



SCHOOL OF PHYSICS

PROGRAMME-SPECIFIC EXAMINATION
REGULATIONS FOR THE MASTER'S PROGRAMME
IN "PHYSICS"

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CONTENTS :

§ 1	Applicability	3
§ 2	Purpose of the Examination	3
§ 3	University Degree.....	3
§ 4	Responsibility	3
§ 5	Programme Structure and Organisation	3
§ 6	Semester Abroad	6
§ 7	Admission to the Master's Thesis	6
§ 8	The Master's Thesis	7
§ 8	Final Grade of the Master's Examination	8
§ 9	Entry into Force; Transitional Provisions	8

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§ 1 Applicability

¹The provisions of the General Examination Regulations for Bachelor's and Master's programmes at Osnabrück University in their up-to-date version apply to the Master's programme in "Physics" at Osnabrück University. ²These regulations stipulate the further provisions for completing the Master's programme in "Physics".

§ 2 Purpose of the examination

¹After four semesters of full-time study culminating in the Master's examination, this degree programme represents a second academic degree which is both a recognised professional qualification and a qualification which allows candidates to study for a PhD. ²During the Master's programme, students should acquire advanced and/or extensive knowledge, skills and methods in the field of physics. ³Master's graduates should have a solid overview of their subject, be capable of engaging in independent academic work, applying academic findings and broadening their knowledge by accessing new approaches, and understanding the relevance of these to society and professional practice. ⁴The purpose of the Master's examination is to establish whether the candidate has acquired the necessary skills to achieve these goals.

§ 3 University Degree

Upon passing the Master's examination, the candidate is awarded the degree "Master of Science (M.Sc.) in Physics".

§ 4 Responsibility

The School of Physics examination board is responsible for all examination-related issues.

§ 5 Programme Structure and Organisation

¹The Master's programme in physics consists of 120 credit points (CP) and includes a mandatory component consisting of 30 CP, an elective component in physics consisting of 42 CP and an interdisciplinary elective component consisting of 18 CP. ²The Master's thesis is worth 30 CP. ³Students must have completed courses worth at least 30 CP by the end of their second semester. ⁴Students must select courses in consultation with the examination board which represent a logical extension to their Bachelor's degree and prepare them in a purposeful way for their Master's thesis.

Identifier	Module Title*	SWS	CP	Duration	recom. Semester	Prerequisites
1. Mandatory Component (30 CP)						
PHY-FS_v1	Professional Specialisation	8	12	1 Sem.	3rd Sem.	---
PHY-FP_v1	Research Project	10	15	1 Sem.	3rd Sem.	---
PHY-KMA	Colloquium of the Master Thesis	2	3	1 Sem.	4th Sem.	---
	Sum	20	30			
2. Elective Component in Physics (42 CP) Students may choose from three Areas of Focus (I-III):						
Area of Focus I.						
PHY-FPR-12	Advanced Laboratory Course Physics (12 LP)	8	12	1 Sem.	2nd Sem.	
	(a) core modules totalling 12-18 CPs (see 2a)		12-18			
	(b) further modules totalling 12-18 CP (see 2b)		12-18			
	Sum		42			

