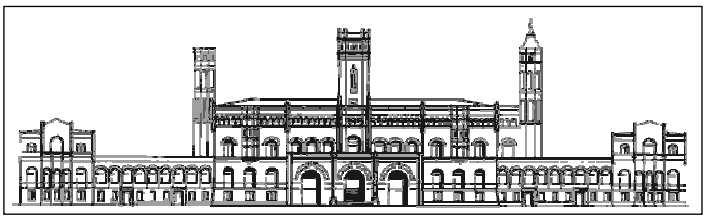
Leibniz Universität Hannover

International Study Guide
Master's Degree Programme of
Physics and Meteorology

Faculty of Mathematics and Physics
Gottfried Wilhelm Leibniz Universität Hannover



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studieninfo@maphy.uni-hannover.de

Preamble

Dear Students,

Welcome to the academic year 2017/18 at our Faculty!

We are pleased that you are interested in studying Physics or Meteorology, subjects that we consider particularly close to our heart. We hope that you will develop your passion and your skills in these areas with our support and complete your studies successfully. Career opportunities and prospects are excellent with a degree in Physics or Meteorology from our University.

Many of you who hold this study guide in hand are now at the beginning of the Master course in Physics or Meteorology. Certainly, you are full of anticipation and excitement but also of questions about your course of studies. In this guide you will find a lot of useful information about various options that you have and issues that may arise. We hope that it will help you to enjoy your studies at our Faculty and to obtain your Master degree.

Your Dean of Studies,

Prof. Dr. Eric Jeckelmann

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1. Faculty Overview

1.1 The Faculty

www.maphy.uni-hannover.de

The telephone numbers are 0511 - 762 - ****, in which **** stands for the numbers below.

The **Dean's Office** leads the Faculty; the dean has the chairmanship. The Dean's Office is the central unit of the Faculty.

Dean

Prof. Dr. Roger Bielawski *dekan@maphy.uni-hannover.de*

Appelstraße 11A (room A108) -5477/-5499
30167 Hannover

Vice Dean

Prof. Dr. Clemens Walther *prodekan@maphy.uni-hannover.de*

Herrenhäuser Straße 2 -3312/-5499
30419 Hannover

Dean of Studies

Prof. Dr. Eric Jeckelmann *studiendekan@maphy.uni-hannover.de*

Appelstraße 2 (room 225 -3661/-4466
30167 Hannover

Vice Dean of Studies

Prof. Dr. Christoph Walker *studienprodekan@maphy.uni-hannover.de*

Welfengarten 1 (room e340) -17203/-4466
30167 Hannover

The **dean of studies** is responsible for the student affairs of the Faculty. He is also at the same time Chairman of the Study Commission.

Study Course Coordination
Dipl.-Ing. Axel Köhler
Dr. Katrin Radatz *sgk@maphy.uni-hannover.de*

Appelstraße 11A (rooms A121, A122) - 5450/ -14594

30167 Hannover

Deanery of Studies

Mariana Stateva-Andonova *studiensekretariat@maphy.uni-hannover.de*

Appelstraße 11A (room A120) - 4466
30167 Hannover

1.2 The Physical and Meteorological Institutes of the Faculty

www.maphy.uni-hannover.de/de/institute

The locations of physical and meteorological institutes spread over several buildings in the city. Indicated are always the building number and room number. The location finder in the appendix (Chapter 5) helps you to find the building.

Listed here are the professors of the Institute, as well as the secretariats.

The telephone numbers are 0511 - 762 - ****, where **** indicates the numbers below. The current office hours are usually found on the institute's website.

You can make as well an appointment by e-mail or phone outside the official opening hours.

Institute of Solid State Physics
www.fkp.uni-hannover.de

Brendel, Rolf	*brendel@isfh.de*	05151-9990	
Haug, Rolf	*haug@ nano.uni-hannover.de*	- 2901	3701-122
Oestreich, Michael	*oest@ nano.uni-hannover.de*	- 3493	3701-020
Pfnür, Herbert	*pfnuer@fkp.uni-hannover.de*	- 4819	3701-144
Ding, Fei	f.ding@fkp.uni-hannover.de		3701-141
Offices			
Griep, Yvonne	*griep@nano.uni-hannover.de*	-2902	3701-124
Kahrs, Heike	*kahrs@fkp.uni-hannover.de*	-4820	3701-142

Institute of Gravitational Physics

www.aei.mpg.de/165375/aei_hannover

E-Mail-ending: *aei.mpg.de*

Allen, Bruce	*bruce.allen@*	- 17148	3401-128
Danzmann, Karsten	*danzmann@*	- 2356	3401-123A
Heurs, Michèle	*michele.heurs@*	- 17037	3401-019
Heinzel, Gerhard	*gerhard.heinzel@*	-19984	3406-C023

Willke, Benno	*benno.willke@*	-2360	3401-L107

Offices

Gemmeke, Birgit	*birgit-gemmeke@*	-17072	3701- 115
Labove, Kirsten	*kirsten.labove@*	- 2229	3401-126
Rehmert, Sabine	*sabine.rehmert@*	- 17164	3401-127
Levkivska, Oksana	*oksana.levkivska@*	- 17145	3401-134
Richardson, Gabriele	*gabriele.richardson@*	-17145	3401-134

Institute of Meteorology and Climatology

www.muk.uni-hannover.de

E-Mail-ending: *muk.uni-hannover.de*

Groß, Günter	*gross@*	- 5408	4105-F123
Raasch, Siegfried	*raasch@*	- 3253	4105-F231
Seckmeyer, Gunther	*seckmeyer@*	- 4022	4105-F113

Offices

Kraege, Petra	*kraege@*	- 2677	4105-F 124

Institute of Quantum Optics

www.iqo.uni-hannover.de

E-Mail-ending: *iqo.uni-hannover.de*

Chichkov, Boris	*b.chichkov@lzh.de*	051127 88316	LZH
Ertmer, Wolfgang	*ertmer@*	- 2231	1101-d108
Heisterkamp, Alexander	*heisterkamp@*	- 17481	1101-d125
Kovacev, Milutin	*kovacev@*	- 5286	1101-d101
Morgner, Uwe	*morgner@*	- 2452	1101-d103
Ospelkaus, Christian	*christian.ospelkaus@*	- 17644	1101-d123
Ospelkaus, Silke	*silke.ospelkaus@*	- 17645	1101-d124
Rasel, Ernst	*rasel@*	- 19203	1101-d129
Ristau, Detlev	*d.ristau@lzh.de*	- 2231	LZH
Schmidt, Piet	*piet.schmidt@quest.uni-hannover.de*	- 17240	1101-d123
Tiemann, Eberhard	*tiemann@*	- 3306	1101-d130

Klempt, Carsten	*klempt@*	- 2238	1101-d409

Offices

Hünitzsch, Elke	*huenitzsch@*	-2589	1101-d110
Göldner-Pauer, Anne-Dore	*goeldner@*	- 4406	1101-d111
Faber, Gunhild	*faber@*	–2231	1101-d108
Pfennig, Katrin	*pfennig@*	-5125	1101-d102
Sengstock, Natalie	*sengstock@*	-2750	1101-d102

Institute of Theoretical Physics

www.itp.uni-hannover.de

E-Mail-ending: *itp.uni-hannover.de*

Frahm, Holger	*frahm@*	- 3266	3701-238
Flohr, Michael	*michael.flohr@*	-3656	3701-242
Giulini, Domenico	*domenico.giulini@*	- 3662	3701-227
Hammerer, Klemens	*klemens.hammerer@*	-17056	3403-A110
Jeckelmann, Eric	*eric.jeckelmann@*	-3661	3701-225
Lechtenfeld, Olaf	*lechtenf@*	-3667	3701-241
Lein, Manfred	*manfred.lein@*	-3291	3701-209A
Osborne, Tobias	*tobias.osborne@*	-17508	3702-022
Santos, Luis	*luis.santos@*	-5890	3701-249
Werner, Reinhard	*reinhard.werner@*	-17501	3702-024
Weimer, Hendrik	hweimer@	-19449	3701-211

Offices

Burmeister, Catharina	*catharina.burmeister@*	- 5889	3701-245
Gemmeke, Birgit	*birgit.gemmeke@*	- 17072	3701-115
Gerlach, Gina	*gina.gerlach@*	-4833	3701-216
Möller, Wiebke	*wiebke.moeller@*	- 17500	3702-023
Richter, Gitta	*richter@*	- 2244	3701-235
Schwebs, Emma	*schwebs@*	- 3267	3701-239

Institute of Radioecology and Radiation Protection

www.irs.uni-hannover.de

E-Mail-ending: *irs.uni-hannover.de*

Walther, Clemens	*walther@*	-3312	4113-023
Steinhauser, Georg	*steinhauser@*	-3311	4113-B07

Offices

Weiler, Bettina	*weiler@*	-5112	4113-017

Didactics of Physics

www.idmp.uni-hannover.de

E-Mail-ending: *idmp.uni-hannover.de*

Friege, Gunnar	*friege@*	- 17223	1109 105
Weßnigk, Susanne	*wessnigk@*	-17509	1109 102

Offices

Krause, Anette	*sek-physikdidaktik@*	-17282	1109 104

1.3 Structure and Committees

The Faculty of Mathematics and Physics consists of thirteen institutes. There are six institutes working in the field of physics apart from the joint Department of Didactics of Mathematics and Physics. These are also administratively subdivided into departments or can be thematically divided into working groups.

