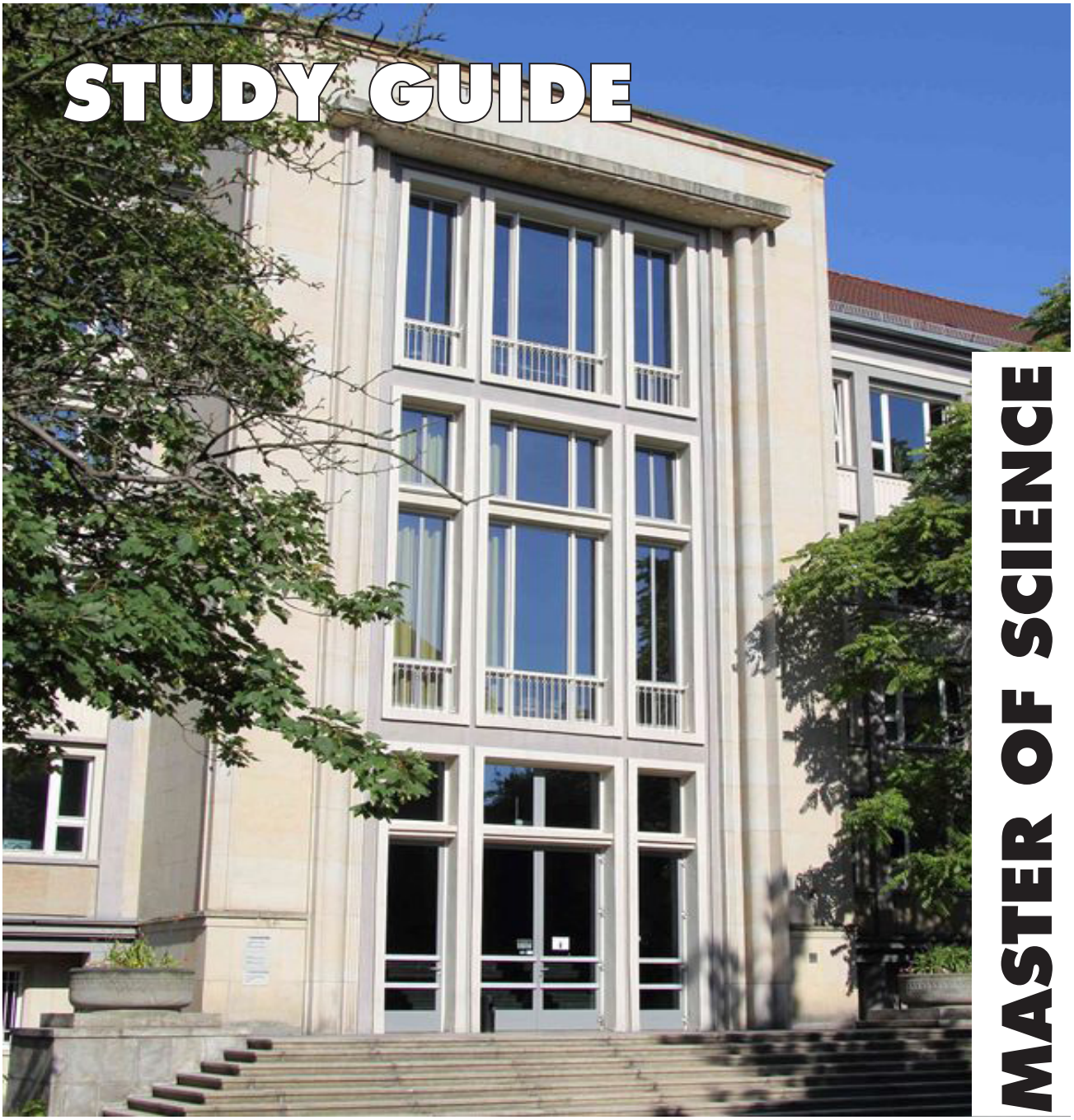

Physics
(International Physics Studies Program)

Zentrale Studienberatung

UNIVERSITÄT LEIPZIG

1. STUDY PROGRAMME:	**M. SC. PHYSICS** (International Physics Studies Program)
2. DEGREE AWARDED:	Master of Science
3. STANDARD PERIOD OF STUDY:	4 semesters
CREDIT POINTS:	120 Credit Points (CP)
COMMENCEMENT OF STUDIES FOR NEW STUDENTS:	**winter and summer semester**

