Technische Universität Dresden
Faculty of Physics

Study Regulations
for the Master's degree program in Physics
from winter semester 2025/2026

Consolidated version of official announcements of TU Dresden of July 25, 2015, the First Amending Statute of Study Regulations of March 22, 2018, the Second Amending Statute of Study Regulations of April 27, 2022 and according to § 6 para. 7 of the Study Regulations the resolution of the Faculty Board of April 16, 2025.

This is valid for all students enrolled in the Master's degree program in Physics **before** the winter semester 2025/26 and have **not** declared their transfer to the Third Amendment Statute in writing.

Please note that the English translation is provided for information purposes only. The English text is not legally binding. Only the original German document has legal validity. The official language at TU Dresden is German. German jurisdiction applies.

Technische Universität Dresden
Faculty of Physics

Study Regulations for the consecutive Master's degree program in Physics

as of July 25, 2015
(translated version)

Based on § 36 para. 1 of the Act on the Autonomy of Institutions of Higher Education in the Free State of Saxony (*Sächsisches Hochschulfreiheitsgesetz* – SächsHSFG) in the version of the announcement of January 15, 2013 (SächsGVBl. p. 3), last amended by Article 11 of the Act of April 29, 2015 (SächsGVBl. p. 349, 354), Technische Universität Dresden issues the following Study Regulations as statutes.

Table of contents

§ 1 Scope of application
§ 2 Objectives of the degree program
§ 3 Admission requirements
§ 4 Start and duration of the degree program
§ 5 Teaching and learning methods
§ 6 Structure and organization of the degree program
§ 7 Content of the degree program
§ 8 Credit points
§ 9 Academic advisory and counseling service
§ 10 Changes to module descriptions

Annex 1 Module descriptions
Annex 2 Study plan – Start winter semester
Study plan – Start summer semester

§ 1
Scope of application

On the basis of the Act on the Autonomy of Institutions of Higher Education in the Free State of Saxony and the Examination Regulations, these Study Regulations stipulate the objectives, content, structure and organization of the consecutive Master's program Physics at Technische Universität Dresden.

§ 2
Objectives of the degree program

(1) Students will have deepened their knowledge of mathematics and sciences and expanded their overview of the interrelations both within physics and with adjacent disciplines. They will have the ability to relate their knowledge from different sub-fields of physics and thus be able to formulate, analyze and resolve complex physical problems and tasks. They have acquired an overview of the established knowledge in a selected special field of physics, are familiar with significant recent developments in the field, have knowledge of current unresolved issues, and have become proficient in the field in such a way that they are able to connect with current international research. During the one-year research phase, they will have acquired the ability to familiarize themselves with new physical problems, to research and understand the current international literature on the subject, to design and carry out experiments or theoretical methods in the field, to classify the findings in the light of a wide variety of physical phenomena, and to then draw conclusions for technical developments and the progress of science. At the same time, graduates recognize the relevance of scientific fields closely related to physics and use those effectively. They are able to discuss complex physical issues and their own research results comprehensively in the context of current international research and to present them in written and oral form.

(2) Graduates have in-depth specialist knowledge required for professional practice, understand interdisciplinary interrelationships and are qualified for highly skilled activities in all fields of work in physics and related areas, such as basic or industry research, application-based development, technical and administrative planning, quality assurance, consulting, sales, teaching and management (e.g. at teaching and research facilities), in industry and at public authorities. They possess key qualifications relevant to the working world, such as communication skills, teamwork, effective project planning and work organization. They are able to work professionally in areas other than the special field they have gained proficiency in the Master's program, using their basic knowledge of physics and the scientific methods and problem-solving strategies they have learned.

§ 3
Admission requirements

(1) To be admitted to the degree program, applicants must have completed a first degree in physics or a closely related discipline at a university or vocational academy that is officially recognized in Germany and qualifies the degree holder for a profession, such as technical physics or engineering physics, if the subject content in experimental and theoretical physics obtained there as well as the knowledge of applied mathematical methods obtained correspond to the content in the Bachelor's degree program in Physics at TU Dresden.

(2) To decide on questions of doubt regarding the assessment of study programs pursuant to para. 1, an Admissions Committee will be established. The Admissions Committee consists of two university lecturers, one research assistant and one student representative of the Faculty of Physics and is formed as a subcommittee of the Academic Affairs Committee for the Master's program

in Physics by election from the respective group representatives of the Academic Affairs Committee.

