



SCHOOL OF PHYSICS AND  
SCHOOL OF BIOLOGY/CHEMISTRY

PROGRAM-SPECIFIC EXAMINATION REGULATIONS  
FOR THE "NANOSCIENCES – MATERIALS, MOLECULES  
AND CELLS"  
MASTER'S PROGRAM

The English version of these regulations is a translation of the German original for information purposes only. The English version of these regulations is not legally binding. In cases of conflict, the original (German) version shall prevail.

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## Section 1 Applicability

<sup>1</sup>The provisions of the General Examination Regulations for Bachelor's and Master's programs of Osnabrück University in their currently valid version apply to the "Nanosciences - Materials, Molecules and Cells" Master's program of Osnabrück University. <sup>2</sup>These regulations set out the overall conditions for completion of the Master's program in "Nanosciences - Materials, Molecules and Cells".

## Section 2 Purpose of the Examination

<sup>1</sup>After four full semesters of study concluding with the Master's examination, this degree program constitutes a second academic degree which is a recognised professional qualification and which also enables candidates to study for a PhD. <sup>2</sup>During the Master's program, students should acquire advanced and/or extended knowledge, skills and methods in the field of Nanosciences - Materials, Molecules and Cells. <sup>3</sup>Graduates holding a Master's degree should have a knowledge of subject-related interdisciplinarity and be capable of undertaking academic work independently, applying academic findings and broadening this knowledge by adopting new approaches and understanding their relevance to society and professional practice. <sup>4</sup>The Master's examination ascertains whether the candidate has acquired the required level of knowledge and skills.

## Section 3 Degree

Upon passing the Master's examination, students are awarded the university degree of "Master of Science" (M. Sc.) in "Nanosciences - Materials, Molecules and Cells" by the school in which the student has written their Master's thesis.

## Section 4 Responsibility

(1) The deans of studies for biology–chemistry and physics are responsible for organising and administering examinations in accordance with Section 45 paragraph 3 item 1 Lower Saxony Higher Education Act (NHG). These responsibilities can be delegated by the deans to an examination committee.

(2) <sup>1</sup>The examination committee has five members as follows:

- a) three members of the university lecturers' group with at least one member each from the department of physics (School of Physics) and the department of biology-chemistry (School of Biology/Chemistry),
- b) one member representing the group of teaching research fellows,  
as well as
- c) one member representing the student group.

<sup>2</sup>The members of the examination committee and their deputies are elected by the representatives of each status group in each respective school executive board. The members under Section 2 subsections b) and c) are to be elected on an alternating basis from the schools of physics and biology/chemistry respectively on the basis of a 2:2:1 distribution of votes between the participating departments.

(3) The examination committee elects a chair of committee as well as a deputy chair from amongst its members. As a general rule, schools involved in this degree program should share and alternate in the functions of chair and deputy chair.

(4) The Deans of Studies of biology-chemistry and physics as well as members of the examination committees are entitled to attend examinations as observers.

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## Section 5 Structure and Organization of the Program

<sup>1</sup>The "Nanoscience - Materials, Molecules and Cells" Master's Program can be studied as an interdisciplinary program by choosing one of the following major/minor combinations:

- A Major in biology, minor in chemistry
- B Major in biology, minor in physics
- C Major in chemistry, minor in biology
- D Major in chemistry, minor in physics
- E Major in physics, minor in biology
- F Major in physics, minor in chemistry

<sup>2</sup> Each major/minor combination listed under sentence 1 requires students to acquire credits totalling 36-48 CP from among the elective courses of their chosen major and 12-24 CP from among the elective courses of their chosen minor by the end of their second semester. <sup>3</sup>In addition, students must collect a total of 30 CP in the mandatory Subject Specialization component of their chosen major. <sup>4</sup>Students should select their courses in consultation with the examination committee in such a way that they represent a coherent supplement to their Bachelor studies and also directly prepare them to write their Master's thesis. <sup>5</sup>Students may only write their Master's thesis in their chosen major.

