

Subdivided Module Catalogue for the Subject

Chemistry

as a Master's with 1 major with the degree "Master of Science" (120 ECTS credits)

Examination regulations version: 2016 Responsible: Faculty of Chemistry and Pharmacy



Learning Outcomes

German contents and learning outcome available but not translated yet.

Wissenschaftliche Befähigung

- Nach erfolgreichem Abschluss des Master-Studiums verfügen die Absolvent/innen über vertiefte Kenntnisse des wissenschaftlichen Arbeitens in der Forschung und Anwendung der Chemie. Sie haben sich dabei auf drei der angebotenen Schwerpunkte (Anorganische Chemie, Organische Chemie, Physikalische Chemie, Biochemie, Funktionsmaterialien, Homogenkatalyse, Medizinische Chemie, Supramolekulare Chemie oder Theoretische Chemie) spezialisiert, indem sie die diesen Schwerpunkten zugeordneten Module (Vorlesungen, Seminare und Praktika) absolviert haben. Sie besitzen neben den vertieften fachspezifischen Kenntnissen auch Abstraktionsvermögen, analytisches Denken, Problemlösungskompetenz und die Fähigkeit, komplexe Zusammenhänge zu strukturieren. Die Grundlagen hierfür werden in den o.g. Veranstaltungen vermittelt und mittels Klausuren, Kolloquien, Protokollen oder Referaten überprüft.
- Die Absolvent/innen besitzen nach Erlangung des Masters die Kompetenzen, ein gegebenes wissenschaftliches Problem planvoll und nach den Regeln der guten wissenschaftlichen Praxis zu bearbeiten, darunter unter anderem sich unter Zuhilfenahme der Kenntnisse in der Literaturrecherche in neue Aufgabengebiete einzuarbeiten und Veröffentlichungen in internationalen Journalen im Kontext der wissenschaftlichen Literatur kritisch einzuordnen und zu bewerten. Sie sind in der Lage, das erworbene Wissen selbständig anzuwenden und auf neue Aufgabenstellungen zu übertragen, Experimente auf Grundlage chemischer Methoden strukturiert und in vorgegebenem zeitlichem Rahmen durchzuführen und zu dokumentieren, die ermittelten Daten kritisch zu analysieren und die Ergebnisse schriftlich zusammenzufassen. Außerdem können Sie ihre selbständig durchgeführten Projekte vor einem Publikum darstellen und die gewählte Methodik in fachlicher Diskussion verteidigen. Vermittelt werden diese Fähigkeiten im Rahmen von Forschungspraktika und der Master-Arbeit. Das Erreichen der Ziele wird durch Praktikums-Protokolle, die Master-Thesis sowie die Präsentation der entsprechenden Ergebnisse überprüft.

Befähigung zur Aufnahme einer Erwerbstätigkeit

- Die Absolvent/innen besitzen Abstraktionsvermögen, Problemlösungskompetenz und die Fähigkeit, komplexe Zusammenhänge in analytischer Herangehensweise zu strukturieren. Die Grundlagen hierfür werden in Vorlesungen, Seminaren und Praktika der verschiedenen Disziplinen der Chemie vermittelt und mittels Klausuren, Kolloquien, Referaten oder Protokollen überprüft.
- Die Absolvent/innen sind in der Lage, ihr theoretisches Wissen in der Praxis anzuwenden und können mit den erlernten wissenschaftlichen Methoden auch unbekannte Probleme aus unterschiedlichen fachlichen Perspektiven analysieren und bearbeiten. Sie sind es dabei gewohnt, in einem Team aus Kommiliton/innen, Kolleg/innen und/oder Wissenschaftler/innen konstruktiv und zielorientiert zusammenzuarbeiten. Der Praxisbezug ist durch einen hohen Anteil an Laborpraktika sowohl Kurspraktika als auch individuelle Forschungspraktika und nicht zuletzt durch die Master-Arbeit gegeben. Der Erfolg wird durch Praktikumsprotokolle und die Master-Thesis überprüft.
- Als teilweise interdisziplinärer Studiengang fördert der Master-Studiengang Chemie, bei entsprechender Wahl der Schwerpunktkombination, von Beginn an fachübergreifendes Lernen,
 Denken und Verstehen. Ein Teil der Lehrveranstaltungen wird auf Englisch angeboten und
 fördert somit die Kommunikations-Kompetenz in dieser international anerkannten Wissenschafts-Sprache. Diese auf dem breiten Fundament der im Bachelor Chemie erworbenen Kompetenzen aufbauende, vertiefte und spezialisierte Wissensbasis und Methodenkompetenz sowie die eingeübte Teamfähigkeit und Weltoffenheit können die Absolvent/innen gewinnbringend in ihrer Berufspraxis einsetzen.



Persönlichkeitsentwicklung

- Die Absolvent/innen sind bereit und in der Lage, Verantwortung für ihr Handeln und für andere zu übernehmen. Sie verfügen über die kommunikativen Fähigkeiten, komplexe Sachverhalte und Standpunkte im Team zu entwickeln, zielgruppengerecht darzustellen und reflektiert gegenüber abweichenden Positionen zu verteidigen und weiterzuentwickeln. Diese Fähigkeiten zur Übernahme von Verantwortung, Diskussionsbereitschaft und Teamfähigkeit sowie Eigenverantwortung und Selbständigkeit, erlernen und beweisen die Studierenden in erster Linie in den selbständig angefertigten Praktikums-Protokollen und der Abschlussarbeit, deren Bewertung zeigt, in welchem Umfang die Ziele erreicht wurden.
- Das Curriculum des Masters Chemie ermöglicht den Studierenden, ein Erasmus-Studium oder ein Laborpraktikum an einer ausländischen Universität durchzuführen. Der Prüfungsausschuss Chemie wacht dabei über die Einhaltung der wissenschaftlichen Standards und ein adäquates Projekt. Die Studierenden erwerben dadurch wertvolle persönliche Erfahrungen und erweitern ihren sprachlichen und kulturellen Horizont.
- Erst die durch Übung und Ermutigung erlangte Fähigkeit zu Kritik und Reflexion (inklusive Selbstreflexion und Selbstkritik) ermöglicht eigenständiges Denken und selbstbestimmtes Handeln, das vor sich selbst und anderen begründet ist und rational kommuniziert werden kann. Diese Kritikfähigkeit und Fähigkeit zur Selbstreflexion erlernen die Studierenden durch das Feedback der Lehrenden und Studierenden zu ihren Seminarvorträgen, die im Masterstudium vermehrt stattfinden.

Befähigung zum gesellschaftlichen Engagement

• Absolvent/innen des Master Chemie werden durch ihr Studium in die Lage versetzt, zu gesellschaftlich kritisch und kontrovers diskutierten Fragen zu chemischen Themen, wissenschaftlich fundiert und begründet Position zu beziehen. Sie sind sich darüber hinaus bei ihrer Arbeit ihrer ethischen Verantwortung gegenüber der Gesellschaft und der Umwelt bewusst und reflektieren ihr Handeln stets kritisch. Vor allem im Rahmen der individuellen, mehrwöchigen bis ganzsemestrigen Laborpraktika und der Abschlussarbeit setzen sich die Studierenden mit aktuellen Forschungsthemen selbständig und kritisch auseinander. Hierzu gehört auch die Reflexion möglicher Folgen der eigenen Arbeit für Umwelt und Gesellschaft sowie das Nachdenken über die damit zusammenhängenden ethischen Fragestellungen. Die Bewertungen der Praktikums-Protokolle und der Abschlussarbeit zeigen, in welchem Umfang die Ziele erreicht wurden.

Abbreviations used

Course types: $\mathbf{E} = \text{field trip}$, $\mathbf{K} = \text{colloquium}$, $\mathbf{O} = \text{conversatorium}$, $\mathbf{P} = \text{placement/lab course}$, $\mathbf{R} = \text{project}$, $\mathbf{S} = \text{seminar}$, $\mathbf{T} = \text{tutorial}$, $\ddot{\mathbf{U}} = \text{exercise}$, $\mathbf{V} = \text{lecture}$

Term: **SS** = summer semester, **WS** = winter semester

Methods of grading: **NUM** = numerical grade, **B/NB** = (not) successfully completed

Regulations: **(L)ASPO** = general academic and examination regulations (for teaching-degree programmes), **FSB** = subject-specific provisions, **SFB** = list of modules

Other: **A** = thesis, **LV** = course(s), **PL** = assessment(s), **TN** = participants, **VL** = prerequisite(s)

Conventions

Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not creditable for bonus.

Notes

Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the method of assessment to be used in the current semester by two weeks after the start of the course at the latest and will communicate this in the customary manner.

Should the module comprise more than one graded assessment, all assessments will be equally weighted, unless otherwise stated below.

Should the assessment comprise several individual assessments, successful completion of the module will require successful completion of all individual assessments.

In accordance with

the general regulations governing the degree subject described in this module catalogue:

ASP02015

associated official publications (FSB (subject-specific provisions)/SFB (list of modules)):

15-Dec-2015 (2015-257)

This module handbook seeks to render, as accurately as possible, the data that is of statutory relevance according to the examination regulations of the degree subject. However, only the FSB (subject-specific provisions) and SFB (list of modules) in their officially published versions shall be legally binding. In the case of doubt, the provisions on, in particular, module assessments specified in the FSB/SFB shall prevail.



The subject is divided into

Abbreviation	Module title	ECTS credits	Method of grading	page
Compulsory Electives Focu	ses (75 ECTS credits)	l.		
Students must take three for fictions provisions) worth 25 EC tence 8 FSB.	ocuses (focuses 1 through 3 pursuant to Section 3 Subsection 2 TS credits each; provisions on available combinations are set o	Sentence out in Section	2 FSB (subject- on 3 Subsectio	speci- n 2 Sei
Inorganic Chemistry (25 E	CTS credits)			
Compulsory Courses (20	ECTS credits)			
08-ACM1-161-m01	Advanced Inorganic Chemistry	10	NUM	17
08-ACPM-161-m01	Inorganic Chemistry practical course for advanced	10	B/NB	20
Compulsory Electives (5	ECTS credits)			•
08-ACM2-161-m01	Bioinorganic Chemistry	5	NUM	18
08-ACM3-161-m01	Solid state chemistry and inorganic materials	5	NUM	19
00 HVM2 464 mo4	Advanced organometallic chemistry and its application in ho-	_	NILIAA	,,
08-HKM2-161-m01	mogeneous catalysis	5	NUM	46
Organic Chemistry (25 EC	TS credits)			
Compulsory Courses (15	ECTS credits)			
08-OCM-SYNT-161-m01	08-OCM-SYNT-161-m01 Modern Synthetic Methods		NUM	61
08-OCM-AKP1-161-m01	Advanced Research Project Organic Chemistry	10	B/NB	57
Compulsory Electives (1	o ECTS credits)			
08-OCM-NAT-161-m01	Modern Aspects of Natural Product Chemistry and Biological Chemistry	5	NUM	60
	Organic Functional Materials	5	NUM	58
08-HKM1-152-m01	Organo- and Biocatalysis	5	NUM	44
08-SCM1-152-m01	Supramolecular Chemistry (Basics)	5	NUM	79
	Bioorganic Chemistry	5	NUM	81
	Basics and Applications of Quantum Chemistry	5	NUM	90
Physical Chemistry (25 EC				
Compulsory Courses (10				
08-PCM1a-161-m01	Laser Spectroscopy	5	NUM	63
08-PCM1b-161-m01	Advanced Physical Chemistry (Lab)	5	B/NB	65
Compulsory Electives (1			,	
	Statistical Mechanics and Reaction Dynamics	5	NUM	67
	Nanoscale Materials	5	NUM	69
08-PCM4-161-m01	Ultrafast spectroscopy and quantum-control	5	NUM	71
08-PCM5-161-m01	Physical Chemistry of Supramolecular Assemblies	5	NUM	73
08-PCM6-161-m01	Physical Chemistry (Advanced Lab)	5	B/NB	75
08-TCM1-161-m01	Selected Topics in Theoretical Chemistry	5	NUM	88
	Basics and Applications of Quantum Chemistry	5	NUM	90
Biochemistry (25 ECTS cre]	110111)
Compulsory Courses (15				-
08-BC-MOLMC-161-	Molecular Biology for Advanced Students	5	NUM	23
08-BC-MOLP-152-m01	Molecular Biology laboratory course	10	NUM	2.
Compulsory Electives (1		10	INOINI	24



08-BC-VPMM-161-m01	10	NUM	26	
08-BC-VPPD-161-m01	Practical course "Protein Degradation in Eukaryotes" for advan-	40	NUM	
08-BC-VPPD-161-M01	ced students	10	NUM	27
08-BC-VPRB-161-m01	Practical course "RNA Biochemistry" for advanced students	10	NUM	28
08-BC-VPSB-161-m01	Practical course "Structural Biology" for advanced students	10	NUM	29
08-ACM2-161-m01	08-ACM2-161-m01 Bioinorganic Chemistry			
08-HKM1-152-m01	Organo- and Biocatalysis	5	NUM	44
08-OCM-NAT-161-m01	Modern Aspects of Natural Product Chemistry and Biological Chemistry	5	NUM	60
08-MCM3-152-m01	Drug design	5	NUM	56
08-PH-KAC-152-m01	Clinical-analytical Chemistry	5	NUM	77
08-PH-KACP-152-m01	Practical course of clinical-analytical Chemistry	5	B/NB	78
Functional Materials (25	ECTS credits)			
Compulsory Courses (20	ECTS credits)			
08-FU-MaWi1-152-m01	Material Science 1 (Basic introduction)	5	NUM	36
08-FMM-PA-161-m01	Project Work	5	B/NB	35
08-0CM-FM-161-m01	Organic Functional Materials	5	NUM	58
08-FMM-MP-161-m01	Lab Course Material Science	5	B/NB	34
Compulsory Electives (5	ECTS credits)			,
08-FU-MaWi2-152-m01	Material Science 2 (The Material Groups)	5	NUM	38
08-FU-NT-152-m01	Chemically and bio-inspired Nanotechnology for Material Synthesis	5	NUM	42
o8-FU-Mo-				
MaV-152-mo1	Molecular Materials (Lecture)	5	NUM	40
03-FU-PM1-152-m01	Polymer Chemistry 1 (Lecture and Practical Course)	5	NUM	13
03-FU-PM2-161-m01	Polymers II	5	NUM	14
08-PCM3-161-m01	Nanoscale Materials	5	NUM	69
08-SCM1-152-m01	Supramolecular Chemistry (Basics)	5	NUM	79
o8-ACM3-161-mo1	Solid state chemistry and inorganic materials	5	NUM	19
Homogeneous Catalysis (25 ECTS credits)			
Compulsory Courses (20	ECTS credits)			
08-HKM1-152-m01	Organo- and Biocatalysis	5	NUM	44
08-HKM2-161-m01	Advanced organometallic chemistry and its application in homogeneous catalysis	5	NUM	46
08-HKM3AC-161-m01	Practical course "Homogeneous catalysis in Inorganic Che- mistry"	5	B/NB	47
08-HKM3OC-161-m01	Practical course "Homogeneous catalysis in Organic Che- mistry"	5	B/NB	48
Compulsory Electives (5	l '			
08-HKM4-161-m01	Advanced transition metal chemistry	5	NUM	49
08-PCM2-161-m01	Statistical Mechanics and Reaction Dynamics	5	NUM	67
	Modern Synthetic Methods	5	NUM	61
08-TCM2-161-m01	Basics and Applications of Quantum Chemistry	5	NUM	90
03-FU-PM1-152-m01	Polymer Chemistry 1 (Lecture and Practical Course)	5	NUM	13
Medicinal Chemistry (25		,		



08-MCM1-161-m01	Practical course medicinal chemistry	10	B/NB	53
08-MCM3-152-m01	Drug design	5	NUM	56
Compulsory Courses (10	ECTS credits)		•	
08-MCM2a-161-m01	Pharmaceutical/Medicinal Chemistry 1	5	NUM	54
08-MCM2b-161-m01	Pharmaceutical/Medicinal Chemistry 2	5	NUM	55
08-MBC-MSP-161-m01	Mass-Spectrometry and Proteomics	5	NUM	51
Supramolecular Chemist	ry (25 ECTS credits)			
Compulsory Courses (10	ECTS credits)			
08-SCM1-152-m01	Supramolecular Chemistry (Basics)	5	NUM	79
08-SCM2-161-m01	Supramolecular Chemistry (Practical Course)	5	B/NB	80
Compulsory Electives (1	5 ECTS credits)			
08-SCM3-152-m01	Bioorganic Chemistry	5	NUM	81
08-SCM4-161-m01	Supramolecular Chemistry (Advanced Lab)	5	B/NB	83
08-PCM5-161-m01	Physical Chemistry of Supramolecular Assemblies	5	NUM	73
08-ACM2-161-m01	Bioinorganic Chemistry	5	NUM	18
08-TCM2-161-m01	Basics and Applications of Quantum Chemistry	5	NUM	90
08-0CM-FM-161-m01	Organic Functional Materials	5	NUM	58
08-PCM3-161-m01	Nanoscale Materials	5	NUM	69
Theoretical Chemistry (2)	I I	,		9
Compulsory Courses (15				
08-TCM2-161-m01	Basics and Applications of Quantum Chemistry	5	NUM	90
08-TCM3-161-m01	Numerical Methods and Programming	5	NUM	92
08-TCM4-161-m01	Quantum Dynamics	5	NUM	94
Compulsory Electives (1	<u> </u>	,	1.0	74
08-TCM1-161-m01	Selected Topics in Theoretical Chemistry	5	NUM	88
08-TCAP1-161-m01	Theoretical Chemistry - Project course quantum chemistry	5	B/NB	84
08-TCAP2-161-m01	Theoretical Chemistry - Project course quantum dynamics	5	B/NB	86
08-MCM3-152-m01	Drug design	5	NUM	56
Additional qualifications (1	,	I WOM	
•	fications Compulsory Electives Focuses (5 ECTS credits)			
In the sub-area "Zusätzlio	he Kompetenzen aus den Schwerpunkten" ("Additional Skills fro	om the Foo	us Area"), stud	lents
may use a module of thei	r choice from the Focus area that they are not using in the area o	f mandato	ry electives 1.	1
08-BC-MOLP-152-m01			l num	
	Molecular Biology laboratory course	10		24
08-HKM1-152-m01	Organo- and Biocatalysis	10 5	NUM	24 44
	Organo- and Biocatalysis Drug design			<u> </u>
08-HKM1-152-m01 08-MCM3-152-m01 08-PH-KAC-152-m01	Organo- and Biocatalysis Drug design Clinical-analytical Chemistry	5	NUM NUM	44
08-HKM1-152-m01 08-MCM3-152-m01	Organo- and Biocatalysis Drug design Clinical-analytical Chemistry Practical course of clinical-analytical Chemistry	5	NUM NUM	44 56
08-HKM1-152-m01 08-MCM3-152-m01 08-PH-KAC-152-m01	Organo- and Biocatalysis Drug design Clinical-analytical Chemistry	5 5 5	NUM NUM	44 56 77
08-HKM1-152-m01 08-MCM3-152-m01 08-PH-KAC-152-m01 08-PH-KACP-152-m01	Organo- and Biocatalysis Drug design Clinical-analytical Chemistry Practical course of clinical-analytical Chemistry	5 5 5 5	NUM NUM NUM B/NB	44 56 77 78
08-HKM1-152-m01 08-MCM3-152-m01 08-PH-KAC-152-m01 08-PH-KACP-152-m01 08-SCM3-152-m01	Organo- and Biocatalysis Drug design Clinical-analytical Chemistry Practical course of clinical-analytical Chemistry Bioorganic Chemistry	5 5 5 5 5	NUM NUM NUM B/NB NUM	44 56 77 78 81
08-HKM1-152-m01 08-MCM3-152-m01 08-PH-KAC-152-m01 08-PH-KACP-152-m01 08-SCM3-152-m01	Organo- and Biocatalysis Drug design Clinical-analytical Chemistry Practical course of clinical-analytical Chemistry Bioorganic Chemistry Supramolecular Chemistry (Basics)	5 5 5 5 5	NUM NUM NUM B/NB NUM NUM	44 56 77 78 81 79
08-HKM1-152-m01 08-MCM3-152-m01 08-PH-KAC-152-m01 08-PH-KACP-152-m01 08-SCM3-152-m01 08-SCM1-152-m01 08-FU-MoMaV-152-m01	Organo- and Biocatalysis Drug design Clinical-analytical Chemistry Practical course of clinical-analytical Chemistry Bioorganic Chemistry Supramolecular Chemistry (Basics) Molecular Materials (Lecture) Chemically and bio-inspired Nanotechnology for Material Syn-	5 5 5 5 5 5 5	NUM NUM NUM B/NB NUM NUM	44 56 77 78 81 79 40
08-HKM1-152-m01 08-MCM3-152-m01 08-PH-KAC-152-m01 08-PH-KACP-152-m01 08-SCM3-152-m01 08-SCM1-152-m01 08-FU-M0MaV-152-m01 08-FU-NT-152-m01	Organo- and Biocatalysis Drug design Clinical-analytical Chemistry Practical course of clinical-analytical Chemistry Bioorganic Chemistry Supramolecular Chemistry (Basics) Molecular Materials (Lecture) Chemically and bio-inspired Nanotechnology for Material Synthesis	5 5 5 5 5 5 5	NUM NUM NUM B/NB NUM NUM NUM	44 56 77 78 81 79 40
08-HKM1-152-m01 08-MCM3-152-m01 08-PH-KAC-152-m01 08-PH-KACP-152-m01 08-SCM3-152-m01 08-SCM1-152-m01 08-FU-MoMaV-152-m01 08-FU-NT-152-m01	Organo- and Biocatalysis Drug design Clinical-analytical Chemistry Practical course of clinical-analytical Chemistry Bioorganic Chemistry Supramolecular Chemistry (Basics) Molecular Materials (Lecture) Chemically and bio-inspired Nanotechnology for Material Synthesis Material Science 1 (Basic introduction)	5 5 5 5 5 5 5 5	NUM NUM NUM B/NB NUM NUM NUM NUM NUM	44 56 77 78 81 79 40 42