4. ENTRY REQUIREMENTS:

Prerequisite to the admission to the master course in the International Physics Studies Programme (IPSP) is a successfully completed Bachelor programme in physics at university level. Further certificates have to be acknowledged by the responsible and officially recognized administration. Bachelor degrees of related subjects might be acknowledged by the board of examiners. The board might impose constraints and tests for the admission. The knowledge of the English language has to be at least on B2 level. International applicants are guided by the webpage: www.uni-leipzig.de/+international-applicants

ADMISSION RESTRICTIONS: **none***

This study programme is currently being revised and changes are planned to the current programme documents.
Until the new programme documents are introduced, the study regulations of 25.04.2013, as amended by the 1st amendment of 18.11.2013, the 2nd amendment of 09.05.2014 and the 3rd amendment of 19.01.2015, will continue to apply.

5. PROGRAMME CONTENT:

The M. Sc. Program in physics deepens and widens the basic knowledge in modern areas of experimental and theoretical physics, always founding on the knowledge obtained in a B. Sc. course in Physics. Further, in physical and non-physical subjects the students have the possibility to specialize in topical areas of physics. Students can design their M. Sc. course along their own interests, such that at the time of graduation they are specialists of either experimental physics of soft or solid matter, or theoretical and mathematical physics or applied physics. To this end the Peter-Debye Institute for soft matter physics, the Felix-Bloch-Institute for solid state physics, the Institute of Theoretical Physics as well as the external Leibniz-Institute of Surface Modification offer a wide variety of modules and research topics.

* Please look online for the information you require.

The M. Sc. program is research oriented and is concluded by an independent research project, the master thesis.
By teaching a broad variety of knowledge and methodical competences it ideally prepares the graduates for an excellent start in the job market, which in the future will present great challenges with its rapidly changing demands.

6. PROGRAMME STRUCTURE:

The master course consists of two one year periods or phases, a first phase in which the physics knowledge is deepened and widened, followed by a research phase. In the first phase the education in experimental and theoretical physics is continued and widened. This phase is structured into four areas, with three of these being obligatory by choice, whereas within the fourth area physical and non-physical subjects might be more or less freely chosen. Area 1 is devoted to experimental physics and gives the student a choice between a course in Advanced Condensed Matter Physics and a course in Soft Matter Physics. Area 2 is devoted to the advancement of the theoretical physics knowledge with a choice between advanced courses in Quantum Mechanics and Statistical Physics. Areas 3 and 4 both serve the further specialization. In these areas the module list reflects the research interests of the Physics Institutes as well as the external Institute for Surface Modification. The division into areas 3 and 4 is due to didactical reasons. Area 3 contains a choice of various advanced seminars in experimental and theoretical physics. Besides transporting specific physics knowledge, in the advanced seminars the student learns certain soft skills, such as literature research, presentation techniques, scientific writing and scientific discussion. Area 4 contains modules with various physical content and of various module forms. Within area 4 the student might choose not only from the range of physics subjects, but – to a certain extent – also from general science subjects.
In the research phase the student is doing research work on a topical physics subject under the supervision of a professor or senior scientist. This is done in a series of three steps. The decision on a special topic is followed by a preparatory phase in which the student first studies the physical background, the experimental or computational methods, topical references to research papers and then develops a project outline. This preparatory phase lasts for half a year and is structured in the research seminars I and II. The second half of the research phase is then devoted to the actual scientific work on the specified problem. The research phase is concluded with the submission and defense of the master thesis.

7. OVERVIEW OF CURRICULUM, MODULES AND EXAMINATIONS:

1st year:

Experimental Physics	**Extent**	**CP**
Advanced Solid State Physics Soft Matter Physics	L/E/P	**10**

Theoretical Physics	**Extent**	**CP**
Advanced Quantum Mechanics Advanced Statistical Physics	L/E	**10**

Advanced Seminars	**Extent**	**CP**
Modern Developments in Solid State Physics	S	**5**
High Temperature Superconductors		
Biological Physics		
Quantum Field Theory and Gravity		
Molecular Nanotechnology		
Quantum Field Theory		
Soft Matter Physics		
Condensed Matter Theory		
Computer-oriented Quantum Field Theory		
Quantumstatistical Physics		