The Institute for Gravitational Physics is part of the Max-Planck-Institute for Gravitational Physics (Albert Einstein Institute), based in Golm and Hannover. There is a close link in research and teaching with the Laser Zentrum Hannover eV (LZH), the Institute for Solar Energy Research Hameln / Emmerthal (ISFH) and the Centre for Radiation Protection and Radioecology (ZSR), which is at the same time a central institution of the University.

The research priorities are promoted in a special way by the Cluster QUEST, the Collaborative Research Centre 407 "Quantum-limited measurement processes with atoms, molecules and photons", the Transregional Collaborative Research Centre "Gravitational Wave Astronomy", the Research Training Group "Analysis, Geometry and String Theory" and the European Graduate College "Interference and Quantum Applications ". The Faculty of Mathematics and Physics, the Max-Planck-Institute for Gravitational Physics and the Laser Zentrum Hannover are joint in the "International Max Planck Research School on Gravitational Wave Astronomy".

The Committees of the Faculty

The current members of the following committees are listed on the homepage of the Faculty of Mathematics and Physics (www.maphy.uni-hannover.de). The e-mail addresses of the student representatives are on the homepage of the Students Council.

Faculty Council

The Faculty Council decides on matters of research and teaching of fundamental importance. It adopts the regulations of the Faculty, in particular the study and examination regulations.

The faculty council consists of seven professors, two research assistants, two students and two staff members of the technical- and managing service (MTV group). The meetings are open to the public for the most part and take place 3 to 4 times on Wednesday during semester.

Academic Studies Commission

The Academic Studies Commission shall be heard before decisions of the Faculty Council in all matters of teaching, of study and examinations. The faculty council has to respect the recommendations. In the Study Board there are currently members, entitled to vote: two professors, a research associate and four students.

Board of Examiners

The board of examiners ensures that the examination regulations are complied. Even in cases of doubt in exam questions the board of examiners has to take the decision. A concern for the board of examiners committee is usually directed directly to the chairman of the board of examiners (see section 1.1).

Students Council

www.fs-maphy.uni-hannover.de

The students of the Faculty of Mathematics and Physics form the joint student union mathematics / physics. The interests of the student union represents the open Student Council, in which all students can participate.
The Student Council meets during term every Monday at 6.15 pm in the student council room. The main task of the student Council is to represent the students' interests in the committees of the faculty. The student council acts via the student representative for example in designing the study- and examination regulations and takes part in hiring of professors in the appointment committees.
It also takes part in interdisciplinary faculty committees.
If you are interested to cooperate actively in the planning of teaching and research – to work in the student committees, you are always welcomed in the Student Council. Further activities of the student council you can find in chapter 4.7
Contact:

Student's Union — *fsr@fs-maphy.uni-hannover.de*

Welfengarten 1 (room d 414) — Phone: 0511-762-7405

30167 Hannover — *www.fs-maphy.uni-hannover.de*

2. Studies

2.1 The Master Courses

These subjects of physics or meteorology can be studied at the Leibniz Universität in the following master courses:
Master Meteorology
Master Physics

The main target of the master courses in physics and meteorology is the ability to work efficiently and independent at the forefront of research and innovative sectors in technology and business, and in all responsible positions in the state and society. This requires both the professional specialization and the introduction to the practice of autonomous working in science. The Master programmes are therefore characterized by a one-year specialization phase and a one-year research phase. The differentiation in three directions corresponds to the qualification of scientific profile within the Faculty of Mathematics and Physics.
For the Master's degree in physics, students acquire deepening knowledge of the first three basic research areas: solid state physics, quantum optics and gravitation. In one of these areas you will be introduced to basic research.
The applied research is also focusing master's degree in meteorology.
What career opportunities are there after graduation?

The consecutive Master degree programmes are research-oriented. A successful **Master's degree** is the requirement for being able to receive the **PhD degree** under your subsequent professional and research activity.
Key professional skills of our graduates in the experimental area are the ability to design appropriate and significant experiments, and then to interpret the observations and measurement results on the basis of comprehensive and broad applicable knowledge. Characteristic skills of physicists and meteorologists and weather forecasters in the **theoretical** field, is the abstract and mathematical analysis of observed physical properties as well as the development of numerical models and numerical methods on different levels of abstraction.
Interdisciplinary key competences acquired the precise representation and presentation of structured problem solving and efficient project management and collaboration in international teams. Please use also the special offers of the Centre for Key Qualifications:
www.sk.uni-hannover.de/
Due to this diverse basic skills physicists and meteorologists can work on basic and applied research questions either in publicly funded or industrial research laboratories, or on the other hand, outside the actual compartment. They are desired employees such as in the information technology, the management consultancy and banking and insurance. They are often active in areas for which they were not trained directly while studying. They can be found anywhere in a rapidly changing environment where structured complex problems need to be treated and flexible creative problem solvers are required. Meteorologists are increasingly taking on tasks that

arise as a result of global change in the atmosphere, especially in the environmental and climate protection and generally in the precaution for society and the economy.

2.2 Structure of Studies

Please note that the legally binding text for all examination regulations is published in the officially announcements of the University.

www.uni-hannover.de/zugangsordnung
The deadline for starting a Master's programme ends currently on July 15th for the winter semester and on January 15th for the summer semester.

The Study
The course contents are divided into so-called modules. The module is a summary of thematically connected courses.
It can therefore cover more than one course and extend over more than one semester. For successful completion of a degree programme **coursework** and **examinations** (module and intermodule tests) must be provided in the individual modules.
In the coursework a minimum score of exercises and / or the existence of a written examination is required by the rule, however, such reviews do not go into the final grade. Course work may be repeated any number of times.

The contents of a module, or in the case of cross-module examination, several modules are checked as exam while studying by an oral examination or an exam (exception: Module Bachelor's / Master's thesis). Each module is assigned according to the expected workload so-called power points. After providing the required coursework and examinations students will be credited with credit points associated with the module.
Credit points in the European Credit Transfer and Accumulation System (ECTS) describe the effort that is required, to acquire competence, mediated by a module. One credit point (CP) corresponding to an estimated workload of 30 hours.

30 credit points should be earned per semester.

In the **Bachelor's degree programmes** should at least **180 credit points** be earned and in the **Master's degree programmes 120**.

They require generally about a workload between 150 and 300 hours, corresponding to 5 to 10 LP of the students. Workload going beyond this scope usually need particular the basic modules and the Bachelor project and the modules of the research phase of the Master's programme.
The final grade is calculated as a weighted average of the required examinations. Which modules must be taken in your course of study, which exams you must provide and which weighting is assigned to these examinations, is set by the examination regulations of your degree programme (see Chapter 5).

2.3 Master Courses

2.3.1 Master of Science in Physics

The examination regulations (Chapter 5) for the Master's degree programmes as well as the admission regulations for master's programme can be found on the homepage of Leibniz Universität Hannover:
www.maphy.uni-hannover.de/physik
The Master's programme in Physics is research-oriented and introduces students to the modern basic research.
Knowledge and skills are taught in several subject areas of physics, and the students are guided to independent scientific work. The **professional deepening- and major subject-phase** is the basis for necessary advanced knowledge for independent productive work in physics in the basic research areas of the faculty of mathematics and physics: solid state physics, quantum optics and gravitation; the study options are rounded and completed by an elective course.
The central element of the research phase is the Master's thesis grants 30 credit points. It is an independent research work on a current issue of modern physics.