(3) Knowledge of English at B2 level of the Common European Framework of Reference for Language is a prerequisite. If applicants do not have a certificate of general or subject-specific university entrance qualification with a basic or advanced course completed in English or comparable levels, a university entrance qualification completed entirely in English, or a certificate of a university degree completed entirely in English, proof is provided on the basis of the result of an internationally offered test, for example IELTS: 6.0, TOEFL online: 75, UNIcert II.

§ 4
Start and duration of the degree program

(1) The program can be started in the winter as well as in the summer semester.

(2) The standard period of study is four semesters and includes on-site attendance, self-study and the Master's examination.

§ 5
Teaching and learning methods

(1) The curriculum is structured in modules. In the individual modules, the course content is taught, consolidated and deepened through lectures, exercises, practical training, seminars, self-study, tutorials, and scientific work.

(2) Lectures introduce the subject matter of the modules. Exercises enable the development of solutions to concrete problems in exemplary sub-areas of the course content. Practical trainings serve to apply the taught course content in hands-on experiments and to learn modern measurement methods and experimental techniques. Seminars allow students to independently research literature on a given, current topic in modern physics, present a complex specific topic in a structured manner, and discuss it with the audience. Self-study allows students to independently consolidate, deepen and expand their knowledge. Tutorials provide support for targeted learning processes to consolidate knowledge. Scientific work enables students to work independently on a scientific issue in a special field of physics, to integrate into a research team, to represent their own findings in compliance with the rules of good scientific practice, and to handle critical questions.

§ 6
Structure and organization of the degree program

(1) The program is organized in modules. The curriculum is divided into three semesters. The fourth semester is dedicated to completing the Master’s thesis. The first summer semester is particularly suitable for a temporary stay at another university (mobility window). Part-time study is possible in accordance with the regulations on part-time study.

(2) The degree program comprises five compulsory modules and 1 elective compulsory module, which allows students to choose their non-physics supplement. The non-physics supplements available include Mathematics, Biomathematics, Chemistry, Biology, Molecular Bioengineering, Computer Science, Philosophy, Electrical engineering, Mechanical Engineering, Materials Science, Business Administration, and Economics. The selection is binding. A non-physics supplements can

be re-selected; the student must submit a written request to the Examination Office stating the module to be replaced and the newly selected elective compulsory module.

(3) Contents and learning goals, teaching and learning methods included, requirements, applicability, frequency, workload, and duration of the individual modules are all listed in the module descriptions (Annex 1).

(4) The courses are held in German or English, as indicated in the module descriptions.

(5) The appropriate allocation of the modules to the individual semester, the observance of which makes it possible to complete the program within the standard period of study, as well as the type and scope of the respective courses included, and the number and standard time of the required study achievements and examined assessments are defined in the study schedules attached (Annex 2), or in an individual study schedule for part-time studies approved by the Faculty.

(6) The module Scientific Studies requires enrollment along with the issue of the topic of the scientific problem, the form and deadline of which will be announced at the beginning of each semester by the Faculty in the usual manner.

(7) Upon proposal of the Academic Affairs Committee, the Faculty Board may change the range of elective compulsory modules as well as the study schedules. The amended range of elective compulsory modules as well as the amended study schedules will apply to all students who have been informed about this by the Faculty at the beginning of their studies. The Examination Committee shall decide, upon application by the student, on any exceptions to sentence 2.

§ 7
Content of the degree program

(1) The Master's program in Physics has a research-oriented profile.

(2) The degree program comprises advanced studies in physics, which in a specialization area of physics to be chosen, relate to current issues in research beyond the limits of established knowledge. The area of experimental physics covers the topics of common principles of solid-state physics, molecular physics, atomic physics, nuclear physics, and particle physics and their different manifestations at different energy scales. The area of theoretical physics focuses on overarching, uniform principles using specific examples from a wide variety of disciplines, aiming to achieve a holistic understanding of theoretical physics. The minor subject addresses exemplary issues in an adjacent field, providing opportunities for interdisciplinary work. The scientific studies field enables students to work independently on a scientific task related to current research questions.

§ 8
Credit points

(1) ECTS credit points document the average workload of the students and their individual study progress. One credit point corresponds to a 30-hour workload. Normally, 60 credit points are awarded per academic year, i.e. 30 credit points per semester. The total workload for the program corresponds to 120 credit points and comprises the teaching and learning methods according to type and scope stipulated in the module descriptions (Annex 1), the study achievements and examined assessments, and the Master's thesis.

(2) The module descriptions (Annex 1) indicate the number of credit points that can be earned by each module. Credit points are awarded upon passing the module examination. § 26 of the Examination Regulations shall remain unaffected.

