/ Lehrveranstaltungen fakultärer Fächer	HS/FS		4.00	
Modul 2. Studienjahr, Praktika	Praktikum Anorganische Chemie I	HS	9.5P	3.00	
	Praktikum Biochemie I	FS	8P	3.00	12.00
	Praktikum Organische Chemie I	HS	9.5P	3.00	
	Praktikum Physikalische Chemie I	FS	6P	3.00	
Total ECTS 2. Studienjahr					**60.00**

3. Studienjahr: 60 ECTS					
	Veranstaltungen	**5./6. Semester**	**Std. pro Woche**	**ECTS**	**Total ECTS**
Modul 3. Studienjahr, Vorlesungen	Anorganische Chemie III	HS	3G	4.00	38.00
	Anorganische Chemie IV	FS	2G	3.00	
	Biochemische Methoden I	HS	3G	3.00	
	Spektroskopische Strukturaufklärung II	HS	2G	3.00	
	Elementanalytik + Elektrochemie	FS	2G	3.00	
	Organische Chemie III	HS	3G	4.00	
	Organische Chemie IV	FS	2G	3.00	
	Physikalische Chemie III	HS	3G	4.00	
	Nuklearchemie	FS	2G	3.00	
	Wahlvorlesungen Chemie/Biochemie/ Lehrveranstaltungen fakultärer Fächer	HS/FS		8.00	
Modul 3. Studienjahr, Praktika	Praktikum Anorganische Chemie II	HS	8P	4.00	12.00
	Praktikum Organische Chemie II	HS	8P	4.00	
	Praktikum Physikalische Chemie II	HS	8P	4.00	
Modul Bachelor-Arbeit	Bachelor-Arbeit	FS		10.00	10.00
Total ECTS 3. Studienjahr					**60.00**

Legende:

V = Vorlesung
Ü = Übungen
P = Praktikum

G = Gemischt, Vorlesung und Übungen
HS = Herbstsemester
FS = Frühjahrssemester

Bern, 20. April 2021

Departement für Chemie und Biochemie
Der Studienleiter Chemie und Molekulare Wissenschaften:

Prof. Dr. Andreas Türler

Vom Studienausschuss genehmigt:

Bern, 4. Mai 2021

Im Namen der Phil.-nat. Fakultät
Der Dekan:

Prof. Dr. Zoltan Balogh

Anhang 2: Mastercurriculum in Chemistry and Molecular Sciences 90 ECTS

The master's studies in Chemistry and Molecular Sciences can begin either with the autumn term (HS) or the spring term (FS). Up to two specializations can be chosen. If none is chosen, students study under the "General Chemistry" program. Within each specialization at least 12 ECTS have to be chosen from the indicated core subject courses. The same goes for the "General Chemistry"-program. The remaining ECTS up to a total of 30 ECTS come from the non marked electives in the chosen specialization(s). Electives build a separate module and core subject courses cannot be compensated with electives.