Course of study in the Master's Programme in Physics

Semester / Field	1. Semester	2. Semester	3. Semester	4. Semester	LP
	2 from 4 advanced modules (each 5 credit points (CP)): - Advanced solid state physics - Gravitational physics - Quantum optics - Quantum field theory 3 lecture + 1 exercise each				10
	Lectures and practical training from the academic course catalogue of Physics min. 27 CP or Lectures and practical training from the course catalogue of Physics min. 17 CP Industrial internship 10 CP				27
	Seminar 3 CP				3
Key competen-	Courses offered by the Foreign Language Centre, LUIS, ZfSk or the Faculty				4

cies				
Compulsory elective subject	Business administration, Chemistry, Electrical engineering, Geodesy, Informatics, Mathematics, Mechanical engineering, Meteorology, Philosophy, Economics			16
		Research practical training 15 CP		
		Project planning 15 CP		

2.3.2 Master of Science in Meteorology

The Master degree meteorology mediates both research- and application-relevant skills. Students are trained to research in the field of observation, analysis and modeling of meteorological and climatological relationships but also for working in the increasing industrial and entrepreneurial labor market of weather forecasts and advice, the power industry, the insurance industry, the aerospace industry and the environmental and climate protection. Analogous to the Master's courses Physics and Engineering the Master's degree programme in meteorology Physics is divided in a technical depth- and focus-phase and a research phase. In the technical depth and focus-phase meteorological special knowledge is imparted, which builds up first on the overview module *Advanced Meteorology* specified in the Bachelor' degree basics and is then deepened in the areas of modern measuring methods and applied meteorology chosen by the student. The first year of study is complemented by a module for research and guidance including the elective course.
The curriculum of the depth and focus phase as well as in the elective course includes lectures, exercises, seminars, field trials, field trips and industrial or research internships.

Course of study in the Master's programme in Meteorology:

Semester / Field	1. Semester	2. Semester	3. Semester	4. Semester	LP
		Seminars for Advanced meteorology II 5 CP			10
		Advanced practical training 6 CP			6

Key competencies	Courses offered by the Foreign Language Centre, LUIS, ZfSk or the Faculty				4
Elective range of Meteorology	Selected topics from the modern Meteorology A, B, C. Min. 24 CP offered by the module catalogue				24
Compulsory elective subject	Business administration, Chemistry, Electrical engineering, Geodesy and Geoinformatics, Geography, Earth Sciences, Hydrology, Informatics, Mathematics, Mechanical engineering, Physics, Economics				16
			Research practical training 15 CP		
			Project planning 15 CP		

2.4 General offers around studying

Libraries *www.tib.uni-hannover.de*

The University Library (UB) and the Technical Information Library (TIB) are located next to the main building of the University. The TIB is the German National Library for all technology engineering and their basic sciences, especially chemistry, computer science, mathematics and physics. This means that from the literature inventory no location in Germany is better equipped to study these subjects. There are also departmental libraries. With the free HOBSY library card all students can borrow books not only in UB and TIB but also in the sites of the city library.

Leibniz Universität IT Services (LUIS) *www.luis.uni-hannover.de*

The LUIS regularly offers courses dealing with programming languages and operating systems (e.g. Linux). Furthermore, the LUIS also publishes a popular series of manuals for self-study.

Studying Abroad

The Leibniz Universität Hannover offers numerous opportunities to spend some time abroad while studying. You can find important preliminary information on the internet pages from the International Office of the university

Employees of the University International Office will be available for further question about studying abroad. In addition to university-wide exchange programmes, there are also faculty-specific programmes available. The following programme is conducted in the moment at the department:

Erasmus +

Contact:

Deanary of Studies Office

Dipl. -Ing. Axel Köhler *koehler@maphy.uni-hannover.de*

Mariana Stateva-Andonova *studiensekretariat@maphy.uni-hannover.de*

As part of the EU's Erasmus programme numerous universities across Europe have entered into partnerships for the mutual exchange of students. Achievements provided are mutually recognized. At the partner university tuition fees need not to be paid.

Centre for Applied Linguistics and Special Languages *www.fsz.uni-hannover.de*

The **Centre for Applied Linguistics and Special Languages** offers free language courses for all students. For students of mathematics and physics good English skills are not only essential for the future profession, but are important in the study, because many basic textbooks are published in English.
In order to expand the existing English language skills for study, for example the course „English for physics and mathematics" would be suitable. Furthermore, grammar courses, preparation courses for staying abroad and professional courses as well as for scientific communication and argumentation will be offered.

Of course, there are also courses for various other languages.

Career Service of the University Hannover *www.career.uni-hannover.de*

Under the patronage of Career Services at the University of Hannover those activities are summarized, which aim to provide students and graduates of the University of Hannover an offer, that
- they are prepared for the changing demands in the workplace
- encourages them to plan actively their own professional development
- enables them to structure the transition from study to work constructively
- the contact and exchange with the employment world promotes to mutual benefit.

The Calendar of Events ***Job fit*** is full of interesting events to the questions.

- How do I plan my career?
- What opportunities and career paths are available?
- How do I find out about business?
- How do I take up business contact?
- How do I prepare myself for a stay abroad?
- What do I need to become self-employed?

Job Fit is published every semester and can be found at:
www.jobfit.career.uni-hannover.de

2.5 Studying and living in Hannover

In this section a few aspects of student life are listed. There are more detailed informations on the website of the University and the Student Administration Hannover (Studentenwerk Hannover).

www.uni-hannover.de *www.studentenwerk-hannover.de*

Accommodation

Whether own apartment, commune (WG) or dorm room - the search for a home is for many students the first step into the study. The many bulletin boards as in the atrium of the main building of the University or the cafeterias, are important starting points when looking for an apartment or WG. Furthermore, you will find offers in Hannover newspapers or you can ask at the Private Housing Placement of the Student Administration Hannover. Information about the various student residences are obtained in the Housing Department of the Student Administration.

www.studentenwerk-hannover.de/wohnen.html

There are also a few holders of other residences, it is worthwhile to investigate. The General Student's Committee(AStA) has also an information flyer "Living in Hannover" *www.asta-hannover.de*

Food and Drink

In the main canteen (Mensa) you can choose from a selection of up to 10 dishes. The main canteen shows in several studies that in the ranges of quality, price and selection they are always among the best cafeterias in Germany.

Furthermore, you find for the less hunger eight cafeterias at the various university locations. The Cafeteria "Sprengelstube" in the main building offers place to stay for the break between the lectures.

www.studentenwerk-hannover.de/essen.html

Traffic

With the semester ticket, students can use public transport in the Hanover region and almost all local trains in Lower Saxony. Since the largest part of the bike paths is in good condition, many students come by bicycle to the university. Included in the semester fee is a small contribution, which is used for the bicycle workshops where you can have your bicycles repaired for free.

For more information about the semester ticket and bike workshops please contact the student council. *www.asta-hannover.de*

Sports

www.hochschulsport-hannover.de

The sports centre is available to all students to do sports together, to move and to recover from the University stress. The various courses of aikido to basketball and athletics to yoga are mostly free for students or considerably cheaper than in most sports clubs. At the beginning of each semester, the sports programme is published, from which you can choose courses. Also in the

semester break, courses are offered. The sports programme is available at the sports centre as a brochure, but also in the Internet.

Financial and Social

Each semester, all students must pay a semester fee for the semester ticket, "administrative fee" and student union.
If the study course lasts longer than the standard period of study plus an additional four semesters, each semester will be charged a so-called long-term study fee, even there are exceptions possible. The amount increases with the length of the study course. The Admissions Office informs about this.
Counseling for student financial assistance offers the BAFöG Department of Student Service Hannover and the BaföG- and social counseling in the student union (ASTA).
www.studentenwerk-hannover.de/bafoeg-und-co.html

www.asta-hannover.de

HiWi-Jobs and Work Opportunities

The best way to not only earn money but also to gain experience for future employment and to repeat study course matters, is to work as a student assistant in the University. Here cooperation is possible in the research and management of the Institutes or in the field of teaching.
If interested, it is advisable to address the faculty and academic staff directly. They will be happy to advise you. In addition, Hannover offers as a major industrial and commercial city in companies, management and service, as well as at the fairs (e.g. CeBIT, Hannover industrial fair, etc.) various opportunities for students to make money.

3. Research

Below we present the physical, meteorological and didactic areas of the faculty and their research activities. This will give you a first orientation about possible major courses and to obtain subjects for your theses.

3.1 Institut of Solid State Physics

www.fkp.uni-hannover.de

Professors: R. Brendel, R. Haug, M. Oestreich, H. Pfnür, F. Ding

Department of Solar Energy Research, Institute of Solid State Physics

Prof. Dr. Rolf Brendel

Solar energy is able to provide significant contributions to the production of electricity and heat. As opposed to the production of useful energy using fossil fuels, solar energy does not pollute the atmosphere with harmful CO_2 emissions. In many areas all over the world, solar energy is already the cheapest type of energy supply. However, the efficiencies of part of the solar cells, photovoltaic modules and solar thermal systems are still far below their physical limits. Moreover, the material consumption is larger than necessary and the production processes for photovoltaic modules and solar collectors are not sufficiently optimised yet. The physical understanding of the power losses within the different components and the subsequent optimisation of fabrication processes are in the focus of our work. Besides, we are also conducting research in the field of integration of renewable energies into the energy system, which is becoming more and more important.