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**Variant A: Major in biology, minor in chemistry**

\* contact hours per week per semester

Identifier	Module title	SWS*	CP	Duration
<b>Mandatory electives for a biology major (36-48 CP)</b>				
BIO-NMM	Master's Module (general description)	8	12	1 Sem.
BIO-NMM-BC1_v1	Master's Module Biochemistry: Structural and Pathobiochemistry	8	12	1 Sem
BIO-NMM-BC2_v1	Master's Module Biochemistry: Molecular Cell Biochemistry: intracellular protein sorting and function	8	12	1 Sem.
BIO-NMM-BO	Master's Module Botany: Molecular plant developmental genetics	8	12	1 Sem
BIO-NMM-BP1	Master's Module Biophysics: Biological Spectroscopy and Microscopy	8	12	1 Sem.
BIO-NMM-BP2	Master's Module Fundamentals of Bioimaging and Data Processing	8	12	1 Sem.
BIO-NMM-BP3	Master's Module Signalling in cell death and immunity	8	12	1 Sem.
BIO-NMM-NBP	Master's Module Biophysics: NanoBioPhysics	8	12	1 Sem
BIO-NMM-MB1	Master's Module Microbiology: Microbial pathomechanisms	8	12	1 Sem
BIO-NMM-MZB	Master's Module Molecular Cell Biology – Cell membranes: from evolutionary origins to deciphering the lipid code	8	12	1 Sem
BIO-NMM-NB	Master's Module Neurobiology: Neurobiology	8	12	1 Sem
BIO-NMM-ÖK1	Master's Module Ecology: Experimental Ecology and Evolution	8	12	1 Sem.
BIO-NMM-ÖK2	Master's Module Ecology: Theoretical Ecology and Evolution	8	12	1 Sem
BIO-NMM-PP	Master's Module Plant Physiology	8	12	1 Sem
BIO-NMM-SB	Master's Module Structural Biology	8	12	1 Sem.
BIO-NMM-ZO1	Developmental Biology and Molecular Genetics of Marine Organisms	8	12	1 Sem
BIO-NMM-ZO2	Developmental Biology and Molecular Genetics of Marine Organisms at the "Biologische Anstalt Helgoland"	8	12	1 Sem
BIO-SPV	Specialization lecture (Spezialvorlesungsmodul)	2	4	1 Sem.
<b>Mandatory electives for a chemistry minor (12-24 CP)</b>				
CHE-Supra	Supramolecular Chemistry	5	6	1 Sem.
CHE-FunP	Functional Polymers	10	12	2 Sem.
CHE-Nano	Nanomaterials	10	12	2 Sem.
CHE-Self	Self-Organizing Systems	5	6	1 Sem.
CHE-Porous	Porous Materials	5	6	1 Sem.
CHE-Biocon	Bioconjugates	2	2	1 Sem.
CHE-KriRö	Crystallography and X-ray diffraction	5	6	2 Sem.
<b>Mandatory subject specialization for a biology major (30 CP)</b>				
BIO-FS1	Professional Specialization 1 (Methods and Project Course 1)	4	6	1 Sem.
BIO-FS2	Professional Specialization 2 (Methods and Project Course 2)	4	6	1 Sem.
BIO-FB	Research Course practical or theoretical thesis preparation	7-9	18	1 Sem.
<b>Master's thesis in biology</b>			<b>30</b>	

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**Variant B: Major in biology, minor in physics**