§ 9
Academic advisory and counseling service

(1) General advice will be provided by the Central Student Information and Counseling Service at TU Dresden. It covers questions regarding study options, enrollment modalities and general student affairs. Subject-specific advice during studies will be provided by the Academic Advisory Service of the Faculty of Physics. This subject-specific advisory service assists students with regard to the design of their studies.

(2) At the beginning of the third semester, each student who has not yet submitted proof of academic performance must make use of the subject-specific advisory services.

§ 10
Changes to module descriptions

(1) In order to amend to changed conditions, module descriptions may be changed in a simplified procedure in order to optimize study organization, with the exemption of the fields “Module name”, “Content and learning goals”, “Teaching and learning methods”, “Requirements for earning credit points”, and “Credit points and grades”.

(2) In a simplified procedure, the Faculty Board will adopt the amendments to the module descriptions upon proposal of the Academic Affairs Committee. The amendments must be published by the Faculty in the usual manner.

Annex 1
Module descriptions

Module number	**Module name**	**Responsible lecturer**
Phy-Ma-Vert	Specialisation Physics	Dean of Studies for the Master's degree program in Physics (studiendekan.physik_master@tu-dresden.de)
Qualification objectives	Students have gained an overview of existing knowledge in the specialisation chosen, they know significant developments of recent years and current unresolved questions and have become familiar with this field to a degree that they can join current international research activities. Students are able to understand and conduct in-depth work on problems of modern physics.	
Content	In this module students elect one of five possible areas of specialization in physics: Applied Solid State Physics and Photonics, Solid State and Materials Physics, Soft Condensed Matter and Biological Physics, Particle and Nuclear Physics, Theoretical Physics.	
Teaching and learning methods	The module comprises lecture und exercise totaling 12 hours per week and, depending on students' choices, a practical training with a total of 4 SWS or self-study with a total of 4 SWS. According to the specialisation area elected, students choose the required and the required elective courses to the stated extent from the catalogue Specialisation Areas Master for the Subject Area Physics; this catalogue including the information on the teaching language will be announced at the beginning of each semester by the Faculty.	
Prerequisites for participation	None	
Applicability	This module is a compulsory module in the Master's degree program Physics. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of an oral examination lasting 45 minutes in the chosen field of specialization. Preliminary academic work is a portfolio of written problem-solving tasks.	
Credit points and grades	Participants can earn 15 credit points for this module. The module grade corresponds to the grade of the oral examination.	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 450 hours.	
Module duration	The module comprises 2 semesters.	

Module number	**Module name**	**Responsible lecturer**
Phy-Ma-Hsem	Advanced Scientific Seminar	Dean of Studies for the Master's degree program in Physics (studiendekan.physik_master@tu-dresden.de)
Content and Qualification objectives	Depending on students' choices, the module comprises a special area chosen from the catalogue Master's Advanced Seminars. The chosen area focuses on issues of advanced scientific facts and relationships. Students are able to get familiar with the topics using technical literature and/or original publications and to present them comprehensibly using suitable aids. They can follow such presentations and discuss the scientific facts with their peers.	
Teaching and learning methods	2 hours per week seminar and 1 hour per week self-study. The courses are to be chosen from the catalogue Master's Advanced Seminars of the Subject Area Physics; this catalogue including the information on the teaching language will be announced at the beginning of each semester by the Faculty.	
rerequisites for participation	None	
Applicability	This module is a compulsory module in the Master's degree program Physics. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of an ungraded oral presentation lasting 45 minutes.	
Credit points and grades	Participants can earn six credit points for this module. The module examination will only be graded as either "pass" or "fail".	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 180 hours.	
Module duration	The module comprises 1 semester.	

Module number	**Module name**	**Responsible lecturer**
Phy-Ma-Exp	Experimental Physics	Prof. Dr. H.-H. Klauß
Content and Qualification objectives	Students have an overview of the key concepts of experimental physics and comprehend its laws. They identify common strategies in the experimental investigation of structures and excitations of physical systems at different scales of size and energy. They are able to correlate physical concepts and methods of different experimental fields and to combine them	
Teaching and learning methods	3 hours per week lecture, 1 hour per week exercise, 1 hour per week tutorial and 3 hours per week self-study. The lectures are held in English. The exercises and tutorials are held in German and in English.	
Prerequisites for participation	Knowledge in the field of the solid-state, atomic, molecular, nuclear and particle physics is prerequisite.	
Applicability	This module is a compulsory module in the Master's degree program Physics. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of an oral examination lasting 45 minutes.	
Credit points and grades	Participants can earn 13 credit points for this module. The module grade corresponds to the grade of the oral exam.	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 390 hours.	
Module duration	The module comprises 2 semesters.	