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Identifier	Module Title*	SWS	CP	Durati on	recom. Semester	Prerequis ites
Area of Focus II						
PHY-FPR-6_v1	Advanced Laboratory Course Physics (6 LP)	4	6	1 Sem.	2nd Sem.	---
	at least one of the core modules (see 2a)					---
PHY-TKM-15	Condensed Matter Theory <i>or</i>	4	6	1 Sem.	1st/2nd Sem.	---
PHY-ACM	Advanced Computer Simulations and Modelling <i>and</i>	4	6	1 Sem.	1st/2nd Sem.	---
	further core modules (see 2a) <i>and</i>		12-18			---
	further modules (see 2b)		12-18			---
	Sum		42			
Area of Focus III						
PHY-TKM-15	" Condensed Matter Theory " <i>and</i>	4	6	1 Sem.	1st/2nd Sem.	---
PHY-ACM	Advanced Computer Simulations and Modelling	4	6	1 Sem.	1st/2nd Sem.	---
	further core modules (see 2a) <i>and/or</i>		0-24			---
	further modules (see 2b)		6-30			---
	Sum		42			
2a. Core Modules						
PHY-AFP-15	Applied solid state physics	4	6	1 Sem.	1st/2nd Sem.	---
PHY-BMMP-15	Biomacromolecular Physics	4	6	1 Sem.	1st/2nd Sem.	---
PHY-OFP-15	Surface Science	4	6	1 Sem.	1st/2nd Sem..	---
PHY-UKP-15	Ultrafast Physics	4	6	1 Sem.	1st/2nd Sem..	---
PHY-TKM-15	CondensedM Matter Theory	4	6	1 Sem.	1st/2nd Sem.	---
PHY-ACM	Advanced Computer Simulations and Modelling	4	6	1 Sem	1st/2nd Sem.	---
2b. further Modules						
PHY-EV-V-y	Complement and Deepen the Knowledge of Physics: y	2	3	1 Sem.	1st/2nd Sem.	---
PHY-EV-S-y	Complement and Deepen the Knowledge of Physics: y (*)	2	3	1 Sem.	1st/2nd Sem.	---
PHY-AFM	Non-Contact Atomic Force Microscopy	2	3	1 Sem.	1st/2nd Sem.	---
PHY-AFM-P	Lab Course Non-Contact Atomic Force Microscopy	2	3	1 Sem.	1st/2nd Sem.	---
PHY-AFM-S	Seminar Non-Contact Atomic Force Microscopy	2	3	1 Sem.	1st/2nd Sem.	---
PHY-AS1_v1	Astronomy 1	2	3	1 Sem.	1st Sem.	---
PHY-AS2_v1	Astronomy 2	2	3	1 Sem.	2nd Sem.	PHY-AS1_v1
PHY-ASN	Advanced Surface Physics and Nanoscience	2	3	1 Sem.	1st/2nd Sem.	
PHY-UKP-F	Advanced Ultrafast Physics	2	3	1 Sem.	1st/2nd Sem..	
PHY-BPHBI-15	Biophysical and Applied Bioinformatics	2	3	1 Sem.	1st/2nd Sem.	---

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Identifier	Module Title*	SWS	CP	Duration	recom. Semester	Prerequisites
PHY-BPHBI-M-15	Methods of Applied Bioinformatics	2	3	1 Sem.	1st/2nd Sem.	---
PHY-BPHBI-S-15	Seminar in Applied Bioinformatics and Evolutionary Biophysics	2	3	1 Sem.	1st/2nd Sem.	---
PHY-BPHBI-P-15	Practical Course in Applied Bioinformatics and Evolutionary Biophysics	2	3	1 Sem.	1st/2nd Sem.	---
PHY-BMMP-M-15	Methods of Biomacromolecular Physics	2	3	1 Sem.	1st/2nd Sem.	---
PHY-BMMP-P-15	Practical Course: Biomacromolecular Physics	2	3	1 Sem.	1st/2nd Sem.	---
PHY-BMMP-S-15	Seminar: Biomacromolecular Physics	2	3	1 Sem.	1st/2nd Sem.	---
PHY-DDD	Diamond and Defects in Diamond	2	3	1 Sem.	1st/2nd Sem.	---
PHY-CTT	Current Topics in Theoretical Physics	2	3	1 Sem.	1st/2nd Sem.	---
PHY-TRQ-15	Transport and Relaxation Dynamics in Quantum Systems	2	3	1 Sem.	1st/2nd Sem.	---
PHY-QTD	Quantum Thermodynamics	2	3	1 Sem.	1st/2nd Sem.	---
PHY-SP_v1	Statistical Physics	2	3	1 Sem.	1st/2nd Sem.	---
PHY-MPP	Many Particle Physics	2	3	1 Sem.	1st/2nd Sem.	---
PHY-NQP-15	Computational Quantum Physics	2	3	1 Sem.	1st/2nd Sem..	---
PHY-OFP-P-15	Laboratory Course: Surface Sciences	2	3	1 Sem.	1st/2nd Sem.	---
PHY-OFP-S-15	Seminar: Surface Science	2	3	1 Sem.	1st/2nd Sem.	---
PHY-PCMS-15	Computational Materials Science	2	3	1 Sem.	1st/2nd Sem.	---
PHY-PCN-15	Physics of Carbon Nanostructures (lecture)	2	3	1 Sem.	1st/2nd Sem..	---
PHY-PCN-P-15	Physics of Carbon Nanostructures (lab course)	2	3	1 Sem.	1st/2nd Sem.	---
PHY-PCN-S-15	Physics of Carbon Nanostructures (seminar)	2	3	1 Sem.	1st/2nd Sem.	---
PHY-PFM-15	Physics of Functional Materials	2	3	1 Sem.	1st/2nd Sem.	---
PHY-PSY-15	Physics with Synchrotron Radiation	2	3	1 Sem.	1st/2nd Sem.	---
PHY-PUDS-15	Physics of Ultrathin Films	2	3	1 Sem.	1st/2nd Sem.	---
PHY-SDS-15	Stochastic Dynamical Systems	2	3	1 Sem.	1st/2nd Sem.	---
PHY-UKP-E-15	Introduction: Ultrafast Physics	2	3	1 Sem.	1st/2nd Sem.	---
PHY-UKP-P-15	Laboratory Course: Ultrafast Physics	2	3	1 Sem.	1st/2nd Sem.	---
PHY-UKP-S-15	Seminar: Ultrafast Physics	2	3	1 Sem.	1st/2nd Sem.	---
3. Interdisciplinary Elective Component (18 LP)						