0.8-P.CM1:b-16-mot Advanced Physical Chemistry (Lab) 5 B/NB 65 0.8-P.CM2:161-mot Statistical Mechanics and Reaction Dynamics 5 NUM 67 0.8-P.CM3:161-mot Annoscale Materials 5 NUM 71 0.8-P.CM5:161-mot Physical Chemistry of Supramolecular Assemblies 5 NUM 73 0.8-P.CM6:161-mot Physical Chemistry (Advanced Lab) 5 B/NB 75 0.8-P.CM6:161-mot Basics and Applications of Quantum Chemistry 5 NUM 90 0.8-P.CM6:161-mot Numerical Methods and Programming 5 NUM 92 0.8-P.CM6:161-mot Numerical Methods and Programming 5 NUM 92 0.8-P.CM6:161-mot Davide Methods 8 Numerical Methods 5 NUM 92 0.8-P.CM6:161-mot Discovered Chemistry Project course quantum dhemistry 5 NUM 88 0.8-P.CM7:161-mot Advanced Inorganic Chemistry 9 NUM 12 NUM 12 0.8-CM7M:161-mot Advanced Inorganic Chemistry					
08-PCM3-161-mot Nanoscale Materials 5 NUM 69 08-PCM4-161-mot Ultrafast spectroscopy and quantum-control 5 NUM 73 08-PCM6-161-mot Physical Chemistry of Supramolecular Assemblies 5 NUM 73 08-PCM6-161-mot Physical Chemistry Odyantum Chemistry 5 NUM 90 08-TCM3-161-mot Saciss and Applications of Quantum Chemistry 5 NUM 90 08-TCM3-161-mot Numerical Methods and Programming 5 NUM 90 08-TCM3-161-mot Oand Chemistry 5 NUM 90 08-TCM3-161-mot Theoretical Chemistry 5 NUM 88 08-TCM3-161-mot Theoretical Chemistry - Project course quantum dynamics 5 B/NB 84 08-ACM1-161-mot Inceptical Chemistry - Project course quantum dynamics 5 B/NB 84 08-ACM3-161-mot Advanced Inorganic Chemistry 10 NUM 17 08-ACM3-161-mot Advanced Research Project Course quantum dynamics 5 NUM 18 08-CM-SVPTT-161-m	08-PCM1b-161-m01	Advanced Physical Chemistry (Lab)	5	B/NB	65
08-PCM4-161-mo1 Physical Chemistry of Supramolecular Assemblies 5 NUM 73 08-PCM5-161-mo1 Physical Chemistry of Supramolecular Assemblies 5 NUM 73 08-PCM6-161-mo1 Physical Chemistry (Supramolecular Assemblies 5 NUM 73 08-PCM6-161-mo1 Physical Chemistry (Advanced Lab) 5 B/NB 75 08-PCM6-161-mo1 Numerical Methods and Programming 5 NUM 90 08-PCM4-161-mo1 Quantum Dynamics 7 NUM 88 08-PCM4-161-mo1 Theoretical Chemistry - Project course quantum chemistry 7 NUM 88 08-PCM4-161-mo1 Theoretical Chemistry - Project course quantum dynamics 7 B/NB 86 08-PCM5-161-mo1 Theoretical Chemistry - Project course quantum dynamics 8 B/NB 86 08-PCM5-161-mo1 Theoretical Chemistry - Project course quantum dynamics 9 B/NB 86 08-PCM5-161-mo1 Solid state Chemistry - Project course quantum dynamics 9 B/NB 86 08-PCM5-161-mo1 Solid state Chemistry - Project course quantum dynamics 9 B/NB 86 08-PCM5-161-mo1 Solid state Chemistry 9 NUM 18 08-PCM5-161-mo1 Solid state Chemistry 9 NUM 19 08-PCM5-161-mo1 Advanced Inorganic Chemistry 9 NUM 19 08-PCM5-161-mo1 Advanced Research Project Organic Chemistry 10 B/NB 57 08-PCM5-161-mo1 Advanced Research Project Organic Chemistry 10 B/NB 57 08-PCM5-161-mo1 Organic Functional Materials 5 NUM 23 08-PCM5-161-mo1 Organic Functional Materials 5 NUM 23 08-PCM5-161-mo1 Organic Functional Materials 5 NUM 23 08-PCM5-161-mo1 Practical course "Protein Degradation in Eukaryotes" for advanced students 10 NUM 26 08-PCM5-161-mo1 Practical course "Protein Degradation in Eukaryotes" for advanced students 10 NUM 27 08-PCM5-161-mo1 Practical course "Protein Degradation in Eukaryotes" for Advanced students 10 NUM 28 08-PCM5-161-mo1 Practical course "Protein Degradation in Eukaryotes" for Advanced Students 10 NUM 29 08-PCM5-161-mo1 Practical course "Protein Degradation in Eukaryotes" for Advanced Students 10 NUM 29 08-PCM5-161-mo1 Practical course "Protein Degradation in Protein Protein Protein Protein Prot	08-PCM2-161-m01	Statistical Mechanics and Reaction Dynamics	5	NUM	67
08-PCM5-161-mon1 Physical Chemistry of Supramolecular Assemblies 5 NUM 73 08-PCM6-161-mon1 Physical Chemistry (Advanced Lab) 5 B/NB 75 08-TCM2-161-mon1 Basics and Applications of Quantum Chemistry 5 NUM 90 08-TCM3-161-mon1 Numerical Methods and Programming 5 NUM 92 08-TCM4-161-mon1 Selected Topics in Theoretical Chemistry 5 NUM 89 08-TCM2-161-mon1 Theoretical Chemistry - Project course quantum chemistry 5 B/NB 84 08-TCAP2-161-mon1 Theoretical Chemistry - Project course quantum dynamics 5 B/NB 86 08-ACM3-161-mon1 Inorganic Chemistry Project course quantum dynamics 5 B/NB 86 08-ACM3-161-mon1 Inorganic Chemistry Project course quantum dynamics 5 B/NB 86 08-ACM3-161-mon1 Inorganic Chemistry Project course quantum dynamics 5 B/NB 86 08-ACM3-161-mon1 Inorganic Chemistry Project course quantum dynamics 5 NUM 17 08-ACM3-161-mon1	08-PCM3-161-m01	Nanoscale Materials	5	NUM	69
08-PCM6-161-mo1 Physical Chemistry (Advanced Lab) 5 B/NB 73 08-TCM2-161-mo1 Basics and Applications of Quantum Chemistry 5 NUM 90 08-TCM3-161-mo1 Numerical Methods and Programming 5 NUM 92 08-TCM3-161-mo1 Quantum Dynamics 5 NUM 94 08-TCM1-161-mo1 Selected Topics in Theoretical Chemistry 5 NUM 94 08-TCAP1-161-mo1 Theoretical Chemistry - Project course quantum chemistry 5 B/NB 84 08-TCAP2-161-mo1 Theoretical Chemistry - Project course quantum dynamics 5 NUM 17 08-TCAP2-161-mo1 Theoretical Chemistry - Project course quantum dynamics 5 NUM 17 08-ACM2-161-mo1 Inorganic Chemistry - Project course quantum dynamics 5 NUM 17 08-ACM2-161-mo1 Inorganic Chemistry - Project course quantum dynamics 5 NUM 17 08-ACM2-161-mo1 Inorganic Chemistry - Project course quantum dynamics 5 NUM 17 08-ACM2-161-mo1 Inorganic Chemistry - Project course quantum dynamics 5 NUM 18 08-ACM2-161-mo1 Inorganic Chemistry - Project course quantum dynamics 5 NUM 18 08-ACM2-161-mo1 Solid state chemistry practical course for advanced 10 B/NB 20 08-ACM3-161-mo1 Solid state chemistry and inorganic materials 5 NUM 19 08-OCM-NYT-161-mo1 Advanced Research Project Organic Chemistry 10 B/NB 57 08-OCM-NAT-161-mo1 Advanced Research Project Organic Chemistry 10 B/NB 57 08-OCM-MNT-161-mo1 Organic Functional Materials 5 NUM 23 08-BC-WPRM-161-mo1 Practical course Molecular Machines' for advanced students 5 NUM 23 08-BC-WPRM-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 26 08-BC-WPRM-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 28 08-BC-WPRM-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 29 08-BC-WPRM-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 29 08-BC-WPRM-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 29 08-BC-WPRM-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 29 08-BC-WPRM-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 29 08-BC-WPRM-161-mo1 Practical course "RNA Biochemistry"	08-PCM4-161-m01	Ultrafast spectroscopy and quantum-control	5	NUM	71
08-TCM2-161-mo1	08-PCM5-161-m01	Physical Chemistry of Supramolecular Assemblies	5	NUM	73
08-TCM3-161-mo1	08-PCM6-161-m01	Physical Chemistry (Advanced Lab)	5	B/NB	75
08-TCM4-161-mo1 Quantum Dynamics 5 NUM 94 08-TCM1-161-mo1 Selected Topics in Theoretical Chemistry 5 NUM 88 08-TCAP1-161-mo1 Theoretical Chemistry - Project course quantum chemistry 5 B/NB 88 08-TCAP1-161-mo1 Theoretical Chemistry - Project course quantum chemistry 5 B/NB 86 08-ACM1-161-mo1 Advanced Inorganic Chemistry - Project course quantum dynamics 5 B/NB 86 08-ACM1-161-mo1 Inorganic Chemistry - Project course quantum dynamics 5 B/NB 86 08-ACM1-161-mo1 Inorganic Chemistry - Project course quantum dynamics 5 B/NB 86 08-ACM1-161-mo1 Inorganic Chemistry - Project course quantum dynamics 5 B/NB 86 08-ACM1-161-mo1 Inorganic Chemistry 10 NUM 17 08-ACM2-161-mo1 Inorganic Chemistry 10 NUM 19 08-OCM-NAP1-161-mo1 Solid state chemistry and inorganic materials 5 NUM 19 08-OCM-NAP1-161-mo1 Inorganic Chemistry 10 NUM 19 08-OCM-NAP1-161-mo1 Practical course "NAP1 Biochemistry" for advanced students 10 NUM 19 08-OCM-NAP1-161-mo1 Practical Course "NAP1 Biochemistry" for advanced students 10 NUM 19 08-HKM2-161-mo1 Practical Course "NAP1 Biochemistry 10 NUM 19 08-HKM3-161-mo1 Practical Course "Homogeneous catalysis in Inorganic Chemistry 10 NUM 19 08-HKM3-161-mo1 Advanced organometallic chemistry 10 NUM 19 08-HKM3-161-mo1 Advanced Inorganic Chemistry 10 NUM 19 08-HKM3-161-mo1 Advanced Inorganic Chemistry 10 NUM 19 08-MCM-161-mo1 Advanced Inorganic Chemistry 10 NUM 19 08-MCM-161-mo1 Num 19 08-MCM-161-	08-TCM2-161-m01	Basics and Applications of Quantum Chemistry	5	NUM	90
08-TCM1-161-m01 Selected Topics in Theoretical Chemistry 08-TCAP1-161-m01 Theoretical Chemistry - Project course quantum chemistry 08-TCAP1-161-m01 Theoretical Chemistry - Project course quantum chemistry 08-TCAP1-161-m01 Theoretical Chemistry - Project course quantum dynamics 08-ACM1-161-m01 Advanced Inorganic Chemistry 08-ACPM-161-m01 Inorganic Chemistry practical course for advanced 10 B/NB 20 08-ACM2-161-m01 Bioinorganic Chemistry 08-ACM3-161-m01 Solid state chemistry and inorganic materials 08-OCM-SYNT-161-m01 Modern Synthetic Methods 08-OCM-SYNT-161-m01 Advanced Research Project Organic Chemistry 08-OCM-ACP1-161-m01 Modern Synthetic Methods 08-OCM-NAP1-161-m01 Organic Chemistry 08-OCM-NAP1-161-m01 Organic Chemistry 08-OCM-FM-161-m01 Organic For Advanced Students 08-BC-VPMM-161-m01 Organic For Advanced Students 08-BC-VPMM-161-m01 Practical course "Molecular Machines" for advanced students 08-BC-VPMB-161-m01 Practical course "Protein Degradation in Eukaryotes" for advanced students 08-BC-VPSB-161-m01 Practical course "RNA Biochemistry" for advanced students 08-BC-VPSB-161-m01 Project Work 08-BC-VP	08-TCM3-161-m01	Numerical Methods and Programming	5	NUM	92
08-TCAP1-161-mo1 Theoretical Chemistry - Project course quantum chemistry 5 B/NB 84 08-TCAP2-161-mo1 Theoretical Chemistry - Project course quantum dynamics 5 B/NB 86 08-ACM1-161-mo1 Advanced Inorganic Chemistry 10 NUM 17 08-ACPM-161-mo1 Inorganic Chemistry practical course for advanced 10 B/NB 20 08-ACM2-161-mo1 Bioinorganic Chemistry yractical course for advanced 10 B/NB 20 08-ACM2-161-mo1 Solid state chemistry and inorganic materials 5 NUM 19 08-ACM3-161-mo1 Solid state chemistry and inorganic materials 5 NUM 19 08-OCM-SYNT-161-mo1 Advanced Research Project Organic Chemistry 10 B/NB 57 08-OCM-NRT-161-mo1 Advanced Research Project Organic Chemistry 10 B/NB 57 08-OCM-NRT-161-mo1 Organic Functional Materials 5 NUM 58 08-BC-WOLMC-161-mo1 Organic Functional Materials 5 NUM 23 08-BC-WPMM-161-mo1 Practical course "Nolecular Machines" for advanced students 10 NUM 26 08-BC-WPMM-161-mo1 Practical course "Protein Degradation in Eukaryotes" for advanced students 10 NUM 27 08-BC-WPRB-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 28 08-BC-WPSB-161-mo1 Practical course "Structural Biology" for advanced students 10 NUM 28 08-BC-WPSB-161-mo1 Practical course "Structural Biology" for advanced students 10 NUM 29 08-FMM-MP-161-mo1 Advanced organometallic chemistry and its application in homogeneous catalysis in Inorganic Chemistry 5 NUM 46 08-HKM3-161-mo1 Project Work 5 B/NB 34 08-HKM3-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry 5 NUM 46 08-HKM3-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry 5 NUM 54 08-HKM3-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry 5 NUM 54 08-HKM3-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry 5 NUM 54 08-HKM3-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry 5 NUM 54 08-HKM3-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry 5 NUM 54 08-HKM3-161-mo1 Practical Course "Homogeneous catalysis in Inorganic Chemistry 5 NUM 54 08-HKM3-161-mo1 Pract	08-TCM4-161-m01	Quantum Dynamics	5	NUM	94
08-TCAP2-161-mo1 Theoretical Chemistry - Project course quantum dynamics 5 B/NB 86 08-ACM1-161-mo1 Advanced Inorganic Chemistry 10 NUM 17 08-ACPM-161-mo1 Inorganic Chemistry practical course for advanced 10 B/NB 20 08-ACM2-161-mo1 Bioinorganic Chemistry practical course for advanced 10 B/NB 20 08-ACM2-161-mo1 Solid state chemistry and inorganic materials 5 NUM 19 08-OCM-SYNT-161-mo1 Modern Synthetic Methods 5 NUM 61 08-OCM-AKP1-161-mo1 Advanced Research Project Organic Chemistry 10 B/NB 57 08-OCM-NAT-161-mo1 Modern Aspects of Natural Product Chemistry and Biological Chemistry 10 Organic Functional Materials 10 NUM 23 08-OCM-RM-161-mo1 Organic Functional Materials 10 NUM 23 08-BC-WPDM1-161-mo1 Practical course "Nolecular Machines" for advanced students 10 NUM 26 08-BC-WPDM1-161-mo1 Practical course "Nolecular Machines" for advanced students 10 NUM 27 08-BC-WPBB-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 28 08-BC-WPSB-161-mo1 Practical course "Structural Biology" for advanced students 10 NUM 29 08-FMM-PA-161-mo1 Advanced organometallic chemistry and its application in homogeneous catalysis 10 NUM 14 08-HKM2-161-mo1 Project Work 15 B/NB 34 08-HKM3-C-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" 10 B/NB 34 08-HKM3-C-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" 10 B/NB 33 08-HKM3-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry" 10 B/NB 33 08-MCM2a-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" 10 B/NB 33 08-MCM2a-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry 10 B/NB 33 08-MCM2a-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry 10 B/NB 33 08-MCM2a-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry 10 B/NB 33 08-MCM2a-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry 10 B/NB 33 08-MCM2a-161-mo1 Practical Course Homogeneous catalysis in Organic Chemistry 10 B/NB 33 08-MCM2a-161-mo1 Practical Course Homogeneous cata	08-TCM1-161-m01	Selected Topics in Theoretical Chemistry	5	NUM	88
08-ACM1-161-mo1 Advanced Inorganic Chemistry 10 NUM 17 08-ACPM-161-mo1 Inorganic Chemistry practical course for advanced 10 B/NB 20 08-ACM2-161-mo1 Bioinorganic Chemistry 5 NUM 18 08-ACM3-161-mo1 Solid state chemistry and inorganic materials 5 NUM 19 08-OCM-SYNT-161-mo1 Advanced Research Project Organic Chemistry 10 B/NB 57 08-OCM-AKP1-161-mo1 Advanced Research Project Organic Chemistry 10 B/NB 57 08-OCM-NAT-161-mo1 Advanced Research Project Organic Chemistry 10 B/NB 57 08-OCM-FM-161-mo1 Organic Functional Materials 5 NUM 60 08-OCM-FM-161-mo1 Organic Functional Materials 5 NUM 58 08-BC-VPMM-161-mo1 Practical course "Molecular Machines" for advanced students 10 NUM 23 08-BC-VPMM-161-mo1 Practical course "Protein Degradation in Eukaryotes" for advanced students 10 NUM 27 08-BC-VPSB-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 28 08-FMM-MP-161-mo1 Lab Course Material Science 5 B/NB 34 08-FMM-MP-161-mo1 Lab Course Material Science 5 B/NB 34 08-HKM3-161-mo1 Project Work 5 B/NB 35 08-HKM3-C-161-mo1 Advanced organometallic chemistry and its application in homogeneous catalysis in Inorganic Chemistry 5 B/NB 47 08-HKM3-C-161-mo1 Advanced transition metal chemistry 5 NUM 49 08-HKM3-C-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry 5 NUM 49 08-MCM3-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry 5 NUM 54 08-MCM3-161-mo1 Practical course medicinal chemistry 5 NUM 54 08-MCM3-161-mo1 Practical course medicinal chemistry 5 NUM 54 08-MCM3-161-mo1 Practical course medicinal Chemistry 5 NUM 55 08-MCM3-161-mo1 Supramolecular Chemistry (Advanced Lab) 5 B/NB 83 Subfield Other additional qualifications (so ECTS credits) 5 B/NB 83	08-TCAP1-161-m01	Theoretical Chemistry - Project course quantum chemistry	5	B/NB	84
08-ACPM-161-mo1 Inorganic Chemistry practical course for advanced 10 B/NB 20 08-ACM2-161-mo1 Bioinorganic Chemistry 5 NUM 18 18 08-ACM3-161-mo1 Solid state chemistry and inorganic materials 5 NUM 19 08-OCM-SYNT-161-mo1 Modern Synthetic Methods 5 NUM 61 08-OCM-AKP1-161-mo1 08-OCM-AKP1-161-mo1 Modern Aspects of Natural Product Chemistry 10 B/NB 57 08-OCM-NAT-161-mo1 Organic Functional Materials 5 NUM 60 08-OCM-NAT-161-mo1 Organic Functional Materials 5 NUM 58 08-BC-MOLIMC-161-mo1 Organic Functional Materials 5 NUM 23 08-BC-WPDM-161-mo1 Practical course "Molecular Machines" for advanced students 5 NUM 26 08-BC-WPDM-161-mo1 Practical course "Protein Degradation in Eukaryotes" for advanced students 10 NUM 27 08-BC-WPSB-161-mo1 Practical course "Structural Biology" for advanced students 10 NUM 28 08-BC-WPSB-161-mo1 Practical course "Structural Biology" for advanced students 10 NUM 29 08-BC-WPSB-161-mo1 Project Work 5 B/NB 34 08-BC-WPSB-161-mo1 Project Work 5 B/NB 35 NUM 14 08-HKM2-161-mo1 Project Work 5 B/NB 35 NUM 14 08-HKM3-C-161-mo1 Project Work 5 B/NB 35 NUM 46 08-HKM3-C-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" 5 B/NB 48 48 08-BC-WPS-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry" 5 B/NB 38 38 38 38 38 38 38 3	08-TCAP2-161-m01	Theoretical Chemistry - Project course quantum dynamics	5	B/NB	86
08-ACM2-161-mo1 Bioinorganic Chemistry 5 NUM 18 08-ACM3-161-mo1 Solid state chemistry and inorganic materials 5 NUM 19 08-OCM-SYNT-161-mo1 Modern Synthetic Methods 5 NUM 61 08-OCM-AKP1-161-mo1 Modern Synthetic Methods 5 NUM 61 08-OCM-AKP1-161-mo1 Modern Synthetic Methods 5 NUM 61 08-OCM-AKP1-161-mo1 Modern Aspects of Natural Product Chemistry 10 B/NB 57 08-OCM-NAT-161-mo1 Organic Functional Materials 5 NUM 58 08-BC-MOLMC-161-mo1 Organic Functional Materials 5 NUM 23 08-BC-WPMM-161-mo1 Molecular Biology for Advanced Students 5 NUM 23 08-BC-VPPMM-161-mo1 Practical course "Molecular Machines" for advanced students 10 NUM 26 08-BC-VPPD-161-mo1 Practical course "Protein Degradation in Eukaryotes" for advanced students 10 NUM 27 08-BC-VPSB-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 29 08-BC-WPSB-161-mo1 Practical course "Structural Biology "for advanced students 10 NUM 29 08-FMM-MP-161-mo1 Lab Course Material Science 5 B/NB 34 08-FMM-PA-161-mo1 Lab Course Material Science 5 B/NB 35 03-FU-PM2-161-mo1 Project Work 5 B/NB 35 03-FU-PM2-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" 5 NUM 46 08-HKM3-C-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" 5 NUM 49 08-HKM3-C-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry" 5 NUM 49 08-MCM2a-161-mo1 Practical course medicinal chemistry 5 NUM 49 08-MCM2a-161-mo1 Practical course medicinal chemistry 5 NUM 54 08-MCM2a-161-mo1 Pharmaceutical/Medicinal Chemistry 5 NUM 55 08-MCM2b-161-mo1 Supramolecular Chemistry 6 S-SCM2-161-mo1 Supramolecular Chemistry (Practical Course) 5 NUM 55 08-SCM4-161-mo1 Supramolecular Chemistry (Practical Course) 5 B/NB 83 Subfield Other additional qualifications (to ECTS credits) 5 B/NB 98	o8-ACM1-161-mo1	Advanced Inorganic Chemistry	10	NUM	17
08-ACM2-161-mo1 Bioinorganic Chemistry 5 NUM 18 08-ACM3-161-mo1 Solid state chemistry and inorganic materials 5 NUM 19 08-OCM-SYNT-161-mo1 Modern Synthetic Methods 5 NUM 61 08-OCM-AKP1-161-mo1 Modern Synthetic Methods 5 NUM 61 08-OCM-AKP1-161-mo1 Modern Synthetic Methods 5 NUM 61 08-OCM-AKP1-161-mo1 Modern Aspects of Natural Product Chemistry 10 B/NB 57 08-OCM-NAT-161-mo1 Organic Functional Materials 5 NUM 58 08-BC-MOLMC-161-mo1 Organic Functional Materials 5 NUM 23 08-BC-WPMM-161-mo1 Molecular Biology for Advanced Students 5 NUM 23 08-BC-VPPMM-161-mo1 Practical course "Molecular Machines" for advanced students 10 NUM 26 08-BC-VPPD-161-mo1 Practical course "Protein Degradation in Eukaryotes" for advanced students 10 NUM 27 08-BC-VPSB-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 29 08-BC-WPSB-161-mo1 Practical course "Structural Biology "for advanced students 10 NUM 29 08-FMM-MP-161-mo1 Lab Course Material Science 5 B/NB 34 08-FMM-PA-161-mo1 Lab Course Material Science 5 B/NB 35 03-FU-PM2-161-mo1 Project Work 5 B/NB 35 03-FU-PM2-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" 5 NUM 46 08-HKM3-C-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" 5 NUM 49 08-HKM3-C-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry" 5 NUM 49 08-MCM2a-161-mo1 Practical course medicinal chemistry 5 NUM 49 08-MCM2a-161-mo1 Practical course medicinal chemistry 5 NUM 54 08-MCM2a-161-mo1 Pharmaceutical/Medicinal Chemistry 5 NUM 55 08-MCM2b-161-mo1 Supramolecular Chemistry 6 S-SCM2-161-mo1 Supramolecular Chemistry (Practical Course) 5 NUM 55 08-SCM4-161-mo1 Supramolecular Chemistry (Practical Course) 5 B/NB 83 Subfield Other additional qualifications (to ECTS credits) 5 B/NB 98	08-ACPM-161-m01	Inorganic Chemistry practical course for advanced	10	B/NB	20
08-OCM-SYNT-161-mo1 Advanced Research Project Organic Chemistry 10 B/NB 57 08-OCM-NAT-161-mo1 Organic Functional Materials 5 NUM 66 08-OCM-FM-161-mo1 Organic Functional Materials 5 NUM 23 08-BC-WPMM-161-mo1 Practical course "Molecular Machines" for advanced students 10 NUM 26 08-BC-VPPD-161-mo1 Practical course "Protein Degradation in Eukaryotes" for advanced students 10 NUM 27 08-BC-VPRB-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 28 08-BC-VPRB-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 29 08-BC-VPRB-161-mo1 Practical course "Structural Biology" for advanced students 10 NUM 29 08-FMM-PA-161-mo1 Project Work 5 B/NB 34 08-FMM-PA-161-mo1 Project Work 5 B/NB 35 03-FU-PM2-161-mo1 Project Work 5 B/NB 35 08-HKM3-C-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" 5 NUM 46 08-HKM3-C-161-mo1 Advanced transition metal chemistry 5 NUM 49 08-HKM3-C-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry" 5 NUM 49 08-MCM1-161-mo1 Advanced transition metal chemistry 5 NUM 54 08-MCM2-161-mo1 Practical course medicinal chemistry 5 NUM 54 08-MCM2-161-mo1 Advanced transition metal chemistry 5 NUM 54 08-MCM2-161-mo1 Supramolecular Chemistry 2 5 NUM 55 08-MCM2-161-mo1 Supramolecular Chemistry 6 S-NUM 55 08-MCM2-161-mo1 Supramolecular Chemistry (Practical Course) 5 B/NB 80 08-SCM2-161-mo1 Supramolecular Chemistry (Practical Course) 5 B/NB 83 Subfield Other additional qualifications (to ECTS credits) 08-WRM1-161-mo1 Tutoring 1 (practical course) 5 B/NB 83	08-ACM2-161-m01		5	NUM	18
08-OCM-SYNT-161-mo1 Advanced Research Project Organic Chemistry 10 B/NB 57 08-OCM-NAF1-161-mo1 Advanced Research Project Organic Chemistry 10 B/NB 57 08-OCM-NAF1-161-mo1 Chemistry 10 B/NB 57 08-OCM-NAF1-161-mo1 Organic Functional Materials 5 NUM 58 08-BC-WPMICH-161-mo1 Practical course "Molecular Machines" for advanced students 10 NUM 26 08-BC-VPMM-161-mo1 Practical course "Protein Degradation in Eukaryotes" for advanced students 10 NUM 27 08-BC-VPRB-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 28 08-BC-VPRB-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 28 08-BC-VPRB-161-mo1 Lab Course Material Science 5 B/NB 34 08-FMM-PR-161-mo1 Project Work 5 B/NB 35 03-FU-PM2-161-mo1 Polymers II 5 NUM 14 08-HKM3-C-161-mo1 Polymers II 5 NUM 46 08-HKM3-C-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" 5 B/NB 47 08-HKM3-C-161-mo1 Advanced transition metal chemistry 5 NUM 49 08-MCM1-161-mo1 Advanced transition metal chemistry 5 NUM 49 08-MCM1-161-mo1 Practical course medicinal chemistry 5 NUM 49 08-MCM1-161-mo1 Advanced transition metal chemistry 5 NUM 54 08-MCM2-161-mo1 Dractical course medicinal chemistry 5 NUM 54 08-MCM2-161-mo1 Dractical course medicinal Chemistry 5 NUM 54 08-MCM2-161-mo1 Supramolecular Chemistry 6 NUM 55 08-MCM2-161-mo1 Supramolecular Chemistry 6 NUM 55 08-MCM2-161-mo1 Supramolecular Chemistry (Practical Course) 5 B/NB 80 08-SCM2-161-mo1 Supramolecular Chemistry (Practical Course) 5 B/NB 83 Subfield Other additional qualifications (to ECTS credits)	o8-ACM3-161-mo1	Solid state chemistry and inorganic materials	5	NUM	19
08-OCM-AKP1-161-mo1 Advanced Research Project Organic Chemistry 10 B/NB 57 08-OCM-NAT-161-mo1 Modern Aspects of Natural Product Chemistry and Biological Chemistry 5 NUM 58 08-BC-MOLMC-161-mo1 Organic Functional Materials 5 NUM 23 08-BC-VPMM-161-mo1 Molecular Biology for Advanced Students 5 NUM 23 08-BC-VPMM-161-mo1 Practical course "Molecular Machines" for advanced students 10 NUM 26 08-BC-VPPD-161-mo1 Practical course "Protein Degradation in Eukaryotes" for advanced students 10 NUM 27 08-BC-VPRB-161-mo1 Practical course "RNA Biochemistry" for advanced students 10 NUM 29 08-BC-VPSB-161-mo1 Practical course "Structural Biology" for advanced students 10 NUM 29 08-FMM-MP-161-mo1 Lab Course Material Science 5 B/NB 34 08-FMM-PA-161-mo1 Project Work 5 B/NB 35 03-FU-PM2-161-mo1 Polymers II 5 NUM 14 08-HKM2-161-mo1 Advanced organometallic chemistry and its application in homogeneous catalysis in Inorganic Chemistry" 5 NUM 46 08-HKM3AC-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" 5 B/NB 48 08-HKM3-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry" 5 NUM 49 08-MCM1-161-mo1 Practical course medicinal chemistry 5 NUM 49 08-MCM1-161-mo1 Pharmaceutical/Medicinal Chemistry 5 NUM 51 08-MCM2-161-mo1 Pharmaceutical/Medicinal Chemistry 5 NUM 51 08-MCM2-161-mo1 Supramolecular Chemistry 6 S NUM 51 08-MCM2-161-mo1 Supramolecular Chemistry (Practical Course) 5 B/NB 80 08-SCM2-161-mo1 Supramolecular Chemistry (Practical Course) 5 B/NB 83 Subfield Other additional qualifications (10 ECTS credits) 5 B/NB 98	08-OCM-SYNT-161-m01	Modern Synthetic Methods		NUM	
08-0CM-NAT-161-mo1 Chemistry 08-0CM-FM-161-mo1 Organic Functional Materials 08-BC-WDMM-161-mo1 Organic Functional Materials 08-BC-WDMM-161-mo1 Practical course "Molecular Machines" for advanced students 08-BC-VPPD-161-mo1 Practical course "Protein Degradation in Eukaryotes" for advanced students 08-BC-VPPB-161-mo1 Practical course "RNA Biochemistry" for advanced students 08-BC-VPSB-161-mo1 Practical course "Structural Biology" for advanced students 08-BC-VPSB-161-mo1 Practical course "Structural Biology" for advanced students 08-BC-VPSB-161-mo1 Practical course "Structural Biology" for advanced students 08-BC-WPSB-161-mo1 Project Work 08-BFMM-MP-161-mo1 Project Work 08-FMM-PA-161-mo1 Polymers II 08-HKM2-161-mo1 Polymers II 08-HKM3AC-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" 08-HKM3AC-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry" 08-HKM3AC-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry" 08-HKM3-161-mo1 Practical course medicinal chemistry 08-MCM1-161-mo1 Practical course medicinal Chemistry 08-MCM2-161-mo1 Pharmaceutical/Medicinal Chemistry 08-MCM2-161-mo1 Pharmaceutical/Medicinal Chemistry 08-MCM2-161-mo1 Supramolecular Chemistry (Practical Course) 08-MS Bybertonal qualifications (10 ECTS credits) 08-WRM1-161-mo1 Tutoring 1 (practical course) 5 B/NB 98				B/NB	57
o8-OCM-NAT-161-mo1 Chemistry o8-OCM-FM-161-mo1 Organic Functional Materials o8-BC-MOLMC-161-mo1 Organic Functional Materials o8-BC-WPMM-161-mo1 Practical course "Molecular Machines" for advanced students o8-BC-VPPM-161-mo1 Practical course "RNA Biochemistry" for advanced students o8-BC-VPRB-161-mo1 Practical course "RNA Biochemistry" for advanced students o8-BC-VPSB-161-mo1 Practical course "Structural Biology" for advanced students o8-BC-VPSB-161-mo1 Practical course "Structural Biology" for advanced students o8-FMM-PA-161-mo1 Project Work o8-FMM-PA-161-mo1 Polymers II o8-HKM2-161-mo1 Polymers II o8-HKM3-C-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" o8-HKM3-C-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry" o8-HKM4-161-mo1 Practical course medicinal chemistry o8-MCM2-161-mo1 Pharmaceutical/Medicinal Chemistry o8-MCM2-161-mo1 Supramolecular Chemistry (Practical Course) o8-SCM2-161-mo1 Supramolecular Chemistry (Advanced Lab) Supfield Other additional qualifications (10 ECTS credits) o8-WRM1-161-mo1 Tutoring 1 (practical course) 5 B/NB 98					
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08-BC-MOLMC-161-motMolecular Biology for Advanced Students5NUM2308-BC-VPMM-161-motPractical course "Molecular Machines" for advanced students10NUM2608-BC-VPPD-161-motPractical course "Protein Degradation in Eukaryotes" for advanced students10NUM2708-BC-VPRB-161-motPractical course "RNA Biochemistry" for advanced students10NUM2808-BC-VPSB-161-motPractical course "Structural Biology" for advanced students10NUM2908-FMM-MP-161-motLab Course Material Science5B/NB3408-FMM-PA-161-motProject Work5B/NB3503-FU-PM2-161-motPolymers II5NUM1408-HKM2-161-motAdvanced organometallic chemistry and its application in homogeneous catalysis5NUM4608-HKM3AC-161-motPractical course "Homogeneous catalysis in Inorganic Chemistry"5B/NB4708-HKM3OC-161-motPractical course "Homogeneous catalysis in Organic Chemistry"5B/NB4808-HKM4-161-motAdvanced transition metal chemistry5NUM4908-MCM1-161-motPractical course medicinal chemistry5NUM5408-MCM2a-161-motPharmaceutical/Medicinal Chemistry5NUM5508-MBC-MSP-161-motMass-Spectrometry and Proteomics5NUM5108-SCM2-161-motSupramolecular Chemistry (Practical Course)5B/NB8008-SCM2-161-motSupramolecular Chemistry (Advanced Lab) <td< td=""><td>08-OCM-FM-161-m01</td><td>·</td><td>5</td><td>NUM</td><td>58</td></td<>	08-OCM-FM-161-m01	·	5	NUM	58
08-BC-VPMM-161-m01 Practical course "Molecular Machines" for advanced students 10 NUM 26 08-BC-VPPD-161-m01 Practical course "Protein Degradation in Eukaryotes" for advanced students 10 NUM 27 08-BC-VPRB-161-m01 Practical course "RNA Biochemistry" for advanced students 10 NUM 28 08-BC-VPSB-161-m01 Practical course "Structural Biology" for advanced students 10 NUM 29 08-FMM-MP-161-m01 Lab Course Material Science 5 B/NB 34 08-FMM-PA-161-m01 Project Work 5 B/NB 35 03-FU-PM2-161-m01 Polymers II 5 NUM 14 08-HKM2-161-m01 Advanced organometallic chemistry and its application in homogeneous catalysis Practical course "Homogeneous catalysis in Inorganic Chemistry" 5 B/NB 47 08-HKM3OC-161-m01 Practical course "Homogeneous catalysis in Organic Chemistry" 5 NUM 49 08-HKM4-161-m01 Advanced transition metal chemistry 5 NUM 49 08-MCM1-161-m01 Practical course medicinal chemistry 10 B/NB 53 08-MCM2a-161-m01 Pharmaceutical/Medicinal Chemistry 2 5 NUM 54 08-MBC-MSP-161-m01 Mass-Spectrometry and Proteomics 5 NUM 51 08-SCM2-161-m01 Supramolecular Chemistry (Practical Course) 5 B/NB 80 08-SCM2-161-m01 Supramolecular Chemistry (Advanced Lab) 5 B/NB 83 Subfield Other additional qualifications (10 ECTS credits)	08-BC-MOLMC-161-m01			NUM	23
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08-BC-VPSB-161-mo1Practical course "Structural Biology" for advanced students10NUM2908-FMM-MP-161-mo1Lab Course Material Science5B/NB3408-FMM-PA-161-mo1Project Work5B/NB3503-FU-PM2-161-mo1Polymers II5NUM1408-HKM2-161-mo1Advanced organometallic chemistry and its application in homogeneous catalysis5NUM4608-HKM3AC-161-mo1Practical course "Homogeneous catalysis in Inorganic Chemistry"5B/NB4708-HKM3OC-161-mo1Practical course "Homogeneous catalysis in Organic Chemistry"5B/NB4808-HKM4-161-mo1Advanced transition metal chemistry5NUM4908-MCM1-161-mo1Practical course medicinal chemistry5NUM4908-MCM2a-161-mo1Pharmaceutical/Medicinal Chemistry10B/NB5308-MCM2b-161-mo1Pharmaceutical/Medicinal Chemistry5NUM5408-MBC-MSP-161-mo1Mass-Spectrometry and Proteomics5NUM5508-MBC-MSP-161-mo1Supramolecular Chemistry (Practical Course)5B/NB8008-SCM2-161-mo1Supramolecular Chemistry (Advanced Lab)5B/NB83Subfield Other additional qualifications (10 ECTS credits)08-WRM1-161-mo1Tutoring 1 (practical course)5B/NB98	00 BC VII B 101 11101	ced students		NOW	-/
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08-FMM-PA-161-m01 Project Work 5 B/NB 35 03-FU-PM2-161-m01 Polymers II 5 NUM 14 08-HKM2-161-m01 Advanced organometallic chemistry and its application in homogeneous catalysis 5 NUM 46 08-HKM3AC-161-m01 Practical course "Homogeneous catalysis in Inorganic Chemistry" 5 B/NB 47 08-HKM3OC-161-m01 Practical course "Homogeneous catalysis in Organic Chemistry" 5 B/NB 48 08-HKM4-161-m01 Advanced transition metal chemistry 5 NUM 49 08-MCM1-161-m01 Practical course medicinal chemistry 10 B/NB 53 08-MCM2a-161-m01 Pharmaceutical/Medicinal Chemistry 1 5 NUM 54 08-MCM2b-161-m01 Pharmaceutical/Medicinal Chemistry 2 5 NUM 55 08-MBC-MSP-161-m01 Mass-Spectrometry and Proteomics 5 NUM 51 08-SCM2-161-m01 Supramolecular Chemistry (Practical Course) 5 B/NB 80 08-SCM4-161-m01 Supramolecular Chemistry (Advanced Lab) 5 B/NB 83 Subfield Other additional qualifications (10 ECTS credits) 08-WRM1-161-m01 Tutoring 1 (practical course) 5 B/NB 98	08-BC-VPSB-161-m01	Practical course "Structural Biology" for advanced students	10	NUM	29
O3-FU-PM2-161-m01 Polymers II 5 NUM 14 O8-HKM2-161-m01 Advanced organometallic chemistry and its application in homogeneous catalysis 5 NUM 46 O8-HKM3AC-161-m01 Practical course "Homogeneous catalysis in Inorganic Chemistry" 5 B/NB 47 O8-HKM3OC-161-m01 Practical course "Homogeneous catalysis in Organic Chemistry" 5 B/NB 48 O8-HKM4-161-m01 Advanced transition metal chemistry 5 NUM 49 O8-MCM1-161-m01 Practical course medicinal chemistry 10 B/NB 53 O8-MCM2a-161-m01 Pharmaceutical/Medicinal Chemistry 1 5 NUM 54 O8-MCM2b-161-m01 Pharmaceutical/Medicinal Chemistry 2 5 NUM 55 O8-MBC-MSP-161-m01 Mass-Spectrometry and Proteomics 5 NUM 51 O8-SCM2-161-m01 Supramolecular Chemistry (Practical Course) 5 B/NB 80 O8-SCM4-161-m01 Supramolecular Chemistry (Advanced Lab) 5 B/NB 83 Subfield Other additional qualifications (10 ECTS credits) O8-WRM1-161-m01 Tutoring 1 (practical course) 5 B/NB 98	08-FMM-MP-161-m01	Lab Course Material Science	5	B/NB	34
Advanced organometallic chemistry and its application in homogeneous catalysis 08-HKM3AC-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" 08-HKM3OC-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry" 5 B/NB 47 08-HKM4-161-mo1 Advanced transition metal chemistry 5 NUM 49 08-MCM1-161-mo1 Practical course medicinal chemistry 5 NUM 49 08-MCM2a-161-mo1 Pharmaceutical/Medicinal Chemistry 08-MCM2b-161-mo1 Pharmaceutical/Medicinal Chemistry 5 NUM 54 08-MCM2b-161-mo1 Pharmaceutical/Medicinal Chemistry 5 NUM 55 08-MBC-MSP-161-mo1 Supramolecular Chemistry (Practical Course) 5 B/NB 80 80-SCM2-161-mo1 Supramolecular Chemistry (Advanced Lab) 5 B/NB 83 Subfield Other additional qualifications (10 ECTS credits) Tutoring 1 (practical course) 5 B/NB 98	08-FMM-PA-161-m01	Project Work	5	B/NB	35
o8-HKM2-161-mo1 Practical course "Homogeneous catalysis in Inorganic Chemistry" 5 B/NB 47 o8-HKM3OC-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry" 5 B/NB 48 o8-HKM4-161-mo1 Advanced transition metal chemistry 5 NUM 49 o8-MCM1-161-mo1 Practical course medicinal chemistry 10 B/NB 53 o8-MCM2a-161-mo1 Pharmaceutical/Medicinal Chemistry 1 5 NUM 54 o8-MCM2b-161-mo1 Pharmaceutical/Medicinal Chemistry 2 5 NUM 55 o8-MBC-MSP-161-mo1 Mass-Spectrometry and Proteomics 5 NUM 51 o8-SCM2-161-mo1 Supramolecular Chemistry (Practical Course) 5 B/NB 80 o8-SCM4-161-mo1 Supramolecular Chemistry (Advanced Lab) 5 B/NB 83 Subfield Other additional qualifications (10 ECTS credits) Tutoring 1 (practical course) 5 B/NB 98	03-FU-PM2-161-m01	Polymers II	5	NUM	14
mogeneous catalysis 08-HKM3AC-161-m01 Practical course "Homogeneous catalysis in Inorganic Chemistry" 08-HKM3OC-161-m01 Practical course "Homogeneous catalysis in Organic Chemistry" 08-HKM4-161-m01 Advanced transition metal chemistry 08-MCM1-161-m01 Practical course medicinal chemistry 08-MCM2a-161-m01 Pharmaceutical/Medicinal Chemistry 1 08-MCM2b-161-m01 Pharmaceutical/Medicinal Chemistry 2 08-MBC-MSP-161-m01 Mass-Spectrometry and Proteomics 08-SCM2-161-m01 Supramolecular Chemistry (Practical Course) 08-SCM4-161-m01 Supramolecular Chemistry (Advanced Lab) Subfield Other additional qualifications (10 ECTS credits) 08-WRM1-161-m01 Tutoring 1 (practical course) 5 B/NB 98	08-HKM2-161-m01	I	5	NUM	46
o8-HKM3AC-161-mo1 mistry" o8-HKM3OC-161-mo1 Practical course "Homogeneous catalysis in Organic Chemistry" o8-HKM4-161-mo1 Advanced transition metal chemistry o8-MCM1-161-mo1 Practical course medicinal chemistry o8-MCM2a-161-mo1 Pharmaceutical/Medicinal Chemistry o8-MCM2b-161-mo1 Pharmaceutical/Medicinal Chemistry o8-MCM2b-161-mo1 Pharmaceutical/Medicinal Chemistry o8-MCM2b-161-mo1 Pharmaceutical/Medicinal Chemistry o8-MCM2b-161-mo1 Supramolecular Chemistry (Practical Course) o8-SCM2-161-mo1 Supramolecular Chemistry (Practical Course) o8-SCM4-161-mo1 Supramolecular Chemistry (Advanced Lab) Subfield Other additional qualifications (10 ECTS credits)					· .
08-HKM3OC-161-m01Practical course "Homogeneous catalysis in Organic Chemistry"5B/NB4808-HKM4-161-m01Advanced transition metal chemistry5NUM4908-MCM1-161-m01Practical course medicinal chemistry10B/NB5308-MCM2a-161-m01Pharmaceutical/Medicinal Chemistry 15NUM5408-MCM2b-161-m01Pharmaceutical/Medicinal Chemistry 25NUM5508-MBC-MSP-161-m01Mass-Spectrometry and Proteomics5NUM5108-SCM2-161-m01Supramolecular Chemistry (Practical Course)5B/NB8008-SCM4-161-m01Supramolecular Chemistry (Advanced Lab)5B/NB83Subfield Other additional qualifications (10 ECTS credits)08-WRM1-161-m01Tutoring 1 (practical course)5B/NB98	08-HKM3AC-161-m01		5	B/NB	47
08-HKM3OC-161-mo1mistry"5B/NB4808-HKM4-161-mo1Advanced transition metal chemistry5NUM4908-MCM1-161-mo1Practical course medicinal chemistry10B/NB5308-MCM2a-161-mo1Pharmaceutical/Medicinal Chemistry 15NUM5408-MCM2b-161-mo1Pharmaceutical/Medicinal Chemistry 25NUM5508-MBC-MSP-161-mo1Mass-Spectrometry and Proteomics5NUM5108-SCM2-161-mo1Supramolecular Chemistry (Practical Course)5B/NB8008-SCM4-161-mo1Supramolecular Chemistry (Advanced Lab)5B/NB83Subfield Other additional qualifications (10 ECTS credits)08-WRM1-161-mo1Tutoring 1 (practical course)5B/NB98		·			
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08-MCM1-161-m01Practical course medicinal chemistry10B/NB5308-MCM2a-161-m01Pharmaceutical/Medicinal Chemistry 15NUM5408-MCM2b-161-m01Pharmaceutical/Medicinal Chemistry 25NUM5508-MBC-MSP-161-m01Mass-Spectrometry and Proteomics5NUM5108-SCM2-161-m01Supramolecular Chemistry (Practical Course)5B/NB8008-SCM4-161-m01Supramolecular Chemistry (Advanced Lab)5B/NB83Subfield Other additional qualifications (10 ECTS credits)08-WRM1-161-m01Tutoring 1 (practical course)5B/NB98	08-HKM4-161-m01	· ·	5	NUM	49
08-MCM2a-161-mo1Pharmaceutical/Medicinal Chemistry 15NUM5408-MCM2b-161-mo1Pharmaceutical/Medicinal Chemistry 25NUM5508-MBC-MSP-161-mo1Mass-Spectrometry and Proteomics5NUM5108-SCM2-161-mo1Supramolecular Chemistry (Practical Course)5B/NB8008-SCM4-161-mo1Supramolecular Chemistry (Advanced Lab)5B/NB83Subfield Other additional qualifications (10 ECTS credits)08-WRM1-161-mo1Tutoring 1 (practical course)5B/NB98		·			
08-MCM2b-161-mo1Pharmaceutical/Medicinal Chemistry 25NUM5508-MBC-MSP-161-mo1Mass-Spectrometry and Proteomics5NUM5108-SCM2-161-mo1Supramolecular Chemistry (Practical Course)5B/NB8008-SCM4-161-mo1Supramolecular Chemistry (Advanced Lab)5B/NB83Subfield Other additional qualifications (10 ECTS credits)08-WRM1-161-mo1Tutoring 1 (practical course)5B/NB98	08-MCM2a-161-m01	Pharmaceutical/Medicinal Chemistry 1	5	NUM	
08-MBC-MSP-161-mo1Mass-Spectrometry and Proteomics5NUM5108-SCM2-161-mo1Supramolecular Chemistry (Practical Course)5B/NB8008-SCM4-161-mo1Supramolecular Chemistry (Advanced Lab)5B/NB83Subfield Other additional qualifications (10 ECTS credits)08-WRM1-161-mo1Tutoring 1 (practical course)5B/NB98	08-MCM2b-161-m01	Pharmaceutical/Medicinal Chemistry 2		NUM	
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08-SCM4-161-mo1 Supramolecular Chemistry (Advanced Lab) 5 B/NB 83 Subfield Other additional qualifications (10 ECTS credits) 08-WRM1-161-mo1 Tutoring 1 (practical course) 5 B/NB 98	08-SCM2-161-m01	·		B/NB	
Subfield Other additional qualifications (10 ECTS credits) 08-WRM1-161-m01 Tutoring 1 (practical course) 5 B/NB 98	08-SCM4-161-m01			B/NB	83
08-WRM1-161-mo1 Tutoring 1 (practical course) 5 B/NB 98	·	l ·	-	ı	
			5	B/NB	98
	08-WRM2-161-m01			B/NB	99



