



## Masterstudium Chemical and Pharmaceutical Engineering

ab 01.10.2023 (Neu) – Plan nach ECTS

Matrikel-Nr.

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Familienname, Vorname(n)

Kennzeichnung des Studiums

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Auflagen/Additional mandatory Courses:	<input type="checkbox"/> JA <input type="checkbox"/> NEIN   → Auflagen überprüft? <input type="checkbox"/>		
Vorstudium/ Bachelor's programme:	<input type="checkbox"/> BA oder MA Chemie	<input type="checkbox"/> BA oder MA Pharmazie	<input type="checkbox"/> Diplom Pharmazie
	<input type="checkbox"/> BA oder MA Technische Chemie	<input type="checkbox"/> Diplom Chemie oder Technische Chemie	<input type="checkbox"/> sonstiges: .....

Lehrveranstaltung/Course	Typ	SWS	Datum/Date	Note/Grade	ECTS	
<b>Compulsory Module A1: Chemical and Pharmaceutical Engineering: Basics</b>					<b>19</b>	
Mass- and Energy Balances	VU	02			03	A1.1
Transport Processes I	VU	02			03	A1.2
Transport Processes II	VU	02			03	A1.3
Chemical Thermodynamics I	VO	02			03	A1.4
Chemical Thermodynamics I	UE	01			01	A1.5
Engineering Mathematics	VU	02			03	A1.6
Programming VT I	VU	03			03	A1.7
<b>Compulsory Module A2: Chemical and Pharmaceutical Engineering: Unit Operations</b>					<b>20</b>	
Chemical Reaction Engineering I	VU	03			04	A2.1
Mass Transfer Unit Operations	VO	03			4,5	A2.2
Mass Transfer Unit Operations	UE	02			02	A2.3
Particle Technology I	VO	03			4,5	A2.4
Particle Technology I	UE	02			02	A2.5

Lehrveranstaltung/Course	Typ	SWS	Datum/Date	Note/Grade	ECTS	
Chemical Reaction Engineering Laboratory	LU	01			01	A2.6
Mass Transfer Unit Operations Laboratory	LU	01			01	A2.7
Particle Technology Laboratory I	LU	01			01	A2.8
<b>Elective Module Main Focus B1: Chemical Engineering (Vertiefungsrichtung)</b> B1 oder B2 ist zu wählen. / Choose B1 or B2.					<b>26</b>	
Particle Technology II	VU	03			04	B1.1
Mass Transfer Unit Operations II	VO	02			03	B1.2
Mass Transfer Unit Operations II	UE	01			01	B1.3
Chemical Reaction Engineering II	VU	02			03	B1.4
Introduction to Process Simulation and Process Design	VU	03			04	B1.5
Thermodynamics	VO	04			06	B1.6
Thermodynamics	UE	03			05	B1.7
<b>Elective Module Main Focus B2: Pharmaceutical Engineering (Vertiefungsrichtung)</b> B1 oder B2 ist zu wählen. / Choose B1 or B2.					<b>26</b>	
Pharmaceutical Engineering I	VU	03			04	B2.1
Pharmaceutical Engineering II	VU	03			04	B2.2
Pharmaceutical Process and Plant Engineering	VO	2,66			03	B2.3
Quality by Design	VO	1,33			02	B2.4
Synthetic Drugs	VO	02			03	B2.5
Drugs of Biological Origin	VO	02			03	B2.6
Basics of Pharmaceutical Preparations	LU	5,33			04	B2.7
Continous Process Engineering	VO	02			03	B2.8
<b>Aus den Special Focus C1-C3 bzw. dem nicht gewählten Main Focus sind 16 ECTS zu wählen. Min. 10 ECTS müssen aus einem Special Focus absolviert werden./Choose 16 ECTS out of the Special Focus C1-C3 and the non-choose Main Focus. At least 10 ECTS must be completed in one Special Focus.</b>					<b>16</b>	<input type="checkbox"/> C1 .....ECTS <input type="checkbox"/> C2 .....ECTS <input type="checkbox"/> C3 .....ECTS <input type="checkbox"/> B1/B2 ... ECTS
<b>Elective Module Special Focus C1: Chemical Engineering</b>						
Fluid Phase Properties	VU	03			03	C1.1
Mass Transfer Unit Operations Laboratory II	LU	02			02	C1.2
Advanced Chemical Reaction Engineering	VU	03			04	C1.3