\* contact hours per week per semester

Identifier	Module title	SWS*	CP	Duration
<b>Mandatory electives for a biology major (36-48 CP)</b>				
BIO-NMM	Master's Module (general description)	8	12	1 Sem.
BIO-NMM-BC1_v1	Master's Module Biochemistry: Structural and Pathobiochemistry	8	12	1 Sem
BIO-NMM-BC2_v1	Master's Module Biochemistry: Molecular Cell Biochemistry: intracellular protein sorting and function	8	12	1 Sem.
BIO-NMM-BO	Master's Module Botany: Molecular plant developmental genetics	8	12	1 Sem
BIO-NMM-BP1	Master's Module Biophysics: Biological Spectroscopy and Microscopy	8	12	1 Sem.
BIO-NMM-BP2	Master's Module Fundamentals of Bioimaging and Data Processing	8	12	1 Sem.
BIO-NMM-BP3	Master's Module Signalling in cell death and immunity	8	12	1 Sem.
BIO-NMM-NBP	Master's Module Biophysics: NanoBioPhysics	8	12	1 Sem
BIO-NMM-MB1	Master's Modul Mikrobiologie: Microbial pathomechanisms	8	12	1 Sem
BIO-NMM-MZB	Master's Module Molecular Cell Biology – Cell membranes: from evolutionary origins to deciphering the lipid code	8	12	1 Sem.
BIO-NMM-NB	Master's Module Neurobiology: Neurobiology	8	12	1 Sem
BIO-NMM-ÖK1	Master's Module Ecology: Experimental Ecology and Evolution	8	12	1 Sem.
BIO-NMM-ÖK2	Master's Module Ecology: Theoretical Ecology and Evolution	8	12	1 Sem.
BIO-NMM-PP	Master's Module Plant Physiology	8	12	1 Sem
BIO-NMM-SB	Master's Module Structural Biology	8	12	1 Sem.
BIO-NMM-ZO1	Developmental Biology and Molecular Genetics of Marine Organisms	8	12	1 Sem
BIO-NMM-ZO2	Developmental Biology and Molecular Genetics of Marine Organisms at the "Biologische Anstalt Helgoland"	8	12	1 Sem
BIO- SPV	Specialization lecture (Spezialvorlesungsmodul)	3	4	1 Sem.
<b>Mandatory electives for a physics minor (12-24CP)</b>				
PHY-AFP-15	Applied Solid State Physics	4	6	1 Sem.
PHY-BMMP-15	Biomacromolecular Physics	4	6	1 Sem.
PHY-OFP-15	Surface Science	4	6	1 Sem.
PHY-TKM-15	Theory of Condensed Matter	4	6	1 Sem.
PHY-UKP-15	Ultrafast Physics	4	6	1 Sem.
PHY-ACM	Advanced Computer Simulations and Modelling	4	6	1 Sem.
PHY-BPHBI-15	Biophysical and Applied Bioinformatics	2	3	1 Sem.
PHY-BPHBI-M-15	Methods of applied Bioinformatics	2	3	1 Sem.
PHY-BPHBI-P-15	Practical Course in applied bioinformatics and evolutionary biophysics	2	3	1 Sem.
PHY-BPHBI-S-15	Seminar in applied bioinformatics and evolutionary biophysics	2	3	1 Sem.
PHY-BMMP-M-15	Techniques of Biomacromolecular Physics	2	3	1 Sem.
PHY-BMMP-P-15	Practical Course: Biomacromolecular Physics	2	3	1 Sem.
PHY-BMMP-S-15	Seminar: Biomacromolecular Physics	2	3	1 Sem.
PHY-NQP-15	Computational Quantum Physics	2	3	1 Sem.

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Identifier	Module title	SWS*	CP	Duration
PHY-OFP-P-15	Laboratory Course: Surface Science	2	3	1 Sem.
PHY-OFP-S-15	Seminar: Surface Science	2	3	1 Sem.
PHY-PCMS-15	Practicum Computational Materials Science	2	3	1 Sem.
PHY-PCN-15	Physics of Carbon Nanostructures	2	3	1 Sem.
PHY-PCN-P-15	Physics of Carbon Nanostructures (lab course)	2	3	1 Sem.
PHY-PCN-S-15	Physics of Carbon Nanostructures (seminar)	2	3	1 Sem.
PHY-PFM-15	Physics of Functional Materials	2	3	1 Sem.
PHY-PSY-15	Physics with Synchrotron Radiation	2	3	1 Sem.
PHY-PUDS-15	Physics of Ultrathin Films	2	3	1 Sem.
PHY-SDS-15	Stochastic Dynamical Systems	2	3	1 Sem.
PHY-TRQ-15	Transport and Relaxation Dynamics in Quantum Systems	2	3	1 Sem.
PHY-UKP-E-15	Introduction: Ultrafast Physics	2	3	1 Sem.
PHY-UKP-F	Advanced Ultrafast Physics	2	3	1 Sem.
PHY-UKP-P-15	Laboratory Course: Ultrafast Physics	2	3	1 Sem.
PHY-UKP-S-15	Seminar: Ultrafast Physics	2	3	1 Sem.
PHY-EV-V-y	Complement and deepen the knowledge of physics: y <sup>(*)</sup>	2	3	1 Sem.
PHY-EV-S-y	Complement and deepen the knowledge of physics: y <sup>(*)</sup>	2	3	1 Sem.
<b>Mandatory subject specialization for a biology major (30 CP)</b>				
BIO-FS1	Professional Specialization 1 (Methods and Project Course 1)	4	6	1 Sem.
BIO-FS2	Professional Specialization 2 (Methods and Project Course 1)	4	6	1 Sem.
BIO-FB	Research Course practical or theoretical thesis preparation	7-9	18	1 Sem.
<b>Master's thesis in biology</b>			<b>30</b>	1 Sem.