08-APM1-161-m01	Facility Coulting (about)		D/ND	
	Foreign Studies (short)	5	B/NB	21
08-APM2-161-m01	Foreign Studies (long)	10	B/NB	22
08-CHPM1-161-m01	08-CHPM1-161-m01 Chemistry-related competences outside of the Natural Sciences			
o8-CHPM2-161-mo1	Chemistry-related competences within the Natural Sciences	5	B/NB	31
08-CHPM3-161-m01	Chemistry-related competences outside of the Natural Sciences acquired abroad	5	B/NB	32
o8-CHPM4-161-mo1	Chemistry-related competences within the Natural Sciences acquired abroad	5	B/NB	33
Thesis (30 ECTS credits)	<u> </u>			
08-MA-161-m01	Master-Thesis Chemistry	30	NUM	50
Compulsory Courses (dou	ble degree) (35 ECTS credits)		l	
This and the following are dance with the provisions	as are designed for students of Chemistry who take part in an exo of Annex DA of the relevant FSB (subject-specific provisions).	change pro	ogramme in acc	cor-
Subfield Courses at part	ner university abroad (5 ECTS credits)			,
03-TR-152-m01	Toxicology and legal studies	3	NUM	15
08-VPM-DA-161-m01	Advanced chemical practical course	2	B/NB	96
Subfield Courses at part	ner university abroad (30 ECTS credits)			
08-VPU-161-m01	Qualifications - Partner University	30	B/NB	97
Students must take one for Section 3 Subsection 2 FS Section 3 Subsection 2 Section 2 Section 2 Section 3 Subsection 3 Section 3 Sectio		ts (focuses e combina	s 1 and 2 pursu itions are set o	ant to ut in
inorganic Chemistry (25	EC15 credits)			
Compulsory Courses (2			1	
	Advanced Inorganic Chemistry	10	NUM	17
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced	10	NUM B/NB	17 20
Compulsory Courses (2 08-ACM1-161-m01	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits)			
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced			
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits)	10	B/NB	20
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (08-TCM2-161-m01	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry Solid state chemistry and inorganic materials	10	B/NB NUM	20
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (08-TCM2-161-m01 08-ACM2-161-m01	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry	10 5 5	B/NB NUM NUM	90
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (08-TCM2-161-m01 08-ACM2-161-m01 08-ACM3-161-m01	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry Solid state chemistry and inorganic materials Advanced organometallic chemistry and its application in homogeneous catalysis	5 5 5	B/NB NUM NUM NUM	90 18 19
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (0 08-TCM2-161-m01 08-ACM2-161-m01 08-ACM3-161-m01	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry Solid state chemistry and inorganic materials Advanced organometallic chemistry and its application in homogeneous catalysis CTS credits)	5 5 5	B/NB NUM NUM NUM	90 18 19
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (0 08-TCM2-161-m01 08-ACM2-161-m01 08-ACM3-161-m01 08-HKM2-161-m01 Organic Chemistry (25 E Compulsory Courses (1	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry Solid state chemistry and inorganic materials Advanced organometallic chemistry and its application in homogeneous catalysis CTS credits)	5 5 5 5	B/NB NUM NUM NUM NUM	90 18 19
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (1 08-TCM2-161-m01 08-ACM2-161-m01 08-ACM3-161-m01 08-HKM2-161-m01 Organic Chemistry (25 E Compulsory Courses (1 08-OCM-SYNT-161-m0	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry Solid state chemistry and inorganic materials Advanced organometallic chemistry and its application in homogeneous catalysis CTS credits) 5 ECTS credits) 1 Modern Synthetic Methods	5 5 5	B/NB NUM NUM NUM	90 18 19 46
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (0 08-TCM2-161-m01 08-ACM2-161-m01 08-ACM3-161-m01 08-HKM2-161-m01 Organic Chemistry (25 E Compulsory Courses (1 08-OCM-SYNT-161-m0 08-OCM-AKP1-161-m0	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry Solid state chemistry and inorganic materials Advanced organometallic chemistry and its application in homogeneous catalysis CTS credits) 5 ECTS credits) 1 Modern Synthetic Methods 1 Advanced Research Project Organic Chemistry	5 5 5 5	NUM NUM NUM NUM NUM	90 18 19 46
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (1 08-TCM2-161-m01 08-ACM2-161-m01 08-ACM3-161-m01 08-HKM2-161-m01 Organic Chemistry (25 E Compulsory Courses (1 08-OCM-SYNT-161-m0 08-OCM-AKP1-161-m0 Compulsory Electives (1	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry Solid state chemistry and inorganic materials Advanced organometallic chemistry and its application in homogeneous catalysis CTS credits) 5 ECTS credits) 1 Modern Synthetic Methods 1 Advanced Research Project Organic Chemistry 10 ECTS credits)	5 5 5 5	NUM NUM NUM NUM NUM NUM	90 18 19 46 61 57
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (0 08-TCM2-161-m01 08-ACM2-161-m01 08-ACM3-161-m01 08-HKM2-161-m01 Organic Chemistry (25 E Compulsory Courses (1 08-OCM-SYNT-161-m0 08-OCM-AKP1-161-m0	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry Solid state chemistry and inorganic materials Advanced organometallic chemistry and its application in homogeneous catalysis CTS credits) 5 ECTS credits) 1 Modern Synthetic Methods 1 Advanced Research Project Organic Chemistry	5 5 5 5 5	NUM NUM NUM NUM NUM	90 18 19 46
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (2 08-TCM2-161-m01 08-ACM2-161-m01 08-ACM3-161-m01 08-HKM2-161-m01 Organic Chemistry (25 E Compulsory Courses (1 08-OCM-SYNT-161-m0 08-OCM-SYNT-161-m0 08-OCM-AKP1-161-m0 Compulsory Electives (2 08-HKM1-152-m01	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry Solid state chemistry and inorganic materials Advanced organometallic chemistry and its application in homogeneous catalysis CTS credits) 5 ECTS credits) 1 Modern Synthetic Methods 1 Advanced Research Project Organic Chemistry 10 ECTS credits) Organo- and Biocatalysis Practical course of clinical-analytical Chemistry	5 5 5 5 5 10	NUM NUM NUM NUM NUM NUM NUM NUM B/NB	90 18 19 46 61 57 44 78
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (08-TCM2-161-m01 08-ACM2-161-m01 08-ACM3-161-m01 08-HKM2-161-m01 Organic Chemistry (25 E Compulsory Courses (1 08-OCM-SYNT-161-m0 08-OCM-AKP1-161-m0 Compulsory Electives (0 08-HKM1-152-m01 08-PH-KACP-152-m01	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry Solid state chemistry and inorganic materials Advanced organometallic chemistry and its application in homogeneous catalysis CTS credits) 5 ECTS credits) 1 Modern Synthetic Methods 1 Advanced Research Project Organic Chemistry 10 ECTS credits) Organo- and Biocatalysis Practical course of clinical-analytical Chemistry Bioorganic Chemistry	5 5 5 5 5 10	NUM NUM NUM NUM NUM NUM NUM B/NB NUM B/NB	90 18 19 46 61 57 44 78 81
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (2 08-TCM2-161-m01 08-ACM2-161-m01 08-ACM3-161-m01 08-HKM2-161-m01 Organic Chemistry (25 E Compulsory Courses (1 08-OCM-SYNT-161-m0 08-OCM-AKP1-161-m0 Compulsory Electives (2 08-HKM1-152-m01 08-PH-KACP-152-m01 08-SCM3-152-m01	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry Solid state chemistry and inorganic materials Advanced organometallic chemistry and its application in homogeneous catalysis CTS credits) 5 ECTS credits) 1 Modern Synthetic Methods 1 Advanced Research Project Organic Chemistry 10 ECTS credits) Organo- and Biocatalysis Practical course of clinical-analytical Chemistry Bioorganic Chemistry Supramolecular Chemistry (Basics)	5 5 5 5 5 10 5 5 5	NUM NUM NUM NUM NUM NUM NUM B/NB NUM B/NB NUM NUM	90 18 19 46 61 57 44 78 81 79
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (08-TCM2-161-m01 08-ACM2-161-m01 08-ACM3-161-m01 08-HKM2-161-m01 Organic Chemistry (25 E Compulsory Courses (1 08-OCM-SYNT-161-m0 08-OCM-AKP1-161-m0 Compulsory Electives (0 08-HKM1-152-m01 08-PH-KACP-152-m01	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry Solid state chemistry and inorganic materials Advanced organometallic chemistry and its application in homogeneous catalysis CTS credits) 5 ECTS credits) 1 Modern Synthetic Methods 1 Advanced Research Project Organic Chemistry 10 ECTS credits) Organo- and Biocatalysis Practical course of clinical-analytical Chemistry Bioorganic Chemistry Supramolecular Chemistry (Basics) Basics and Applications of Quantum Chemistry and Biological	5 5 5 5 5 10	NUM NUM NUM NUM NUM NUM NUM B/NB NUM B/NB	90 18 19 46 61 57 44 78 81
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (1 08-TCM2-161-m01 08-ACM3-161-m01 08-ACM3-161-m01 08-HKM2-161-m01 Organic Chemistry (25 E Compulsory Courses (1 08-OCM-SYNT-161-m0 08-OCM-AKP1-161-m0 Compulsory Electives (1 08-PH-KACP-152-m01 08-SCM3-152-m01 08-SCM1-152-m01 08-TCM2-161-m01	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry Solid state chemistry and inorganic materials Advanced organometallic chemistry and its application in homogeneous catalysis CTS credits) 5 ECTS credits) 1 Modern Synthetic Methods 1 Advanced Research Project Organic Chemistry 10 ECTS credits) Organo- and Biocatalysis Practical course of clinical-analytical Chemistry Bioorganic Chemistry Supramolecular Chemistry (Basics) Basics and Applications of Quantum Chemistry Modern Aspects of Natural Product Chemistry and Biological Chemistry	5 5 5 5 5 10 5 5 5 5 5	NUM NUM NUM NUM NUM NUM NUM B/NB NUM NUM NUM NUM NUM	90 18 19 46 61 57 44 78 81 79 90
Compulsory Courses (2 08-ACM1-161-m01 08-ACPM-161-m01 Compulsory Electives (1 08-TCM2-161-m01 08-ACM3-161-m01 08-ACM3-161-m01 08-HKM2-161-m01 Organic Chemistry (25 E Compulsory Courses (1 08-OCM-SYNT-161-m0 08-OCM-SYNT-161-m0 Compulsory Electives (1 08-HKM1-152-m01 08-PH-KACP-152-m01 08-SCM3-152-m01 08-SCM3-152-m01 08-TCM2-161-m01	Advanced Inorganic Chemistry Inorganic Chemistry practical course for advanced 5 ECTS credits) Basics and Applications of Quantum Chemistry Bioinorganic Chemistry Solid state chemistry and inorganic materials Advanced organometallic chemistry and its application in homogeneous catalysis CTS credits) 5 ECTS credits) 1 Modern Synthetic Methods 1 Advanced Research Project Organic Chemistry 10 ECTS credits) Organo- and Biocatalysis Practical course of clinical-analytical Chemistry Bioorganic Chemistry Supramolecular Chemistry (Basics) Basics and Applications of Quantum Chemistry Modern Aspects of Natural Product Chemistry and Biological Chemistry Organic Functional Materials	5 5 5 5 5 10 5 5 5 5	NUM NUM NUM NUM NUM NUM NUM B/NB NUM B/NB NUM NUM NUM	90 18 19 46 61 57 44 78 81 79