The department of solar energy research is conducting applied research in the field of photovoltaics in cooperation with the Institute for Solar Energy Research (ISFH), which is a research facility sustained by the State of Lower Saxony and an associated institute of the Leibniz Universität Hannover. Both institutions, together with 140 employees, are managed by Prof. Dr.-Ing. Rolf Brendel. The technological and metrological instrumentation is excellent. We belong to the leading teams in the world in the field of development of highly efficient silicon solar cells.

For instance, we analyse loss mechanisms in solar cells and photovoltaic modules with new imaging techniques such as electroluminescence and photoluminescence. The results of these measurements are compared to simulations for the creation, transport and annihilation of electron-hole pairs. By understanding the dominant loss mechanisms, new fabrication processes for solar cells and modules with higher efficiencies and reduced material consumptions can be set up. One example for our work in this area is the investigation of the properties of nanoporous silicon, which is used for the fabrication of very thin, monocrystalline silicon solar cells. Compared to conventional silicon solar cells, this allows for the reduction of the silicon consumption by a factor of more than 10. Another topical field of research is the use of very intense laser

radiation for the production of silicon solar cells. Picosecond lasers facilitate the nearly damage-free local opening of dielectric layers. Electrical contacts which are fabricated this way allow to achieve efficiencies of over 21% on industry-standard areas. Moreover, we consider the impact of actual weather, to which photovoltaic modules installed in the field are exposed, on their power output. For this purpose, we simulate their behaviour under realistic conditions in order to improve the assessment of measurement results from lab experiments under standard testing conditions with respect to the power output under realistic operation conditions.

Beside the research in the field of photovoltaics, we also work in the field of solar systems. The proceeding expansion of renewable energies requires the development of innovative approaches for the integration into the energy system. It is important to consider not only the production of electricity from renewable energy supplies, but also the production of heat in order to reduce the primary and final energy consumption. Our research in the field of solar systems ranges from the development of components and materials for solar thermal applications to combined thermal and electrical systems. The material research focusses on coatings for solar thermal components with the intention of giving special properties to these layers or establishing cost-effective processes for the industry. Solar collectors are a key aspect of our component development, but we also model and optimise the "non-solar" system components such as fresh water and home stations, heat reservoirs and electric heat pumps. In the area of thermal and electrical energy systems, we develop concepts for the efficient combination of reservoirs, producers and consumers. A topical field is the development of a new concept for solar houses, where the sun's heat is supplied to the building either as direct heating energy into a concrete core activation or, on a higher temperature level, into a buffer storage for general use. Along with the experimental test of such concepts and control strategies in the field, they are also investigated in an experimental facility. This enables the simulation, surveying and analysis of the operational performance of the single components and the whole system under real operation conditions.

3.2 Institute of Gravitational Physics

www.aei.mpg.de/hannover-de/66-contemporaryIssues/home/index.html

Professors: B. Allen, K. Danzmann, M. Heurs, C. Schnabel

Gravitational Waves – Listening to the Universe
Gravitational waves are tiny ripples in space-time propagating at the speed of light. They are generated by black holes, stellar explosions and maybe even by the Big Bang. Although predicted by Einstein in 1916, their direct measurement is technically extremely challenging and has not been achieved yet. The observation of gravitational waves is a new branch of astronomy that will yield completely new insights into our Universe.

The Institute for Gravitational Physics operates the Michelson interferometer GEO600 with 600 meter long arms for the direct detection of gravitational waves. The detector site is located on university grounds in Ruthe near Sarstedt south of Hannover; GEO600 is part of a worldwide network of gravitational-wave detectors. Its design and operation are coordinated in close collaboration with the universities in Glasgow and Cardiff, and with the Max Planck Institute for Gravitational Physics (Albert Einstein Institute, AEI) in Hannover and Potsdam.

The institute's research also covers the development of new experimental methods for the next generation of even more sensitive gravitational-wave detectors. This encompasses laser development, quantum optics and non-classical light, stabilization of systems at the quantum limit and modern control.

The space-based gravitational-wave detector eLISA is a particularly attractive and ambitious project. eLISA is a laser interferometer with million-kilometer long arms in a solar orbit; LISA Pathfinder, its technology demonstration mission will be launched in 2015. Scientists at the institute are closely involved in developing, building and testing the flight hardware. eLISA technology also has applications in Earth observation and will soon be used in such a mission (GRACE Follow-on, scheduled for launch in 2017).

The analysis and interpretation of detector measurement data are of crucial importance for the first direct detection of gravitational waves. The expected astrophysical signals are very faint and therefore hidden in the detector noise. Computer-based signal processing and filtering methods are required to identify and extract these signals. Because the properties of their astrophysical sources are a priori unknown, many different signal waveforms have to searched for. These searches therefore have to apply a very large number of digital filters to large data sets. The sensitivity of some of these searches is limited only by the available computing power.

The AEI is one of the worldwide leading institutions in the development and implementation of these searches. As part of an international data-sharing collaboration, institute members currently have full access to data from the most sensitive detectors available: LIGO in the USA, Virgo in Italy, and GEO600. This access to the world's best data will continue in the future through several international collaborative data-sharing agreements. The AEI hosts one of the

largest computer clusters worldwide for gravitational-wave data analysis. It consists of more than 13,000 CPU cores and has Petabytes of memory for data storage.

The methods developed for gravitational-wave data analysis are also applied in other fields of astrophysics, e.g., for radio telescope and Fermi gamma-ray data analysis. The AEI is also one of the institutions leading the volunteer distributed computing project Einstein@Home – one of the largest of its kind.

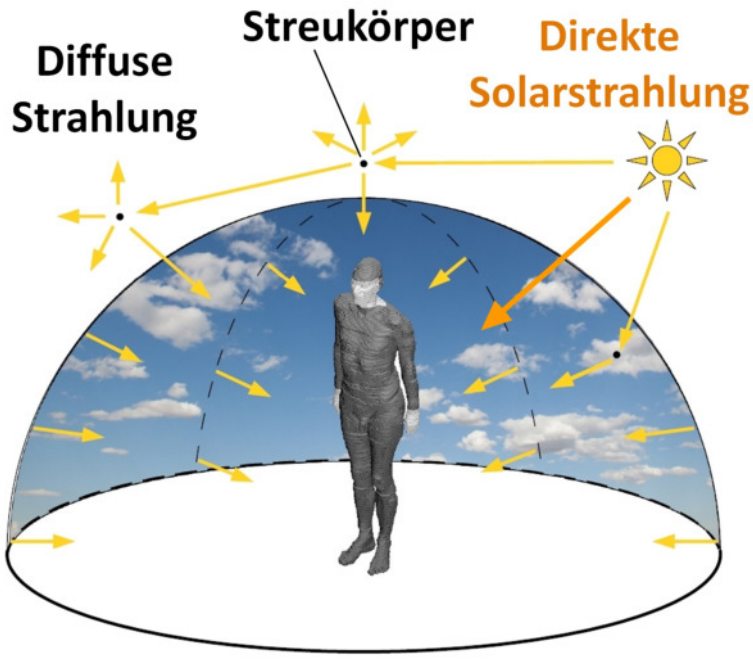
3.3 Institute of Meteorology and Climatology

www.muk.uni-hannover.de

Professors: G. Groß, S. Raasch, G. Seckmeyer,

More than just weather

The Institute of Meteorology and Climatology is the only university institute for meteorology in Lower Saxony. The Institute is divided into the following groups: Radiation and remote sensing



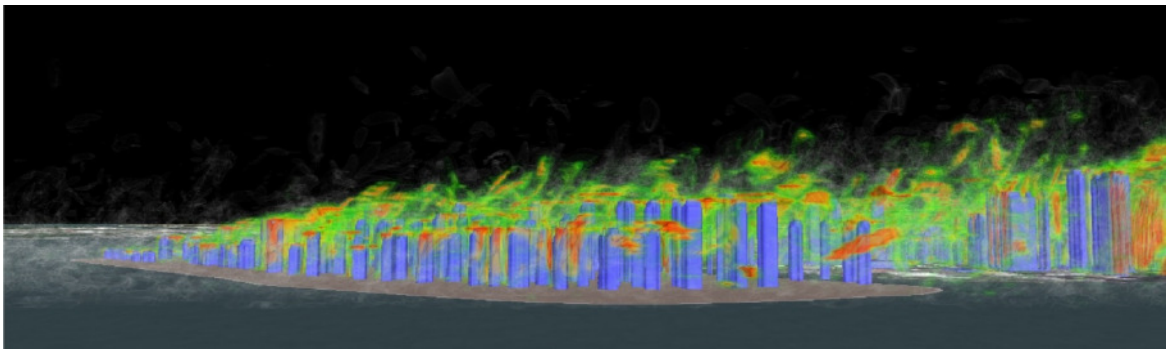
3-D model man in solar radiation field

The aim is to describe the spatial and temporal variability of the solar radiation in order to be able to record its energetic, biological and medical effects better than before. One focus is the development and use of novel measuring devices for the detection of solar radiation. The data obtained should be used to estimate both the positive effects on human health (eg formation of vitamin D) and the negative effects (eg sands, skin cancer). Climate change and the changes in ozone ("ozone hole") play a role here. An improved understanding of solar radiation is also required to optimize the use of solar energy, thus contributing to limiting climate change. In order to allow the results to be transferred to larger areas, the data obtained are also used to validate satellite data. Since it is mostly questions of global importance, it is necessary to coordinate the knowledge of international experts. For this reason, numerous scientific collaborations have been conducted in European and non-European countries. For more than 20 years, scientific contributions have been made to bodies of the Network for the Detection of Atmospheric Composition Change and the Global Atmosphere Watch programme of the World Meteorological Organization.