Core Subject Courses (marked with X) and Electives (blank fields): 30 ECTS / Thesis: 60 ECTS										
			Specialization							
	Lectures / Exercises / Laboratory Courses	General Chemistry	Chemical Biology	Sustainable Chemistry	Advanced Synthesis	Nuclear- and Radiochemistry	Spectroscopy of Materials	Term	Hours/week	ECTS
At least 12 ECTS from "Core Subject Courses" per specialization; remaining ECTS up to a total of 30 ECTS from electives of the chosen specialization(s)	Advanced NMR I	X			X		X	HS	1	1.5
	Advanced Spectroscopy - non-linear properties, lasers, time-resolved spectroscopy	X					X	HS	2	3
	Applied Mass Spectrometry	X						HS	1	1.5
	Atomistic simulations of fluids and solids (not always offered)	X		X			X	HS	2	2.5
	Atmospheric and Aerosol Chemistry (not always offered)			X				HS	2	3
	Basic medicinal Chemistry	X	X					HS	1	1.5
	Chemical Biology I or Chemical Biology II (alternating)	X	X					HS	2	3
	Chemical Crystallography	X					X	HS	2	3
	Clinical Chemistry and Laboratory Medicine – an Introduction							HS	1	1.5
	Environmental Radionuclides and Nuclear Dating (not always offered)	X				X		HS	1	1.5
	Geochronology and Isotope Geochemistry (Earth Sciences, not always offered)					X		HS	2	3
	Heterogeneous Catalysis and Sustainable Chemistry	X		X				HS	2	3
	Introduction to the Physics & Chemistry of Surfaces	X		X			X	HS	2	3
	Molecular Electronics	X					X	HS	1	1.5
	Nuclear / Radiochemistry	X				X		HS	2	3
	Physical Properties and Synthesis of the Organic Nanoscale Systems	X			X		X	HS	3	4
	Principles of Nucleic Acids	X	X					HS	1	1.5
	Radicals in Organic Synthesis (this lecture alternates yearly with the lecture Synthesis of Natural Products)	X			X			HS	2	3
	Scientific Writing							HS	1.5	2
	Seminars at DCB	X	X	X	X	X	X	HS/FS	1	1.5
	Specialist Course - Carbon Cycle (offered irregularly, only until HS2023)			X				HS	4	4
	Specialist Course - Introduction to Medical Radiation Physics (Physics Master)					X		HS	3	4
	Supramolecular Chemistry and Applications of Lipids		X					HS	1	1.5
	Synthesis of Natural Products (this lecture alternates yearly with the lecture Radicals in Organic Synthesis)	X	X		X			HS	2	3
	Advanced Medicinal Chemistry	X	X					FS	1	1.5
	Applied Optical Spectroscopy in Chemical Biology		X					FS	1	1.5
	Drug Delivery and Drug Targeting	X						FS	1	1.5
	Enzyme Catalysis - Sustainable Strategies for Chemicals and Pharmaceuticals	X		X	X			FS	1	1.5
	Forensic Chemistry and Toxicology							FS	2	3
	Geological Disposal of Radioactive Waste (Earth Sciences, not always offered, block course)					X		FS	2*15	2.5
	Homogeneous Catalysis	X		X	X			HS	1	1.5
	Introduction to Organic Photochemistry	X		X	X			FS	1	1.5
	Introduction to Radiopharmaceutical Chemistry					X		FS	2	3
	Medicinal Inorganic Chemistry	X	X		X			FS	2	3
	Membrane Biochemistry							FS	2	3
	New Frontiers in Sustainable Organometallic Chemistry	X		X	X			FS	1	1.5
	Nucleic Acid Analogues	X	X					FS	1	1.5
	Process Chemistry (not always offered)				X			FS	1	1.5
	Lectures / Exercises / Laboratory Courses from other universities or bachelor programs							**Term**	**Hours/week**	**ECTS**
	Courses from other masters programs									
	University of Berne (Molecular Life Sciences Master)									
	University of Berne (Physics Master)									
	University of Fribourg (Chemistry Master)									
	Electives from bachelor program (a max. of 4.5 ECTS can be accredited)									
	Biochemie III (German)							HS	3	3
	Biochemische Methoden I (German)							HS	3	3
	Ethik und Philosophie der Biologie (German)							HS	2	2
	Genetik II (English)							HS	2	2
	Immunologie II (English)							HS	2	3
	Mikrobiologie I (German)							HS	2	2
	Zellbiologie II (German)							HS	1	1
	Biochemische Methoden II (English)							FS	3	3
	Biochemie IV (German)							FS	2	3
	Immunologie I (English)							FS	1	1
	Mikrobiologie II (German)							FS	1	1
Module "Master thesis" 60 ECTS	12 months duration									60

Bern, April 12th, 2022

Department of Chemistry and Biochemistry
The Director of Studies
Chemistry and Molecular Sciences:

Prof. Dr. Andreas Türler

Approved by the study comittee:

Bern, May 10th, 2022

In the name of the Faculty of Science
The Dean:

Prof. Dr. Zoltan Balogh

Anhang 3: Bachelor Minor "Chemie und Molekulare Wissenschaften"