Module number	Module name	Responsible lecturer
Phy-Ma-Theo	Theoretical Physics	Prof. Dr. W. Strunz
Content and Qualification objectives	Students have an overview of the fields of theoretical physics, understand their interrelations and expand their theoretical knowledge. Students are trained to give the most comprehensible theoretical descriptions possible of selected physical phenomena and to combine the theoretical fundamentals and methods that they had known so far predominantly as individual phenomena. They are able to explore complex physics issues independently and theoretically.	
Teaching and learning methods	3 hours per week lecture, 1 hour per week exercise, 1 hour per week tutorial and 3 hours per week self-study. The lectures are held in English. The exercises and tutorials are held in German and in English.	
Prerequisites for participation	Knowledge of theoretical mechanics, electrodynamics, quantum theory, thermodynamics and statistical physics is prerequisite.	
Applicability	This module is a compulsory module in the Master's degree program Physics. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of an oral examination lasting 45 minutes.	
Credit points and grades	Participants can earn 13 credit points for this module. The module grade corresponds to the grade of the oral exam.	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 390 hours.	
Module duration	The module comprises 2 semesters.	

Module number	Module name	Responsible lecturer
Phy-Ma-NpErg-MAT	Non-Physics Supplementary Course Mathematics	Prof. Dr. W. Walter
Content and Qualification objectives	Students have a basic understanding of mathematical issues and interdisciplinary skills. According to their choice from the minor catalogue of the Master's degree program Physics, students have basic competencies in dealing with elements of algebra and number theory, geometry, numerical mathematics or higher analysis and also academic English.	
Teaching and learning methods	The module comprises lecture, exercise, tutorial, seminar or practical training totaling 8 hours per week. The courses are to be chosen from the minor catalogue of the Master's degree program Physics; this catalogue including the respective required examinations, grade weighting as well as the information on the teaching and examination language will be announced at the beginning of each semester by the Faculty.	
Prerequisites for participation	None	
Applicability	This module is one of twelve elective compulsory modules of the Master's degree program Physics, one of which must be chosen. The module is a prerequisite for participation in the module Phy-Ma-Wis-Stu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of the examination assessments specified in the minor catalogue of the Master's degree program Physics.	
Credit points and grades	Participants can earn 13 credit points for this module. The module grade is calculated from the unweighted average grade of the examined assessments.	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 390 hours.	
Module duration	The module comprises 2 semesters.	

Module number	Module name	Responsible lecturer
Phy-Ma-NpErg-BIM	Non-Physics Supplementary Course Biomathematics	Prof. Dr. A. Deutsch
Content and Qualification objectives	Students have a basic understanding of biomathematical issues and interdisciplinary skills. According to their choice from the minor catalogue of the Master's degree program Physics, students have basic competencies in mathematical and statistical modelling of biological issues of genetics and/or of evolutionary, cell and developmental biology, respectively, and also academic English.	
Teaching and learning methods	The module comprises lecture, exercise, tutorial, seminar or practical training totaling 8 hours per week. The courses are to be chosen from the minor catalogue of the Master's degree program Physics; this catalogue including the respective required examinations, grade weighting as well as the information on the teaching and examination language will be announced at the beginning of each semester by the Faculty.	
Prerequisites for participation	None	
Applicability	This module is one of twelve elective compulsory modules of the Master's degree program Physics, one of which must be chosen. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of the examination assessments specified in the minor catalogue of the Master's degree program Physics.	
Credit points and grades	Participants can earn 13 credit points for this module. The module grade is calculated from the unweighted average grade of the examined assessments.	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 390 hours.	
Module duration	The module comprises 2 semesters.	

Module number	Module name	Responsible lecturer
Phy-Ma-NpErg-CHE	Non-Physics Supplementary Course Chemistry	Prof. Dr. T. Wolff
Content and Qualification objectives	Students have a basic understanding of chemical issues and interdisciplinary skills. According to their choice from the minor catalogue of the Master's degree program Physics, students have practical skills in dealing with the fundamentals and principles of general, inorganic, organic or physical chemistry and also academic English.	
Teaching and learning methods	The module comprises lecture, exercise, tutorial, seminar or practical training totaling 8 hours per week. The courses are to be chosen from the minor catalogue of the Master's degree program Physics; this catalogue including the respective required examinations, grade weighting as well as the information on the teaching and examination language will be announced at the beginning of each semester by the Faculty.	
Prerequisites for participation	None	
Applicability	This module is one of twelve elective compulsory modules of the Master's degree program Physics, one of which must be chosen. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of the examination assessments specified in the minor catalogue of the Master's degree program Physics.	
Credit points and grades	Participants can earn 13 credit points for this module. The module grade is calculated from the unweighted average grade of the examined assessments.	
Module frequency	The module will be offered each academic year, beginning in the winter semester	
Workload	The workload comprises a total of 390 hours.	
Module duration	The module comprises 2 semesters.	

