Technische Universität Braunschweig



Study Solar Systems Physics

at Technische Universität Braunschweig

Master's Study Programme

Solar System Physics – the Master's Study Programme

The exploration of the solar system has always been one of the most fascinating visions and continues to pose great challenges to mankind. The celestial bodies of the solar system can be studied with the help of modern astronomical methods using ground- and space-based telescopes, but can also be reached by space probes and explored on site.

A wide variety of space missions are currently being planned and prepared. The technologies required for this are complex and depend heavily on the goals of the missions. Therefore, these technologies must always be further developed or newly invented, and a deeper understanding of the physics of the solar system is a fundamental prerequisite for this.

The Master's programme "Solar System Physics" offers a unique opportunity in Germany to study the physics of the solar system and to qualify for a future career in the space industry or the exploration of planetary bodies through a basic physics education. The degree programme is offered entirely in English, making the teaching suitable for international students and contributing to the internationalisation of the location.

German and international students are optimally prepared for the international job and science market through the use of the English language. Semesters abroad are generally possible in order to deepen the exchange with international scientists.

The structure of the degree programme

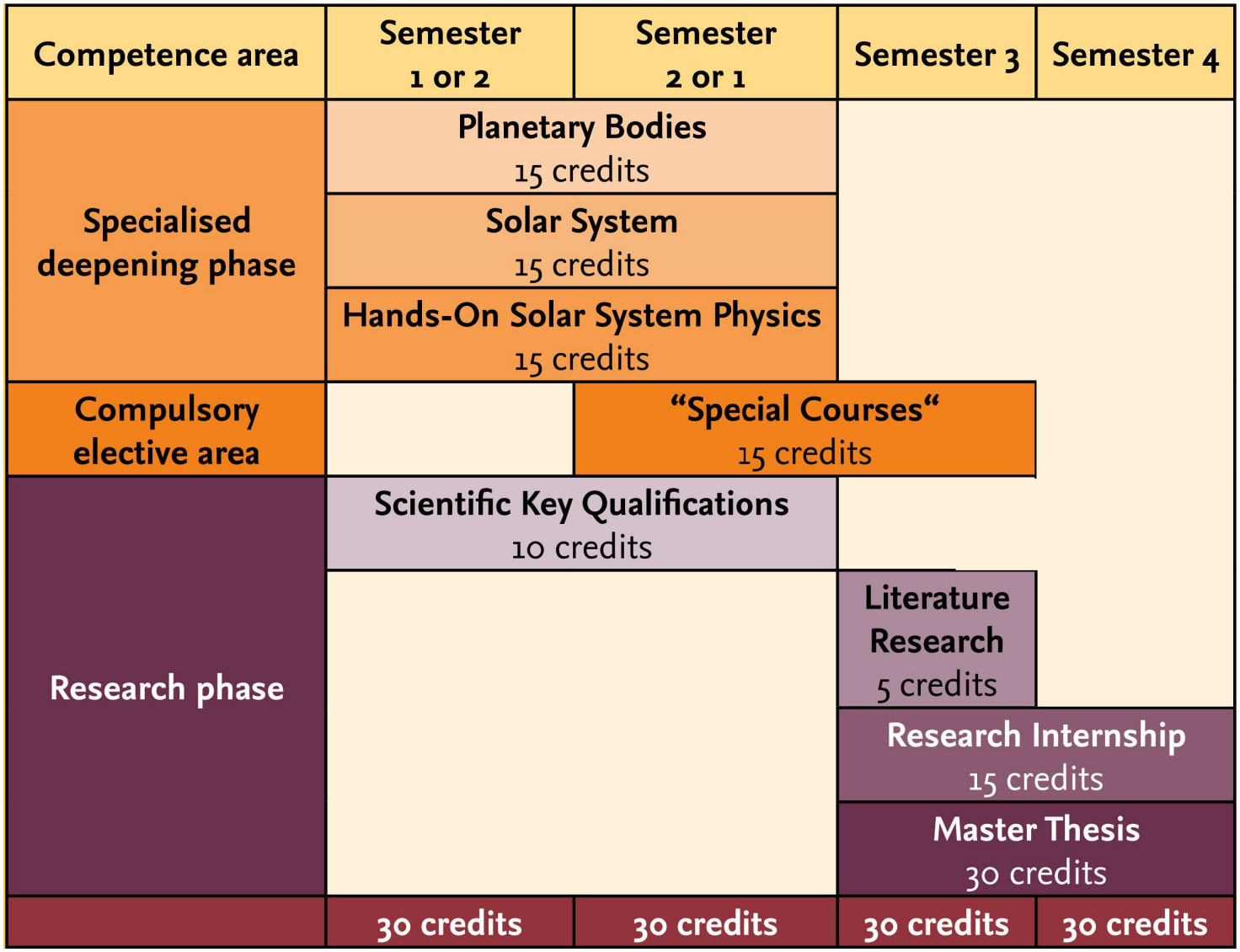
The two-year consecutive Master's programme in Solar System Physics has a strong focus on research and is a full-time attendance-based programme. With English as the language of instruction, this programme is an ideal way to prepare you for the global job and science market and for cooperation with international colleagues.