Electives in Physics	**Extent**	**CP**
Computational Physics I	L/E	**10**
Theoretikum Computational Physics	L	**5**
Semiconductor Physics III: Current Issues in Semiconductor Optics	L	**5**
Physics of Surfaces and Thin Layers	L	**5**
Plasma Surface Modifications	L	**5**
Structure and Structure Analysis	L	**5**
Materials- and Nanophysics	L	**5**
Cellular Biophysics	L/E	**5**
Nuclear Magnetic Resonance Laboratory	P	**5**
Electronic Spin Resonance Laboratory	P	**5**
Nuclear Physics	L/E	**5**
Biological Physics Laboratory	P	**5**
General Relativity	L/E	**10**
Practical Course: Quantum Field Theory and Gravity	S	**5**
Laboratory Superconductivity and Magnetism	P	**5**
Quantum Fields and Particles	L/E	**10**
Theory of Soft and Bio Matter	L/E	**10**
Theoretikum Condensed Matter Theory	Lab	**5**
Theoretikum Statistical Quantum Physics	Lab	**5**
Group Theory and Its Applications in Physics	L/E	**10**
Particle Physics	L/E	**5**
Semiconductor Devices II	L	**5**
Laboratory Work in Semiconductor Devices	P	**5**
Synthesis and Characterization of Thin Films	L	**5**
Experimental Methods in Biophysics	L/S	**5**
Computer Simulations II	L/E	**5**

Photonics II	L/E	**5**
Spin Resonance II	L/E	**5**
Nuclear Probes and Ion Beams II	L/E/P	**5**
Cosmology	L/E	**10**
Quantum Field Theory of Curved Space Times	L/E	**10**
Mathematical Physics	L/E	**10**
Quantum Field Theory of Many-Particle Systems	L/E	**10**
Superconductivity II	L/P	**5**
Astrophysics Laboratory	Lab	**5**
Astrophysics II - Extragalactic Astronomy	L/S	**5**
Computational Physics II	L/E	**10**

Abbreviations: L= lecture, E = Exercise, S= Seminar, P= lab course, CP: credit points.

The cycle of the offered courses may be irregular. Consult the topical time table or the student affairs office for further information.
A maximum of 10 CP can be taken as a non-physical optional. All courses from the wide range of the University modules qualify as such, except pure language courses. Nevertheless filing a request for acceptance of a given course to the board of examiners might be necessary.

2nd year:

Research Project 1		**CP**
initial training in the physics specialization; decision on subject of the thesis	3 months	**15**

Research Project 2		**CP**
Completion of the proficiency in the physics specialization; project outline of thesis	3 months	**15**

MA Master-thesis and defense		**CP**
Solution of a scientific problem under supervision of a senior scientist with a final paper	6 months	**30**
Presentation of the own scientific results with discussion and answers on questions related to the research subject		

Upon passing all exams the academic degree of "Master of Science" in Physics (abbreviated by M.Sc.) is awarded by the Faculty of Physics and Earth Sciences.

8. CAREERS:

The Master of Science in physics completes the university education and represents the level of the Diploma. The academic degree qualifies to apply for admission for doctoral work (thesis research). Traditional operational areas of physicists are microelectronics, construction of scientific and medical devices, fine mechanics, engineering, optics, chemical industry, informatics and communication technology. Due to their analytic research concepts and problem solving strategies physicists' jobs away from physics are common.

9. COURSE ADVISOR:

Experimental Physics:
Prof. Dr. Pablo Esquinazi
Felix-Bloch Institute for Solid State Physics
Faculty of Physics and Earth Sciences
04103 Leipzig, Linnéstr. 5, room 412
Tel.: 0341 97 32750

Theoretical Physics:
Prof. Dr. Klaus Kroy
Institute of Theoretical Physics
Faculty of Physics and Earth Sciences
04103 Leipzig, Brüderstr. 16, room 307
Tel.: 0341 97 32436

COURSE GUIDANCE SERVICE AND EXAMINATION OFFICE:

Kristin Riedel
Isabell Schulthoff, M.A.
Student Affairs Office
Faculty of Physics and Earth Sciences
04103 Leipzig, Linnéstr. 5, room 215
Tel.: 0341 97 32 407/32404
Opening times: Tu 09:00 - 12:00 a.m., 01:00 - 03:30 p.m.
Th 09:00 - 12:00 a.m.

Dr. Konrad Schiele
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Editing and Layout: Student Advisory Service
Photo: Worapon Bonkeerd / Fakultät für Physik und Geowissenschaften
LAST AMENDED: APRIL 2017