Module number	Module name	Responsible lecturer
Phy-Ma-NpErg-BIO	Non-Physics Supplementary Course Biology	Prof. Dr. M. Ansorge-Schumacher
Content and Qualification objectives	Students have a basic understanding of biological issues and interdisciplinary skills. According to their choice from the minor catalogue of the Master's degree program Physics, students have practical competencies regarding the fundamentals and principles of the general genetics, the anatomy and morphology of plants, the physiology of microorganisms or of developmental and cell biology and also academic English.	
Teaching and learning methods	The module comprises lecture, exercise, tutorial, seminar or practical training totaling 8 hours per week. The courses are to be chosen from the minor catalogue of the Master's degree program Physics; this catalogue including the respective required examinations, grade weighting as well as the information on the teaching and examination language will be announced at the beginning of each semester by the Faculty.	
Prerequisites for participation	None	
Applicability	This module is one of twelve elective compulsory modules of the Master's degree program Physics, one of which must be chosen. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of the examination assessments specified in the minor catalogue of the Master's degree program Physics.	
Credit points and grades	Participants can earn 13 credit points for this module. The module grade is calculated from the unweighted average grade of the examined assessments.	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 390 hours.	
Module duration	The module comprises 2 semesters.	

Module number	Module name	Responsible lecturer
Phy-Ma-NpErg-MBE	Non-Physics Supplementary Course Molecular Bioengineering	Prof. Dr. F. Stewart
Content and Qualification objectives	Students have a basic understanding of molecular biological issues and interdisciplinary skills. According to their choice from the minor catalogue of the Master's degree program Physics, students have practical competencies regarding the fundamentals and principles of chemical synthesis and biosynthesis, respectively, and of molecular bioengineering and also academic English.	
Teaching and learning methods	The module comprises lecture, exercise, tutorial, seminar or practical training totaling 8 hours per week. The courses are to be chosen from the minor catalogue of the Master's degree program Physics; this catalogue including the respective required examinations, grade weighting as well as the information on the teaching and examination language will be announced at the beginning of each semester by the Faculty.	
Prerequisites for participation	None	
Applicability	This module is one of twelve elective compulsory modules of the Master's degree program Physics, one of which must be chosen. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of the examination assessments specified in the minor catalogue of the Master's degree program Physics.	
Credit points and grades	Participants can earn 13 credit points for this module. The module grade is calculated from the unweighted average grade of the examined assessments.	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 390 hours.	
Module duration	The module comprises 2 semesters.	

Module number	Module name	Responsible lecturer
Phy-Ma-NpErg-INF	Non-Physics Supplementary Course Computer Science	Prof. Dr. G. Weber
Content and Qualification objectives	Students have a basic understanding of media informatics issues and interdisciplinary skills. According to their choice from the minor catalogue of the Master's degree program Physics, students have practical skills in dealing with algorithms and data structures, programming, software technology, databases, computer networks or computer graphics and also academic English.	
Teaching and learning methods	The module comprises lecture, exercise, tutorial, seminar or practical training totaling 8 hours per week. The courses are to be chosen from the minor catalogue of the Master's degree program Physics; this catalogue including the respective required examinations, grade weighting as well as the information on the teaching and examination language will be announced at the beginning of each semester by the Faculty.	
Prerequisites for participation	None	
Applicability	This module is one of twelve elective compulsory modules of the Master's degree program Physics, one of which must be chosen. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of the examination assessments specified in the minor catalogue of the Master's degree program Physics.	
Credit points and grades	Participants can earn 13 credit points for this module. The module grade is calculated from the unweighted average grade of the examined assessments.	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 390 hours.	
Module duration	The module comprises 2 semesters.	

