Master degree programme Physics

Appendices to the Teaching and Examination Regulations

Appendix A Aim of the degree programme (art. 1.3)

The degree programme aims to train the students in such a way that they acquire the insight, skills and knowledge that allows the recipient of the degree to establish a professional career in the field of Physics.

Appendix B Specializations of degree programme (art. 2.2)

The degree programme has the following specializations:

- Theoretical Physics
- Experimental Physics
- Instrumentation and Informatics
- Science, Business and Policy

Appendix C Content of degree programme (art. 2.3)

Specialization Theoretical Physics

module	ECTS	assessment	practical
Symmetry in Physics	5	written examination	
Computational Physics	5	assignments	x
Relativistic Quantum Mechanics	5	written examination, assignments	
Quantum Field Theory	5	oral examination, assignments	
Theoretical Condensed Matter Physics	5	written examination, assignments	
Statistical Mechanics	5	oral examination, assignments	
Student Seminars	5	see appendix D	see app. D
Optional Courses in Science	20	see appendix D	see app. D
Free Electives	5	see appendix D	see app. D
Research	60	assessment of performance, report, presentation, attendance general physics colloquuium	

Specialization Experimental Physics

module	ECTS	assessment	practical
Symmetry in Physics	5	written examination	
Computational Physics	5	assignments	x
Statistical Methods in Physics	5	written examination	
Principles of Measurement Systems	5	written examination	
Student Seminars	5	see appendix D	see app. D
Optional Courses in Science	25	see appendix D	see app. D
Free Electives	10	see appendix D	see app. D
Research	60	assessment of performance, report, presentation, attendance general physics colloquium	

Specialization Instrumentation and Informatics

module	ECTS	assessment	practical
Computational Physics	5	assignments	x
Principles of Measurement Systems	5	written examination	
Control Engineering	5	written examination	
Applied Signal Processing	5	written examination	
Basic Detection Techniques	5	written examination	
Astronomical Space Missions	5	written examination	
Numerical Mathematics 1	5	written examination	
Optional courses in Science	5	see appendix D	see app. D
Optional courses in Instrumentation and Informatics	10	see appendix D	see app. D
Project Information Technology	10	assessment of performance, report, presentation	x
Internship in Industry	20	assessment of performance, report, presentation	x
Physics research / thesis	40	assessment of performance, report, presentation, attendance general physics colloquium	x

Specialization Science, Business and Policy

module	ECTS	assessment	practical
Computational Physics	5	assignments	x
Principles of Measurement Systems	5	written examination	
Optional courses in Science	20	see appendix D	see app. D
Course Science, Business and Policy	20	assignment, exam	
Internship Science, Business and Policy	40	assessment of performance, reports	
Physics research / thesis	30	assessment of performance, report, presentation , attendance general physics colloquium	

Appendix D Optional modules (art. 2.4)

Student Seminars

module	ECTS	assessment	practical
Student Seminar on Modern Cosmology	5	presentations	
Student Seminar on Quantum Computation	5	presentation, assignments	
Student Seminar on Subatomic Physics	5	presentation, oral examination	
Fundamental Interactions and Symmetry	5	presentations	

Optional Courses in Science

module	ECTS	assessment	practical
Courses that are obligatory in another specialization	5	as indicated in appendix C	
Student seminars in excess of the minimal requirement	5	as indicated under Student Seminars	
Optional courses in Instrumentation and Informatics in excess of the minimal requirement	5	as indicated under Optional Courses in Instrumentation and Informatics	
Optional courses at master level in Mathematics, Astronomy, Chemistry or Computer Science	5	as indicated in appendix C or D of the corresponding programme	as indicated in appendix C or D of the corresponding programme

Astroparticle Physics	5	written examination	
Atomic Interactions	5	written examination	
Capita Selecta Materials Science	5	oral examination	
Computer Simulation of Quantum Systems	5	assignments	
Contempory Experiments in Molecular Physics	5	written examination	
Elementary Particles	5	oral examination	
Environmental Physics	5	written examination	
General Relativity	5	written examination, assignments	
Introduction to String Theory	5	written examination, assignments	
Introduction to Supersymmetry	5	oral examination	
Introductory Plasma Physics	5	written examination	
Isotope Production	5	oral examination	
Key Experiments in Atomic Physics	5	oral examination	
Many Particle Systems	5	written examination	
Mathematical Methods for Physicists	5	assignments	
Mechatronics	5	written examination	
Mesoscopic Physics	5	written examination	
Micromechanics	5	written examination, assignments	
Non Linear Optics	5	written examination, assignments	
Nuclear Physics	5	written examination, assignments, presentation	
Physical Materials Science	5	written examination	
Physics of Continuous Media	5	written examination	
Quantum Many Body Physics	5	oral examination	
Radiation Physics	5	written examination	
Robotics	5	written examination	
Solid Mechanics	5	written examination, assignments, report	
Spintronics	5	written examination ,assignments, report	
Surfaces and Interfaces	5	written examination	

Optional Courses in Instrumentation and Informatics

module	ECTS	assessment	practical
Accelerator Physics and Ion Optics	5	oral examination	
Device Physics	5	written examination	
Experimental Methods of Trace Gas Research	5	written examination, report	
Imaging Techniques in Radiology	5	as indicated in appendix C or D of the MSc programme in Biomedical Engineering	as indicated in appendix C or D of the MSc programme in Biomedical Engineering
Interferometry	5	written examination	
Laser Cooling and Trapping	5	oral examination	
Scientific Visualization	5	as indicated in appendix C or D of the MSc programme in Computer Science	as indicated in appendix C or D of the MSc programme in Computer Science
Virtual Observations	5	written examination, assignments	

Free Electives

module	ECTS	assessment	practical
Optional courses in any field taught at the university, on individual approval of the Board of Examiners	5	as indicated in appendix C or D of the corresponding programme	

Appendix E Entry requirements (art. 3.1)

For students admitted to the programme there are no entry requirements for the individual modules.

Appendix F Admission requirements (art. 4.1 and 4.2)

Holders of the following Bachelor's degrees from the University of Groningen are considered to have sufficient knowledge and skills and will be admitted to the Master's degree programme in Physics on that basis:

- BSc Natuurkunde

Appendix G Application deadlines for admission (art. 4.5)

Deadlines for application are: June 1st for EU students
April 15th for non-EU students