

Selection table **Materials Specialization – SoSe26** Master Program Materials Science

This table should be used to plan the Specialisation Subject. The dates given in it may change (even at short notice). It is therefore strongly recommended that you check regularly all lecture dates either via Campus or by direct enquiry to the module coordinator.

Basic rules: Two to three topics must be chosen. Each must be studied with 6 to 24 CP. Total sum of 30 CP. Within a topic, rules apply as stated in the table:

Topic: Polymer Science and Plastic Engineering (Partially in German and English)				
	Kunststofftechnik - Grundlagen und Einführung (Bonten)	6 CP	WS	2026
	Charakterisierung und Prüfung von Polymeren und Kunststoffen (Bonten)	3 CP	WS	2026
	Faserkunststoffverbunde (Kreutzbruck)	3CP	WS _{over two Semester}	2026
	Praktikum Kunststofftechnik	3 CP	WS	2026
	Kreislaufwirtschaft in der Kunststofftechnik – Aufbereitung, Recycling und Biokunststoffe	3 CP	WS	2026
	Nondestructive Testing (Kreutzbruck); Language: English/German	3 CP	WS _{over two Semester}	2026
	Structure and Properties of Functional Polymers (Ludwigs); Language: English	6CP	By appointment	
	Biopolymers for Pharmaceuticals (Buchmeiser, Adams); Language: English	3CP	SS	2026
	Polymer Electronics (Ludwigs)	3 CP	WS	2027

Topic: Advanced Materials Characterization				
	Solid State Spectroscopy (Dressel/Keimer)	9 CP	SS	2026
	Physikalische Chemie III (Statistische Thermodynamik, Streu- und Diffraktionsmethoden mit Übung und Praktikum) (Gießelmann)	12CP	SS	2026
	High Resolution and Analytical Microscopy (Schmitz)	6 cp	SS	2026 is offered as a block course at the end of the lecture period

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Topic: Functional Materials			
Liquid Crystals (Gießelmann/Laschat)	6 CP	WS every two years	2026
Semiconductor Physics (Weis)	9 CP	WS over two Semesters	2025
Advanced Experimental Physics (Wrachtrup)	9 CP	WS	2026
Advanced Condensed Matter Physics (Wrachtrup)	6 CP	SS	2026
Structure and Properties of Functional Polymers (Ludwigs)	6 CP	-	-
Thin Film Materials and Coatings (Schmitz/Richter)	3 CP	WS	2026
Materials for Energy Technologies (Clemens)	6 CP	SS	2026
Polymer Electronics (Ludwigs)	3 CP	WS	2027
Bioinspired Approaches in Materials Science (Bill)	6 CP	SS every two years	2027
Solid State and Electrochemistry – What to know before making a battery (Rasche)	3 CP	WS	2026
Solid Catalysts and Functional Materials	6 CP	WS	2026
Crystal growth and control of the crystal lattice	3CP	SS	2026
Functional Framework Materials	3 CP	SS	2026
Soft Robots: Principles, Mechanisms and Fabrication	6 CP	WS	2026

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Topic: Inorganic Materials Chemistry				
	Specialization: Inorganic materials chemistry for Material Scientists (Niewa)	12 CP	WS over two Semesters	2026
	Solid State and Materials Chemistry (Niewa)	6 CP	SS	2026
	Advanced Inorganic Synthesis Chemistry (Niewa)	6 CP	WS	2026
	Solid State and Electrochemistry – What to know before making a battery (Rasche)	3 CP	WS	2026

Topic: Materials Theory and Simulation				
	Computational Chemistry (Kästner/Köhn); Language German	6 CP	WS over two Semesters	2026
	Methoden der Werkstoffsimulation ; Language:German	6 CP	WS	2026
	Simulation Methods in Physics for Chemists I	6 CP	WS	2026
	Molecular Quantum Mechanics (Kästner/Köhn)	6 CP	SS	2026
	Advanced Condensed Matter Physics (Dressel)	6 CP	SS	2026
	Solid State Theory (Büchler)	9 CP	SS	2026
	Material design by ab-initio methods (Grabowski)	6 CP	WS	2026
	Computergestützte Materialwissenschaft	6 CP	WS	2026

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Topic: Metals and Structural Materials ((Partially in German and English))			
Schadenskunde (Seidenfuß)	3 CP	WS	2025
Fügetechnik (Seidenfuß)	3 CP	SS	2026
Grundlagen der Keramik und Verbundwerkstoffe	6 CP	WS over two Semesters	2026
Intermetallics and Superalloys (Schmitz)	6 CP	SS every two years	2026
Werkstoffe und Fertigungstechnik technischer Kohlenstoffe (Kern)	3 CP	WS over two Semesters	2025
High Resolution and Analytical Microscopy (Schmitz)	6CP	SS	2026 is offered as a block course at the end of the lecture period
Laboratory course electron microscopy (Schmitz)	3CP	SS	
Mechanical Behavior of Materials	6CP	SS	2026

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Topic: Nanomaterials and Nanostructures				
	Fundamentals of Microelectronics (Quack)	6CP	SS	2026
	Advanced CMOS Devices and Technology (Quack)	6CP	SS	2026
	Nanomaterials (Schmitz)	6 CP	WS every two years)	2027
	Thin film materials and coatings (Schmitz/Richter)	3 CP	WS	2026
	Emulsionen & Schäume	3CP	SS every two years	2027
	Membrane Biophysics	3 CP	SS	2026
	Crystal growth and control of the crystal lattice	3CP	SS	2026

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Topic: Soft Matter and Biomaterials					
	Liquid Crystals (Gießelmann/Laschat)	6 CP	opt.	WS every two years)	2026
	Polymer Electronics (Ludwigs)	3CP	opt.	WS	2027
	Bioinspired Approaches in Material Science (Bill)	6 CP	opt.	SS every two years)	2027
	Emulsionen & Schäume	3CP	opt.	SS every two years	2027
	Membrane Biophysics	3 CP	Opt.	SS	2026
	Biopolymers for Pharmaceuticals	3CP	SS26	SS	2026
	Soft Robots: Principles, Mechanisms and Fabrication	6 CP	WS	2026	