Module number	Module name	Responsible lecturer
Phy-Ma-NpErg-PHI	Non-Physics Supplementary Course Philosophy	Prof. Dr. G. Schönrich
Content and Qualification objectives	Students have a basic understanding of philosophical issues and interdisciplinary skills. According to their choice from the minor catalogue of the Master's degree program Physics, students have basic competencies regarding philosophical propaedeutics, theoretical philosophy, the philosophy of technology, the philosophy of nature or of ethics in science and technology and also academic English.	
Teaching and learning methods	The module comprises lecture, exercise, tutorial, seminar or practical training totaling 8 hours per week. The courses are to be chosen from the minor catalogue of the Master's degree program Physics; this catalogue including the respective required examinations, grade weighting as well as the information on the teaching and examination language will be announced at the beginning of each semester by the Faculty.	
Prerequisites for participation	None	
Applicability	This module is one of twelve elective compulsory modules of the Master's degree program Physics, one of which must be chosen. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of the examination assessments specified in the minor catalogue of the Master's degree program Physics.	
Credit points and grades	Participants can earn 13 credit points for this module. The module grade is calculated from the unweighted average grade of the examined assessments.	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 390 hours.	
Module duration	The module comprises 2 semesters.	

Module number	Module name	Responsible lecturer
Phy-Ma-NpErg-ELT	Non-Physics Supplementary Course Electrical Engineering	Prof. T. Mikolajick
Content and Qualification objectives	Students have a basic understanding of electrical engineering issues and interdisciplinary skills. According to their choice from the minor catalogue of the Master's degree program Physics, students have practical competencies regarding electronic circuits, microsystems, biomedical technology, nanotechnology or laser metrology and also academic English.	
Teaching and learning methods	The module comprises lecture, exercise, tutorial, seminar or practical training totaling 8 hours per week. The courses are to be chosen from the minor catalogue of the Master's degree program Physics; this catalogue including the respective required examinations, grade weighting as well as the information on the teaching and examination language will be announced at the beginning of each semester by the Faculty.	
Prerequisites for participation	None	
Applicability	This module is one of twelve elective compulsory modules of the Master's degree program Physics, one of which must be chosen. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of the examination assessments specified in the minor catalogue of the Master's degree program Physics.	
Credit points and grades	Participants can earn 13 credit points for this module. The module grade is calculated from the unweighted average grade of the examined assessments.	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 390 hours.	
Module duration	The module comprises 2 semesters.	

Module number	Module name	Responsible lecturer
Phy-Ma-NpErg-MSB	Non-Physics Supplementary Course Mechanical Engineering	Prof. C. Felsmann
Content and Qualification objectives	Students have a basic understanding of mechanical engineering issues and interdisciplinary skills. According to their choice from the minor catalogue of the Master's degree program Physics, students have basic competencies regarding regenerative energy sources, energy-economic evaluation, flight mechanics, aero- and gas dynamics, space systems, hydrogen technology or nuclear reactor physics and also academic English.	
Teaching and learning methods	The module comprises lecture, exercise, tutorial, seminar or practical training totaling 8 hours per week. The courses are to be chosen from the minor catalogue of the Master's degree program Physics; this catalogue including the respective required examinations, grade weighting as well as the information on the teaching and examination language will be announced at the beginning of each semester by the Faculty.	
Prerequisites for participation	None	
Applicability	This module is one of twelve elective compulsory modules of the Master's degree program Physics, one of which must be chosen. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of the examination assessments specified in the minor catalogue of the Master's degree program Physics.	
Credit points and grades	Participants can earn 13 credit points for this module. The module grade is calculated from the unweighted average grade of the examined assessments.	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 390 hours.	
Module duration	The module comprises 2 semesters.	

Module number	Module name	Responsible lecturer
Phy-Ma-NpErg-WSW	Non-Physics Supplementary Course Materials Science	Prof. G. Cuniberti
Content and Qualification objectives	Students have a basic understanding of material science issues and interdisciplinary skills. According to their choice from the minor catalogue of the Master's degree program Physics, students have basic competencies regarding the concepts and methods of molecular modelling, molecular electronics and nanostructured materials and also academic English.	
Teaching and learning methods	The module comprises lecture, exercise, tutorial, seminar or practical training totaling 8 hours per week. The courses are to be chosen from the minor catalogue of the Master's degree program Physics; this catalogue including the respective required examinations, grade weighting as well as the information on the teaching and examination language will be announced at the beginning of each semester by the Faculty.	
Prerequisites for participation	None	
Applicability	This module is one of twelve elective compulsory modules of the Master's degree program Physics, one of which must be chosen. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of the examination assessments specified in the minor catalogue of the Master's degree program Physics.	
Credit points and grades	Participants can earn 13 credit points for this module. The module grade is calculated from the unweighted average grade of the examined assessments.	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 390 hours.	
Module duration	The module comprises 2 semesters.	