Bachelor-Minor

Das Minorstudium beginnt mit dem Einführungsstudium im Herbst

1. Studienjahr: Einführungsstudium 15 ECTS

	Veranstaltungen	1./2. Semester	Std. pro Woche	ECTS	Total ECTS
1. Studienjahr: Einführungsstudium 15 ECTS	Allgemeine Chemie I	HS	3V + 1Ü	4.50	
	Allgemeine Chemie II	FS	3V + 1Ü	4.50	
	Praktikum Allgemeine Chemie Minor, inkl. Vorlesung Praktikumsvorbereitung	FS	8P	6.00	
Total ECTS 1. Studienjahr					**15.00**

2. Studienjahr: Minor 30 ECTS

	Veranstaltungen	3./4. Semester	Std. pro Woche	ECTS	Total ECTS
Modul Einführungs-studium	Modul Einführungsstudium 15 ECTC			15.00	
Aufbaumodul 2. Studienjahr, Vorlesungen	***drei der folgenden vier Vorlesungen sind obligatorisch (12 ECTS):***				
	Anorganische Chemie I	HS	3G	4.00	
	Organische Chemie I für Minor	HS	3G	4.00	
	Physikalische Chemie I für Minor	HS	3G	4.00	
	Spektroskopische Strukturaufklärung I (NMR, MS)	FS	3G	4.00	
Aufbaumodul 2. Studienjahr, Praktika	***eines der drei folgenden Praktika ist obligatorisch (3 ECTS):***				
	Praktikum Anorganische Chemie I	HS	9.5P	3.00	
	Praktikum Organische Chemie I	HS	9.5P	3.00	
	Praktikum Physikalische Chemie I	FS	6P	3.00	
Total ECTS 1.-2. Studienjahr					**30.00**

2.+3. Studienjahr: Minor 60 ECTS

	Veranstaltungen	3.-6. Semester	Std. pro Woche	ECTS	Total ECTS
Modul Einführungs-studium	Modul Einführungsstudium 15 ECTS			15.00	
Aufbaumodul 2.+3. Studienjahr, Vorlesungen	***obligatorische Vorlesungen (24 ECTS):***				
	Anorganische Chemie I	HS	3G	4.00	
	Anorganische Chemie II	FS	3G	4.00	
	Organische Chemie I für Minor	HS	3G	4.00	
	Organische Chemie II für Minor	FS	3G	4.00	
	Physikalische Chemie I für Minor	HS	3G	4.00	
	Physikalische Chemie II für Minor	FS	3G	4.00	
	Wahlvorlesungen (12-15 ECTS inkl. Wahlpraktikum):				
	Biochemie I	HS	3G	4.00	
	Biochemie II	FS	3G	4.00	
	Data Science Fundamentals	FS	2G	2.00	
	Einführung in die Chemie und Molekularen Wissenschaften	FS	2G	3.00	
	Elementanalytik + Elektrochemie	FS	2G	3.00	
	Quantenchemie	FS	3G	5.00	
	Spektroskopische Strukturaufklärung I	FS	3G	4.00	
	Spektroskopische Strukturaufklärung II	HS	2G	3.00	
	Symmetrielehre	HS	0.5V	1.00	
Aufbaumodul 2.+3. Studienjahr, Praktika	***zwei der drei folgenden Praktika sind obligatorisch (6-9 ECTS)***				
	Praktikum Anorganische Chemie I	HS	9.5P	3.00	
	Praktikum Organische Chemie I	HS	9.5P	3.00	
	Praktikum Physikalische Chemie I	FS	6P	3.00	
	Wahlpraktikum (12-15 ECTS inkl. Wahlvorlesungen)				
	Praktikum Biochemie I	FS	8P	3.00	
Total ECTS 1.-3. Studienjahr					**60.00**

Bern, 12. April 2022

Department für Chemie, Biochemie
und Pharmazie
Der Studienleiter
Chemie und Molekulare Wissenschaften:

Prof. Dr. Andreas Türler

Vom Studienausschuss genehmigt:

Bern, 12. Mai 2022

Im Namen der Phil.-nat. Fakultät
Der Dekan:

Prof. Dr. Zoltan Balogh

Anhang 3: Master Minor "Chemie und Molekulare Wissenschaften"

Master-Minor

The prerequisite for the Master Minor in Chemistry and Molecular Sciences of 30 ECTS is a Bachelor Minor in Chemistry of a minimum of 60 ECTS.

