Selection table ***Materials Specialization – WS 26/27*** 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 Pharmaceutics (Buchmeiser, Adams); Language: English	3CP	SS	2027
	Polymer Electronics (Ludwigs)	3 CP	WS	2027

Topic: Advanced Materials Characterization				
	Solid State Spectroscopy (Dressel/Keimer)	9 CP	SS	2027
	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
	Diffraction Methods in Materials Science	6 cp	SS	27

23.09.2025

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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	2026
	Advanced Experimental Physics (Wrachtrup)	9 CP	WS	2026
	Advanced Condensed Matter Physics (Wrachtrup)	6 CP	SS	2027
	Structure and Properties of Functional Polymers (Ludwigs)	6 CP	By appointment	
	Thin Film Materials and Coatings (Schmitz/Richter)	3 CP	WS	2026
	Materials for Energy Technologies (Clemens)	6 CP	SS	2027
	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	By appointment	
	Functional Framework Materials	3 CP	SS	2027
	Soft Robots: Principles, Mechanisms and Fabrication	6 CP	WS	2027

23.09.2025

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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	2027
	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	2027
	Advanced Condensed Matter Physics (Dressel)	6 CP	SS	2027
	Solid State Theory (Büchler)	9 CP	SS	2027
	Material design by ab-initio methods (Grabowski)	6 CP	WS	2026
	Computergestützte Materialwissenschaft	6 CP	WS	2026

23.09.2025

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Topic: Metals and Structural Materials ((Partially in German and English))				
	Schadenskunde (Seidenfuß)	3 CP	WS	2026
	Fügetechnik (Seidenfuß)	3 CP	SS	2027
	Grundlagen der Keramik und Verbundwerkstoffe	6 CP	WS over two Semesters	2027
	Intermetallics and Superalloys (Schmitz)	6 CP	SS every two years	2028
	Werkstoffe und Fertigungstechnik technischer Kohlenstoffe (Kern)	3 CP	WS over two Semesters	2026
	Werkstoffeigenschaften (Klenk)	6 CP	SS	2027
	High Resolution and Analytical Microscopy (Schmitz)	6CP	SS	2027 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	2027

23.09.2025

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Topic: Nanomaterials and Nanostructures				
	Fundamentals of Microelectronics (Quack)	6CP	SS	2027
	Advanced CMOS Devices and Technology (Quack)	6CP	SS	2027
	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	2027
	Crystal growth and control of the crystal lattice	3CP	SS	2027

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