Module number	Module name	Responsible lecturer
Phy-Ma-NpErg-BWL	Non-Physics Supplementary Course Business Administration	Prof. Dr. Alexander Kemnitz (alexander.kemnitz@tu-dresden.de)
Qualification objectives	The students have basic knowledge in business administration and know fundamental terms and principles. They are able to deal with business management issues and can explain and analyze them.	
Content	The module includes the following contents according to the student's choice: Fundamentals of Business Administration, Innovations and Industrial Property Rights, Production and Procurement, Logistics, Market and Competition, Service Management, Marketing, Strategic Management, Controlling, Technology Management, Investment and Financing, Organizational Forms and Networks, Task and Work System Design or Business Valuation.	
Teaching and learning methods	The module comprises lecture, exercise, tutorial, seminar or practical training totaling 8 hours per week and self-study. The courses are to be chosen from the minor catalogue of the Master's degree program Physics; this catalogue including the respective required examinations, grade weighting as well as the information on the teaching and examination language will be announced at the beginning of each semester by the Faculty.	
Prerequisites for participation	None	
Applicability	This module is one of twelve elective compulsory modules of the Master's degree program Physics, one of which must be chosen. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of the examination assessments specified in the minor catalogue of the Master's degree program Physics.	
Credit points and grades	Participants can earn 13 credit points for this module. The module grade is calculated from the unweighted average grade of the examined assessments.	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 390 hours.	
Module duration	The module comprises 2 semesters.	

Module number	Module name	Responsible lecturer
Phy-Ma-NpErg-VWL	Non-Physics Supplementary Course Economics	Prof. Dr. Alexander Kemnitz (alexander.kemnitz@tu-dresden.de)
Qualification objectives	The students have basic knowledge in economics. They recognize economic problems and are able to present them appropriately, to analyze them using scientific methods and to work out possible solutions independently.	
Content	The module includes the following contents according to the student's choice: Fundamentals of economics, the interaction of supply and demand, goods markets, economic policy, price and competition theory, finance and markets, international trade, market processes or econometrics.	
Teaching and learning methods	The module comprises lecture, exercise, tutorial, seminar or practical training totaling 8 hours per week and self-study. The courses are to be chosen from the minor catalogue of the Master's degree program Physics; this catalogue including the respective required examinations, grade weighting as well as the information on the teaching and examination language will be announced at the beginning of each semester by the Faculty.	
Prerequisites for participation	None	
Applicability	This module is one of twelve elective compulsory modules of the Master's degree program Physics, one of which must be chosen. The module is a prerequisite for participation in the module Phy-Ma-WisStu.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of the examination assessments specified in the minor catalogue of the Master's degree program Physics.	
Credit points and grades	Participants can earn 13 credit points for this module. The module grade is calculated from the unweighted average grade of the examined assessments.	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 390 hours.	
Module duration	The module comprises 2 semesters.	

Module number	Module name	Responsible lecturer
Phy-Ma-WisStu	Scientific Studies	Dean of Studies for the Master's degree program in Physics (studiendekan.physik_master@tu-dresden.de)
Content and Qualification objectives	The module covers scientific studies in a special area of physics at the student's choice. Students are able to apply their knowledge of the content and methods of physics to the practical solution of problems in a scientific project. They have the ability to work on a research topic on their own.	
Teaching and learning methods	The module comprises 22.5 weeks of scientific work and self-study. The language of instruction is at least in part English.	
Prerequisites for participation	Prerequisites are the subject-specific and language competencies of the modules Experimental Physics, Theoretical Physics, Advanced Scientific Seminar, Specialisation Physics and also one module of the Non-Physics Supplementary Courses. The module requires registration enrollment along with the issue of the topic of the scientific problem pursuant to § 6 para. 6 of Study Regulations.	
Applicability	This module is a compulsory module in the Master's degree program Physics. The module prepares students for their Master's thesis.	
Requirements for earning credit points	Credit points are earned after passing the module examination. The module examination consists of an ungraded scientific defense lasting 45 minutes.	
Credit points and grades	Participants can earn 30 credit points for this module. The module examination will only be graded as either "pass" or "fail".	
Module frequency	The module is offered each semester.	
Workload	The workload comprises a total of 900 hours.	
Module duration	The module comprises 1 semester or 6 months, respectively	

Annex 2
Study plan – Start winter semester

with type and scope of courses given in hours per week as well as required work, the type, scope and format of which can be found in the module descriptions