PALM working group

The PALM group deals with phenomena of the turbulent boundary layer, which will be examined with a very high spatial resolution coarse structure simulation models (large-eddy simulation, LES). The parallel-developed LES model developed by the group PALM is one of the leading meteorological turbulence simulation models internationally. The diverse research areas ranging

from basic research of organized convection (as dust devils and cloud streets) to applied topics such as the influence of turbulence on the aircraft performance during takeoff and landing, the site assessment for wind turbines or wind conditions in urban areas (see Photo). Such simulations require extreme computing power and are carried out e.g. on the parallel parallel computer of the North German Center for High and Maximum Performance Calculations (HLRN). In this context, the development of highly optimized numerical solution methods for the latest computer hardware is another important field of work for the group. Through the worldwide use of PALM, numerous collaborations with university partners have emerged, which are used by students and doctoral students to appropriate foreign stays.



Environmental Meteorology

The work areas of environmental meteorology concern the immediate habitat of humans. Several specific complexes are important for assessing the effects of weather, weather, climate and air hygiene on the human organism: thermal activity complex, actinic activity complex, air-hygienic activity complex including smell, noise and wind comfort.

These aspects are investigated especially in urban areas, above ground and underground (for example underground stations) but also for the interior. Due to legal requirements, these influencing factors on humans are fixed components of the spatial planning and must therefore be considered accordingly.

For such planning tasks specific numerical models have been developed in the working group which are able to calculate local and regional distributions of the different meteorological variables. The differential equations underlying the models are solved by numerical methods on a computation grid. Due to the task, very fine spatial mesh widths of 1 m - 100 m are used.

Such models offer the possibility to examine not only current conditions, but also the effects of changes in the boundary conditions, such as:
Land use changes (urbanization, forestry)
Changes in the composition of air (smog)
Local effects of global climate change (urban climate 2100)

3.4 Institute of Quantum Optics

www.iqo.uni-hannover.de

Professors: B. Chichkov, W. Ertmer, A. Heisterkamp, M. Kovacev, U. Morgner, C. Ospelkaus, S. Ospelkaus, E. M. Rasel, D. Ristau, P. O. Schmidt, E. Tiemann, C. Klempt

The institute of quantum optics at Leibniz University Hannover performs applied and basic research on laser physics and light-matter interaction. The scope of this research reaches from Bose-Einstein condensates, the coldest matter known to exist in the Universe, to the hottest plasmas that can be created through the shortest atto- and femtosecond laser pulses. The systems under study range from single ultracold atoms and molecules to living biological systems. Research includes quantum information processing and space based exploration of general relativity. "How can we improve lasers?", "Where can we employ laser light?" or "What can we learn from the interaction between light and matter?" are some of the central questions. Besides these fundamental aspects, applied aspects are an important point. We work towards novel imaging techniques for biological tissues and technical surfaces, techniques for novel atomic clocks and inertial sensors of unrivaled accuracy, laser-based control of chemical reactions, on laser eye surgery and precision single-cell manipulation. One of the visions is a quantum computer prototype or lasers of ever shorter wavelengths, down to the x-ray part of the spectrum.

This research takes place in local, national and international collaborations with other research groups in the faculty and at the Laser Zentrum Hannover (LZH), with other faculties of the University, with the Physikalisch-Technische Bundesanstalt Braunschweig (PTB), with NIFE (Center for biomedical engineering, implant research and develeopment) as well as with other national and international leading universities and research centers. Of high relevance in this context is the cooperation with physicists, chemists, life science and engineers within the clusters QUEST (quantum engineering and space-time research), REBIRTH (from regenerative biology to reconstructive therapy) and HEARING4ALL (models, technology and solutions for diagnostics, restoration and support of hearing) as well as within multiple national and multinational projects funded and supported by DFG, state and federal ministries, the European Union and ESA. International exchange of science and scientists is of paramount importance. After their Bachelor's, Master's or PhD thesis, graduates find fascinating professional perspectives in research and in the research oriented industry worldwide.

3.5 Institute of Theoretical Physics

www.itp.uni-hannover.de

Professors: H. Frahm, D. Giulini, K. Hammerer, E. Jeckelmann, O. Lechtenfeld, M. Lein, T. Osborne, L. Santos, R. Werner

Theory und Simulation: from big bang to quantum computers

Research in the *Condensed Matter Theory* group is focused on studies of strongly interacting electrons and magnetic systems in quasi one- and two-dimensinal solids. At low temperatures the properties of these systems are determined by the presence of large quantum fluctuations. We investigate the unconventional phases of such systems emerging when coupling constants or external fields are varied and study the role of interactions in the transport properties. For this purpose we analyze lattice models models starting from exact solutions and with methods from quantum field theory and develop efficient numerical algorithms for these problems.

The *String Theory and Gravitation* group (formerly Theoretical Nuclear and Particle Physics) is interested in structural questions of mathematical physics, in particular in string theory, quantum field theory and gravitation. On the one hand side the focus is on the structure and properties of so-called gauge theories, which underlie the fundamental microscopic forces of Nature (electromagnetic, weak and strong). On the other hand do we participate in the international effort to realize the 80-year-old dream of unifying the fundamental macroscopic force, namely gravity, with the other three. To this end we employ supersymmetry and supergravity as well as string theory, conformal field theory and non-commutative geometry (a "grainy'" deformation of spacetime).

The *Theoretical Quantum Optics* group investigates problems related to ultracold atoms, matter in intense laser fields, and macroscopic quantum systems. At very low temperatures, atoms exhibit unique properties. To this end, the group studies Bose-Einstein condensation, nonlinear atom optics, dipolar gases, spinor gases, one-dimensional gases, and dynamics of strongly correlated atomic systems. Aside from low-temperature physics, the group works on ultrafast dynamics of atoms and molecules in intense laser fields and fundamental aspects of density functional theory, which is a method for treatment of many-body problems. The group also investigates the physics of macroscopic quantum systems, for example in optomechanical systems or macroscopic atomic ensembles, as well as applications of macroscopic quantum systems in quantum information processing.

3.6 Institute of Radioecology and Radiation Protection

www.irs.uni-hannover.de

Professors: C. Walther, G. Steinhauser

Radioactive substances and ionizing radiation are indispensable tools in research, technology and medicine, but at the same time they represent a hazard to human health and the environment. The *Radioecology* describes the occurrence of natural (e.g. uranium and thorium decay products) and anthropogenic (e.g. nuclear accidents, nuclear tests) radioactive substances in the environment and their pathway to man and the resulting radiation exposures. In addition, radioecology makes use of radionuclides in the environment as tracer for the study of environmental processes. This becomes only possible by making use of highly sensitive ultra-trace detection, such as accelerator mass spectrometry or resonance ionization mass spectrometry.

Radiation protection is a prerequisite for the application of radioactive substances and ionizing radiation in medicine, technology and science while minimizing the potential risk to humans and the environment. Radiation protection requires an understanding of the physical, chemical, biological and ecological processes that occur in the causal chain from the production of radionuclides and radiation over the interaction with the environment and biological systems to the manifestation of damage.

Research at the Institute for Radioecology and Radiation Protection (IRS) covers many of these fields. Current research topics in collaboration with national and international partners are:

- Radio Ecological studies in the northern Ukraine, investigation and speciation particulate-bound radionuclides
- For this purpose, IRS develops tailored mass spectrometric and laser spectroscopic speciation methods
- Investigation of contaminated samples from the vicinity of the power plant Fukushima Daiichi
- Speciation of radionuclides in solutions using EXAFS and electrospray mass spectrometry
- Analysis and radioecology of the long lived fission product iodine-129
- Radiation exposure from radionuclides of the natural radioactive decay series
- Disposal options for radioactive residues (HAW). In particular radionuclide transfer into plants, radiation protection issues when handling or retrieving containers with highly active waste and community / social / political aspects (ENTIRA).
- Sorption and incorporation of radionuclides on and in solid matrices as migration barriers in repositories.

