

II. List of courses for the Master's Programme Physics

Please note: Some courses are combinations of lectures, see acronyms in the table below. Exams of combined lecture course cannot be dissected and distributed into individual lectures for the Master certificate afterwards. Details on the exam modalities for each course are defined by the respective lecturer(s).

Abbreviations:

SWS = hours per week

VX = X hours of lectures per week

ÜX = X hours of exercises per week

PX = X hours of lab training per week

A Physics Courses

A.1 Courses Offered Annually

a) Winter semester:

Course	Abbr.	Combo of	Eligible for modules	SWS	ECTS
Advanced Biological Physics		BP1+BP2	SCP, WFA	6	9
Advanced Quantum Mechanics			FTP, SCP, WFA	6	9
Mechanics of Continua			FTP, SCP, WFA	6	9
Advanced Experimental Physics ¹			FEP	4	6
Experimental and Statistical Biological Physics (Biological Physics C)	BP1		SCP, SPP, WFA, WFB	4	6
Collective Phenomena in Solids			SCP, SPP, WFA, WFB	4	6
Polymer Physics			SCP, SPP, WFA, WFB	4	6
Pattern Formation and Calculus in Nonlinear Physics		ND2+ND5	SCP, SPP, WFA, WFB	4	6
Experimental Methods in Biological Physics (Biological Physics B)	BP2		SCP, SPP, WFA, WFB	2	3
Laser			SCP, SPP, WFA, WFB	2	3
Calculus in Nonlinear Physics	ND5		<i>Crediting only in combination with ND2 or ND1+ND2</i>	Ü2	
Pattern Formation	ND2		SCP, SPP, WFA, WFB	2	3

¹NEW, starting with winter semester 2020/2021 the only course for the FEP module

b) Summer semester:

Course	Abbr.	Combo of	Eligible for modules	SWS	ECTS
Non-Equilibrium Thermodynamics			FTP, SCP, WFA	6	9
Optical and Electronic Spectroscopy of Soft Matter		OS1+OS2 +OH2	SCP, WFA	6	9
Photophysics of Organic Semiconductors		OH1+OH2 +OS2	SCP, WFA	6	9
Quantum Theory of Condensed Matter			FTP, SCP, WFA	6	9
Computics (M.Sc.)			SCP, SPP, WFA, WFB	4	6
Organic Semiconductors		OH1+OH2	SCP, SPP, WFA, WFB	4	6
Spectroscopy of Soft Condensed Matter		OS1+OS2	SCP, SPP, WFA, WFB	4	6
Ferrofluid Dynamics	ND4		SCP, SPP, WFA, WFB	2	3
Principles of Optical Spectroscopy	OS1		SCP, SPP, WFA, WFB	2	3
Coherent Spectroscopy	OS2		SCP, SPP, WFA, WFB	2	3
Optical Properties of Organic Semiconductors	OH1		SCP, SPP, WFA, WFB	2	3
Physics of Organic Semiconductors Devices	OH2		SCP, SPP, WFA, WFB	2	3
Plasmonics and Nanooptics			SCP, SPP, WFA, WFB	2	3

