

# Selection table *Materials Specialization I & II – WS 2021/2022*

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	2022
	Diffraction Methods in Materials Science (Zotov)	6 CP	opt.	SS	2022
	Physikalische Chemie III (Statistische Thermodynamik, Streu- und Diffraktionsmethoden mit Übung und Praktikum) (Gießelmann)	12 CP	opt.	SS	2022
	High Resolution and Analytical Microscopy (Stender/Schmitz)	6 cp	opt.	SS	2022
<b>Topic: Functional Materials</b>					
	Liquid Crystals (Gießelmann/Laschat)	6 CP	opt	WS every two years	2022
	Semiconductor Physics (Weis)	9 CP	opt.	WS over two Semesters	2021
	Advanced Experimental Physics (Wrachtrup/Bechinger)	9 CP	opt.	WS	2021
	Advanced Condensed Matter Physics (Wrachtrup)	6 CP	opt.	SS	2022
	Materials for Energy Technologies (Clemens)	6 CP	opt.	SS	2022
	Polymer Electronics (Ludwigs)	3 CP	opt.	WS	as per announcement
	Bioinspired Approaches in Materials Science (Bill)	6 CP	opt.	SS every two years	2023
<b>Topic: Inorganic Materials Chemistry</b>					
	Inorganic Materials Chemistry for Material Scientists (Niewa)	12 CP	comp.	WS over two Semesters	2021

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	Solid State and Materials Chemistry (Niewa)	6 CP	opt.	SS	2022
	Advanced Inorganic Synthesis Chemistry (Niewa)	6 CP	opt.	WS	2021
<b>Topic: Materials Theory and Simulation</b>					
	Computational Chemistry (Kästner/Köhn)	6 CP	opt.	SS	2021 WS od. SS
	Methoden der Werkstoffsimulation (Schmauder)	6 CP	opt	WS	2021
	Molecular Quantum Mechanics (Kästner/Köhn)	6 CP	opt	SS	2022
	Advanced Condensed Matter Physics (Bechinger)	6 CP	opt.	SS	2022
	Solid State Theory (Büchler)	9 CP	opt.	SS	2022
	Material design by ab-initio methods (Grabowski)	6 CP	opt.	WS	2021
	Computergestützte Materialwissenschaft	6 CP	opt.	WS	2021
<b>Topic: Metals and Structural Materials</b>					
6CP	Schadenskunde (Seidenfuß)	3 CP	comp	WS	2021
	Fügetechnik (Seidenfuß)	3 CP	comp	SS	2022
	Grundlagen der Keramik und Verbundwerkstoffe (	6 CP	comp	WS&SS	2021/2022
	Intermetallics and Superalloys	6 CP	comp	SS	2022
	Diffraction Methods in Materials Science (Zotov)	6 CP	opt.	SS	2022

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	Werkstoffe und Fertigungstechnik technischer Kohlenstoffe (Kern)	3 CP	opt	WS&SS	2021
	Werkstoffeigenschaften (Klenk)	6 CP	opt.	SS	2022
	High Resolution and Analytical Microscopy (Stender/Schmitz)	6CP	opt.	SS	2022
	Laboratory course	3CP	opt.	SS	as per announcement
<b>Topic: Nanomaterials and Nanostructures</b>					
	Fundamentals of Microelectronics (Burghartz)	6CP	opt.	SS	2022
	Advanced CMOS Devices and Technology	6CP	opt.	SS	2022
	Nanomaterials (Schmitz)	6 CP	opt.	WS <small>every two years</small> )	2021
	Thin film materials and coatings (Schmitz/Richter)	3 CP	opt.	WS	2021
	Emulsionen & Schäume	3CP	opt.	SS	2022
	Nanopartikel und Nanomotoren: Eigenschaften und Materialien	3CP	opt.	SS	2022
<b>Topic: Plastics Engineering</b>					
	Kunststofftechnik - Grundlagen und Einführung (Bonten)	6 CP	comp.	WS	2021
	Charakterisierung und Prüfung von Polymeren und Kunststoffen (Bonten)	3 CP	Comp.	WS	2021
	Faserkunststoffverbunde (Kreutzbruck)	3CP	Comp.	SS&WS	2021
	Kunststoffaufbereitung und Kunststoffrecycling (Kroh/Bonten)	3 CP	opt.	WS	2021
	Grundlagen der zerstörungsfreien Prüfung (Kreutzbruck)	3CP	Opt.	SS&WS	2021

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<b>Topic: Soft Matter and Biomaterials</b>					
	Liquid Crystals (Gießelmann/Laschat)	6 CP	opt.	WS every two years)	2022
	Polymer Electronics	3CP	opt.	WS	as per announcement
	Bioinspired Approaches in Material Science (Bill)	6 CP	opt.	SS every two years)	2023
	Emulsionen & Schäume	3CP	opt.	SS	2022
	Nanopartikel und Nanomotoren: Eigenschaften und Materialien	3CP	opt.	SS	2022