08-PCM1a-161-m01	Laser Spectroscopy	5	NUM	63
08-PCM1b-161-m01	Advanced Physical Chemistry (Lab)	5	B/NB	65
08-PCM2-161-m01	Statistical Mechanics and Reaction Dynamics	5	NUM	67
08-PCM6-161-m01	Physical Chemistry (Advanced Lab)	5	B/NB	75
Compulsory Electives (5			-	
08-FU-MaWi1-152-mo1	Material Science 1 (Basic introduction)	5	NUM	36
08-PCM3-161-m01	Nanoscale Materials	5	NUM	69
08-PCM4-161-m01	Ultrafast spectroscopy and quantum-control	5	NUM	71
08-PCM5-161-m01	Physical Chemistry of Supramolecular Assemblies	5	NUM	73
08-TCM2-161-m01	Basics and Applications of Quantum Chemistry	5	NUM	90
o8-TCM3-161-mo1	Numerical Methods and Programming	5	NUM	92
08-TCM1-161-m01	Selected Topics in Theoretical Chemistry	5	NUM	88
08-TCAP1-161-m01	Theoretical Chemistry - Project course quantum chemistry	5	B/NB	84
08-TCAP2-161-m01	Theoretical Chemistry - Project course quantum dynamics	5	B/NB	86
08-FMM-MP-161-m01	Lab Course Material Science	5	B/NB	34
Biochemistry (25 ECTS cr	edits)			
Compulsory Courses (15	ECTS credits)			
08-BC-MOLP-152-m01	Molecular Biology laboratory course	10	NUM	2/
08-BC-MOLMC-161-	Malagular Dialam, for Advanged Ctudents	_	NILIAA	-
mo1	Molecular Biology for Advanced Students	5	NUM	23
Compulsory Electives (1	o ECTS credits)			
08-HKM1-152-m01	Organo- and Biocatalysis	5	NUM	44
08-MCM3-152-m01	Drug design	5	NUM	56
08-PH-KAC-152-m01	Clinical-analytical Chemistry	5	NUM	77
08-PH-KACP-152-m01	Practical course of clinical-analytical Chemistry	5	B/NB	78
08-ACM2-161-m01	Bioinorganic Chemistry	5	NUM	18
08-OCM-NAT-161-m01	Modern Aspects of Natural Product Chemistry and Biological Chemistry	5	NUM	60
08-BC-VPMM-161-m01	Practical course "Molecular Machines" for advanced students	10	NUM	26
08-BC-VPPD-161-m01	Practical course "Protein Degradation in Eukaryotes" for advanced students	10	NUM	27
08-BC-VPRB-161-m01	Practical course "RNA Biochemistry" for advanced students	10	NUM	28
08-BC-VPSB-161-m01	Practical course "Structural Biology" for advanced students	10	NUM	29
Functional Materials (25	ECTS credits)		l .	
Compulsory Courses (20	ECTS credits)			
08-FU-MaWi1-152-mo1	Material Science 1 (Basic introduction)	5	NUM	36
08-0CM-FM-161-m01	Organic Functional Materials	5	NUM	58
08-FMM-MP-161-m01	Lab Course Material Science	5	B/NB	34
08-FMM-PA-161-m01	Project Work	5	B/NB	35
Compulsory Electives (5	ECTS credits)			
08-SCM1-152-m01	Supramolecular Chemistry (Basics)	5	NUM	79
o8-FU-Mo-	Malagular Matariala (Lastura)	_	NILIAA	
00.00	Molecular Materials (Lecture)	5	NUM	40
MaV-152-mo1				
	Chemically and bio-inspired Nanotechnology for Material Synthesis	5	NUM	42