You will have the chance to acquire in-depth specialist knowledge in the field of solar system physics, for example:

- formation and evolution of planetary systems
- the sun and its heliosphere
- planetary surfaces
- the internal structure and processes of planets
- the atmospheres and magnetospheres of planetary bodies

Step by step, you will become familiar with innovative work methods in research and science, and practice hands-on problem-solving techniques. With a final thesis completed over the course of eight months, students will demonstrate their ability to independently investigate a subject-specific issue by applying scientific work methods.

The Master's degree entitles the holder to a doctorate in physics (Dr. rer. nat.).


Competence area
Semester 1 or 2
Semester 2 or 1
Semester 3
Semester 4
Specialised deepening phase
Planetary Bodies
15 credits
Solar System
15 credits
Hands-On Solar System Physics
15 credits
Compulsory elective area
"Special Courses"
15 credits
Research phase
Scientific Key Qualifications
10 credits
Literature Research
5 credits
Research Internship
15 credits
Master Thesis
30 credits
30 credits
30 credits
30 credits
30 credits

Specialised deepening phase

During the specialised deepening phase, three compulsory modules must be taken. In the module *Planetary Bodies*, students must attend the courses on *Interiors and Surfaces of Planetary Bodies* and *Atmospheres and Environments of Planetary Bodies*. The study achievement of 'homework' must be passed for both courses. The final module examination is usually taken as two separate examinations covering the two courses. Registration for these is carried out directly via the examiner. The same applies to the module *Solar System* (courses: *The Sun and Heliosphere* and *Formation and Evolution of the Solar System*). In the module *Hands-On Solar System Physics*, three compulsory practical courses must be completed (*Laboratory Solar System Physics, Astronomy, Data Analysis and Simulations*), for each of which a report and a presentation constitute the study achievement.

Compulsory elective area

In this area, students must earn 15 credits by selecting at least three compulsory-elective modules. A variety of modules relating to topics such as the Solar System and Astrophysics are offered on a rotating basis. Registration for the examinations takes place online via TUconnect.

Research phase

The research phase provides intensive preparation for the Master's thesis, which is due at the end of this module and the degree programme. The compulsory modules *Scientific Key Qualifications* and *Literature Research* prepare students for writing their Master's thesis and presenting their results. The *Research Internship* provides an introduction to the research that will form the basis of the Master's thesis. This leads seamlessly into the Master's thesis. Registration for the exams in the module *Scientific Key Qualification* is done online via TUconnect.