Lehrveranstaltung/Course	Typ	SWS	Datum/Date	Note/ Grade	ECTS	
Chemical Reaction Engineering Laboratory II	LU	02			02	C1.4
Advanced Chemical Reaction Engineering Laboratory	LU	02			02	C1.5
Particle Technology Laboratory II	LU	02			02	C1.6
Plant and Process Design	VO	03			04	C1.7
Systems Dynamic and Basics of Process Technology	VU	02			03	C1.8
Anlagengenehmigungsverfahren	SE	02			03	C1.9
Model Development and Simulation	VU	04			05	C1.10
Safety and Environmental Aspects in Chemical Process Engineering	VO	02			03	C1.11
Project CE	KU	02			06	C1.12
Electrochemical Engineering	SE	02			02	C1.13
Encyclopedia Business Economics	VO	03			4,5	C1.14
Encyclopedia Business Economics	UE	02			03	C1.15
Industrial Engineering 1	VO	02			03	C1.16
Industrial Engineering 1	UE	01			01	C1.17
Industrial Management Seminar	SE	02			03	C1.18
Preformulation	VO	02			03	C1.19
Project Management	VU	02			03	C1.20
Bio-based Materials: Processing, Engineering and Analysis	VO	02			03	C1.21
Bio-based Materials: Processing, Engineering and Analysis	LU	02			02	C1.22
Chemical Engineering of Bio-based Products	VU	3,5			4,5	C1.23
Hydrogen Production and Storage	VO	02			03	C1.24
Fuel Cells and Energy Storage	VO	02			03	C1.25
Milli and Micro Fluid Mechanics	VU	02			03	C1.26
<b>Elective Module Special Focus C2: Pharmaceutical Engineering</b>						
Particle Technology II	VU	03			04	C2.1
Quality Assurance in Pharmaceutical, Food and Biotechnological Processing	VO	02			03	C2.2
Pharmaceutical Process Control and Process Analysis	VO	02			03	C2.3
Project Laboratory PE	LU	04			06	C2.4

Lehrveranstaltung/Course	Typ	SWS	Datum/Date	Note/Grade	ECTS	
Biopharmaceuticals	VO	02			03	C2.5
Design of Drug Formulations	VO	2,66			04	C2.6
Design of Multiphases Flow Processes	VU	02			03	C2.7
Drug Delivery	VO	02			03	C2.8
Introduction to Dermopharmacy	VO	02			03	C2.9
Colloidal Drug Delivery System	VO	01			1,5	C2.10
Model Development and Simulation	VU	04			05	C2.11
Particle Technology Laboratory II	LU	02			02	C2.12
Pharmaceutical Nanotechnology	VO	02			03	C2.13
Exkursion (Verfahrenstechnik)	EX	02			02	C2.14
Solid State and Physical Pharmaceutics	VO	02			03	C2.15
Selected Topics in Pharmaceutical Engineering	VO	02			03	C2.16
Modeling and Simulation of Pharmaceutical Manufacturing Operations	VO	02			03	C2.17
Laboratory Course – Pharmaceutical Engineering I	LU	03			03	C2.18
Laboratory Course Special Pharmaceutical Ingredients and Fine Chemicals	LU	03			03	C2.19
Project Management	VU	02			03	C2.20
Milli and Micro Fluid Mechanics	VU	02			03	C2.21
<b>Elective Module Special Focus C3: Technical Chemistry</b>						
Green Chemistry	VO	1,33			02	C3.1
Energy and Environmental Science	VO	1,33			02	C3.2
Introduction to Solid State Chemistry	VO	02			03	C3.3
Materials and Materials Technologies I	VO	02			03	C3.4
Materials and Materials Technologies II	VO	02			03	C3.5
Physical Chemistry for Technical Chemists	VO	1,33			02	C3.6
Applied Catalysis	VO	02			03	C3.7
Material Science II – Characterisation and Testing	VO	02			03	C3.8
Renewable Resources – Chemistry and Technology	VO	1,33			02	C3.9
Liquid Biofuels	SE	01			01	C3.10

Lehrveranstaltung/Course	Typ	SWS	Datum/Date	Note/Grade	ECTS	
Advanced Polymer Characterisation	VO	02			03	C3.11
Chemo- and Biosensors	VO	1,33			02	C3.12
Electrosynthesis in Industry and Laboratory	VO	2,66			04	C3.13
Advanced Organic Chemistry	VO	02			03	C3.14
Advanced Inorganic Analytical Chemistry	VO	1,33			02	C3.15
Advanced Organic Analytical Chemistry	VO	1,33			02	C3.16
Food Biotechnology	VO	1,33			02	C3.17
Enzyme Technology and Biocatalysis	VO	02			03	C3.18
Enzymatic and Microbial Food Processing	VO	02			03	C3.19
Bioprocess Optimisation and Process Control	VO	02			03	C3.20
Sustainable Process Technology	VO	02			03	C3.21
Project Laboratory PE	LU	04			06	C3.22
Project Management	VU	02			03	C3.23
<b>LVen aus dem nicht gewählten Main Focus</b>						
<b>Courses of the non-chosen Main Focus</b>						
Aus dem nicht gewählten Main Focus (B1 oder B2) können max. 6 ECTS hier verwendet werden.						max. 6 ECTS
Max. 6 ECTS out of the non-chosen Main Focus (B1 or B2).						
<b>Free Choice Subjects</b>				<b>E</b>	<b>08</b>	N <sub>FWF</sub> : 1:1 VO = 1:1,5

Lehrveranstaltung/Course	Typ	SWS	Datum/Date	Note/ Grade	ECTS	
<b>Master's Thesis</b>					<b>30</b>	
<b>Master's Examination</b>					<b>01</b>	

Das viersemestrige Masterstudium umfasst einen Arbeitsaufwand von 120 ECTS-Anrechnungspunkten.