03-FU-PM1-152-m01	Polymer Chemistry 1 (Lecture and Practical Course)	5	NUM	13
08-PCM3-161-m01	Nanoscale Materials	5	NUM	69
08-TCM2-161-m01	Basics and Applications of Quantum Chemistry	5	NUM	90
08-ACM3-161-m01	Solid state chemistry and inorganic materials	5	NUM	19
03-FU-PM2-161-m01	Polymers II	5	NUM	14
Homogeneous Catalysis (25 ECTS credits)			'
Compulsory Courses (20	ECTS credits)			,
08-HKM1-152-m01	Organo- and Biocatalysis	5	NUM	44
08-HKM2-161-m01	Advanced organometallic chemistry and its application in ho-	_	NUM	
00-HKW2-101-III01	mogeneous catalysis	5	INUNI	46
08-HKM3AC-161-m01	Practical course "Homogeneous catalysis in Inorganic Che-	F	B/NB	4.7
06-11KM3AC-101-11101	mistry"	5	D/ ND	47
08-HKM3OC-161-m01	Practical course "Homogeneous catalysis in Organic Che-	r	B/NB	48
00-11KM30C-101-11101	mistry"	5	טווןט	40
Compulsory Electives (5	ECTS credits)			
03-FU-PM1-152-m01	Polymer Chemistry 1 (Lecture and Practical Course)	5	NUM	13
08-PCM2-161-m01	Statistical Mechanics and Reaction Dynamics	5	NUM	67
08-TCM2-161-m01	Basics and Applications of Quantum Chemistry	5	NUM	90
08-OCM-SYNT-161-m01	Modern Synthetic Methods	5	NUM	61
08-HKM4-161-m01	Advanced transition metal chemistry	5	NUM	49
Medicinal Chemistry (25 I	ECTS credits)			
Compulsory Courses (10	ECTS credits)			,
08-MCM1-161-m01	Practical course medicinal chemistry	10	B/NB	53
Compulsory Electives (1	5 ECTS credits)			
08-MCM3-152-m01	Drug design	5	NUM	56
08-PH-KAC-152-m01	Clinical-analytical Chemistry	5	NUM	77
08-PH-KACP-152-m01	Practical course of clinical-analytical Chemistry	5	B/NB	78
08-ACM2-161-m01	Bioinorganic Chemistry	5	NUM	18
08-OCM-SYNT-161-m01	Modern Synthetic Methods	5	NUM	61
08-0CM-NAT-161-m01	Modern Aspects of Natural Product Chemistry and Biological	5	NUM	60
	Chemistry			
o8-BC-MOLMC-161-	Molecular Biology for Advanced Students	5	NUM	23
m01				
	Practical course "Structural Biology" for advanced students	10	NUM	29
08-MCM2a-161-m01	Pharmaceutical/Medicinal Chemistry 1	5	NUM	54
		,		
	Pharmaceutical/Medicinal Chemistry 2	5	NUM	55
			NUM NUM	_
08-MBC-MSP-161-m01 Supramolecular Chemistr	Pharmaceutical/Medicinal Chemistry 2 Mass-Spectrometry and Proteomics y (25 ECTS credits)	5		55
08-MBC-MSP-161-m01 Supramolecular Chemistr Compulsory Courses (10	Pharmaceutical/Medicinal Chemistry 2 Mass-Spectrometry and Proteomics y (25 ECTS credits) ECTS credits)	5		55
08-MBC-MSP-161-m01 Supramolecular Chemistr Compulsory Courses (10	Pharmaceutical/Medicinal Chemistry 2 Mass-Spectrometry and Proteomics y (25 ECTS credits)	5		55
08-MBC-MSP-161-m01 Supramolecular Chemistr Compulsory Courses (10 08-SCM1-152-m01 08-SCM2-161-m01	Pharmaceutical/Medicinal Chemistry 2 Mass-Spectrometry and Proteomics y (25 ECTS credits) ECTS credits) Supramolecular Chemistry (Basics) Supramolecular Chemistry (Practical Course)	5	NUM	55 51
08-MBC-MSP-161-m01 Supramolecular Chemistr Compulsory Courses (10 08-SCM1-152-m01	Pharmaceutical/Medicinal Chemistry 2 Mass-Spectrometry and Proteomics y (25 ECTS credits) ECTS credits) Supramolecular Chemistry (Basics) Supramolecular Chemistry (Practical Course)	5 5	NUM	55 51 79
08-MBC-MSP-161-m01 Supramolecular Chemistr Compulsory Courses (10 08-SCM1-152-m01 08-SCM2-161-m01 Compulsory Electives (19)	Pharmaceutical/Medicinal Chemistry 2 Mass-Spectrometry and Proteomics y (25 ECTS credits) ECTS credits) Supramolecular Chemistry (Basics) Supramolecular Chemistry (Practical Course)	5 5	NUM	55 51 79
08-MBC-MSP-161-m01 Supramolecular Chemistr Compulsory Courses (10 08-SCM1-152-m01 08-SCM2-161-m01 Compulsory Electives (19 08-SCM3-152-m01	Pharmaceutical/Medicinal Chemistry 2 Mass-Spectrometry and Proteomics y (25 ECTS credits) ECTS credits) Supramolecular Chemistry (Basics) Supramolecular Chemistry (Practical Course) 5 ECTS credits)	5 5 5 5	NUM NUM B/NB	55 51 79 80
08-MBC-MSP-161-m01 Supramolecular Chemistr Compulsory Courses (10 08-SCM1-152-m01 08-SCM2-161-m01 Compulsory Electives (19 08-SCM3-152-m01 08-PCM3-161-m01	Pharmaceutical/Medicinal Chemistry 2 Mass-Spectrometry and Proteomics y (25 ECTS credits) ECTS credits) Supramolecular Chemistry (Basics) Supramolecular Chemistry (Practical Course) 5 ECTS credits) Bioorganic Chemistry	5 5 5 5	NUM NUM B/NB	55 51 79 80



08-TCM2-161-m01	Basics and Applications of Quantum Chemistry	5	NUM	90
08-OCM-FM-161-m01	Organic Functional Materials	5	NUM	58
08-SCM4-161-m01	Supramolecular Chemistry (Advanced Lab)	5	B/NB	83
Theoretical Chemistry (2	5 ECTS credits)			
Compulsory Courses (1	ECTS credits)			
08-TCM2-161-m01	Basics and Applications of Quantum Chemistry	5	NUM	90
08-TCM3-161-m01	08-TCM3-161-m01 Numerical Methods and Programming		NUM	92
o8-TCM4-161-mo1	08-TCM4-161-m01 Quantum Dynamics		NUM	94
Compulsory Electives (a	o ECTS credits)			
08-MCM3-152-m01	Drug design	5	NUM	56
08-TCM1-161-m01	Selected Topics in Theoretical Chemistry	5	NUM	88
08-TCAP1-161-m01	Theoretical Chemistry - Project course quantum chemistry	5	B/NB	84
08-TCAP2-161-m01	08-TCAP2-161-mo1 Theoretical Chemistry - Project course quantum dynamics		B/NB	86
Thesis (30 ECTS credits)				
08-MA-161-m01	Master-Thesis Chemistry	30	NUM	50



Modul	Module title			Abbreviation	
Polymer Chemistry 1 (Lecture and Practical Course)			•	03-FU-PM1-152-m01	
Module coordinator Module offered by					
holder of the Chair of Functional Materials in Medicine and Faculty of Medicine Dentistry				2	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duration Module level Other prerequisites			Other prerequisites		
1 seme	ester	undergraduate	ergraduate		
Conter	nts		·		

Basic methods of polymerisation: free radical polymerisations, polyadditions, ionic polymerisations, controlled radical polymerisations; characterisation of polymers and polymer analytics: gel permeation chromatography, endgroup analysis, mass spectrometry, rheology.

Intended learning outcomes

The students acquire fundamentals of polymer chemistry and the related methods for their characterisation.

Courses (type, number of weekly contact hours, language — if other than German)

V(2) + P(2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) assessment and b) Vortestate/Nachtestate (pre and post-experiment examination talks approx. 15 minutes each, log approx. 5 to 10 pages each) and assessment of practical assignments (2 to 4 random examinations) Language of assessment: German and/or English

Assessment offered: Once a year, winter semester

creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor's degree (1 major) Functional Materials (2015)

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Bachelor's degree (1 major) Functional Materials (2021)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Bachelor's degree (1 major) Functional Materials (2025)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 13 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Module	e title				Abbreviation
Polymers II					03-FU-PM2-161-m01
Module	e coord	inator		Module offered by	
holder of the Chair of Functional Materials in Medicine and Dentistry				Faculty of Medicine	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duration Module level Other prerequis			Other prerequisites		
1 semester graduate					
Conten	its				

Deepend polymer synthesis methods, special polymers (block copolymers, co-polymerization techniques, complex polymer architectures), biodegradable polymers, polypeptoides, natural polymers. We will discuss the application of the respective polymers: e.g as biomaterials, for electrospinning, for the production of hydrogels and their behavior on surfaces.

Intended learning outcomes

The student acquire advanced knowledge in polymer manufacturing, analysis and applications. This involves different synthetic routes with which the different molecules can be prepared from different starting materials. Students can estimate if and how fast a polymer degrades under given circumstances. Furthermore, they gain insight into the field of technically used polymers from nature. Each section also points to possible consequences / disadvantages that synthesis of the various polymers may have, thus drawing students' understanding to ethical concerns.

Courses (type, number of weekly contact hours, language — if other than German)

 $S(2) + \ddot{U}(1)$

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 minutes) or
- b) oral examination of one candidate each (approx. 20 minutes) or
- c) talk (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Functional Materials (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)



Modul	e title				Abbreviation
Toxico	logy an	ıd legal studies			03-TR-152-m01
Module coordinator				Module offered by	
lecturer of lecture "Toxikologie und Rechts		d Rechtskunde"	Faculty of Medicine	2	
ECTS	Meth	od of grading	Only after succ. o	compl. of module(s)	
3	nume	rical grade			
Duration Module level Other prerequisite			Other prerequisit	tes	
1 semester undergraduate					
Contor	nt c				

Basics of legal regulations for chemists (handling and transportation of hazardous materials), fundamentals of toxicology.

Intended learning outcomes

The students master the basics of legal regulations for chemists (handling and transport of hazardous substances) as well as the fundamentals of toxicology.

Courses (type, number of weekly contact hours, language — if other than German)

V(1) + V(1)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 90 minutes)

Allocation of places

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Additional information

according to § 2 para. 2 sentence 2 APOLmCh in conjunction with No. II 2nd letter g) and i) and No. II 1st letter d) of annex 1 to the APOLmCh and No. 5 and 6 of annex 3 to the APOLmCh

Workload

90 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 22 II Nr. 1 h)

§ 22 II Nr. 2 f)

§ 22 II Nr. 3 f)

Module appears in

Bachelor's degree (1 major) Biochemistry (2015)

Bachelor's degree (1 major) Chemistry (2015)

Bachelor's degree (1 major) Food Chemistry (2015)

First state examination for the teaching degree Grundschule Chemistry (2015)

First state examination for the teaching degree Grundschule Didactics in Chemistry (Primary School) (2015)

First state examination for the teaching degree Realschule Chemistry (2015)

First state examination for the teaching degree Gymnasium Chemistry (2015)

First state examination for the teaching degree Sonderpädagogik Didactics in Chemistry (Middle School) (2015)

First state examination for the teaching degree Mittelschule Chemistry (2015)

First state examination for the teaching degree Mittelschule Didactics in Chemistry (Middle School) (2015)

Master's degree (1 major) Chemistry (2016)

Bachelor's degree (1 major) Food Chemistry (2016)

Bachelor's degree (1 major) Biochemistry (2017)

Bachelor's degree (1 major) Chemistry (2017)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 15 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Master's degree (1 major) Chemistry (2018)

Bachelor's degree (1 major) Food Chemistry (2019)

First state examination for the teaching degree Mittelschule Chemistry (2020 (Prüfungsordnungsversion 2015)) First state examination for the teaching degree Mittelschule Didactics in Chemistry (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Chemistry (Middle School) (2020 (Prüfungsordnungsversion 2015))

Bachelor's degree (1 major) Food Chemistry (2021)

Bachelor's degree (1 major) Biochemistry (2022)

Master's degree (1 major) Chemistry (2024)

Bachelor's degree (1 major) Food Chemistry (2025)



Module title				Abbreviation	
Advanced Inorganic Chemistry				_	08-ACM1-161-m01
Module coordinator				Module offered by	
Managing Director of the Institute of Inorganic Chemistry			e of Inorganic Chemistry	Institute of Inorganic Chemistry	
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)	
10	nume	rical grade			
Duration Module level Other prerequisites		;			
2 semester graduate					
Conto	ntc				

This module discusses advanced topics in main group chemistry and transition metal chemistry. It focuses on special compounds of the main group elements (MGEs), bonding situations of MGEs and MGE compounds, the chemistry of transition metals and coordination chemistry.

Intended learning outcomes

Students are able to characterise and explain special compounds of the main group elements. They can describe the chemical properties of transition metals and analyse the structure as well as chemical and physical aspects of coordination compounds.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

S(3) + S(3)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

Additional information

Workload

300 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bayaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title			Abbreviation		
Bioinorganic Chemistry				08-ACM2-161-m01	
Module coordinator				Module offered by	
and Me	lecturer of seminar "Anorganische Aspekte der Biochemie and Medizinischen Chemie" (Inorganic Aspects of Bioche- mistry and Medicinal Chemistry)		Institute of Inorganic Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duration Module level Other prerequisites		i			
1 semester graduate					
Conten	Contents				

This module introduces students to the fundamental principles of bioinorganic chemistry (BIC). It discusses the methods of BIC, structures and effects of metalliferous enzymes and applications of BIC in the fields of diagnosis and therapy.

Intended learning outcomes

Students are able to describe the principles of, and methods in, BIC. They can explain the structure and effects of metalliferous enzymes and describe applications of BIC in biochemistry and medicine.

Courses (type, number of weekly contact hours, language — if other than German)

S (3)

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 45 to 90 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Biochemistry (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)



Module title					Abbreviation
Solid state chemistry and inorganic materials			aterials		08-ACM3-161-m01
Module	e coord	inator		Module offered by	
lecturer of seminar "Festkörperchemie and Anorganische Materialien" (Solid State Chemistry and Inorganic Materi- als)		Institute of Inorganic Chemistry			
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duration Module level Other prerequisites					
1 semester graduate					
Conten	Contents				

This module provides an introduction to solid-state chemistry. It focuses on the structure, chemical and physical properties, synthesis methods and selected materials of solids.

Intended learning outcomes

Students are able to describe the structure and properties of solids. They can explain methods for solid-state synthesis. They can describe important aspects of selected materials regarding the corresponding solids.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

S (3)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

Additional information

Workload

150 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bayaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title					Abbreviation
Inorganic Chemistry practical course for advanced				08-ACPM-161-m01	
Module coordinator				Module offered by	
focus	ooint co	ordinator "Inorganic Che	emistry"	Institute of Inorganic Chemistry	
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)	
10	(not)	successfully completed			
Duration Module level Other prereq		Other prerequisites			
1 semester graduate					
Contor	Contents				

This module gives students the opportunity to enhance their skills in advanced synthesis and analytical methods in inorganic chemistry. The focus will be on working under inert atmospheres, purification methods, spectral analysis and crystallography. Students will be expected to conduct their work in the lab independently, write a lab report documenting their findings and deliver a presentation.

Intended learning outcomes

Students are able to use advanced synthesis and analytical methods in inorganic chemistry in the lab and to interpret their findings. They are able to write a lab report documenting their findings and deliver a presentation.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

P (24)

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

report on practical course (approx. 20 pages) and talk (approx. 15 minutes) Language of assessment: German and/or English

Allocation of places

Additional information

Additional information on module duration: block taught lab course with approx. 40 working days.

Workload

300 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title					Abbreviation
Foreign Studies (short)					08-APM1-161-m01
Module coordinator				Module offered by	
Erasmu	Erasmus programme coordinator Chemie (Chemistry)			Faculty of Chemistry and Pharmacy	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	(not)	successfully completed			
Duration Module level Other prerequisi		Other prerequisites	1		
1 semester graduate		May not be combined with o8-APM2.			
Conten	Contents				

Practical course to be completed at universities abroad. Students may complete this course in the context of exchange programmes such as Erasmus etc. The contents of the course should correspond to the contents of a lab course offered in the context of the Master's programme in Chemistry (120 ECTS credits); please consult with the competent coordinator in advance.

Intended learning outcomes

Students are familiar with procedures and processes used at universities in countries other than Germany. They have acquired subject-specific skills as well as language and interpersonal skills.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

P (o)

Module taught in: German and/or English and potentially language of the respective country

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) report (10 to 20 pages) or
- b) talk (10 to 20 minutes)

Language of assessment: German and/or English and potentially language of the respective country

Allocation of places

Additional information

Additional information on module duration: block placement abroad with a duration of no less than 20 working days.

Workload

150 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Food Chemistry (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Food Chemistry (2019)

Master's degree (1 major) Food Chemistry (2021)

Master's degree (1 major) Chemistry (2024)



Module	e title				Abbreviation
Foreign Studies (long)					08-APM2-161-m01
Module coordinator				Module offered by	
Erasmı	us prog	ramme coordinator Chen	nie (Chemistry)	Faculty of Chemistry and Pharmacy	
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)	
10	(not)	successfully completed			
Duratio	Ouration Module level Other prerequisites				
1 semester graduate May not be			May not be combine	ed with o8-APM1.	
Contents					

Practical course to be completed at universities abroad. Students may complete this course in the context of exchange programmes such as Erasmus etc. The contents of the course should correspond to the contents of a lab course offered in the context of the Master's programme in Chemistry (120 ECTS credits); please consult with the competent coordinator in advance.