3.7 Institute of Mathematics and Physics Education

www.idmp.uni-hannover.de

Professors: T. Gawlick (Mathematik), R. Hochmuth (Mathematik), G. Friege (Physik)

Didactics of Physics

Prof. Dr. Gunnar Friege

The didactics of physics deals with the teaching and learning of physics. This involves academic as well as extra-curricular learning centres. The design of optimal learning environments for physics is based on evidence of the teaching-learning-research. The question of good physics teaching raises many new questions, that should be clarified only in the interaction of the multiple reference disciplines (physics, other sciences, education, sociology, psychology, history, philosophy ...) The design of optimal learning environments for physics based on evidence of the teaching-learning-research. An answer to such questions is on the one hand from the current social norms and on the other hand consist of empirical findings on the effectiveness of particular approaches. We assume that good physic teaching is continually being developed jointly by researchers and teachers. The educational reconstruction is based on our research and teaching activities.

At the Institute, we have research and development priorities in the following areas:
- Research-based learning
- Science Competitions
- Tasks in physics class
- Experiment in Physics Teaching
- Case based video analysis of physics teaching
- Technical Education in teaching physics

We explore the question of how in physics teaching experimenting is done and how students learn to investigate and solve problems. We examine how scientific competitions affect the careers of the participants and how to use competitions as a teaching method. Students have the opportunity to perform, case-based video studies with us and using lesson videos to reflect on their teaching physics theory knowledge. We develop approaches to teaching and teacher training in the sectional area of technical and physical education. We explore different types of learning and test tasks - for example, how to use multiple-choice questions for learning physics.

4. Contacts for study information and guidance

Many questions about the study should be clarified in reading this study guide. But there are also issues that are the easiest to answer during a consultation. Therefore, you have the following persons and facilities:

4.1 Contacts within the Faculty

4.1.1 Organization of Studies

Information about the study organization you find in this brochure, in the current examination regulations and *www.maphy.uni-hannover.de/de/studieren.*
For individual questions or problems you can contact the
Study Course Coordination:

Dipl.-Ing. Axel Köhler
Dr. Katrin Radatz — *sgk@maphy.uni-hannover.de*

Appelstraße 11A (Raum A121 und A120)
30167 Hannover — Tel.: 762-5450 und -14594

4.1.2 Academic Councelling

For an individual student counselling basically all professors are available. This specialist study advice should be claimed particularly in the following cases:

- before the election of majors, examination subjects and the field of subject for the Bachelor or Master thesis
- when planning a study abroad
- after failed exams
- before exchange of study, study programme or university.

The current office hours of professional counselors and advisors can usually be found online or can be requested at the advisory by telephone, post or e-mail.

Meteorology

Dr. Micha Gryschka — *gryschka@imuk.uni-hannover.de*

Herrenhäuser Straße 2
(Raum f 121)
30419 Hannover — Tel.: 0511-762-3254

Physics

Prof. Dr. Manfred Lein — *manfred.lein@itp.uni-hannover.de*

Appelstraße 2 (room 209A)
30167 Hannover — Tel.: 0511-762-3291

4.1.3 Federal Training Assistance Act Representative (BAföG)

If you receive BaföG, you must present either after the 3rd or 4th semester a certificate from the faculty that you are studying in regular time. For this purpose please contact the BaföG representative:

Prof. Dr. E. Jeckelmann
Appelstrasse 2 (room 225)
30167 Hannover

Tel. 0511-762-3661

eric.jeckelmann@itp.uni-hannover.de

4.1.4 Student's Union Mathematics and Physics

www.fs-maphy.uni-hannover.de

Experience shows that many students receive information on the fastest of fellow students from the same or higher semesters.
The Student Union provides information about contacts, which in most cases, clarify many questions, or can refer to the appropriate advisory body - mainly due to their own study experience. The current contact partners are available on the web. The main task of the Student Union is to represent the students' interests in the bodies of the faculty. So it acts via the student representatives, for example it is involved in the design of the examination regulations and has a say in the decisions of the vocation committees for the appointment of professors. It also acts in interdisciplinary faculty committees.
In addition, the Student Union also offers the following:

- Orientation units and common breakfast for all students in the first week before the start of the winter semester
- Introductory leisure weekend for students in the first semester
- Advice on all mathematics, physics, meteorology and nanotechnology courses
- Help with problems in the study / with lectures or with faculty structure
- Working spaces with a small collection of textbooks
- Free Internet access on the student council computer
- A collection of exams from recent years
- Several file folders with questions from oral examinations (diploma, undergraduate, intermediate examination, first state examination) and more recent examination records online
- The student council newspaper „Physemathenten"
- A football team for all interested students of the faculty to play
- The annual faculty BBQ
- Zahlendreher-parties (Count turner-parties, Transposed digits-parties)

Student Union Mathematics and Physics — fsr@fs-maphy.uni-hannover.de

Welfengarten 1 (room d 414) — Tel.: 0511-762-7405

30167 Hannover

Who even once feels like to be contact person is invited by the Student Council just to attend a meeting of the Student Council. The meetings are in the semester every Monday at 18.15 clock in the student council room. Since the Council is an open Council, even any student of the faculty is entitled to vote at the meeting. This applies to all votes that do not deal with finances or changes to the rules of procedure.

4.1.5 Board of Examiners

The course of studies, particularly in the results to be provided, shall be governed by the respective examination regulations (see. Chap. 5). The Audit Committee ensures that the examination regulations are complied with. The committee decides on matters of acceptance of work as well as in opposition proceedings.

Meteorology

Prof. Dr. Gunther Seckmeyer
(Chairman)
Herrenhäuser Straße 2 (room f 113)
30419 Hannover

Tel.: 0511-762-4022

seckmeyer@muk.uni-hannover.de

Physics

Prof. Dr. Christian Ospelkaus
(Chairman)
Welfengarten 1 (Raum D123)
30167 Hannover

Tel. 0511-762-17644

christian.ospelkaus@iqo.uni-hannover.de

4.2 Main contacts

4.2.1 Service Center

www.uni-hannover.de/servicecenter

The Service Center at the Leibniz Universität Hannover is the central contact point for students and prospective students. Employees from various central institutions of the University are working here and will answer questions about your studies, help with problems and facilitate orientation at the Leibniz Universität Hannover. During the opening times employees of the following areas are available for consultation:

- Academic Examination Office
- BAFöG advice
- University International Office

- Admissions Office
- Psychologically Therapeutic Counselling
- Student Advice Centre

Contact:

Service Center
Leibniz Universität Hannover
Welfengarten 1
30167 Hannover

Tel.: 0511-762-2020
Fax: 0511-76219385
studium@uni-hannover.de

Opening hours: Monday - Thursday: 9.00am - 5.00pm
Friday and before public holidays 9.00am - 3.00pm

4.2.2 Student Advice Centre (ZSB)

www.zsb.uni-hannover.de

The Student Advice Centre is the contact point for all students of the universities of Hanover. There are various forms of consultation:

- Brief information talks (Duration: up to 10 minutes) in the Information Centre of the Service Centre in the main building (Monday- Friday 10.00 -14.00 o'clock)
- Open hours: Individual counseling in a confidential atmosphere without prior appointment. Sign in at the Info Desk in the Service Centre (Thursday, 14.30-17.00 clock)
- By appointment via the service hotline of the Leibniz Universität Hannover (0511-762-2020): individual counseling in a confidential atmosphere. The consultation is provided to all questions and problems that are closer or further related to the study; so as in:
  - Study course exchange
  - Changing university
  - Examination problems
  - Career prospects after graduation

In the Data Library is extensive material on nationwide study opportunities. Some PC are available, where you can perform database searches on study opportunities:

Student Advisory Service
Welfengarten 1
30167 Hannover

Tel.: 0511-762-2020
studienberatung@uni-hannover.de

4.2.3 Academic Examination Office

www.uni-hannover.de/pruefungsamt

The examinations in the Bachelor and Master degree programmes are organized in the central Academic Examination Office of the University in cooperation with the Audit Committee or the Dean's Office competent for the respective course. The Examination Office has in particular the following tasks:

- exam registration / admission
- central recording of test results
- examination resignation (for example due to illness)
- Issuing certificates, e.g. as for child support
- draw up grades for applications or course/high school exchange
- draw up certificates and documents

The staff of the academic examination office will advise you on all audit matters. Please contact the following addresses:

Central service hotline:

Tel.: 0511-762-2020 Fax: 0511-762-2137 *studium@uni-hannover.de*

Within the Audit Office, there are currently the following responsibilities for the various courses of study:

Bachelor- and Master course in Physics

Torsten Flenner

Welfengarten 1 (room f 311)

30167 Hannover

Torsten.Flenner@zuv.uni-hannover.de

Bachelor- und Master course in Meteorology

Felix Lapossa

Welfengarten 1 (room f 317)

30167 Hannover

Felix.Lapossa@zuv.uni-hannover.de

4.2.4 Studying Abroad

Leibniz Universität Hannover offers several ways to complete a part of the studies abroad. About the possibilities advises the foreign lecturers of the Faculty, and the University International Office.