In accordance with the director of studies 30 ECTS can be chosen from the following lectures and lab-courses for the Master Minor in "Chemistry and Molecular Sciences". Please note, that courses that have already been taken during the bachelors program cannot be taken again.

Semester 1-3 - Master Minor: 30 ECTS						
	Lecture Courses Bachelor-Level	**Semester 1-3**	**h/week**	**ECTS**	**Total ECTS**	**Prerequisites**
	Anorganische Chemie III	HS	3G	4.00		
	Anorganische Chemie IV	FS	2G	3.00		
	Biochemie I	HS	3G	4.00		
	Biochemie II	FS	3G	4.00		
	Biochemie III	HS	2V	3.00		
	Biochemie IV	FS	2G	3.00		
	Biochemische Methoden I	HS	3G	3.00		
	Biochemische Methoden II	FS	3G	3.00		
	Data Science Fundamentals	FS	2G	2.00		
	Einführung in die Chemie und Molekularen Wissenschaften	FS	2G	3.00		
	Elementanalytik + Elektrochemie	FS	2G	3.00		
	Nuklearchemie	FS	2G	3.00		
	Organische Chemie III	HS	3G	4.00		
	Organische Chemie IV	FS	2G	3.00		
	Physikalische Chemie III	HS	3G	4.00		
	Quantenchemie	FS	3G	5.00		
	Spektroskopische Strukturaufklärung I	FS	3G	4.00		
	Spektroskopische Strukturaufklärung II	HS	2G	3.00		
	Symmterielehre	HS	0.5V	1.00		
Modul Lectures	**Lecture Courses Master-Level**					
	Advanced NMR I	HS	1V	1.50		Spectroscopic Methods for Structure Elucidation I + II, namely NMR
	Applied Electrochemistry	HS	2V	3.00		Electrochemistry knowledge advantageous
	Applied Mass Spectrometry	HS	1V	1.50		Spectroscopic Methods for Structure Elucidation I + II, namely MS
	Atmospheric and Aerosol Chemistry (not always offered)	HS	2V	3.00		
	Basic Medicinal Chemistry	HS	1V	1.50		
	Chemical Crystallography	HS	2V	3.00		Symmetry
	Environmental Radionuclides and Nuclear Dating (not always offered)	HS	1V	1.50		
	Forensic Chemistry and Toxicology	FS	2V	3.00		Knowledge of basic stereo-chemistry and structure elucidation (MS) is necessary.
	Heterogeneous Catalysis and Sustainable Chemistry	HS	2V	3.00		Electrochemistry knowledge advantageous
	Introduction to the Physics & Chemistry of Surfaces	HS	2V	3.00		
	Principles of Nucleic Acids	HS	1V	1.50		
Module Lab Courses	**Lab Courses Bachelor-Level**					
	Praktikum Anorganische Chemie I	HS	9.5P	3.00		
	Praktikum Organische Chemie I	HS	9.5P	3.00		
	Praktikum Physikalische Chemie I	FS	6P	3.00		
	Praktikum Biochemie I	FS	8P	3.00		
	Praktikum Anorganische Chemie II	HS	8P	4.00		
	Praktikum Organische Chemie II	HS	8P	4.00		
	Praktikum Physikalische Chemie II	HS	8P	4.00		
Total ECTS Semester 1-3 Master Minor					**30.00**	

HS = fall semester
FS = spring semester
Language: Most courses on the bachelor's level are taught in German. Courses on the master's level are taught in English.