Intended learning outcomes

Students are familiar with procedures and processes used at universities in countries other than Germany. They have acquired subject-specific skills as well as language and interpersonal skills.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

P (o)

Module taught in: German and/or English and potentially language of the respective country

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) report (15 to 30 pages) or

b) talk (15 to 30 minutes)

Language of assessment: German and/or English and potentially language of the respective country

Allocation of places

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Additional information

Additional information on module duration: block placement abroad with a duration of no less than 40 working days.

Workload

300 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Food Chemistry (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Food Chemistry (2019)

Master's degree (1 major) Food Chemistry (2021)

Master's degree (1 major) Chemistry (2024)



Module title					Abbreviation	
Molecular Biology for Advanced Students			tudents		o8-BC-MOLMC-161-mo1	
Module coordinator				Module offered by		
holder	of the	Chair of Biochemistr	у	Chair of Biochemis	Chair of Biochemistry	
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)		
5	nume	rical grade				
Duration Module level Other prerequisites		S				
1 semester graduate						
Contents						

Comprising a lecture and an exercise, this module discusses advanced topics in molecular physiology and functional biochemistry.

Intended learning outcomes

Students have developed a sound knowledge of molecular biology.

Courses (type, number of weekly contact hours, language — if other than German)

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Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

Additional information

Workload

150 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Functional Materials (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Functional Materials (2022)

Master's degree (1 major) Functional Materials (2025)



Module title					Abbreviation
Molecular Biology laboratory course			e		08-BC-MOLP-152-m01
Module coordinator				Module offered by	
holder	holder of the Chair of Biochemistry Faculty of Cher			Faculty of Chemistr	y and Pharmacy
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)	
10	nume	rical grade			
Duration Module level Other prerequisites			Other prerequisites	5	
1 semester undergraduate					
Conte	Contents				

This module equips students with practical skills in the areas of recombinant engineering and characterisation of macromolecular complexes, modern biomolecular techniques, in vivo analysis of biochemical processes, and modern imaging techniques.

Intended learning outcomes

Students have developed a knowledge of molecular biology and are able to apply it to practical experiments.

Courses (type, number of weekly contact hours, language - if other than German)

P (5)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 45 to 90 minutes) or
- b) log (10 to 20 pages) or
- c) oral examination of one candidate each (20 to 30 minutes) or
- d) oral examination in groups of up to 3 candidates (approx. 15 to 20 minutes per candidate) or
- e) presentation (20 to 30 minutes) or
- f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours)

Language of assessment: German and/or English

Assessment offered: Once a year, winter semester

Allocation of places

Biochemie (Biochemistry), Bachelor's: 24 places.

Selection process Biochemie (Biochemistry), Bachelor's (180 ECTS credits): Should the number of applications exceed the number of available places, places will be allocated according to the following quotas: Quota 1 (two thirds of places): current average grade of successfully completed modules; among applicants with the same average grade, places will be allocated by lot. Quota 2 (one third of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

Chemie (Chemistry), Master's: 6 places. Selection process Chemie (Chemistry), Bachelor's (120 ECTS credits): Places will be allocated according to the number of subject semesters. Among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

300 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 24 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Bachelor's degree (1 major) Biochemistry (2015) Master's degree (1 major) Chemistry (2016) Bachelor's degree (1 major) Biochemistry (2017)



Module title					Abbreviation	
Practic	Practical course "Molecular Machines" for advanced students				08-BC-VPMM-161-m01	
Module coordinator Module offe			Module offered by			
holder	holder of the Chair of Biochemistry			Chair of Biochemistry		
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)		
10	nume	rical grade	o8-BC-MOLP			
Duration Module level Other prerequisites		3				
1 semester graduate						
Conten	Contents					

This module gives students the opportunity to explore a research topic. Selected methods and topics in molecular biology and biochemistry; cloning, mutagenesis, protein expression and purification, RNA-protein and protein-protein interactions, isolation and functional analysis of macromolecular complexes.

Intended learning outcomes

Students are able to explore a specific research topic and deliver an oral presentation on the results of their work.

Courses (type, number of weekly contact hours, language — if other than German)

P (10)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Log (approx. 20 pages) and talk (approx. 15 minutes) Language of assessment: German and/or English

Allocation of places

Additional information

Additional information on module duration: block taught lab course with approx. 40 working days.

Workload

300 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bayaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)



Module title					Abbreviation
Practical course "Protein Degradation in Eukaryotes" for advanced students			o8-BC-VPPD-161-mo1		
Module coordinator Module offered by			Module offered by	Į.	
holder	of the	Chair of Biochemistr	у	Chair of Biochemis	try
ECTS	Meth	od of grading	Only after succ. co	npl. of module(s)	
10	nume	rical grade	o8-BC-MOLP	•	
Durati	on	Module level	Other prerequisites	3	
1 seme	ester	graduate			
Contents					

This module gives students the opportunity to explore a research topic in the field of protein degradation in eukaryotes.

Intended learning outcomes

Students are able to explore a specific research topic and deliver an oral presentation on the results of their work.

Courses (type, number of weekly contact hours, language — if other than German)

P (10)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Log (approx. 20 pages) and talk (approx. 15 minutes) Language of assessment: German and/or English

Allocation of places

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Additional information

Additional information on module duration: block taught lab course with approx. 40 working days.

Workload

300 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)



Modul	e title			Abbreviation		
Practio	Practical course "RNA Biochemistry" for advanced students			S.S.	08-BC-VPRB-161-m01	
Modul	e coord	linator		Module offered by		
holder	holder of the Chair of Biochemistry			Chair of Biochemistry		
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)		
10	nume	erical grade	o8-BC-MOLP			
Duratio	Duration Module level Other prerequisite		Other prerequisites	3		
1 semester graduate						
Conter	Contents					

This module gives students the opportunity to explore a research topic in the field of RNA biochemistry. Ribosomes as "molecular machines", regulatory mechanisms of eukaryotic protein biosynthesis. Gradient centrifugation, in vitro translation in different cell-free systems.

Intended learning outcomes

Students are able to explore a specific research topic and deliver an oral presentation on the results of their work. They are able to familiarise themselves with different mechanisms of general and specific translation control with the help of different methods as well as to present their findings in an appropriate and understandable manner.

Courses (type, number of weekly contact hours, language — if other than German)

P (10)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Log (approx. 20 pages) and talk (approx. 15 minutes) Language of assessment: German and/or English

Allocation of places

Additional information

Additional information on module duration: block taught lab course with approx. 40 working days.

Workload

300 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)



Modul	e title				Abbreviation
Practical course "Structural Biology" for advanced students			ts	08-BC-VPSB-161-m01	
Modul	e coord	linator		Module offered by	I.
holder	of the	Chair of Biochemistr	у	Chair of Biochemistry	
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)	
10	nume	rical grade	o8-BC-MOLP	•	
Duration Module level Other prerequisites		3			
1 semester graduate					
Conte	nte				

This module discusses cloning and the expression of protein constructs for crystallisation. It teaches students the fundamental principles and techniques of crystallisation and crystal optimisation as well as crystallographic data collection.

Intended learning outcomes

Students have developed an understanding of the method of selecting protein constructs for crystallisation. They master fundamental skills and techniques for protein crystallisation as well as data collection and processing.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

P (10)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Log (approx. 20 pages) and talk (approx. 15 minutes) Language of assessment: German and/or English

Allocation of places

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Additional information

Additional information on module duration: block taught lab course with approx. 40 working days.

Workload

300 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)



Module	e title				Abbreviation	
Chemis	Chemistry-related competences outside of the Natural Sci			ences	08-CHPM1-161-m01	
Module	e coord	linator		Module offered by		
Dean o	f Studi	es Chemie (Chemistry)		Faculty of Chemistr	y and Pharmacy	
ECTS	Meth	od of grading	Only after succ. con	pl. of module(s)	,	
5	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate	Please consult with	course advisory serv	vice in advance.	
Conten	its					
other F	acultie t with t	s and are not explicitly in heir course advisors in ac	cluded in the acaden		elated courses that are offered by neir programmes. Students MUST	
	-	ning outcomes				
		e developed the knowled	-		•	
Course	s (type	, number of weekly conta	ct hours, language –	- if other than Germa	an)	
No cou	rses as	ssigned to module				
		sessment (type, scope, la ion on whether module ca	-		ntion offered — if not every seme-	
b) oral c) oral d) log (e) pres	examir examir (approx entatio	mination (approx. 90 to 1 nation of one candidate enation in groups of up to 3 x. 20 pages) or on (approx. 30 minutes) assessment: German and	ach (20 to 30 minute 3 candidates (approx.		didate) or	
Allocat	ion of	places				
Additio	nal inf	ormation				
			•			
Worklo	ad					
150 h	150 h					
Teaching cycle						
	<u> </u>					
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appe	ars in				
		ee (1 major) Chemistry (2	016)			
		(2)	->			

Master's degree (1 major) Chemistry (2018) Master's degree (1 major) Chemistry (2024)



Modul	e title				Abbreviation	
Chemi	stry-re	lated competences withir	the Natural Science	S	o8-CHPM2-161-mo1	
Modul	e coord	linator		Module offered by		
		es Chemie (Chemistry)		Faculty of Chemistr	v and Pharmacy	
ECTS		od of grading	Only after succ. con		y and i namiacy	
5		successfully completed		.,		
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate	Please consult with		vice in advance.	
Conter	ıts					
other F	acultie		cluded in the acaden		elated courses that are offered by neir programmes. Students MUST	
Intend	ed lear	ning outcomes				
Studer	nts hav	e developed the knowled	ge and skills taught i	n the courses attenc	ded by them.	
Course	es (type	e, number of weekly conta	ct hours, language –	- if other than Germa	an)	
No cou	ırses a	ssigned to module	•			
ster, in	format	sessment (type, scope, la ion on whether module comination (approx. 90 to 1	an be chosen to earn		ation offered — if not every seme-	
b) oral c) oral d) log (e) pres	exami examir (approx entatio	nation of one candidate e nation in groups of up to 3 k. 20 pages) or on (approx. 30 minutes) assessment: German and,	ach (20 to 30 minute 3 candidates (approx		didate) or	
Allocat	tion of	places				
Additio	onal in	formation				
Worklo	oad					
150 h	150 h					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Modul	e appe	ars in				
	Master's degree (1 major) Chemistry (2016)					
		() ()	->			

Master's degree (1 major) Chemistry (2018) Master's degree (1 major) Chemistry (2024)



Module	e title		Abbreviation			
Chemis	Chemistry-related competences outside of the Natural Sciences acquired ab-			o8-CHPM3-161-mo1		
road						
Module coordinator Module offered by						
Dean o	Dean of Studies Chemie (Chemistry)			Faculty of Chemistry and Pharmacy		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	(not)	successfully completed				
Duratio	Duration Module level Other prerequisites					
1 semester graduate Please consult with course advisory ser			vice in advance.			
Conten	Contents					

This module gives students the opportunity to transfer credits from chemistry-related courses that are offered by other Faculties and are not explicitly included in the academic regulations for their programmes. Students MUST consult with their course advisors in advance.

Intended learning outcomes

Students have developed the knowledge and skills taught in the courses attended by them.

Courses (type, number of weekly contact hours, language — if other than German)

No courses assigned to module

Module taught in: German and/or English and potentially language of the respective country

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English and potentially language of the respective country

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Chemistry (2024)



Chemistry-related competences within the Natural Sciences acquired abroad	Module	e title				Abbreviation	
Dean of Studies Chemie (Chemistry) ECTS Method of grading			•	the Natural Science	s acquired abroad	o8-CHPM4-161-mo1	
ECTS Method of grading Conty successfully completed	Module	e coord	inator		Module offered by		
Solution Module level Other prerequisites	Dean o	f Studi	es Chemie (Chemistry)		Faculty of Chemistr	y and Pharmacy	
Duration Module level please consult with course advisory service in advance. Contents This seminar equips students with knowledge, skills and methods for special education professionals. Intended learning outcomes Knowledge, skills and methods for special education professionals. Courses (type, number of weekly contact hours, language — if other than German) No courses assigned to module Module taught in: German and/or English and potentially language of the respective country Method of assessment (type, scope, language — if other than German, examination offered — if not every senster, information on whether module can be chosen to earn a bonus) a) written examination (approx. 90 to 180 minutes) or b) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes) Language of assessment: German and/or English and potentially language of the respective country Allocation of places	ECTS			Only after succ. com	ıpl. of module(s)		
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Referred to in LPO I (examination regulations for teaching-degree programmes) Module appears in Master's degree (1 major) Chemistry (2016)	150 h						
Module appears in Master's degree (1 major) Chemistry (2016)		ng cycl	e				
Module appears in Master's degree (1 major) Chemistry (2016)							
Master's degree (1 major) Chemistry (2016)	Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Master's degree (1 major) Chemistry (2016)							
Master's degree (1 major) Chemistry (2016)	Module	e appea	nrs in				
Master's degree (1 major) Chemistry (2018) Master's degree (1 major) Chemistry (2024)	Master	's degr	ee (1 major) Chemistry (2	018)			



Module title	Abbreviation
Lab Course Material Science	o8-FMM-MP-161-mo1

Module coordinator Module offered by

lecturers specialisation subject Funktionsmaterialien (Functional Materials) Chair of Chemical Technology of Material Synthesis

ECTS	Metho	od of grading	Only after succ. compl. of module(s)
5	(not)	successfully completed	
Duratio	n	Module level	Other prerequisites
1 seme	ster	graduate	

Contents

Ten selected experiments in materials science.

Intended learning outcomes

Students have developed an advanced proficiency in the performance of experiments in materials science.

Courses (type, number of weekly contact hours, language — if other than German)

P (8)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Vortestate/Nachtestate (pre and post-experiment examination talks approx. 15 minutes each, log approx. 5 to 10 pages each) and assessment of practical performance (2 to 4 random examinations)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module	Module title Abbreviation					
Project Work					08-FMM-PA-161-m01	
Module	e coord	inator		Module offered by		
head o	f the re	search group offering the	e module	Chair of Chemical Technology of Material Synthesis		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites	i		
1 seme	ster	graduate				
Conten	Contents					

This module gives students the opportunity to explore a research topic under the guidance of a supervisor and to describe their findings.

Intended learning outcomes

Students have developed an advanced proficiency in the performance of experiments in materials science.

Courses (type, number of weekly contact hours, language — if other than German)

P (10)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Log (approx. 15 pages) and talk (approx. 15 minutes) Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title	Abbreviation
Material Science 1 (Basic introduction)	08-FU-MaWi1-152-m01

Module coordinator Module offered by

holder of the Chair of Chemical Technology of Material Synthesis

ECTS	ECTS Method of grading		Only after succ. compl. of module(s)
5	nume	rical grade	
Duratio	n	Module level	Other prerequisites
1 seme	ster	undergraduate	

Contents

Uncertainty analysis, process engineering: mixing, comminution, agglomeration, separation, drying, conveying. Vacuum technology, coating processes, sintering.

Intended learning outcomes

The students possess comprehensive knowledge about various techniques form different areas of the field of chemical process engineering. For a given objective they are able to weigh the pros and cons of different techniques and can suggest ways of fabrication, processing and treatment of materials. Furthermore they are confident in handling of measurement data as well as statistical and systematic errors and possess extensive knowledge about nomenclature, significance as well as practically determining characteristic material properties.

Courses (type, number of weekly contact hours, language — if other than German)

 $V(3) + \ddot{U}(1)$

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor's degree (1 major) Nanostructure Technology (2015)

Bachelor's degree (1 major) Functional Materials (2015)

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 36 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	

Bachelor's degree (1 major) Nanostructure Technology (2020)



Module title	Abbreviation
Material Science 2 (The Material Groups)	08-FU-MaWi2-152-m01

Module coordinator Module offered by

holder of the Chair of Chemical Technology of Material Synthesis thesis

ECTS	rs Method of grading		Only after succ. compl. of module(s)
5	5 numerical grade		
Duration Module level		Module level	Other prerequisites
1 seme	ster	undergraduate	

Contents

Fabrication and properties of the main material groups. Metals: structure and microstructure, phase transitions and properties; thermo-mechanical treatment; Martensitic transitions; ductility and strength; form memory alloys. Ceramics: oxidic and non-oxidic structural ceramics; electric and magnetic properties of functional ceramics; glass. Polymer materials: thermoplasts, duromers, elastomers. Composite materials.

Intended learning outcomes

Students have developed a knowledge of the fabrication and properties of the main material groups and are able to apply that knowledge to research problems.

Courses (type, number of weekly contact hours, language — if other than German)

 $V(3) + \ddot{U}(1)$

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor's degree (1 major) Nanostructure Technology (2015)

Bachelor's degree (1 major) Functional Materials (2015)

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Bachelor's degree (1 major) Nanostructure Technology (2020)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 38 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Bachelor's degree (1 major) Functional Materials (2021) Bachelor's degree (1 major) Quantum Technology (2021)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Bachelor's degree (1 major) Functional Materials (2025)



Module title	Abbreviation
Molecular Materials (Lecture)	o8-FU-MoMaV-152-mo1

Module coordinatorModule offered bydegree programme coordinator Funktionswerkstoffe (Functional Matrierials)Chair of Chemical Technology of Material Synthesis

	are material and m				
ECTS	Metho	od of grading	Only after succ. compl. of module(s)		
5	nume	rical grade			
Duratio	Duration Module level		Other prerequisites		
1 semester ur		undergraduate			

Contents

Chemical bonds and molecular interactions, supramolecular chemistry, molecular materials, colloids, nanoparticles, thin films.

Intended learning outcomes

Students have developed an understanding of the relationship between the physical, chemical and technological properties of materials and their structure. They know the significance of various inter and intramolecular interactions and how they determine the properties of molecular materials. They have learned how to familiarise themselves with a topic in the field, deliver a presentation on that topic, discuss it as well as to give and receive feedback.

Courses (type, number of weekly contact hours, language — if other than German)

V(3) + S(1)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

[a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes)] as well as talk (approx. 30 minutes), weighted 3:1 Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor's degree (1 major) Nanostructure Technology (2015)

Bachelor's degree (1 major) Functional Materials (2015)

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Bachelor's degree (1 major) Nanostructure Technology (2020)

Bachelor's degree (1 major) Quantum Technology (2021)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 40 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title	Abbreviation
Chemically and bio-inspired Nanotechnology for Material Synthesis	08-FU-NT-152-m01

Module coordinatorModule offered bydegree programme coordinator Funktionswerkstoffe (Functional Matrierials)Chair of Chemical Technology of Material Synthesis

ECTS	S Method of grading Only after succ. compl. of module(s)				
5	numerical grade				
Duratio	Duration Module level		Other prerequisites		
1 semester undergraduate		undergraduate			

Contents

Synthesis methods and parameters in sol-gel chemistry as well as characterisation and applications of the created materials. Fundamental principles of biomineralisation, the structure of biomaterials, introduction to bio-inspired material synthesis.

Intended learning outcomes

Students have developed a sound knowledge of sol-gel chemistry and biomineralisation.

Courses (type, number of weekly contact hours, language — if other than German)

V (4)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor's degree (1 major) Nanostructure Technology (2015)

Bachelor's degree (1 major) Functional Materials (2015)

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Bachelor's degree (1 major) Nanostructure Technology (2020)

Bachelor's degree (1 major) Quantum Technology (2021)

Master's degree (1 major) Chemistry (2024)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 42 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title			'	Abbreviation	
Organo- and Biocatalysis					o8-HKM1-152-mo1
Module coordinator Module offered by					
lecturer of the seminar "Organo- and Biokatalyse" Faculty of C		Faculty of Chemist	ry and Pharmacy		
ECTS	Method of grading Only after succ. cor		compl. of module(s)		
5	nume	rical grade			
Duration Module level Other prerequisites		ites			
1 semester graduate					
Conter	nte		·		

Contents

This module provides students with deeper insights into topics in organic compounds and enzymes in catalytic processes. Organocatalysis: enantioselective implementation, principles, green chemistry, substance classes and application areas. Biocatalysis: effects of enzymes in view of different aspects, especially regarding organic synthesis.

Intended learning outcomes

Students are able to categorise organocatalysts and explain their effects and areas of application. They can describe the structure and applications of enzymes in organic synthesis. They are able to mechanistically describe and analyse the effects of enzymes.

Courses (type, number of weekly contact hours, language — if other than German)

S (3)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 45 to 90 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Biochemistry (2015)

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Biochemistry (2017)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Biochemistry (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 44 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	





Module title			Abbreviation
Advanced organometallic chemistry and its application in homogeneous cata-			08-HKM2-161-m01
lysis			
Module coordinator Module offered by			
lecturer of the seminar "Spezielle Metallorganische Chemie and deren Anwendung in der Homogenkatalyse"			ic Chemistry
FCTS Method of grading Only after succ. compl. of module(s)			

ECTS	ECTS Method of grading		Only after succ. compl. of module(s)
5	numerical grade		
Duratio	Duration Module level		Other prerequisites
1 semester		graduate	

Contents

This module examines elementary organic compounds of transition metals with homogeneous catalytic applications.

Intended learning outcomes

Students can describe and analyse the structure, reactivity and analysis of elementary organic compounds. They are able to characterise special substance classes. They can formulate homogeneous catalysis reactions.

