Selection table ***Materials Specialization – WiSe 25*** 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 (only in German)				
	Kunststofftechnik - Grundlagen und Einführung (Bonten)	6 CP	WS	2025
	Charakterisierung und Prüfung von Polymeren und Kunststoffen (Bonten)	3 CP	WS	2025
	Faserkunststoffverbunde (Kreutzbruck)	3CP	WS over two Semester	2025
	Praktikum Kunststofftechnik	3 CP	WS	2025
	Kreislaufwirtschaft in der Kunststofftechnik – Aufbereitung, Recycling und Biokunststoffe	3 CP	WS	2025
	Grundlagen der zerstörungsfreien Prüfung	3 CP	WS over two Semester	2025
	Structure and Properties of Functional Polymers (Ludwigs)	6CP	By appointment	
	Biopolymers for Pharmaceutics	3CP	SS26	2026

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)	-	SS	2025
	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	2025
	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	2025
	Materials for Energy Technologies (Clemens)	6 CP	SS	2026
	Polymer Electronics (Ludwigs)	3 CP	WS every two years	2025
	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	2025
	Solid Catalysts and Functional Materials	6 CP	WS	2025
	Crystal growth and control of the crystal lattice	3CP	By appointment	

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Topic: Inorganic Materials Chemistry				
	Specialization: Inorganic materials chemistry for Material Scientists (Niewa)	12 CP	WS over two Semesters	2025
	Solid State and Materials Chemistry (Niewa)	6 CP	SS	2026
	Advanced Inorganic Synthesis Chemistry (Niewa)	6 CP	WS	2025
	Solid State and Electrochemistry – What to know before making a battery (Rasche)	3 CP	WS	2025

Topic: Materials Theory and Simulation				
	Computational Chemistry (Kästner/Köhn)	6 CP	WS over two Semesters	2025
	Methoden der Werkstoffsimulation	6 CP	WS	2025
	Simulation Methods in Physics for Chemists I	6 CP	WS	2025
	Molecular Quantum Mechanics (Kästner/Köhn)	6 CP	SS	2026
	Advanced Condensed Matter Physics (Wrachtrup/Bechinger)	6 CP	SS	2026
	Solid State Theory (Büchler)	9 CP	SS	2026
	Material design by ab-initio methods (Grabowski)	6 CP	WS	2025
	Computergestützte Materialwissenschaft	6 CP	WS	2025

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Topic: Metals and Structural Materials				
	Schadenskunde (Seidenfuß)	3 CP	WS	2025
	Fügetechnik (Seidenfuß)	3 CP	SS	2026
	Grundlagen der Keramik und Verbundwerkstoffe	6 CP	WS over two Semesters	2025
	Intermetallics and Superalloys (Schmitz)	6 CP	SS every two years	2026
	Werkstoffe und Fertigungstechnik technischer Kohlenstoffe (Kern)	3 CP	WS over two Semesters	2025
	Werkstoffeigenschaften (Klenk)	6 CP	SS	2026
	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	

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Topic: Nanomaterials and Nanostructures				
	Fundamentals of Microelectronics (Burghartz)	6CP	SS	2026
	Advanced CMOS Devices and Technology (Burghart)	6CP	SS	2026
	Nanomaterials (Schmitz)	6 CP	WS every two years)	2025
	Thin film materials and coatings (Schmitz/Richter)	3 CP	WS	2025
	Emulsionen & Schäume	3CP	SS every two years	2027
	Membrane Biophysics	3 CP	SS	2026
	Crystal growth and control of the crystal lattice	3CP	By appointment	

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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 every two years	2025
	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 Pharmaceutics	3CP	SS26	2026	