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**Variant C: Major in chemistry, minor in biology**

\* contact hours per week per semester

Identifier	Module title	SWS*	CP	Duration
<b>Mandatory electives for a chemistry major ( 36-48CP)</b>				
CHE-Supra	Supramolecular Chemistry	5	6	1 Sem.
CHE-FunP	Functional Polymers	10	12	2 Sem.
CHE-Nano	Nanomaterials	10	12	2 Sem.
CHE-Self	Self-Organizing Systems	5	6	1 Sem.
CHE-Porous	Porous Materials	5	6	1 Sem.
CHE-Biocon	Bioconjugates	2	2	1 Sem.
<b>Mandatory electives for a biology minor (12-24CP)</b>				
BIO-NMM	Master's Module (general description)	8	12	1 Sem.
BIO-NMM-BC1_v1	Master's Module Biochemistry: Structural and Pathobiochemistry	8	12	1 Sem
BIO-NMM-BC2_v1	Master's Module Biochemistry: Molecular Cell Biochemistry: intracellular protein sorting and function	8	12	1 Sem.
BIO-NMM-BO	Master's Module Botany: Molecular plant developmental genetics	8	12	1 Sem
BIO-NMM-BP1	Master's Module Biophysics: Biological Spectroscopy and Microscopy	8	12	1 Sem.
BIO-NMM-BP2	Master's Module Fundamentals of Bioimaging and Data Processing	8	12	1 Sem.
BIO-NMM-BP3	Master's Module Signalling in cell death and immunity	8	12	1 Sem.
BIO-NMM-NBP	Master's Module Biophysics: NanoBioPhysics	8	12	1 Sem
BIO-NMM-MB1	Master's Module Microbiology: Microbial pathomechanisms	8	12	1 Sem
BIO-NMM-MZB	Master's Module Molecular Cell Biology – Cell membranes: from evolutionary origins to deciphering the lipid code	8	12	1 Sem.
BIO-NMM-NB	Master's Module Neurobiology: Neurobiology	8	12	1 Sem
BIO-NMM-ÖK1	Master's Module Ecology: Experimental Ecology and Evolution	8	12	1 Sem.
BIO-NMM-ÖK2	Master's Module Ecology: Theoretical Ecology and Evolution	8	12	1 Sem.
BIO-NMM-PP	Master's Module Plant Physiology	8	12	1 Sem
BIO-NMM-SB	Master's Modul Structural Biology	8	12	1 Sem.
BIO-NMM-ZO1	Developmental Biology and Molecular Genetics of Marine Organisms	8	12	1 Sem
BIO-NMM-ZO2	Developmental Biology and Molecular Genetics of Marine Organisms at the "Biologische Anstalt Helgoland"	8	12	1 Sem
<b>Mandatory subject specialization for a chemistry major (30 CP)</b>				
CHE-FS1	Professional Specialization 1	5	6	1 Sem.
CHE-FS2	Professional Specialization 2	5	6	1 Sem.
CHE-RC	Research Course	7-9	18	1 Sem.
	<b>Master's thesis in Chemistry</b>		30	1 Sem.

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**Variant D: Major in chemistry, minor in physics**