Courses (type, number of weekly contact hours, language — if other than German)

S (3)

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 46 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Module title					Abbreviation
Practical course "Homogeneous catalysis in Inorganic Che				mistry"	08-HKM3AC-161-m01
Module	e coord	inator		Module offered by	
lecturer of the seminar "Spezielle Metallorganische Cher and deren Anwendung in der Homogenkatalyse"			•	Institute of Inorgan	ic Chemistry
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	(not)	successfully completed		-	
Duration Module level		Other prerequisites			
1 semester graduate					
Contents					

This module gives students the opportunity to enhance their skills in advanced synthesis and analytical methods in homogeneous catalysis. The focus will be on catalyst synthesis and characterisation, spectral analysis and crystallography. Students will be expected to conduct their work in the lab independently, write a lab report documenting their findings and deliver a presentation.

Intended learning outcomes

Students are able to use advanced synthesis and analytical methods in homogeneous catalysis in the lab and to interpret their findings. They are able to write a lab report documenting their findings and deliver a presentation.

Courses (type, number of weekly contact hours, language — if other than German)

P (6)

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

report on practical course (approx. 10 pages) and talk (approx. 15 minutes) Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



	title		Abbreviation		
Practical course "Homogeneous catalysis in Organic Chem				istry"	08-HKM3OC-161-m01
Module coordinator				Module offered by	
lecturer of the seminar "Spezielle Metallorganische Chemi and deren Anwendung in der Homogenkatalyse"				Institute of Organic	Chemistry
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	(not) s	successfully completed		-	
Duration Module level Othe			Other prerequisites		
1 semester graduate					
Contents					

This module gives students the opportunity to enhance their skills in advanced synthesis and analytical methods in homogeneous catalysis. The focus will be on catalyst synthesis and characterisation, spectral analysis and crystallography. Students will be expected to conduct their work in the lab independently, write a lab report documenting their findings and deliver a presentation.

Intended learning outcomes

Students are able to use advanced synthesis and analytical methods in homogeneous catalysis in the lab and to interpret their findings. They are able to write a lab report documenting their findings and deliver a presentation.

Courses (type, number of weekly contact hours, language — if other than German)

P (6)

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

report on practical course (approx. 10 pages) and talk (approx. 15 minutes) Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title					Abbreviation	
Advanced transition metal chemistry					08-HKM4-161-m01	
Module coordinator				Module offered by		
lecture	r of the	seminar "Spezielle Ü	bergangsmetallchemie"	Institute of Inorganic Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	1 semester graduate					
Conten	Contents					

Contents

This module provides students with deeper insights into topics in the chemistry of transition metals and coordination chemistry. It also provides an introduction to bioinorganic chemistry and discusses recent developments in transition metal chemistry.

Intended learning outcomes

Students are able to explain transition metals and coordination compounds demonstrating a high degree of expertise in the field. They can explain the fundamental principles of bioinorganic chemistry.

Courses (type, number of weekly contact hours, language — if other than German)

S (3)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module titl	e			Abbreviation	
Master-The	sis Chemistry			08-MA-161-m01	
Module coordinator			Module offered by		
degree pros	gramme coordinator Chemi	e (Chemistry)	Faculty of Chemistr	y and Pharmacy	
	thod of grading	Only after succ. con	ipl. of module(s)		
30 nur	nerical grade				
Duration	Module level	Other prerequisites			
1 semester	graduate	Where applicable, s	pecific modules as s	specified by supervisor.	
Contents					
	e gives students the opport he scientific methods they			problem within a given time frame	
Intended le	arning outcomes				
	re able to conduct research ad to present the results of	•		the principles of good scientific	
Courses (ty	pe, number of weekly conta	act hours, language –	- if other than Germa	ın)	
No courses	assigned to module				
	assessment (type, scope, la ation on whether module c			ition offered — if not every seme-	
	esis (approx. 60 to 80 page f assessment: German and				
Allocation	of places				
Additional	information				
Time to con	nplete: 6 months.				
Workload					
900 h					
Teaching cycle					
Referred to	in LPO I (examination regu	llations for teaching-	degree programmes)		

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Chemistry (2024)



Module title					Abbreviation	
Mass-Spectrometry and Proteomics					08-MBC-MSP-161-m01	
Module coordinator				Module offered by		
holder	holder of the Chair of Biochemistry			Chair of Biochemistry		
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)		
5	nume	rical grade				
Duratio	Duration Module level O		Other prerequisites	Other prerequisites		
1 seme	1 semester graduate					
Conten	Contents					

This module comprises a lecture, a seminar and a lab course. The lecture discusses the fundamental principles of the mass spectrometry of biomolecules. Topics to be covered in the lecture include ESI and MALDI ionisation techniques as well as the operating principles of TOF, Orbitrap and other mass analysers. The lecture also provides an introduction to CID and ETD fragmentation techniques, peptide and protein separation methods as well as the analysis of mass spectrometric data (protein databases, FDR, GO terms, etc.). It gives an overview of quantitative proteomics with a special focus on different stable isotope quantification methods (e.g. SILAC, N15 labelling, iTRAQ) and provides an insight into the mass spectrometric analysis of post-translational modifications. The seminar covers the fundamental principles of the analysis of mass spectrometric data. It introduces students to different software packages and gives them the opportunity to independently develop solutions to a range of problems. In the lab course, students will use affinity purification to isolate a protein complex from yeast. They will then use 1D-SDS-PAGE to separate that complex and will proteolytically cleave it in the gel. Afterwards, students will use nano-LC-MS/MS to analyse the peptides thus obtained and will conduct a data analysis to identify specific interaction partners and post-translational modifications.

Intended learning outcomes

Students have learned the theoretical foundations of mass spectrometry protein and proteomic analysis. They have learned how to use proteomic data analysis software tools. Students have become proficient in the affinity purification of protein complexes and have learned the steps involved in the preparation of samples for mass spectrometry protein analysis, e.g. SDS-PAGE and in-gel digestion. They have gained an insight into how to operate a nanoHPLC-coupled mass spectrometer.

Courses (type, number of weekly contact hours, language — if other than German)

V(2) + S(1) + P(2)

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 45 to 90 minutes) or
- b) log (20 to 30 pages) or
- c) oral examination of one candidate each (20 to 30 minutes) or
- d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or
- e) presentation (20 to 40 minutes)

Language of assessment: German and/or English

Assessment offered: In the semester in which the course is offered, no less than once a year

Allocation of places

67 places.

Additional information

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Workload

150 h

Teaching cycle

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Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 51 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Biochemistry (2019)

Master's degree (1 major) Chemistry (2024)



Module title					Abbreviation	
Practical course medicinal chemistry					08-MCM1-161-m01	
Module	e coord	inator		Module offered by		
lecture mistry)		mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharmacy and Food Chemistry		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
10	(not)	successfully completed				
Duratio	Duration Module level		Other prerequisites			
1 seme	ster	graduate				
Conten	Contents					

Selected methods and topics in medicinal chemistry (synthesis, testing, analysis, theory, pharmacokinetics).

Intended learning outcomes

Students have developed a knowledge of medicinal chemistry and are able to apply it to practical experiments.

Courses (type, number of weekly contact hours, language — if other than German)

P (10)

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Vortestate/Nachtestate (pre and post-experiment examination talks approx. 15 minutes each, log approx. 5 to 10 pages each) and assessment of practical assignments (2 to 4 random examinations) as well as report (30 to 50 pages)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title					Abbreviation	
Pharmaceutical/Medicinal Chemistry 1				-	08-MCM2a-161-m01	
Module	e coord	inator		Module offered by		
	lecturers Pharmazeutische Chemie (Pharmaceutical Chemistry)			Institute of Pharmacy and Food Chemistry		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duration Module level Other prerequis			Other prerequisites	;		
1 semester graduate						
Conten	Contents					

Chemistry of drugs by field of indication; principles of drug development, strategies for active agent discovery; structure-activity relationships; molecular effect mechanisms; pharmacological principles of the drugs discussed in the module; drug analysis; drug synthesis; biotransformation, pharmacokinetics of individual drugs; history of drug development: discussion of specific examples.

Intended learning outcomes

Students have developed a knowledge of pharmaceutical/medicinal chemistry.

Courses (type, number of weekly contact hours, language — if other than German)

V (3)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title					Abbreviation	
Pharmaceutical/Medicinal Chemistry 2					08-MCM2b-161-m01	
Modul	e coord	dinator		Module offered by		
	lecturers Pharmazeutische Chemie (Pharmaceutical Chemistry)			Institute of Pharmacy and Food Chemistry		
ECTS	Meth	od of grading	Only after succ. cor	mpl. of module(s)		
5	nume	erical grade				
Duratio	Duration Module level Oth		Other prerequisites	Other prerequisites		
1 seme	1 semester graduate					
Conter	Contents					

Chemistry of drugs by field of indication; principles of drug development, strategies for active agent discovery; structure-activity relationships; molecular effect mechanisms; pharmacological principles of the drugs discussed in the module; drug analysis; drug synthesis; biotransformation, pharmacokinetics of individual drugs; history of drug development: discussion of specific examples.

Intended learning outcomes

Students have developed a knowledge of pharmaceutical/medicinal chemistry.

Courses (type, number of weekly contact hours, language — if other than German)

V (3)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title					Abbreviation	
Drug design					o8-MCM3-152-mo1	
Modul	e coord	inator		Module offered by		
	lecturers Pharmazeutische Chemie (Pharmaceutical Chemistry)			Institute of Pharmacy and Food Chemistry		
ECTS	Meth	od of grading	Only after succ. cor	mpl. of module(s)		
5	nume	rical grade				
Duratio	Duration Module level Other pren		Other prerequisites	3		
1 seme	1 semester graduate					
Conten	Contents					

Fundamentals: drug targets (types and classification), target validation, effect mechanisms, protein-ligand interactions, lead finding; lead optimisation. Experimental methods: bioassays, HTS, combinatorial chemistry, naturally occurring substances. Theoretical methods: molecular modelling, structure-based drug design, pharmacophore models, docking, virtual screening, simulation methods, de novo design. Ligand-based drug design. QSAR. Predictions of pharmacokinetic and toxicological components (ADME). Case examples, prodrug strategies, bioisosterism, SAR.

Intended learning outcomes

Students master the theoretical and experimental methods and aspects of drug design.

Courses (type, number of weekly contact hours, language — if other than German)

 $S(2) + \ddot{U}(1)$

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

presentation with discussion (approx. 30 minutes) Language of assessment: German and/or English

Allocation of places

20 places. 4 places for students of the Master's degree programme Chemie (Chemistry): Places will be allocated according to the same number of subject semesters; students who have chosen Medizinische Chemie (Medicinal Chemistry) as their focus will be given preferential consideration; among applicants with the same number of subject semesters, places will be allocated by lot.; 6 places for students of the Master's degree programme Biochemie (Biochemistry): Places will be allocated according to the number of subject semesters; among applicants with the same number of subject semesters, places will be allocated by lot; a waiting list will be maintained and places re-allocated by lot as they become available.

Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Biochemistry (2015)

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Biochemistry (2017)



Module title					Abbreviation
Advanced Research Project Organic Chemistry			nemistry		08-OCM-AKP1-161-m01
Modul	e coord	inator		Module offered by	
head o	head of the research group offering the		e module	Institute of Organic Chemistry	
ECTS	Metho	od of grading	Only after succ. con	ıpl. of module(s)	
10	(not)	successfully completed			
Duration Module level		Other prerequisites			
1 semester graduate					
Conter	Contents				

This module gives students the opportunity to get involved in the work of one of the research groups based at the Institute of Organic Chemistry and learn some advanced synthesis and analytical methods.

Intended learning outcomes

Students are able to describe and use some of the synthesis and analytical methods typically used by the research group as well as to describe theoretical aspects.

Courses (type, number of weekly contact hours, language — if other than German)

P (20)

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Log (approx. 15 to 20 pages) and talk (approx. 15 minutes)

Language of assessment: German and/or English

Allocation of places

Additional information

Workload

300 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Modul	e title			At	breviation
Organic Functional Materials				08	3-OCM-FM-161-mo1
Module coordinator				Module offered by	
lecture	lecturer of the seminar "Organische Funktionsmaterialie			Institute of Organic Chemistry	
ECTS	Meth	od of grading	Only after succ. con	ıpl. of module(s)	
5	nume	rical grade			
Duration Module level (Other prerequisites			
1 semester graduate					
Conter	nts		,		

The module deals with specific topics in organic functional materials. The focus is on fundamental (photo) physical effects in organic molecular and polymeric semiconductors as well as their application in (opto)electronic components such as field effect transistors, organic light-emitting diodes, or organic solar cells as well as in nonlinear optics.

Intended learning outcomes

The students are able to explain fundamental (photo)physical processes in organic semiconductors. He/She can explain the synthesis of these semiconductor materials as well as their application in (opto)electronic components such as field effect transistors, organic light-emitting diodes or in organic photovoltaics as well as in nonlinear optics.

Courses (type, number of weekly contact hours, language — if other than German)

S (3)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

Additional information

Workload

150 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Functional Materials (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Functional Materials (2022)



Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's degree (1 major) Functional Materials (2025)



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Module	e title				Abbreviation
Moderi	n Aspe	cts of Natural Product Ch	emistry and Biologic	al Chemistry	08-OCM-NAT-161-m01
Module	e coord	inator		Module offered by	
lecture	r of the	seminar		Institute of Organic	Chemistry
ECTS		od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
This m	odule c	liscusses advanced topic	s in natural product (chemistry and biolog	gical chemistry.
Intend	ed lear	ning outcomes			
Studen	ts are	able to discuss advanced	topics in natural pro	duct chemistry and	biological chemistry.
Course	s (type	, number of weekly conta	ct hours, language –	- if other than Germa	ın)
S (3) Module	e taugh	t in: German or English			
Metho	d of as	_			ation offered — if not every seme-
b) oral c) oral	examir examir	mination (approx. 45 to 9 nation of one candidate e nation in groups of up to 3 assessment: German and	ach (20 to 30 minute 3 candidates (15 to 30	•	late)
Allocat	ion of	places			
semest	ters. Ar		same number of sub	ject semesters, plac	ording to the number of subject es will be allocated by lot. A waible.
Additio	nal inf	ormation			
	-				
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regu	lations for teaching-	degree programmes)	

Module appears in

Master's degree (1 major) Chemistry (2016)



Module title					Abbreviation
Modern Synthetic Methods					o8-OCM-SYNT-161-mo1
Module coordinator				Module offered by	
lecture	er of the	e seminar		Institute of Organic Chemistry	
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)	
5	nume	erical grade			
Duration Module level Othe		Other prerequisites	5		
1 semester graduate					
Conter	nts		•		

This module discusses modern stereoselective synthesis methods. It focuses on selected total syntheses, organometallic chemistry and catalysis.

Intended learning outcomes

Students are able to stereoselectively plan complex chemical syntheses and to stereochemically analyse them. They can explain total syntheses. They can describe aspects of organometallic chemistry and catalysis in synthesis chemistry.

Courses (type, number of weekly contact hours, language — if other than German)

 $S(2) + \ddot{U}(1)$

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

Additional information

Workload

150 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Functional Materials (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Functional Materials (2022)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 61 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Master's degree (1 major) Functional Materials (2025)



Modul	e title	'			Abbreviation
Laser Spectroscopy				-	08-PCM1a-161-m01
Modul	e coord	inator		Module offered by	
lecture copy)	lecturer of seminar "Laserspektroskopie" (Laser Specopy)		kopie" (Laser Spectros-	Institute of Physical and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duration Module level Other pre		Other prerequisites	;		
1 semester graduate					
Conter	ıts				

This module introduces students to the fundamental principles of laser spectroscopy. It discusses absorption and emission spectroscopy.

Intended learning outcomes

Students are able to explain the components and operating principles of lasers as well as the optical principles of laser technology. They are able to describe the principles of absorption and emission spectroscopy.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

 $S(2) + \ddot{U}(1)$

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 minutes) or
- b) oral examination of one candidate each (approx. 20 minutes)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Mathematics (2016)

Master's degree (1 major) Computational Mathematics (2016)

Master's degree (1 major) Functional Materials (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Functional Materials (2022)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 63 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Chemistry (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's degree (1 major) Functional Materials (2025)



Modul	e title				Abbreviation
Advanced Physical Chemistry (Lab)					08-PCM1b-161-m01
Modul	e coord	inator		Module offered by	
lecture copy)	lecturer of seminar "Laserspektroskopi copy)		ie" (Laser Spectros-	Institute of Physica	l and Theoretical Chemistry
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	(not)	successfully completed			
Duratio	Duration Module level		Other prerequisites		
1 semester graduate					
Conten	Contents				

This module gives students the opportunity to use modern experimental methods in physical chemistry in the laboratory. After a safety briefing, the students autonomously conduct experiments in the laboratory. Students will be expected to take tests and write lab reports to demonstrate their knowledge.

Intended learning outcomes

Students have developed a high level of proficiency in modern experimental methods in physical chemistry. They are able to analyse the resulting measurements and write a lab report.

 $\textbf{Courses} \ (\textbf{type}, \, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

P (4)

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Vortestate/Nachtestate (pre and post-experiment examination talks approx. 15 minutes each, log approx. 5 to 10 pages each) and assessment of practical performance (2 to 4 random examinations)

Language of assessment: German and/or English

Allocation of places

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Additional information

Additional information on module duration: block taught lab course with approx. 20 working days.

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Mathematics (2016)

Master's degree (1 major) Computational Mathematics (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bayaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Mathematics (2022)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 65 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Master's degree (1 major) Chemistry (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title		Abbreviation
Statistical Mechanics and Reaction Dynamics		08-PCM2-161-m01
Module coordinator	Module offered by	
lecturer of seminar "Chemische Dynamik" (Chemical Dynamics)	Institute of Physica	l and Theoretical Chemistry

ECTS	Metho	od of grading	Only after succ. compl. of module(s)
5	nume	rical grade	
Duratio	n	Module level	Other prerequisites
1 seme	ster	graduate	

Contents

This module discusses selected topics in statistical mechanics and reaction dynamics. Topics to be covered include the fundamental principles of statistical thermodynamics, the transition state theory, uni- and bimolecular reactions as well as charge and energy transfer.

Intended learning outcomes

Students have become familiar with selected topics in statistical mechanics and reaction dynamics. They have learned and are able to apply the fundamental principles of statistical thermodynamics.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

 $S(2) + \ddot{U}(1)$

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 minutes) or
- b) oral examination of one candidate each (approx. 20 minutes) or
- c) talk (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Mathematics (2016)

Master's degree (1 major) Computational Mathematics (2016)

Master's degree (1 major) Functional Materials (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 67 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Functional Materials (2022)

Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Chemistry (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's degree (1 major) Functional Materials (2025)



Modul	e title				Abbreviation			
Nanos	cale Ma	aterials			08-PCM3-161-m01			
Modul	e coord	inator		Module offered by				
lecturer of the seminar "Nanoskalige Materialien"				Institute of Physical and Theoretical Chemistry				
ECTS	Meth	od of grading Only after succ.		mpl. of module(s)				
5	nume	rical grade	l grade					
Duration		Module level	Other prerequisite	Other prerequisites				
1 semester		graduate						
Contents								

This module discusses advanced topics in nanoscale materials. It focuses on the structure, properties, fabrication, modern characterisation methods and application areas of nanoscale materials.

Intended learning outcomes

Students are able to characterise nanoscale materials. They are able to name analytical methods and application areas of nanoscale materials.

Courses (type, number of weekly contact hours, language — if other than German)

 $S(2) + \ddot{U}(1)$

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 minutes) or
- b) oral examination of one candidate each (approx. 20 minutes) or
- c) talk (approx. 30 minutes)

Language of assessment: German and/or English

creditable for bonus

Allocation of places

Additional information

Workload

150 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Mathematics (2016)

Master's degree (1 major) Computational Mathematics (2016)

Master's degree (1 major) Functional Materials (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Bachelor's degree (1 major) Quantum Technology (2021)



Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Functional Materials (2022)

Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Chemistry (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's degree (1 major) Functional Materials (2025)



Modul	e title				Abbreviation		
Ultrafa	st spec	troscopy and quantu	m-control		08-PCM4-161-m01		
Modul	e coord	inator		Module offered by			
lecturer of the seminar "Nanoskalige Materialien"				Institute of Physical and Theoretical Chemistry			
ECTS	Metho	hod of grading Only after succ.		ompl. of module(s)			
5	nume	rical grade					
Duration		Module level	Other prerequisites	Other prerequisites			
1 semester		graduate	Prior completion of	Prior completion of modules o8-PCM1a and o8-PCM1b recommended.			
Contouts							

Contents

This module discusses advanced topics in ultrafast spectroscopy and quantum control. It focuses on ultrashort laser pulses, time-resolved laser spectroscopy and coherent control.