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Identifier	Module Title*	SWS	CP	Durati on	recom. Semester	Prerequis ites
	Modules(*) from one of the elective fields: Applied Systems Science (Mathematics) Biology Chemistry Computer Science Mathematics Economics Economic Theory/Philosophy Foreign Languages Alternatively, students may also select additional courses from the elective components in Physics (2b. additional modules) (***)		18	2 Sem.	1st/2nd Sem..	---
	Sum		18			
	4. Master's Thesis (30 LP)		30		4th Sem.	s. § 7

(*) This formula covers a variety of modules, each with its own content-related subtitles. Here, $y \in \{A, B, C, \dots, Z\}$ serves as a “sub-identifier” and allows for differentiation between different modules (e.g. the Theory of Relativity or Nuclear Physics).

(**) Modules which have been taken in the interdisciplinary elective component of a student's Bachelor's programme in physics and the module “Basics of Physical Chemistry” cannot be accredited for the Master's programme in physics.

(***) Students may *only* select modules from the elective section under 2b. for their interdisciplinary elective if they have *not yet* studied them in the elective section (2).

§ 6 Semester Abroad

The accreditation of courses taken by students in a relevant degree programme at a university abroad or a German university can be granted to a maximum of 30 CP subject if the student has acquired the prior agreement of the examination board.

§ 7 Admission to the Master's Thesis

- (1) ¹The candidate must submit his/her application for admission (registration) to the Master's thesis in writing to the examination board within the time period set down by the examination board.
²Application deadlines set down by the examination board can be extended or retroactively extended if a candidate puts forward valid reasons for doing so, especially when it would be unreasonable to allow the legal consequences to come into being that would otherwise arise by allowing the deadline to pass.
- (2) Candidates are admitted to the Master's thesis if they
 - have successfully completed at least the required modules in the Elective Component in Physics and the Interdisciplinary Elective Component as well as the specialist subject module in accordance with § 5 to a total of 72 credit points and successfully completed the research project and
 - have been enrolled at Osnabrück University in the Master's programme in physics for at least one semester before applying for registration to the Master's thesis.
- (3) ¹Candidates must include the following with their application for admission to the Master's thesis:

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- a. documentation showing they have passed courses examined by continuous assessment in accordance with § 5,
- b. a statement indicating whether they have already failed a Master's examination or parts of any such examination in a physics programme at another university or equivalent higher education institution,
- c. a topic proposal (in consultation with their supervisor),
- d. proposals for their examiners,
- e. an outline of their educational history and
- f. a recent photograph of themselves.