\* contact hours per week per semester

Identifier	Module title	SWS*	CP	Duration
<b>Mandatory electives for a chemistry major (36-48 CP)</b>				
CHE-Supra	Supramolecular Chemistry	5	6	1 Sem.
CHE-FunP	Functional Polymers	10	12	2 Sem.
CHE-Nano	Nanomaterials	10	12	2 Sem.
CHE-Self	Self-Organizing Systems	5	6	1 Sem.
CHE-Porous	Porous Materials	5	6	1 Sem.
CHE-Biocon	Bioconjugates	2	2	1 Sem.
<b>Mandatory electives for a physics minor ( 12-24 CP)</b>				
PHY-AFP-15	Applied Solid State Physics	4	6	1 Sem.
PHY-BMMP-15	Biomacromolecular Physics	4	6	1 Sem.
PHY-OFP-15	Surface Science	4	6	1 Sem.
PHY-TKM-15	Theory of Condensed Matter	4	6	1 Sem.
PHY-UKP-15	Ultrafast Physics	4	6	1 Sem.
PHY-ACM	Advanced Computer Simulations and Modelling	4	6	1 Sem.
PHY-BPHBI-15	Biophysical and Applied Bioinformatics	2	3	1 Sem.
PHY-BPHBI-M-15	Methods of applied Bioinformatics	2	3	1 Sem.
PHY-BPHBI-P-15	Practical Course in applied bioinformatics and evolutionary biophysics	2	3	1 Sem.
PHY-BPHBI-S-15	Seminar in applied bioinformatics and evolutionary biophysics	2	3	1 Sem.
PHY-BMMP-M-15	Techniques of Biomacromolecular Physics	2	3	1 Sem.
PHY-BMMP-P-15	Practical Course: Biomacromolecular Physics	2	3	1 Sem.
PHY-BMMP-S-15	Seminar: Biomacromolecular Physics	2	3	1 Sem.
PHY-NQP-15	Computational Quantum Physics	2	3	1 Sem.
PHY-OFP-P-15	Laboratory Course: Surface Science	2	3	1 Sem.
PHY-OFP-S-15	Seminar: Surface Science	2	3	1 Sem.
PHY-PCMS-15	Practicum Computational Materials Science	2	3	1 Sem.
PHY-PCN-15	Physics of Carbon Nanostructures	2	3	1 Sem.
PHY-PCN-P-15	Physics of Carbon Nanostructures (lab course)	2	3	1 Sem.
PHY-PCN-S-15	Physics of Carbon Nanostructures (seminar)	2	3	1 Sem.
PHY-PFM-15	Physics of Functional Materials	2	3	1 Sem.
PHY-PSY-15	Physics with Synchrotron Radiation	2	3	1 Sem.
PHY-PUDS-15	Physics of Ultrathin Films	2	3	1 Sem.
PHY-SDS-15	Stochastic Dynamical Systems	2	3	1 Sem.
PHY-TRQ-15	Transport and Relaxation Dynamics in Quantum Systems	2	3	1 Sem.
PHY-UKP-E-15	Introduction: Ultrafast Physics	2	3	1 Sem.
PHY-UKP-F	Advanced Ultrafast Physics	2	3	1 Sem.
PHY-UKP-P-15	Laboratory Course: Ultrafast Physics	2	3	1 Sem.
PHY-UKP-S-15	Seminar: Ultrafast Physics	2	3	1 Sem.
PHY-EV-V-y	Complement and deepen the knowledge of physics: y <sup>(*)</sup>	2	3	1 Sem.
PHY-EV-S-y	Complement and deepen the knowledge of physics: y <sup>(*)</sup>	2	3	1 Sem.

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Identifier	Module title	SWS*	CP	Duration
<b>Mandatory subject specialization for a chemistry major (30 CP)</b>				
CHE-FS1	Professional Specialization 1	5	6	1 Sem.
CHE-FS2	Professional Specialization 2	5	6	1 Sem.
CHE-RC	Research Course	7-9	18	1 Sem.
	<b>Master's thesis</b> in chemistry		<b>30</b>	<b>1 Sem.</b>

### Variant E: Major in physics, minor in biology

\* contact hours per week per semester

Identifier	Module title	SWS*	CP	Duration
<b>Mandatory electives for a physics major ( 36-48 CP)</b>				
PHY-AFP-15	Applied Solid State Physics	4	6	1 Sem.
PHY-BMMP-15	Biomacromolecular Physics	4	6	1 Sem.
PHY-OFP-15	Surface Science	4	6	1 Sem.
PHY-TKM-15	Theory of Condensed Matter	4	6	1 Sem.
PHY-UKP-15	Ultrafast Physics	4	6	1 Sem.
PHY-ACM	Advanced Computer Simulations and Modelling	4	6	1 Sem.
PHY-BPHBI-15	Biophysical and Applied Bioinformatics	2	3	1 Sem.
PHY-BPHBI-M-15	Methods of applied Bioinformatics	2	3	1 Sem.
PHY-BPHBI-P-15	Practical Course in applied bioinformatics and evolutionary biophysics	2	3	1 Sem.
PHY-BPHBI-S-15	Seminar in applied bioinformatics and evolutionary biophysics	2	3	1 Sem.
PHY-BMMP-M-15	Techniques of Biomacromolecular Physics	2	3	1 Sem.
PHY-BMMP-P-15	Practical Course: Biomacromolecular Physics	2	3	1 Sem.
PHY-BMMP-S-15	Seminar: Biomacromolecular Physics	2	3	1 Sem.
PHY-MPP	Many Particle Physics	2	2	1 Sem.
PHY-NQP-15	Computational Quantum Physics	2	3	1 Sem.
PHY-OFP-P-15	Laboratory Course: Surface Science	2	3	1 Sem.
PHY-OFP-S-15	Seminar: Surface Science	2	3	1 Sem.
PHY-PCMS-15	Practicum Computational Materials Science	2	3	1 Sem.
PHY-PCN-15	Physics of Carbon Nanostructures	2	3	1 Sem.
PHY-PCN-P-15	Physics of Carbon Nanostructures (lab course)	2	3	1 Sem.
PHY-PCN-S-15	Physics of Carbon Nanostructures (seminar)	2	3	1 Sem.
PHY-PFM-15	Physics of Functional Materials	2	3	1 Sem.
PHY-PSY-15	Physics with Synchrotron Radiation	2	3	1 Sem.
PHY-PUDS-15	Physics of Ultrathin Films	2	3	1 Sem.
PHY-SDS-15	Stochastic Dynamical Systems	2	3	1 Sem.
PHY-TRQ-15	Transport and Relaxation Dynamics in Quantum Systems	2	3	1 Sem.
PHY-UKP-E-15	Introduction: Ultrafast Physics	2	3	1 Sem.
PHY-UKP-F	Advanced Ultrafast Physics	2	3	1 Sem.
PHY-UKP-P-15	Laboratory Course: Ultrafast Physics	2	3	1 Sem.

