Appendix for the double Master's degree programme in Mathematics and Physics

2026-2027

A student who desires to obtain both a Masters' degree in Mathematics and a Master's degree in Physics has to be enrolled in both degree programmes and has to meet the requirements of both programmes. The following programme meets the requirements of the MSc Mathematics as well as the requirements of the MSc Physics, track Quantum Universe, where the individual Master Research Projects in Physics and Mathematics are replaced by a joint Master Research Project. The total programme comprises (at least) 180 ECTS: (at least) 100 ECTS of courses and 80 ECTS of research, and is feasible within 2 ½ years of study.

Research Project (80 ECTS)

Course unit name	Course code	ECTS	Entry requirements
Master Research Project Physics and Mathematics*			- Successful completion of 35 ECTS of modules of the Mathematics part and 45 ECTS of modules of the Physics part. - Enrolment in progress for both parts of the joint research project - Approval of research plan including project schedule by supervisors and Master Project coordinator of both programmes. - Both parts can only be completed together, i.e. it is not possible to register a final grade for only one of the two parts
- Mathematics Part	WMMA905-40	40	
- Physics Part	WMPH904-40	40	
The Research Project includes:			
- Scientific Integrity	WMPH019-00	0	
- Academic Skills	WMPH001-00	0	
- Career Perspectives	WMPH048-00	0	
- General Physics Colloquium	WMPH002-00	0	

* This joint research project is formally split into two parts, however practically it is one large research project supervised and graded by one examiner from Mathematics and one from Physics and it is not necessary to split the final report into two distinct parts. The grade of the two formal parts will be determined by both supervisors. Note that the corresponding Board of Examiners for Mathematics has to approve the Physics supervisor for the Mathematics Part and vice versa.

Physics (50 ECTS)

Course unit name	Course code	ECTS	Entry requirements
Advanced Quantum Mechanics	WMPH032-05	5	
Computational Physics	WMPH007-05	5	

Statistical Mechanics	WMPH029-05	5	
Mathematical Methods of Physics	WMPH016-05	5	
General Relativity	WMPH009-05	5	
Particle Physics Phenomenology	WMPH026-05	5	
Astroparticle Physics	WMAS008-05	5	
Student Seminar Quantum Universe	WMPH039-05	5	
Two optional courses Quantum Universe which are not part of the individual Mathematics programme of the student. Not allowed: - Geometry & Differential Equations - Geometry & Topology		10	

For information about the courses of the Master's degree programme Physics and a list of optional courses Quantum Universe see the Teaching and Examination Regulations of the Master's degree programme in Physics.

Mathematics (50 ECTS)

Course unit name	**Course code**	**ECTS**	**Entry requirements**
Mathematics and its Environment	WMMA013-05	5	
Student Colloquium	WMMA029-05	5	
Research Seminar in Mathematics	WMMA030-05	5	
Geometry and Differential Equations (26/27)	WMMA017-05	5	
Geometry and Topology (27/28)	WMMA018-05	5	
15 - 25 ECTS out of: - Topics in Dynamical Systems and Chaos A (26/27) - Topics in Dynamical Systems and Chaos B (27/28) - Hamiltonian Mechanics - Topics in Algebra and Geometry A (26/27) - Topics in Algebra and Geometry B (27/28) - Topics in Differential Geometry - Introduction to Algebraic Geometry - Topics in Number Theory (26/27) - Arithmetic Geometry (27/28) - Topics in Topology A (26/27)	 WMMA031-05 WMMA042-05 WMMA019-05 WMMA038-05 WMMA048-05 WMMA040-05 WMMA033-05 WMMA035-05 WMMA045-05 WMMA034-05	15-25 5 5 5 5 5 5 5 5 5 5	

- Topics in Topology B (27/28) - Perturbation Theory (26/27) - Singularity Theory (27/28) - Integrable Systems - Spectral Theory (27/28) - Random Geometry and Topology A (26/27) - Random Geometry and Topology B (27/28) - Combinatorial Mathematics A (26/27) - Combinatorial Mathematics B (27/28) - Topics in Probability and Statistics A (27/28) - Topics in Probability and Statistics B (26/27) - Mathematical Modelling and Statistical Analysis of the Spread of Infectious Diseases (27/28)	WMMA044-05 WMMA032-05 WMMA043-05 WMMA037-05 WMMA047-05 WMMA041-05 WMMA049-05 WMMA036-05 WMMA046-05 WMMA067-05 WMMA068-05 WMMA061-05	5 5 5 5 5 5 5 5 5 5 5 5	
Max. 2-courses from the Mastermath programme		≤16	

The total of the Mathematics part has to be at least 50 ECTS, but it should not be possible to remove 1 course and still have more than 50 ECTS.

Transitional provisions

Cohort 2024-2025 and earlier
The following course has been replaced within the degree programme Physics:

Old course	**New course**
Electrodynamics of Radiative Processes	Astroparticle Physics