Modul number	Modul name	1st Semester	2nd Semester (M)	3rd Semester	4th Semester	CP
		L/E/T/S/P/St/SW	L/E/T/S/P/St/SW	L/E/T/S/P/St/SW	L/E/T/S/P/St/SW	
Compulsory Field						
Phy-Ma-Vert	Specialisation Physics	*/*/0/0/*/*/0 1xPA	*/*/0/0/*/*/0 1xEx			**15**
Phy-Ma-Hsem	Advanced Scientific Seminar		0/0/0/2/0/1/0 1xEx			**6**
Phy-Ma-Exp	Experimental Physics	3/1/0/0/0/0/0	0/0/1/0/0/3/0 1xEx			**13**
Phy-Ma-Theo	Theoretical Physics	3/1/0/0/0/0/0	0/0/1/0/0/3/0 1xEx			**13**
Phy-Ma-WisStu	Scientific Studies			0/0/0/0/0/0/22,5 weeks 1xEx		**30**
					Master Thesis	**30**
Elective Compulsory Field Non-Physics Supplement[1]						
Phy-Ma-NpErg-MAT	Non-Physics Supplementary Course Mathematics	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-BIM	Non-Physics Supplementary Course Biomathematics	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-CHE	Non-Physics Supplementary Course Chemistry	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-BIO	Non-Physics Supplementary Course Biology	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-MBE	Non-Physics Supplementary Course Molecular Bioengineering	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-INF	Non-Physics Supplementary Course Computer Science	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-PHI	Non-Physics Supplementary Course Philosophy	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-ELT	Non-Physics Supplementary Course Electrical Engineering	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-MSB	Non-Physics Supplementary Course Mechanical Engineering	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-WSW	Non-Physics Supplementary Course Materials Science	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-BWL	Non-Physics Supplementary Course Business Administration	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-VWL	Non-Physics Supplementary Course Economics	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
CP		**30**	**30**	**30**	**30**	**120**

[1] one module must be chosen * depending on choice made by the student M Mobility window according to § 6 para. 1 sentence 4

CP	Credit Points	Ex	Examination(s)	PA	Preliminary academic work	L	Lecture	E	Exercise
T	Tutorial	S	Seminar	P	Practical training	St	Self-study	SW	Scientific work

Study plan – Start summer semester

with type and scope of courses given in hours per week as well as required work, the type, scope and format of which can be found in the module descriptions

Modul number	Modul name	1st Semester (M)	2nd Semester	3rd Semester	4th Semester	CP
		L/E/T/S/P/St/SW	L/E/T/S/P/St/SW	L/E/T/S/P/St/SW	L/E/T/S/P/St/SW	
Compulsory Field						
Phy-Ma-Vert	Specialisation Physics	*/*/0/0/*/*/0 1xPA	*/*/0/0/*/*/0 1xEx			**15**
Phy-Ma-Hsem	Advanced Scientific Seminar	0/0/0/2/0/1/0 1xEx				**6**
Phy-Ma-Exp	Experimental Physics	0/0/1/0/0/3/0	3/1/0/0/0/0/0 1xEx			**13**
Phy-Ma-Theo	Theoretical Physics	0/0/1/0/0/3/0	3/1/0/0/0/0/0 1xEx			**13**
Phy-Ma-WisStu	Scientific Studies			0/0/0/0/0/0/22,5 weeks 1xEx		**30**
					Master Thesis	**30**
Elective Compulsory Field Non-Physics Supplement[1]						
Phy-Ma-NpErg-MAT	Non-Physics Supplementary Course Mathematics	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-BIM	Non-Physics Supplementary Course Biomathematics	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-CHE	Non-Physics Supplementary Course Chemistry	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-BIO	Non-Physics Supplementary Course Biology	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-MBE	Non-Physics Supplementary Course Molecular Bioengineering	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-INF	Non-Physics Supplementary Course Computer Science	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-PHI	Non-Physics Supplementary Course Philosophy	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-ELT	Non-Physics Supplementary Course Electrical Engineering	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-MSB	Non-Physics Supplementary Course Mechanical Engineering	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-WSW	Non-Physics Supplementary Course Materials Science	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-BWL	Non-Physics Supplementary Course Business Administration	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
Phy-Ma-NpErg-VWL	Non-Physics Supplementary Course Economics	*/*/*/*/*/*/0 Ex*	*/*/*/*/*/*/0 Ex*			**13**
CP		**30**	**30**	**30**	**30**	**120**

[1] one module must be chosen * depending on choice made by the student M Mobility window according to § 6 para. 1 sentence 4

CP	Credit Points	Ex	Examination(s)	PA	Preliminary academic work	L	Lecture	E	Exercise
T	Tutorial	S	Seminar	P	Practical training	St	Self-study	SW	Scientific work