Student Exchange Faculty Coordinator:

Dipl.-Ing. Axel Köhler Tel.: 762-5450

Appelstraße 11A (room A121)

30167 Hannover

koehler@maphy.uni-hannover.de

Mariana Stateva-Andonova
Appelstaße. 11A (room A120)
30167 Hannover

studiensekretariat@maphy.uni-hannover.de
Tel.: 762-4466

International Office

www.international.uni-hannover.de

The university International Office provides information and services to study- and research-opportunities abroad. It manages the exchange programmes of the Leibniz Universität of Hannover and advises on grants and funding opportunities. It is also responsible for the development of internationalization at the Leibniz Universität Hannover and the development and maintenance of cooperation with universities.

4.2.5 Ombudsman

www.uni-hannover.de/ombudsperson-studium

The office of the Ombudsperson to ensure good study conditions serves as a point of contact for students who have general or individual problems, complaints or suggestions concerning their studies and teaching. Ombudsperson is Prof. Dr. Hans Bickes.

Contact:

Rebecca Gora
Tel.: 0511-762 - 5446

Callinstr.24
30167 Hannover

Post office box 172 (left of the entrance of the main building)

ombudsperson@studium.uni-hannover.de

4.2.6 Psychological-Therapeutic Counselling for Students (ptb)

www.ptb.uni-hannover.de

At some point during your studies, the initial joy and excitement of starting university and living in a new country slowly fades. You begin to feel overwhelmed by the demands of your studies and the difficulties of adjusting to a new life. Suddenly, you have reached that point, where everything seems too much.

Facing and dealing with problems, that come in your way is a part of life and is a constant life-long learning experience. Nevertheless, you do not need to manage it alone! Our psychological counselling service is available to you and we strive to assist in dealing with your specific problems.

We are pleased to inform you of our collaboration with the PTB to provide a counselling service, which is free, confidential and tailored to your needs.

Contact for an individual appointment:

Tel.: 0511-762-3799
Mo. – Fri., 10:00 – 12:00 o'clock
Mo. – Thu., 14:00 – 16:00 o'clock (during the lecture period only)
Alternatively, drop-in hours: Mo., 12:00 – 13 o'clock,

Appelstr. 11A (room A101)
30167 Hannover

4.2.7 Career and Service Centre of Key Competencies (ZFSK)

www.career.uni-hannover.de *www.zfsk.uni-hannover.de*

The Centre for key competences is located in Career Services, Leibniz Universität Hannover. The Career Service also offers events on current topics of professional experience, additional qualifications and individual career counseling.

Contact:
Career Service/ZEW

Tel.: 0511 - 762 19137
Fax: 0511 - 762 8154

Schlosswender Str. 5
30167 Hannover

info@career.uni-hannover.de

5. Appendix

5.1 Important Links

Examination Regulations Bachelor:

Bachelor of Science in Physics:
www.uni-hannover.de/de/studium/studiengaenge/physik/ordnungen

Bachelor of Science in Meteorology:
www.uni-hannover.de/de/studium/studiengaenge/meteorologie/ordnungen

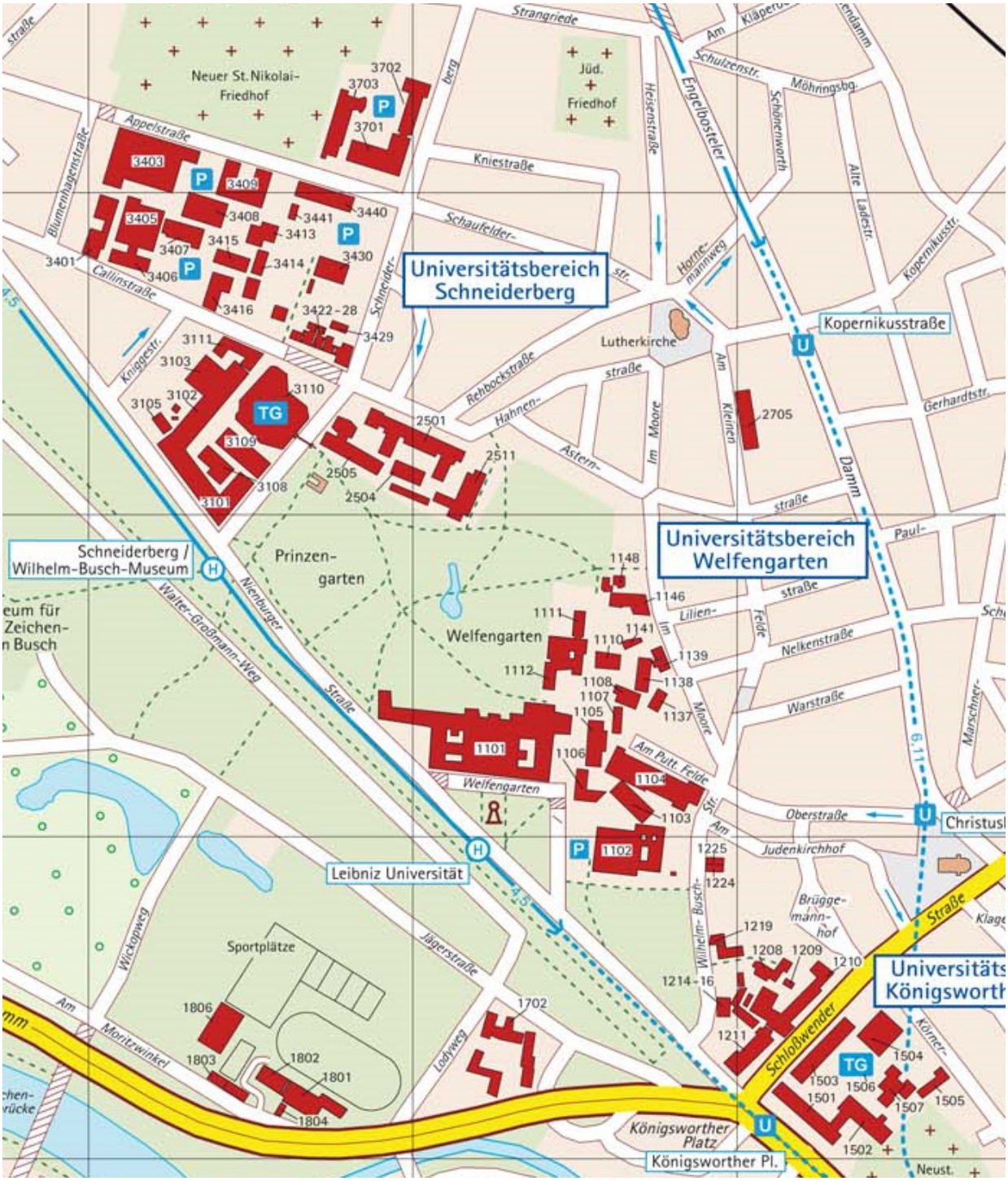
Examination Regulations Master:

Master of Science in Physics:
www.uni-hannover.de/de/studium/studiengaenge/physik/ordnungen

Admission Regulations:

www.maphy.uni-hannover.de/fileadmin/maphy/Studium/Studierende/Andere_Informationen/Zugangsordnung_Engl_170602.pdf