²If it is not possible for the candidate to submit one of the required documents in the manner set down in accordance with item 1, the examination board can permit the candidate to submit alternative documentation.

- (4) ¹The examination board decides whether to grant a candidate admission. ²A candidate is refused admission if
- a. they do not fulfil the admission requirements,
 - b. their documentation is incomplete
- or
- c. they have already definitively failed their Master's examination in a physics programme at another university or equivalent higher education institution.
- (5) ¹Notification of admission including examination dates as well as refusal of admission take place in accordance with § 41 of the Administrative Procedure Act (VwVfG). ²Refusals of admission are issued in writing.
- (6) Candidates can withdraw their admission application up to the point in time when the topic of the Master's thesis is issued.

§ 8 Master's Thesis

- (1) ¹The Master's thesis should demonstrate the candidate's ability to work independently on a defined problem in the field of physics using scholarly methods and present his/her findings within a prescribed time period. ²The topic of the Master's thesis and the nature of the assignment must comply with the purpose of the examination (§ 2) and the allocated period of time for its completion in accordance with paragraph 3. ³The kind of task and the nature of the assignment must be defined together with the topic of the Master's thesis. ⁴Candidates may write their thesis either in German or English; candidates should provide a summary of their thesis in both languages.
- (2) ¹The Master's thesis can take the form of group work. ²Each candidate must make their individual contribution clearly identifiable for assessment by indicating sections, page numbers or other objective criteria so that these may be evaluated separately in compliance with the requirements set down in paragraph 1.
- (3) ¹Candidates must submit their thesis no later than 6 months after the examination board has issued the topic of the Master's thesis. ²The topic can only be handed back once and only within the first third of the allocated period of time for its completion in accordance with paragraph 1. ³Candidates can, on presentation of a reasoned request, apply for the examination board to extend the period of time allocated for completion. As a rule, the examination board grants a maximum extension of up to three months.

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- (4) When submitting their thesis, the candidate must confirm in writing that the thesis – or in the case of group work that section of the project that is marked accordingly – was written by himself or herself alone and that the candidate used no other sources and resources other than those cited.
- (5) The Master's thesis must be submitted to the relevant examinations office by the set deadline and be submitted in digital form. The date of submission must be officially recorded.

§ 9 Final Grade of the Master's Examination

- (1) The Master's examination is graded as passed if the candidate has passed all of the modules in accordance with § 5 and been awarded at least the grade 4.0 ("pass") for the Master's thesis.
- (2) The final grade for the courses examined by continuous assessment is calculated by the average of all unrounded grades for these examinations weighted by credit points.
- (3) The final grade of the Master's examination is calculated based on the unrounded final grade for the courses examined by continuous assessment in accordance with paragraph 2 and the two unrounded grades for the Master's thesis at a ratio of 1:1.

§ 10 Entry into Force; Transitional Provisions

- (1) These examination regulations enter into force upon publication in an official Osnabrück University gazette on 01.10.2021.
- (2) ¹For students who were already enrolled in the Master's programme in "Physics" in the summer semester 2020, the version of the programme-specific examination regulations for the Master's programme in "Physics" of 25.05.2018 (Osnabrück University official gazette no. 03/2018 dated 24.05.2018, p 357) remains in force. ²Upon application to the relevant examination office, students are entitled to change to the new programme-specific examination regulations.
- (3) ¹The existing programme-specific examination regulations for the Master's programme in "Physics" (Osnabrück University official gazette no. 03/2018 dated 24.05.2018, p 357) cease to be in force as of 31.03.2024. ²Students under subsection 2 sentence 1 automatically become subject to the currently valid programme-specific examination regulations for the Master's programme in "Physics" on 01.04.2024 at the point at which the previous examination regulations cease to be in force.

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