Curriculum of the course Photonics, with the qualification Master of Science

ASP - Abbe School of Photonics **Friedrich-Schiller-Universität Jena**

Master Program Photonics

ECTS CP Σ 120

1. Semester 30 CP	2. Semester 30 CP	3. Semester 30 CP	4. Semester 30 CP
Fundamentals & Adjustment	**Fundamentals & Specialization**	**Specialization & Research**	**Research**

Module Fundamentals — Tünnermann — 8 CP

Opt. metrology & sensing		
Kowarschik	Comp.	
2L+1E	4 CP	
Optical mod. & design I		
Zeitner/Wyrowski	Comp.	
2L+1E	4 CP	

Module Fundamentals — Tünnermann — 8 CP

Laser physics		
Tünnermann/Limpert/Nolte	Comp.	
4L+2E	8 CP	

Module Adjustment — Paulus — 16 CP

Fundam. of modern optics		
Skupin	Adv.	
4L+2E	8 CP	
Structure of matter		
Meyer	Adv.	
4L+2E	8 CP	
Condensed matter physics (G)		
Seidel	Adv.	
4L+2E	8 CP	

Module Specialization I — Spielmann — 12 CP

Applied laser technology I		
Stafast/Paa	Elect.	
2L+1E	4 CP	
Biophotonics		
Heintzmann/Heinemann/..	Elect.	
2L+1E	4 CP	
Coherence theory and applic.		
Kowarschik	Elect.	
2L+1E	4 CP	
Computational photonics		
Pertsch	Elect.	
2L+1E	4 CP	
Design&corr. of opt. systems		
Gross	Elect.	
2L+1E	4 CP	
Fiber optics		
Bartelt	Elect.	
2L+1E	4 CP	
Fourier transform/sampling		
Wyrowski	Elect.	
2L+1E	4 CP	
Holography		
Kowarschik	Elect.	
2L+1E	4 CP	
Image processing		
Denzler	Elect.	
2L+1E	4 CP	
Introduction to nanooptics		
Pertsch	Elect.	
2L+1E	4 CP	
Micro/nanotechnology		
Zeitner	Elect.	
2L+1E	4 CP	
Nonlinear optics		
Skupin	Elect.	
2L+1E	4 CP	
Optical mod. & design II		
Wyrowski	Elect.	
2L+1E	4 CP	
Optoelectronics		
Schmidl	Elect.	
2L+1E	4 CP	
Physic. aspects of med. imag.		
Reichenbach/Förster	Elect.	
2L+1E	4 CP	
Plasma physics		
Kaluza	Elect.	
2L+1E	4 CP	
Quantum optics		
Rockstuhl	Elect.	
2L+1E	4 CP	
Waveguide theory		
Skupin	Elect.	
2L+1E	4 CP	

Module Specialization II — Lederer — 12 CP

Applied laser technology II		
Stafast/Paa	Elect.	
2L+1E	4 CP	
Astrophotonics		
Minardi/Pertsch	Elect.	
2L+1E	4 CP	
Biomedical imaging		
Reichenbach/Förster	Elect.	
2L+1E	4 CP	
High-intensity/relativ. optics		
Kaluza	Elect.	
2L+1E	4 CP	
Lasers in ophthalmo.&medic.		
Heisterkamp	Elect.	
2L+1E	4 CP	
Microoptics		
Bartelt	Elect.	
2L+1E	4 CP	
Nanomaterials & optical appl.		
Grange/Pertsch	Elect.	
2L+1E	4 CP	
Nanoengineering		
Schubert/Hoeppener	Elect.	
2L+1E	4 CP	
Nonlinear optics		
Paulus	Elect.	
2L+1E	4 CP	
Optical mod. & design III		
Wyrowski	Elect.	
2L+1E	4 CP	
Photovoltaics		
Falk	Elect.	
2L+1E	4 CP	
Theoretical nanooptics		
Rockstuhl/Pertsch	Elect.	
2L+1E	4 CP	
Thin film optics		
Tünnermann/Stenzel	Elect.	
2L+1E	4 CP	
Ultrafast optics		
Nolte	Elect.	
2L+1E	4 CP	

Adv. - Advised course
Comp. - Compulsory course
Elect. - Elective course
(G) - Course given in German

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Module Labworks — Nolte — 6 CP

Labworks optics		
University (Shipulin)	Comp.	
6Lab	6 CP	

Module Internship — Nolte — 10 CP

Internship		
Industry (/University)	Comp.	
10Lab	10 CP	

Module Research Labworks — Kaluza — 18 CP

Research labworks optics		
University/Industry	Comp.	
18Lab	18 CP	

Module Master Thesis — Kowarschik — 30 CP

Master thesis		
University/Industry	Comp.	
30Lab	30 CP	