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Identifier	Module title	SWS*	CP	Duration
PHY-UKP-S-15	Seminar: Ultrafast Physics	2	3	1 Sem.
PHY-EV-V-y	Complement and deepen the knowledge of physics: y <sup>(*)</sup>	2	3	1 Sem.
PHY-EV-S-y	Complement and deepen the knowledge of physics: y <sup>(*)</sup>	2	3	1 Sem.
<b>Mandatory electives for a biology minor (18-32 CP)</b>				
BIO-NMM	Master's Module (general description)	8	12	1 Sem.
BIO-NMM-BC1_v1	Master's Module Biochemistry: Structural and Pathobiochemistry	8	12	1 Sem
BIO-NMM-BC2_v1	Master's Module Biochemistry: Molecular Cell Biochemistry: intracellular protein sorting and function	8	12	1 Sem.
BIO-NMM-BO	Master's Module Botany: Molecular plant developmental genetics	8	12	1 Sem
BIO-NMM-BP1	Master's Module Biophysics: Biological Spectroscopy and Microscopy	8	12	1 Sem.
BIO-NMM-BP2	Master's Module Fundamentals of Bioimaging and Data Processing	8	12	1 Sem.
BIO-NMM-BP3	Master's Module Signalling in cell death and immunity	8	12	1 Sem.
BIO-NMM-NBP	Master's Module Biophysics: NanoBioPhysics	8	12	1 Sem
BIO-NMM-MB1	Master's Module Microbiology: Microbial pathomechanisms	8	12	1 Sem
BIO-NMM-MZB	Master's Module Molecular Cell Biology – Cell membranes: from evolutionary origins to deciphering the lipid code	8	12	1 Sem.
BIO-NMM-NB	Master's Module Neurobiology: Neurobiology	8	12	1 Sem
BIO-NMM-ÖK1	Master's Module Ecology: Experimental Ecology and Evolution	8	12	1 Sem.
BIO-NMM-ÖK2	Master's Module Ecology: Theoretical Ecology and Evolution	8	12	1 Sem.
BIO-NMM-PP	Master's Module Plant Physiology	8	12	1 Sem
BIO-NMM-SB	Master's Module Structural Biology	8	12	1 Sem.
BIO-NMM-ZO1	Developmental Biology and Molecular Genetics of Marine Organisms	8	12	1 Sem
BIO-NMM-ZO2	Developmental Biology and Molecular Genetics of Marine Organisms at the "Biologische Anstalt Helgoland"	8	12	1 Sem
<b>Mandatory subject specialization for a physics major (30 CP)</b>				
PHY-FS_v1	Professional Specialization	8	12	1 Sem.
PHY-FB	Research Course	12	18	1 Sem.
	<b>Master's thesis in physics</b>		<b>30</b>	<b>1 Sem.</b>

#### Variant F: Major in physics, minor in chemistry

\* contact hours per week per semester

Identifier	Module title	SWS*	CP	Duration
<b>Mandatory electives for a physics major (36-48 CP)</b>				
PHY-AFP-15	Applied Solid State Physics	4	6	1 Sem.
PHY-BMMP-15	Biomacromolecular Physics	4	6	1 Sem.
PHY-OFP-15	Surface Science	4	6	1 Sem.
PHY-TKM-15	Theory of Condensed Matter	4	6	1 Sem.
PHY-UKP-15	Ultrafast Physics	4	6	1 Sem.