5.2 Maps


Universitätsbereich Schneiderberg
Universitätsbereich Welfengarten
Universitäts Königsworth
Schneiderberg / Wilhelm-Busch-Museum
Leibniz Universität
Kopernikusstraße
Königsworther Platz
Königsworther Pl.
Neuer St. Nikolai-Friedhof
Jüd. Friedhof
Lutherkirche
Prinzengarten
Welfengarten
Sportplätze
Engelbosteler Damm
Schulzenstr.
Möhringsbg.
Schönenworth
Alte Ladestr.
Kopernikusstr.
Gerhardtstr.
Heisenstraße
Strangriede
Kniestraße
Schaufelder-straße
Hanne-mannweg
Rehbockstraße
Hahnen-Astern-straße
Am Kleinen Moore
Lilien-Felde
Nelkenstraße
Warstraße
Paul-Marschner-Straße
Am Putt. Felde
Oberstraße
Judenkirchhof
Brügge-mann-hof
Wilhelm-Busch-Straße
Schloßwender Straße
Körner-straße
Appelstraße
Blumenhagenstraße
Callinstraße
Knigge-straße
Schneider-berg
Walter-Großmann-Weg
Nienburger Straße
Wickopweg
Jägerstraße
Am Moritzwinkel
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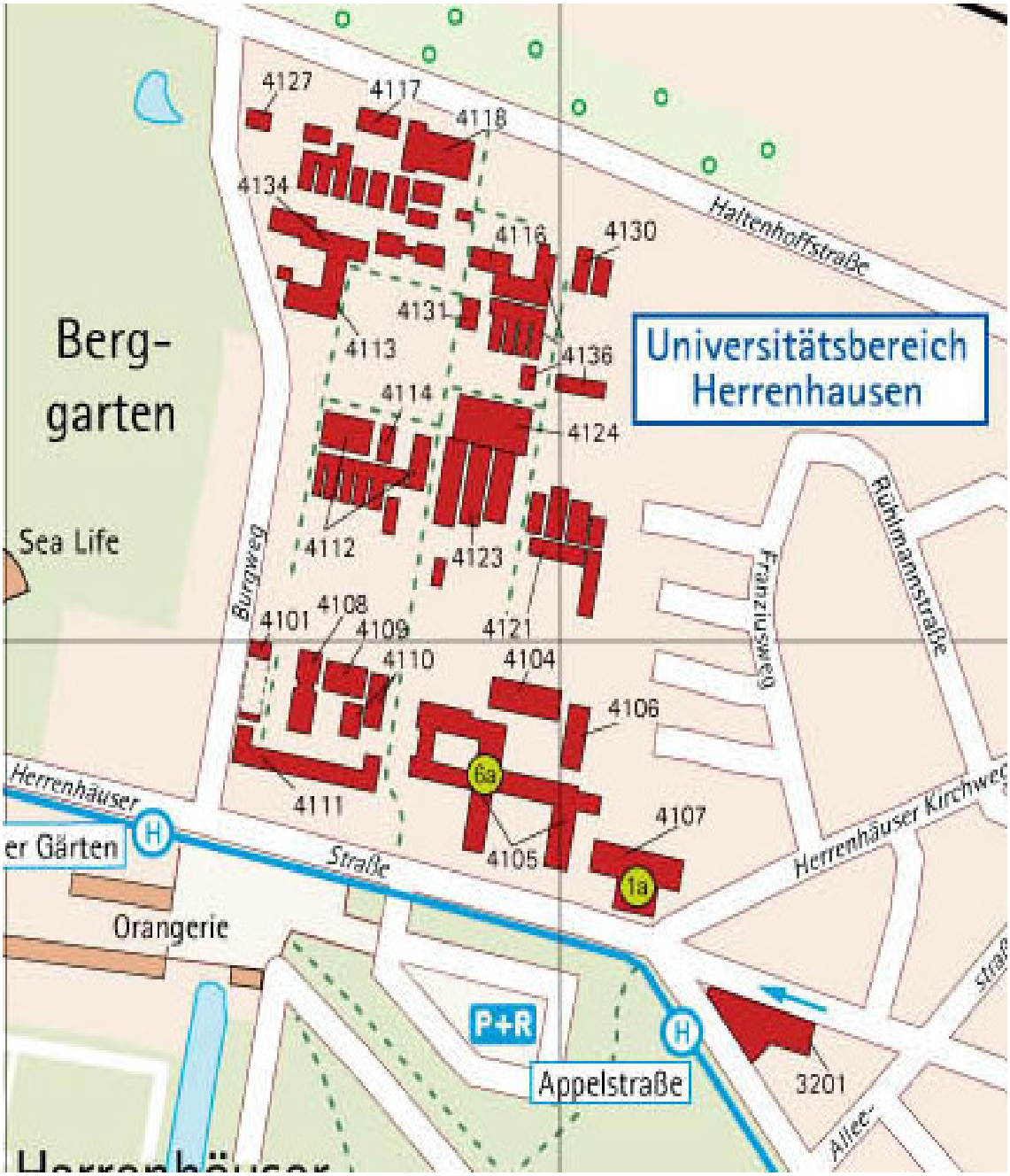
Berg-
garten
Sea Life
Universitätsbereich
Herrenhausen
Haltenhoffstraße
Burgweg
Franziusweg
Rühlmannstraße
Herrenhäuser
Straße
Herrenhäuser Kirchweg
Orangerie
P+R
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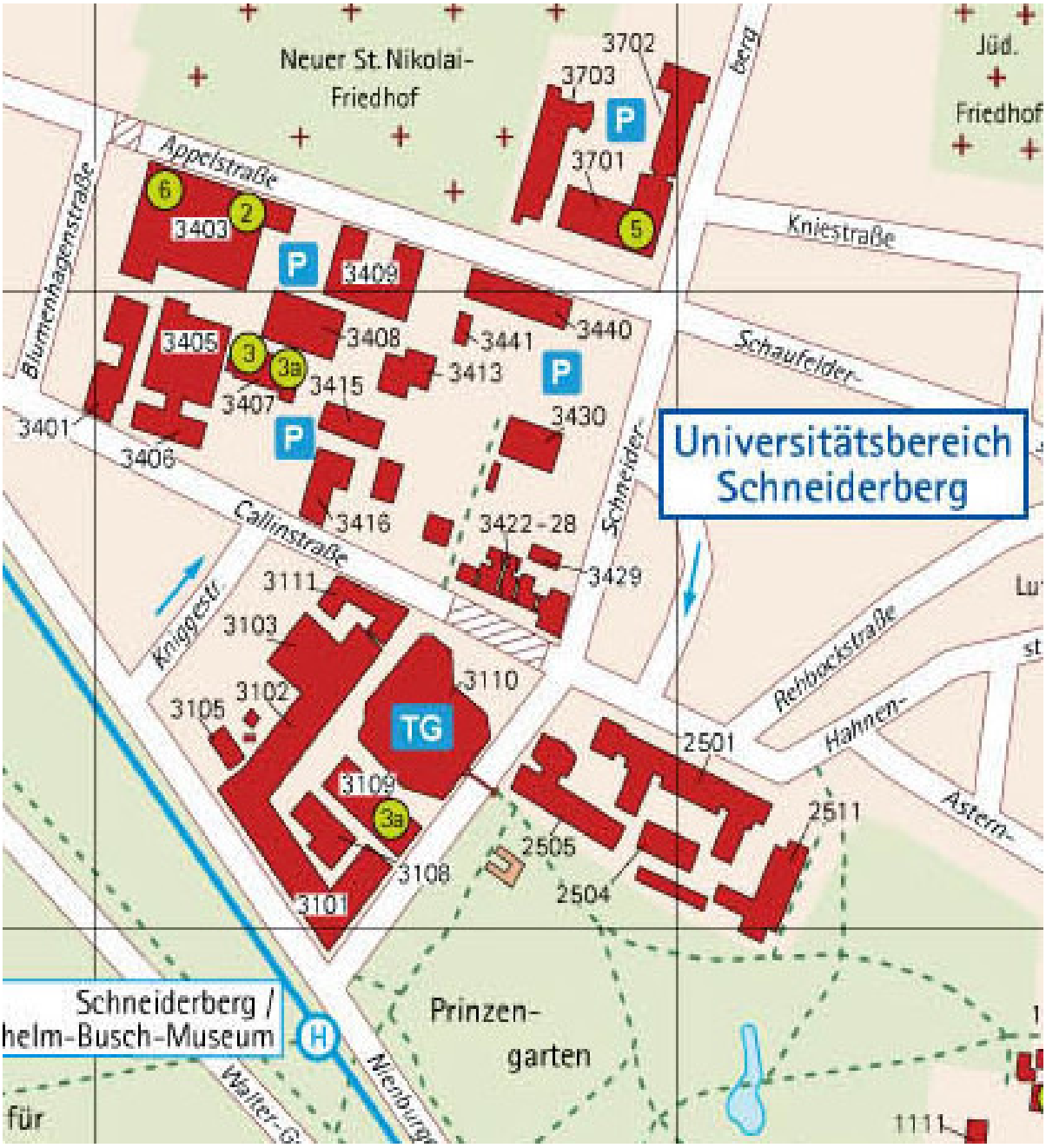
Neuer St. Nikolai-
Friedhof
Jüd.
Friedhof
Appelstraße
Blumenhagenstraße
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Schaufelder-
Universitätsbereich
Schneiderberg
Callinstraße
Rehbockstraße
Hahnen-
Astern-
Prinzen-
garten
Schneiderberg /
helm-Busch-Museum
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Universitätsbereich Welfengarten
Welfengarten
Leibniz Universität
Lilien-straße
Nelkenstraße
Warstraße
Oberstraße
Judenkirchhof
Am Putt. Felde
Jägerstraße
Brügge-mann-hof
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