Bern, April 12th, 2022

Department of Chemistry, Biochemistry and Pharmaceutical Sciences
The Director of Studies Chemistry and Molecular Sciences:

Prof. Dr. Andreas Türler

Approved by the study comittee:

Bern, May 10th, 2022

In the name of the Faculty of Science
The Dean:

Prof. Dr. Zoltan Balogh

Anhang 4: Chemie im Zusammenhang mit PHBern Studium

Vertiefungsprogramm Chemie für Studierende PHBern/Sekundarstufe I

Das Vertiefungsprogramm Chemie für Studierende PHBern/Sekundarschulstufe I setzt ein Fachstudium im Rahmen des Studiengangs Sekundarstufe I voraus. Das Vertiefungsprogramm gilt als bestanden, wenn der Durchschnitt aus der Gesamtsumme Note x ECTS geteilt durch 12 ECTS mindestens 4.0 ist.

Das Vertiefungsstudium Chemie 12 ECTS für Studierende PHBern/Sekundarstufe I beginnt im Herbstsemester

Vertiefungsprogramm Chemie 12 ECTS für Studierende PHBern/Sekundarstufe I					
	Veranstaltungen	**Semester**	**Std. pro Woche**	**ECTS**	**Total ECTS**
	Anorganische Chemie I, inkl. Übungen	HS	2V + 1Ü	4.00	
	Organische Chemie I für Minor	HS	2V + 1Ü	4.00	
	Physikalische Chemie I für Minor	HS	2V + 1Ü	4.00	
Total ECTS					**12.00**

Bern, 4. März 2020

Departement für Chemie und Biochemie
Der Studienleiter Chemie und Molekulare Wissenschaften:

Prof. Dr. Andreas Türler

Vom Studienausschuss genehmigt:

Bern, 10. März 2020

Im Namen der Phil.-nat. Fakultät
Der Dekan:

Prof. Dr. Zoltan Balogh

Attachment 5 ("Anhang 5"): DCBP Graduate Program (as of HS2022)

The duration of the thesis is 3-4 years and comprises the successful completion of a research project in a research group at the DCBP, the accumulation of a minimum of 30 ECTS

For each student, a personal folder serves to keep an overview of the completed requirements and a summary sheet recording the accumulation of credits (line items signed by the PI). ECTS are given once per year by the supervisor of the thesis. The thesis supervisor confirms the successful completion of the program to the director of studies at the end of the PhD program.

Participation in the research group's (weekly) seminar (research update, literature seminar, problem session, journal clubs etc. as defined by each research group)

To obtain the credits, a list of group seminar's dates and attendance, signed by the PI must be filed.

Ca. 14 group seminars per semester, 1 ECTS per semester..... 6 ECTS

Attendance of lectures of invited speakers at the DCBP, such as PhD-Program lectures, Departementseminare, Berner Chemische Gesellschaft, Biochemische Vereinigung Bern. Seminars outside the DCBP can also be included

Ca. 10 lectures per semester, 0.5 ECTS per semester..... 3 ECTS

To obtain the credits, the student must present a list of seminars attended during the semester. Once a year, the list must be signed and accepted by the student's PI.

Attendance of summer schools/conferences, poster/talk presentations..... 6 ECTS

attendance $\geq$ 3 days: 1 ECTS
attendance 2 days: 0.5 ECTS
attendance 1 day: 0.25 ECTS
presentations of a Poster or talk (1st author/presenter only): 1 ECTS

To obtain the attendance ECTS, the student must submit proof of participation, e.g. the school/conference program or an attendance certificate. To obtain the presentation/poster ECTS, a conference program with proof of participation and the lecture/poster abstract must be filed. The PI signs for the according ECTS. Presentation and attendance ECTS may be earned from the same event.

Teaching in BSc-level laboratory courses (1 "Praktikum" per year), 4.5 ECTS per year..... 13.5 ECTS

The official list of "Praktikumsassistenten" permits award of the associated credits.

1st year Graduate Student Symposium..... 1.5 ECTS

TOTAL: 30 ECTS

Bern, April 12th, 2022

Department of Chemistry, Biochemistry and Pharmaceutical Sciences
The Director of Studies Chemistry and Molecular Sciences:

Prof. Dr. Andreas Türler

Approved by the study committee:
Bern, May 10th, 2022

In the name of the Faculty of Science
The Dean:

Prof. Dr. Zoltan Balogh