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Identifier	Module title	SWS*	CP	Duration
PHY-ACM	Advanced Computer Simulations and Modelling	4	6	1 Sem.
PHY-BPHBI-15	Biophysical and Applied Bioinformatics	2	3	1 Sem.
PHY-BPHBI-M-15	Methods of applied Bioinformatics	2	3	1 Sem.
PHY-BPHBI-P-15	Practical Course in applied bioinformatics and evolutionary biophysics	2	3	1 Sem.
PHY-BPHBI-S-15	Seminar in applied bioinformatics and evolutionary biophysics	2	3	1 Sem.
PHY-BMMP-M-15	Techniques of Biomacromolecular Physics	2	3	1 Sem.
PHY-BMMP-P-15	Practical Course: Biomacromolecular Physics	2	3	1 Sem.
PHY-BMMP-S-15	Seminar: Biomacromolecular Physics	2	3	1 Sem.
PHY-MPP	Many Particle Physics	2	2	1 Sem.
PHY-NQP-15	Computational Quantum Physics	2	3	1 Sem.
PHY-OFP-P-15	Laboratory Course: Surface Science	2	3	1 Sem.
PHY-OFP-S-15	Seminar: Surface Science	2	3	1 Sem.
PHY-PCMS-15	Practicum Computational Materials Science	2	3	1 Sem.
PHY-PCN-15	Physics of Carbon Nanostructures	2	3	1 Sem.
PHY-PCN-P-15	Physics of Carbon Nanostructures (lab course)	2	3	1 Sem.
PHY-PCN-S-15	Physics of Carbon Nanostructures (seminar)	2	3	1 Sem.
PHY-PFM-15	Physics of Functional Materials	2	3	1 Sem.
PHY-PSY-15	Physics with Synchrotron Radiation	2	3	1 Sem.
PHY-PUDS-15	Physics of Ultrathin Films	2	3	1 Sem.
PHY-SDS-15	Stochastic Dynamical Systems	2	3	1 Sem.
PHY-TRQ-15	Transport and Relaxation Dynamics in Quantum Systems	2	3	1 Sem.
PHY-UKP-E-15	Introduction: Ultrafast Physics	2	3	1 Sem.
PHY-UKP-F	Advanced Ultrafast Physics	2	3	1 Sem.
PHY-UKP-P-15	Laboratory Course: Ultrafast Physics	2	3	1 Sem.
PHY-UKP-S-15	Seminar: Ultrafast Physics	2	3	1 Sem.
PHY-EV-V-y	Complement and deepen the knowledge of physics: y <sup>(*)</sup>	2	3	1 Sem.
PHY-EV-S-y	Complement and deepen the knowledge of physics: y <sup>(*)</sup>	2	3	1 Sem.
<b>Mandatory electives for a chemistry minor (12-24 CP)</b>				
CHE-Supra	Supramolecular Chemistry	5	6	1 Sem.
CHE-FunP	Functional Polymers	10	12	2 Sem.
CHE-Nano	Nanomaterials	10	12	2 Sem.
CHE-Self	Self-Organizing Systems	5	6	1 Sem.
CHE-Porous	Porous Materials	5	6	1 Sem.
CHE-Biocon	Bioconjugates	2	2	1 Sem.
<b>Mandatory subject specialization for a physics major (30 CP)</b>				
PHY-FS_v1	Professional Specialization	8	12	1 Sem.
PHY-FB	Research Course	12	18	1 Sem.
	<b>Master's thesis in physics</b>		30	1 Sem.

(\*) 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

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## Section 6 Semester Abroad

Students may have up to 30 CP of coursework credits recognized from a university abroad or another university in Germany if the credits are earned in a degree program relevant to the students' specialist field and provided that they have gained the consent of the examination committee in advance.