A.2 Further Courses in Physics

Course	Eligible for modules	SWS	ECTS
Nonlinear Dynamics and Methods (ND1+ND2+ND5)	SCP, WFA	6	9
Acoustics: From Fundamentals to Applications	SCP, SPP, WFA, WFB	4	6
Crystallography in Solid State Physics	SCP, SPP, WFA, WFB	4	6
General Relativity	SCP, SPP, WFA, WFB	4	6
Hydrodynamics of Complex Fluids	SCP, SPP, WFA, WFB	4	6
Introduction to Quantum Density Functional Theory	SCP, SPP, WFA, WFB	4	6
Introduction to Cell Mechanics	SCP, SPP, WFA, WFB	4	6
Nonlinear Dynamics and Ferrofluids (ND1+ND4)	SCP, SPP, WFA, WFB	4	6
Nonlinear Dynamics and Pattern Formation (ND1+ND2)	SCP, SPP, WFA, WFB	4	6
Nuclear and Energy Physics	SCP, SPP, WFA, WFB	4	6
Nuclear Magnetic Resonance Spectroscopy	SCP, SPP, WFA, WFB	4	6
Pattern Formation in Living Matter	SCP, SPP, WFA, WFB	4	6
Physics of Complex Systems	SCP, SPP, WFA, WFB	4	6
Power Functional Theory for Many-Body Dynamics	SCP, SPP, WFA, WFB	4	6
Quantum Fluids	SCP, SPP, WFA, WFB	4	6
Quantum Optics	SCP, SPP, WFA, WFB	4	6
Spectroscopy of Biological Systems	SCP, SPP, WFA, WFB	4	6
Stochastic Processes in Physics	SCP, SPP, WFA, WFB	4	6
Astrophysics	SCP, SPP, WFA, WFB	2	3
Classical density functional theory	SCP, SPP, WFA, WFB	2	3
Climate physics	SCP, SPP, WFA, WFB	2	3
Electronic excitations of condensed matter with many-body perturbation theory	SCP, SPP, WFA, WFB	2	3
Introduction to Fusion Research	SCP, SPP, WFA, WFB	2	3
Introduction to Plasma Physics	SCP, SPP, WFA, WFB	2	3
Introduction to Research in Nuclear Fusion	SCP, SPP, WFA, WFB	2	3
Introduction to the Physics of Cellular Signal Processing	SCP, SPP, WFA, WFB	2	3
Introduction to the Theory of Relativity	SCP, SPP, WFA, WFB	2	3
Molecular Dynamics in Biophysical Systems	SCP, SPP, WFA, WFB	2	3
Nonlinear Dynamics (ND1)	SCP, SPP, WFA, WFB	2	3
Nonlinear Optics	SCP, SPP, WFA, WFB	2	3
Optical and electronic properties of inorganic Semiconductors	SCP, SPP, WFA, WFB	2	3
Pathintegrals	SCP, SPP, WFA, WFB	2	3
Physics of Embryogenesis	SCP, SPP, WFA, WFB	2	3
Scattering Methods for Soft Matter Systems	SCP, SPP, WFA, WFB	2	3

Surface and Nanophysics	SCP, SPP, WFA, WFB	2	3
Superconductivity / Theory of Superconductivity	SCP, SPP, WFA, WFB	2	3
Synchrotron Radiation and the Free Electron Laser	SCP, SPP, WFA, WFB	2	3
Theoretical Nonlinear Optics	SCP, SPP, WFA, WFB	2	3
Ultrafast Photonics	SCP, SPP, WFA, WFB	2	3

B. Non-Physics courses

Course	Eligible for module	SWS	ECTS
Advanced Mathematics for Physicists	WFA	6	9
Biochemical Physics	WFA, WFB	4	6
Genetics of Eukaryotes	WFA, WFB	V2	4
Genetics of Eukaryotes	WFA, WFB	S2	2
Genetics of Eukaryotes	WFA, WFB	P5	3
Physics of Materials	WFA, WFB	4	6
Structure analysis of crystalline matter	WFA, WFB	4	6
Colloids and Interfaces	WFA, WFB	V2	4
Physical Chemistry of Polymers	WFA, WFB	V2	4
Crystallography in Superspace	WFA, WFB	2	3
Evolutionary Biology and Population Genetics	WFA, WFB	2	3
Advanced Physical Chemistry	WFA, WFB	2	3
Principles of Energy Conversion I	WFA, WFB	2	3
Principles of Energy Conversion II	WFA, WFB	2	3
Meteorology	WFA, WFB	V2+Ü1	3
Sensors	WFA, WFB	2	3
Cell Biology	WFA, WFB	2	3
Practical Course Module P103/ C104 ¹	WFA, WFB	P6	2
Practical Course: Physical Chemistry (P102/C103) ²	WFA, WFB	P6	2

Remarks:

¹The 'Practical Course Module P103 / C104' is connected to the lecture 'Colloids and Interfaces'.

²The 'Practical Course: Physical Chemistry (P102/C103)' is connected to the lecture 'Physical Chemistry of Polymers' (up to the winter term 2016/2017, its title was 'Practical Course: Physical Chemistry of Polymers').