Intended learning outcomes

Students are able to describe the generation of ultrashort laser pulses and to characterise them. They can explain the theory of time-resolved laser spectroscopy and name experimental methods. They can describe the principles and applications of quantum control.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

 $S(2) + \ddot{U}(1)$

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 minutes) or
- b) oral examination of one candidate each (approx. 20 minutes) or
- c) talk (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Mathematics (2016)

Master's degree (1 major) Physics (2016)

Master's degree (1 major) Nanostructure Technology (2016)

Master's degree (1 major) Computational Mathematics (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (2019)

Master's degree (1 major) Nanostructure Technology (2020)

Master's degree (1 major) Physics (2020)



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Physics International (2020)

Master's degree (1 major) Quantum Engineering (2020)

Master's degree (1 major) Quantum Technology (2021)

Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Functional Materials (2022)

Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Quantum Engineering (2024)

Master's degree (1 major) Physics International (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)



Module title				,	Abbreviation	
Physical Chemistry of Supramolecular Assemblies				-	08-PCM5-161-m01	
Modul	e coord	inator		Module offered by		
1	lecturer of the seminar "Physikalische Chemie Supramole- kularer Strukturen"			Institute of Physical and Theoretical Chemistry		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duration Module level Other prerequisi		Other prerequisites	3			
1 semester graduate						
Conten	Contents					

This module examines the basic interactions between molecules. It discusses the formation and physical-chemical properties of aggregates as well as key applications of supramolecular chemistry.

Intended learning outcomes

Students are able to explain the basic interactions between molecules demonstrating a high degree of expertise in the field. They can describe the formation and physical-chemical properties of aggregates. They can name modern applications of supramolecular chemistry.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

 $S(2) + \ddot{U}(1)$

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 minutes) or
- b) oral examination of one candidate each (approx. 20 minutes) or
- c) talk (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

Additional information

Workload

150 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Mathematics (2016)

Master's degree (1 major) Computational Mathematics (2016)

Master's degree (1 major) Functional Materials (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bayaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 73 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Functional Materials (2022)

Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Chemistry (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's degree (1 major) Biofabrication (2025)



Module title					Abbreviation
Physical Chemistry (Advanced Lab)					o8-PCM6-161-mo1
Module coordinator				Module offered by	
lecture	rs Phys	ikalische Chemie (Physic	cal Chemistry)	Institute of Physical and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. con	ıpl. of module(s)	
5	(not) successfully completed				
Duration Module level		Other prerequisites			
1 semester graduate					
Contor	Contents				

Contents

This module gives students the opportunity to get involved in the work of one of the research groups based at the Institute of Physical Chemistry and learn some advanced synthesis and analytical methods.

Intended learning outcomes

Students have become proficient in the research methods typically used by the relevant physical chemistry research group. They are able to analyse their findings and thus help answer topical questions in physical chemistry.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

P (4)

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

presentation (approx. 20 minutes)

Language of assessment: German and/or English

Allocation of places

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Additional information

Additional information on module duration: block taught lab course with approx. 20 working days.

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Mathematics (2016)

Master's degree (1 major) Computational Mathematics (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Chemistry (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 75 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Modul					Abbreviation
Clinical-analytical Chemistry					08-PH-KAC-152-m01
Modul	e coord	inator		Module offered by	
		ture "Klinisch-analytis l Chemistry)	sche Chemie" (Clinical	Institute of Pharma	cy and Food Chemistry
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)	
5	nume	rical grade			
Durati	on	Module level	Other prerequisites	5	
1 seme	ester	graduate			
Conte	nts				
This m	odule c	liscusses advanced to	ppics in clinical analytic	al chemistry.	
Intend	ed lear	ning outcomes			
Stude	nts have	e developed an advan	ced knowledge of mole	cular biology.	
Course	es (type	, number of weekly co	ontact hours, language -	– if other than Germa	an)
V (3)		•			
			e, language — if other the can be chosen to earr		ntion offered — if not every seme-
		nation (approx. 120 m ssessment: German a			
Alloca	tion of	places			
Additi	onal inf	ormation			
Workl	oad				
150 h					
Teach	ing cycl	e			
Referr	ed to in	LPO I (examination r	egulations for teaching-	degree programmes)	
				<u> </u>	

Module appears in

Master's degree (1 major) Biochemistry (2015)

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Biochemistry (2017)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Biochemistry (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module	Module title				Abbreviation
Practio	al cour	se of clinical-analytical (Chemistry	-	08-PH-KACP-152-m01
Modul	e coord	inator		Module offered by	
I		ture "Klinisch-analytisch l Chemistry)	e Chemie" (Clinical	Institute of Pharma	cy and Food Chemistry
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)	
5	(not)	successfully completed			
Duratio	Duration Module level		Other prerequisites		
1 seme	1 semester undergraduate				
Conter	Contents				

This module covers practical topics in clinical chemistry and clinical diagnostics as well as the related analytical methods.

Intended learning outcomes

Students have developed a knowledge of clinical analytical chemistry and are able to apply it to practical experiments.

Courses (type, number of weekly contact hours, language — if other than German)

P (5)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Vortestate/Nachtestate (pre and post-experiment examination talks approx. 15 minutes each, log approx. 5 to 10 pages each) and assessment of practical performance (2 to 4 random examinations)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Biochemistry (2015)

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Biochemistry (2017)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Biochemistry (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)



Module title				Abbreviation	
Supramolecular Chemistry (Basics))	-	08-SCM1-152-m01
Module coordinator				Module offered by	
lecture	r of lec	ture "Organischen Ch	iemie"	Faculty of Chemistry and Pharmacy	
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)	
5	nume	rical grade			
Duration Module level		Other prerequisite	Other prerequisites		
1 semester graduate					
Contents					

This module introduces students to the fundamental principles of supramolecular chemistry. It focuses on interactions between molecules, molecular recognition by receptors, complexes, supramolecular polymers, coordination polymers and networks, liquid crystals, self-assembly in aqueous media, synthetic ion channels and modern applications of supramolecular chemistry.

Intended learning outcomes

Students are able to explain interactions between molecules demonstrating a high degree of expertise in the field as well as to describe the formation, structure and polymers of coordination compounds. They are able to describe the self-assembly of polymers in aqueous media as well as to identify the characteristics of synthetic ion channels. They can name modern applications of supramolecular chemistry.

Courses (type, number of weekly contact hours, language — if other than German)

S (3)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 minutes) or
- b) oral examination of one candidate each (approx. 20 minutes)

Language of assessment: German and/or English

Allocation of places

Additional information

Workload

150 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Biofabrication (2015)

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)



Module	e title		Abbreviation			
Supran	nolecul	lar Chemistry (Practical (Course)		08-SCM2-161-m01	
Module	e coord	inator		Module offered by		
lecturer of lecture "Supramolekularen Chemie Chemie/Physikalische Chemie)"			Chemie (Organische	Faculty of Chemistr	y and Pharmacy	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	(not)	successfully completed	o8-SCM1			
Duratio	Duration Module level		Other prerequisites			
1 seme	1 semester graduate					
Conten	Contents					

This module gives students the opportunity to perform some of the key experiments in supramolecular chemistry. They will perform syntheses of host-guest complexes, dye aggregates and nanoparticles and use advanced analytical methods to characterise them.

Intended learning outcomes

Students are able to perform syntheses of host-guest complexes and use spectroscopic methods to analyse and characterise them. They are able to produce nanoparticles and to characterise them microscopically.

Courses (type, number of weekly contact hours, language — if other than German)

P (6)

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Vortestate/Nachtestate (pre and post-experiment examination talks approx. 15 minutes each, log approx. 5 to 10 pages each) and assessment of practical performance (2 to 4 random examinations) Language of assessment: German and/or English

Allocation of places

Additional information

Workload

150 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)



Module title					Abbreviation
Bioorganic Chemistry					o8-SCM3-152-mo1
Modul	Module coordinator			Module offered by	
	lecturer of lecture "Bioorganische Chemie" (Bioorganic Chemistry)			Institute of Organic Chemistry	
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)	
5	nume	rical grade			
Duratio	Duration Module level O		Other prerequisite	S	
1 semester graduate					
Contents					

Bioorganic chemistry unites the central questions of organic chemistry, biochemistry, medicinal chemistry and spectroscopy with a focus on biomolecules. At the core of bioorganic chemistry is the synthesis and purposeful manipulation of biomolecules, such as nucleic acids, peptides, proteins, carbohydrates and lipids. This includes the framework of structure-function relationships and the fundamental understanding of biological mechanisms, to enable applications towards biomaterials, biosensing, bioimaging, clinical diagnostics and therapeutics.

Key concepts covered in the course are nucleic acid chemistry, peptide chemistry, carbohydrate chemistry, bioorthogonal reactions, molecular diversity, solid-phase synthesis, molecular recognition and interactions (ligand-receptor interactions, signal transduction)

Intended learning outcomes

The students will have a molecular understanding of the structure and reactivity of biomolecules. The students obtain knowledge of modern synthetic methods in bioorganic chemistry and can explain principles of molecular interactions and recognition mechanisms. They can describe modern aspects of nucleic acids, proteins, carbohydrates and lipids.

Courses (type, number of weekly contact hours, language — if other than German)

S (3)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 45 to 90 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Biochemistry (2015)

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Functional Materials (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 81 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Master's degree (1 major) Biochemistry (2017)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Biochemistry (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Functional Materials (2022)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title					Abbreviation	
Supramolecular Chemistry (Advanced Lab)					08-SCM4-161-m01	
Module	e coord	inator		Module offered by		
lecturer of lecture "Supramolekularen Chemie (Organische Chemie/Physikalische Chemie)"			Chemie (Organische	Institute of Organic	Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	(not)	successfully completed	o8-SCM2			
Duration Module level Ot		Other prerequisites				
1 seme	1 semester graduate					
Conten	Contents					

Contents

This module gives students the opportunity to enhance their skills in advanced synthesis and analytical methods in supramolecular chemistry. Students will be expected to conduct their work in the lab independently, document their findings and deliver a presentation.

Intended learning outcomes

Students are able to use advanced synthesis and analytical methods in supramolecular chemistry in the lab and to interpret their findings. They are able to deliver a presentation on their findings.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

P (6)

Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

presentation (approx. 20 minutes)

Language of assessment: German and/or English

Allocation of places

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Additional information

Additional information on module duration: block taught lab course with approx. 20 working days.

Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)



Module	Module title				Abbreviation
Theoretical Chemistry - Project course quantum chemistry			quantum chemistry		08-TCAP1-161-m01
Modul	Module coordinator			Module offered by	
head o	f the re	search group offering the	e module	Institute of Physical and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. con	ıpl. of module(s)	
5	(not)	successfully completed			
Duration Module level		Other prerequisites			
1 semester graduate					
Conter	Contents				

This module gives students the opportunity to get involved in the work of one of the research groups based at the Institute of Theoretical Chemistry and learn some of the methods typically used in the discipline. The focus will be on quantum chemistry.

Intended learning outcomes

Students have learned some of the methods typically used in theoretical chemistry and, in particular, in quantum chemistry. They are able to explain issues that are relevant to the field of quantum chemistry.

Courses (type, number of weekly contact hours, language — if other than German)

P (5)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

Additional information

Additional information on module duration: block taught lab course with approx. 20 working days.

Workload

150 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Mathematics (2016)

Master's degree (1 major) Computational Mathematics (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Chemistry (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 84 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title					Abbreviation
Theoretical Chemistry - Project course quantum dynamics			quantum dynamics		08-TCAP2-161-m01
Module coordinator				Module offered by	
head o	f the re	search group offering the	e module	Institute of Physical and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	(not)	successfully completed			
Duration Module level Other		Other prerequisites			
1 semester graduate					
Conten	Contents				

This module gives students the opportunity to get involved in the work of one of the research groups based at the Institute of Theoretical Chemistry and learn some of the methods typically used in the discipline. The focus will be on quantum dynamics.

Intended learning outcomes

Students have learned some of the methods typically used in theoretical chemistry and, in particular, in quantum dynamics. They are able to explain issues that are relevant to the field of quantum dynamics.

Courses (type, number of weekly contact hours, language — if other than German)

P (5)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

Additional information

Additional information on module duration: block taught lab course with approx. 20 working days.

Workload

150 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Mathematics (2016)

Master's degree (1 major) Computational Mathematics (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Chemistry (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title			Abbreviation		
Selected Topics in Theoretical Chemistry			try		08-TCM1-161-m01
Modul	e coord	inator		Module offered by	
lecturer of lecture "Theoretische Chemie"		Institute of Physical and Theoretical Chemistry			
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duration Module level Other prerequisites					
1 semester graduate					
Contents					

This module introduces students to the fundamental principles of theoretical chemistry.

Intended learning outcomes

Students are able to describe the mathematical and physical principles underlying the quantum chemical and quantum dynamical approaches of theoretical chemistry.

Courses (type, number of weekly contact hours, language — if other than German)

 $S(2) + \ddot{U}(2)$

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

Additional information

Workload

150 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Mathematics (2016)

Master's degree (1 major) Computational Mathematics (2016)

Master's degree (1 major) Functional Materials (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bayaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Computational Mathematics (2022)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 88 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Chemistry (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title				Abbreviation	
Basics and Applications of Quantum Chemistry			Chemistry		08-TCM2-161-m01
Module coordinator				Module offered by	
lecturer of lecture "Computational Chemistry"		Institute of Physical and Theoretical Chemistry			
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duration Module level Other prerequisites					
1 semester graduate					
Contents					

This module introduces students to the fundamental principles of computational chemistry.

Intended learning outcomes

Students are able to explain the theoretical principles of computational chemistry and to apply methods in computational chemistry.

Courses (type, number of weekly contact hours, language — if other than German)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

Additional information

Workload

150 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Mathematics (2016)

Master's degree (1 major) Computational Mathematics (2016)

Master's degree (1 major) Functional Materials (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bayaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Computational Mathematics (2022)



Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Chemistry (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title					Abbreviation
Numerical Methods and Programming			S		o8-TCM3-161-mo1
Module	e coord	inator		Module offered by	
lecturer of lecture "Programmieren in Theoretischer Chemie"		Institute of Physical and Theoretical Chemistry			
ECTS	Meth	od of grading	Only after succ. cor	mpl. of module(s)	
5	nume	rical grade			
Duration Module level Other prerequisite		3			
1 semester graduate					
Contents					

This module provides an introduction to the fundamentals of programming in theoretical chemistry and discusses its application areas.

Intended learning outcomes

Students are able to explain and use one of the programming languages typically used in theoretical chemistry as well as to name its application areas.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

 $S(2) + \ddot{U}(2)$

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Mathematics (2016)

Master's degree (1 major) Computational Mathematics (2016)

Master's degree (1 major) Functional Materials (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 92 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Functional Materials (2022)

Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Chemistry (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module title			Abbreviation		
Quantum Dynamics					08-TCM4-161-m01
Module coordinator				Module offered by	
lecturer of lecture "Quantendynamik"			Institute of Physical and Theoretical Chemistry		
ECTS	Meth	od of grading	Only after succ. con	ıpl. of module(s)	
5	nume	rical grade			
Duration Module level Other prerequisite					
1 semester graduate					
Conter	nts				

Time-dependent Schrödinger equation, propagators, time-dependent perturbation theory, adiabatic theorem, diabatic and adiabatic states, non-adiabatic dynamics, mixed quantum-classical dynamics.

Intended learning outcomes

The students possess knowledge about the time-dependent description of the nuclear and electronic dynamics in molecules. Their insight into the methods and the numerical realizations allow them to carry out applications in the field of theoretical chemistry.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$

 $S(2) + \ddot{U}(2)$

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 90 to 180 minutes) or
- b) oral examination of one candidate each (20 to 30 minutes) or
- c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or
- d) log (approx. 20 pages) or
- e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

Allocation of places

Additional information

Workload

150 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Chemistry (2016)

Master's degree (1 major) Mathematics (2016)

Master's degree (1 major) Computational Mathematics (2016)

Master's degree (1 major) Functional Materials (2016)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Chemistry (2018)

Master's degree (1 major) Computational Mathematics (2019)

Master's degree (1 major) Mathematics (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's with 1 major Chemistry (2016)	JMU Würzburg • generated 19-Apr-2025 • exam.	page 94 / 99
	reg. data record Master (120 ECTS) Chemie - 2016	



Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Functional Materials (2022)

Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Chemistry (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)



Module	Module title Abbreviation					
Advanc	Advanced chemical practical course				08-VPM-DA-161-m01	
Module	Module coordinator			Module offered by		
head of the research group offering the module		module	Faculty of Chemistr	v and Pharmacy		
		od of grading	Only after succ. con		y and i namacy	
2		successfully completed				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	graduate				
Conten	ts					
		ives students the opport ne in question.	unity to explore a res	earch topic and app	ly the methods commonly used	
Intende	ed learı	ning outcomes				
Student oral pre			research topic and p	resent the results of	their work in a written report or	
Courses (type, number of weekly contact hours, language — if other than German)						
P (3)						
		sessment (type, scope, la on on whether module ca			tion offered — if not every seme-	
		a. 3 pages) ssessment: German and,	or English			
Allocati	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
60 h						
Teachir	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Chemistry (2016)						
	Master's degree (1 major) Chemistry (2018)					
Master'	Master's degree (1 major) Chemistry (2024)					



Module ti	Abbreviation					
Qualificat	Qualifications - Partner University			08-VPU-161-m01		
Module co	oordinator		Module offered by			
	e coordinator of the exchang	ge programme	Faculty of Chemistr	y and Pharmacy		
	ethod of grading	Only after succ. con		,		
30 (r	ot) successfully completed					
Duration	Module level	Other prerequisites				
1 semeste	r graduate	Please consult with	course advisory serv	vice in advance.		
Contents						
This mod	ıle discusses topics from the	curriculum of the pa	rtner university abro	ad.		
Intended	learning outcomes					
Students sity.	have developed the knowled	ge and skills taught i	n the courses attend	ed by them at the partner univer-		
Courses (type, number of weekly conta	act hours, language –	- if other than Germa	n)		
No course	s assigned to module	_				
	f assessment (type, scope, la mation on whether module c			tion offered — if not every seme-		
	nts as specified by partner u of assessment: German and		at partner university	abroad		
Allocation	of places					
Additiona	linformation					
Workload						
900 h						
Teaching	cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)						
	<u>- </u>					
Module a	pears in					
Master's degree (1 major) Chemistry (2016)						
	legree (1 major) Chemistry (2					
Master's degree (1 major) Chemistry (2024)						



Module title Abbreviation					Abbreviation
Tutorin	ng 1 (pr	actical course)			08-WRM1-161-m01
Module coordinator				Module offered by	
Dean of Studies Chemie (Chemistry)			Faculty of Chemistr	y and Pharmacy	
ECTS	Meth	od of grading	Only after succ. con	ipl. of module(s)	
5	(not)	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate	· '	dule. The tutorial mu	rmed under a research assistant ast accompany a different course M1.
Conten	its				
		rives students the opport I Pharmacy and learn how			lecture offered by the Faculty of an appropriate manner.
Intend	ed lear	ning outcomes			
Studen needs.	its are a	able to teach students in	earlier stages of thei	r degrees and tailor	their teaching to those students'
Courses (type, number of weekly contact hours, language — if other than German)					
T (3)					
Metho		sessment (type, scope, la			tion offered — if not every seme-
		ities, (preparation of stat ssessment: German and		ports, approx. 100 h	ours total)
Allocat	ion of p	places			
	-				
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	ars in			
Master's degree (1 major) Chemistry (2016)					
Master's degree (1 major) Food Chemistry (2016)					
Master's degree (1 major) Chemistry (2018)					
	_	ee (1 major) Food Chemis			
Master	's degr	ee (1 major) Food Chemis	stry (2021)		

Master's degree (1 major) Chemistry (2024)



Module title					Abbreviation	
Tutoring 2 (practical course)					08-WRM2-161-m01	
Module coordinator				Module offered by		
Dean of Studies Chemie (Chemistry)				Faculty of Chemistry and Pharmacy		
ECTS		od of grading	Only after succ. com	nly after succ. compl. of module(s)		
5	(not)	successfully completed				
Duration		Module level	Other prerequisites			
1 semester		graduate	It is not permitted to use activities performed under a research assistant contract for this module. The tutorial must accompany a different course than the tutorial held in module 08-WRM1.			
Conter	ıts					
This module gives students the opportunity to teach a tutorial accompanying a lecture offered by the Faculty of Chemistry and Pharmacy and learn how to present and teach scientific topics in an appropriate manner.						
Intended learning outcomes						
Students are able to teach students in earlier stages of their degrees and tailor their teaching to those students' needs.						
Courses (type, number of weekly contact hours, language — if other than German)						
T (3)						
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)						
Tutoring activities, (preparation of status and/or wrap-up reports, approx. 100 hours total) Language of assessment: German and/or English						
Allocation of places						
Additional information						
Workload						
150 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Chemistry (2016)						
Master's degree (1 major) Food Chemistry (2016)						
Master's degree (1 major) Chemistry (2018)						
Master's degree (1 major) Food Chemistry (2019)						
	Master's degree (1 major) Food Chemistry (2021) Master's degree (1 major) Chemistry (2024)					
masici s degree (1 major) enemistry (2024)						