

# Selection table *Materials Specialization I & II – SoSe24* Master Program Materials Science

## Basic rules:

Two topics must be chosen. Each must be studied with 12 to 18 CP. Total sum on both 30 CP. Within a topic, rules apply as stated in the table:

				Turnus	Next begin
<b>Topic: Advanced Materials Characterization</b>					
	Solid State Spectroscopy (Dressel/Keimer)	9 CP	opt.	SS	2024
	Diffraction Methods in Materials Science (Zotov)	6 CP	opt.	SS	2024
	Physikalische Chemie III (Statistische Thermodynamik, Streu- und Diffraktionsmethoden mit Übung und Praktikum) (Gießelmann)	12 CP	opt.	SS	2024
	High Resolution and Analytical Microscopy (Stender/Schmitz)	6 cp	opt.	SS	2024 is offered as a block course at the end of the lecture period
<b>Topic: Functional Materials</b>					
	Liquid Crystals (Gießelmann/Laschat)	6 CP	opt	WS every two years/ over two Semester	2025
	Semiconductor Physics (Weis)	9 CP	opt.	WS over two Semesters	2024
	Advanced Experimental Physics (Wrachtrup/Bechinger)	9 CP	opt.	WS	2024
	Advanced Condensed Matter Physics (Wrachtrup)	6 CP	opt.	SS	2024
	Materials for Energy Technologies (Clemens)	6 CP	opt.	SS	2024
	Polymer Electronics (Ludwigs)	3 CP	opt.	WS	2024
	Bioinspired Approaches in Materials Science (Bill)	6 CP	opt.	SS every two years	2025

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					Turnus	Next begin
<b>Topic: Inorganic Materials Chemistry</b>						
	Inorganic Materials Chemistry for Material Scientists (Niewa)	12 CP	comp.	WS	over two Semesters	2024
	Solid State and Materials Chemistry (Niewa)	6 CP	opt.	SS		2024
	Advanced Inorganic Synthesis Chemistry (Niewa)	6 CP	opt.	WS		2024
<b>Topic: Materials Theory and Simulation</b>						
	Computational Chemistry (Kästner/Köhn)	6 CP	opt.	WS	over two Semesters	2024
	Methoden der Werkstoffsimulation (Schmauder)	6 CP	opt.	WS		2024
	Molecular Quantum Mechanics (Kästner/Köhn)	6 CP	opt.	SS		2024
	Advanced Condensed Matter Physics (Wrachtrup/Bechinger)	6 CP	opt.	SS		2024
	Solid State Theory (Büchler)	9 CP	opt.	SS		2024
	Material design by ab-initio methods (Grabowski)	6 CP	opt.	WS		2024
	Computergestützte Materialwissenschaft	6 CP	opt.	WS		2024

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<b>Topic: Metals and Structural Materials</b>					
6CP	Schadenskunde (Seidenfuß)	3 CP	comp	WS	2024
	Fügetechnik (Seidenfuß)	3 CP	comp	SS	2024
	Grundlagen der Keramik und Verbundwerkstoffe	6 CP	comp	WS&SS	2024/2025
	Intermetallics and Superalloys (Schmitz)	6 CP	comp	SS <sub>every two years</sub>	2024
	Diffraction Methods in Materials Science (Zotov)	6 CP	opt.	SS	2024
	Werkstoffe und Fertigungstechnik technischer Kohlenstoffe (Kern)	3 CP	opt	WS <sub>over two Semesters</sub>	2024
	Werkstoffeigenschaften (Klenk)	6 CP	opt.	SS	2024
	High Resolution and Analytical Microscopy (Schmitz)	6CP	opt.	SS	2024 is offered as a block course at the end of the lecture period
	Laboratory course electron microscopy (Schmitz)	3CP	opt.	SS	
<b>Topic: Nanomaterials and Nanostructures</b>					
	Fundamentals of Microelectronics (Burghartz)	6CP	opt.	SS	2024
	Advanced CMOS Devices and Technology	6CP	opt.	SS	2024
	Nanomaterials (Schmitz)	6 CP	opt.	WS <sub>every two years</sub>	2025

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				Turnus	Next begin
	Thin film materials and coatings (Schmitz/Richter)	3 CP	opt.	WS	2024
	Emulsionen & Schäume	3CP	opt.	SS	2024
<b>Topic: Polymer Science and Plastic Engineering (only in German)</b>					
	Kunststofftechnik - Grundlagen und Einführung (Bonten)	6 CP	comp.	WS	2024
	Charakterisierung und Prüfung von Polymeren und Kunststoffen (Bonten)	3 CP	Comp.	WS	2024
	Faserkunststoffverbunde (Kreutzbruck)	3CP	Comp.	SS&WS	2024
	Kunststoffaufbereitung und Kunststoffrecycling (Kroh/Bonten)	3 CP	opt.	WS	2024
	Grundlagen der zerstörungsfreien Prüfung	3 CP	Opt.	WS&SS	2023
	Structure and Properties of functional Polymers	6 CP	opt.	WS	2024
<b>Topic: Soft Matter and Biomaterials</b>					
	Liquid Crystals (Gießelmann/Laschat)	6 CP	opt.	WS every two years)	2025
	Polymer Electronics	3CP	opt.	WS	2024
	Bioinspired Approaches in Material Science (Bill)	6 CP	opt.	SS every two years)	2025
	Emulsionen & Schäume	3CP	opt.	SS	2024