## Section 7 Admission to the Master's Thesis

- (1) <sup>1</sup>Applications for admission (registration) to the Master's thesis must be submitted to the examination committee in writing within the time stipulated by the examination committee. <sup>2</sup>Application deadlines set by the examination committee can be extended if there is a sound reason for doing so, or can be retrospectively extended especially when it might be deemed unreasonable to accept the prolongation of the legal consequences arising from to the expiry of a deadline.
- (2) Candidates are admitted to the Master's thesis when they
  - have successfully completed module-related coursework in accordance with *Section 5* amounting to at least 72 credit points and
  - have been enrolled at Osnabrück University for the "Nanosciences - Materials, Molecules and Cells" Master's program for at least one semester before applying to register for their Master's thesis.
- (3) <sup>1</sup>Students must include the following in their application to write their Master's thesis:
  - evidence of coursework in accordance with *Section 5*,
  - a topic proposal (in consultation with their supervisor),
  - proposals for examiners,

<sup>2</sup>If students are unable to provide one of the required items prelisted under sentence 1 as required, the examination committee can allow the student to provide the required information by other means.
- (4) <sup>1</sup>The examination committee decides on admissions. <sup>2</sup>Admission will be refused if
  - the admission requirements are not fulfilled or
  - documentation is incomplete.
- (5) <sup>1</sup> The declaration of admission together with the examination dates or a refusal of admission shall be made in accordance with Section 41 of the Administrative Procedure Act (VwVfG). <sup>2</sup>Refusal of admission is given in writing.
- (6) Students may withdraw their application for admission up to the point at which the topic of the Master's thesis is issued.

## Section 8 Master's Thesis

- (1) <sup>1</sup>The Master's thesis should demonstrate that the candidate is in a position to work independently within a prescribed time period on a defined problem within the field of Nanosciences - Materials, Molecules and Cells using academic methods, and present this work accordingly. <sup>2</sup>The topic of the Master's thesis and the nature of the assignment must comply with the purpose of the examination (Section 2) and the working period allocated in accordance with paragraph 3. <sup>3</sup>The type of task and the nature of the assignment are to be stipulated when the topic is assigned. <sup>4</sup>The thesis is to be written in English. <sup>5</sup>Upon application, the examination committee may permit the use of a different language.

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- (2) <sup>1</sup>The Master's thesis can take the form of group work. <sup>2</sup>The contribution of the individual candidate being assessed must be clearly identifiable and assessable in its own right; the candidate must clearly mark the sections, page numbers or other objective criteria which refer specifically to their individual contribution, and comply with the requirements in accordance with paragraph 1.
- (3) <sup>1</sup>The time between the topic being issued and the submission of the Master's thesis is 6 months. <sup>2</sup>The topic can only be handed back once and only within the first third of the working period permitted in accordance with sentence 1. <sup>3</sup>The permissible working period can generally be extended by the examination board by a maximum of three months if the candidate submits a well-founded application
- (4) When submitting their thesis, the candidate must confirm in writing that the thesis - or in the case of group work, that part of the thesis which is marked accordingly - was written independently and that the candidate has used no other sources or resources other than those cited in the document.
- (5) The Master's thesis is to be submitted to the relevant Examination Office by the prescribed deadline and must also be made available in a digital format. The date of submission must be officially recorded.

## **Section 9 Final grade of the Master's Examination**

- (1) The Master's examination is graded as passed if the student has passed the required coursework in accordance with Section 5 to a total of 90 credit points and the Master's thesis has been awarded the grade 4.0 or better.
- (2) The final grade for the candidate's coursework is calculated from the average of all the unrounded grades awarded for this work.
- (3) The final grade of the Master's examination is calculated at a ratio of 1:1 from the unrounded final grade for the candidate's coursework in accordance with subsection 2 and the unrounded average of the two grades awarded for the Master's thesis.

## **Section 10 Entry into Force and Transitional Provisions**

- (1) These examination regulations enter into force retroactively from 01 October 2022 following their publication in an official gazette of Osnabrück University.
- (2) For students who were already enrolled in the Master's programme "Nanosciences – Materials, Molecules and Cells" in the summer semester 2022, the programme-specific examination regulations for the Master's programme "Nanosciences – Materials, Molecules and Cells" in the version dated 10.03.2020 continue to apply (Official Gazette of Osnabrück University no. 01/2020, p. 26).
- (3) <sup>1</sup>The previous programme-specific examination regulations for the Master's programme "Nanosciences – Materials, Molecules and Cells" in the version dated 10.03.2020 (Official Gazette of Osnabrück University no. 01/2020, p. 26) ceases to be in force on 30.09.2024. <sup>2</sup>From 01.10.2024, upon its ceasing to be in force, students who are studying in accordance with Section 2 of those regulations shall automatically fall under the programme-specific examination regulations for the Master's programme "Nanosciences – Materials, Molecules and Cells" in force at that time.

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