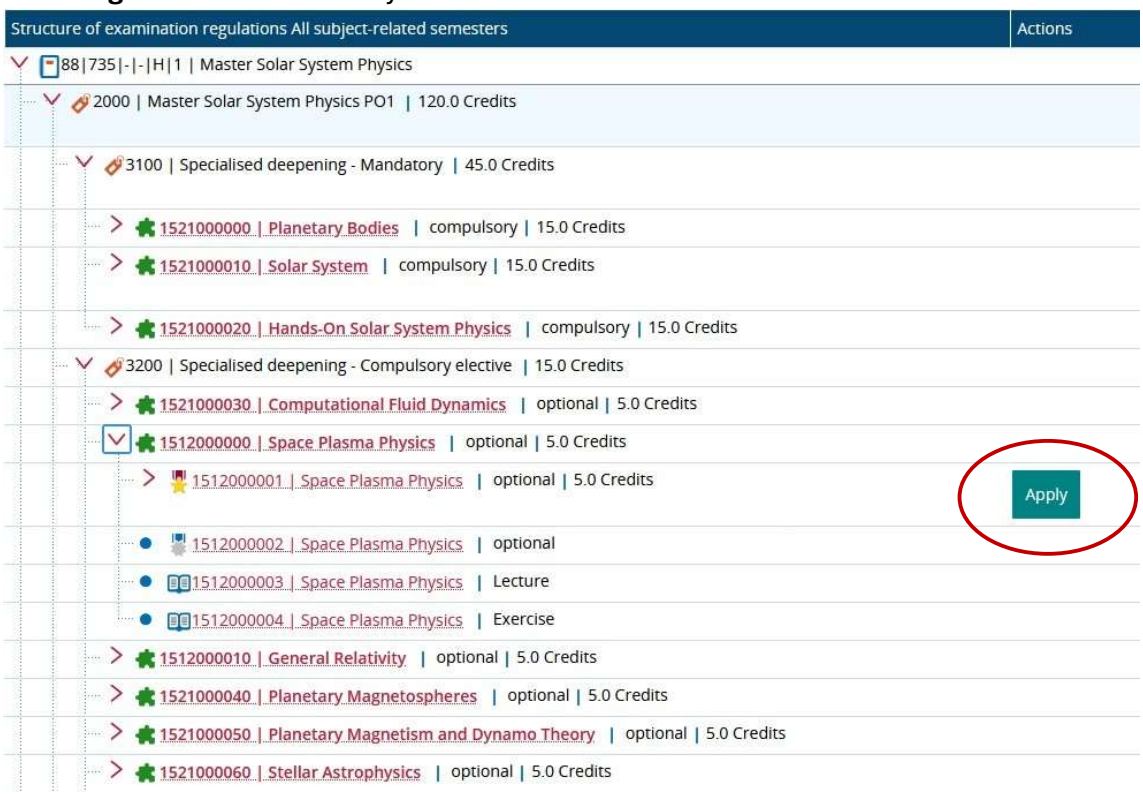
Master's Thesis

The Master's thesis takes 8 months to complete and concludes with the submission of the written thesis and a presentation of the results. The written thesis is an exam worth 30 credits. The oral presentation is a course achievement in the *Research Internship* module. Registration for the written thesis is carried out via the Examinations Office.

programme

Registration for and withdrawal from examinations

Exam **registrations** are usually made online via TUconnect.



Once you have clicked the ‘Apply’ button, you will need to confirm your registration by clicking the ‘Apply’ button that then appears.

The exam registration period is

for winter semester examinations: 15 December – 15 January
for summer semester examinations: 1 June – 30 June

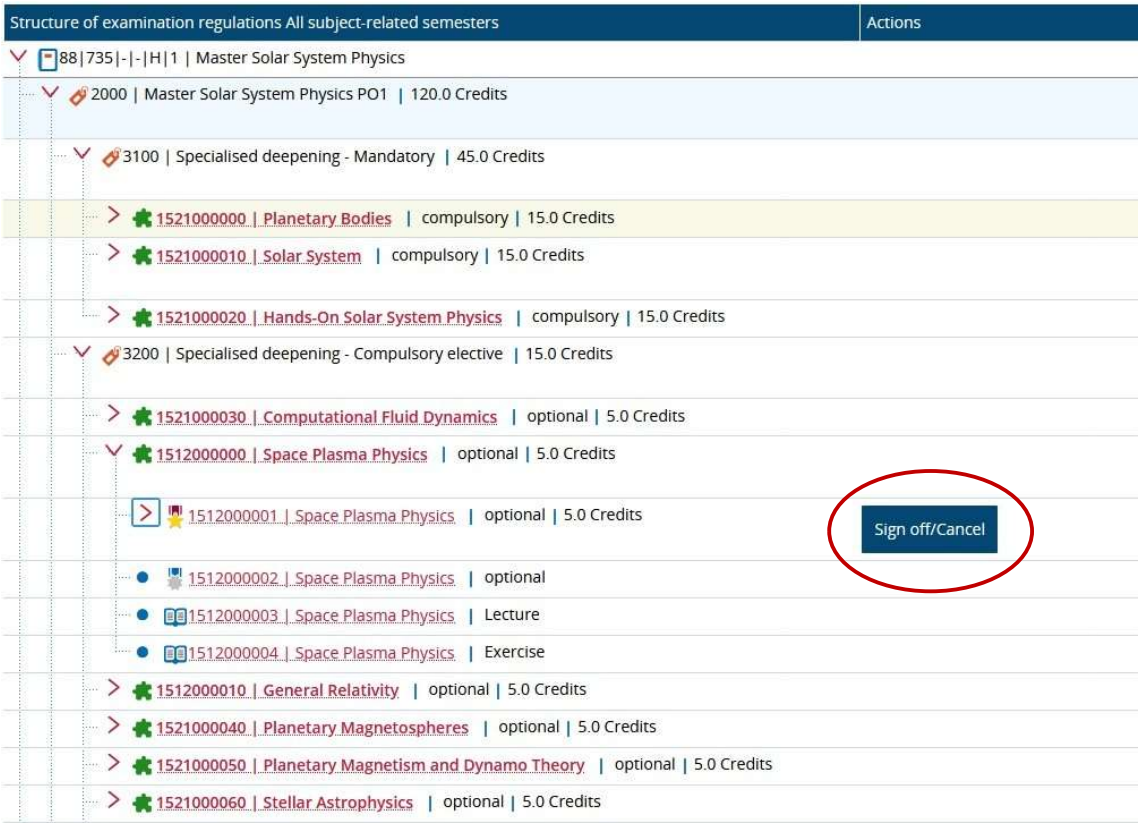
Dates for written examinations are announced on the respective faculty’s website and in the courses. Dates for oral examinations are arranged directly with the relevant examiner.

The examination period for written examinations runs from the end of the lecture term until the end of the semester (31 March or 30 September). For oral examinations, the examination period is extended until 30 April for examinations in the winter semester and until 30 October for examinations in the summer semester. As a rule, one examination date is offered in each semester.

exams

Withdrawals from **written examinations** can be made online via TUconnect or in writing to the Examinations Office up to **two days before** the examination date.

Withdrawals from **oral examinations** can only be made up to **one week before** the examination date by contacting the **Examinations Office and the examiner**.



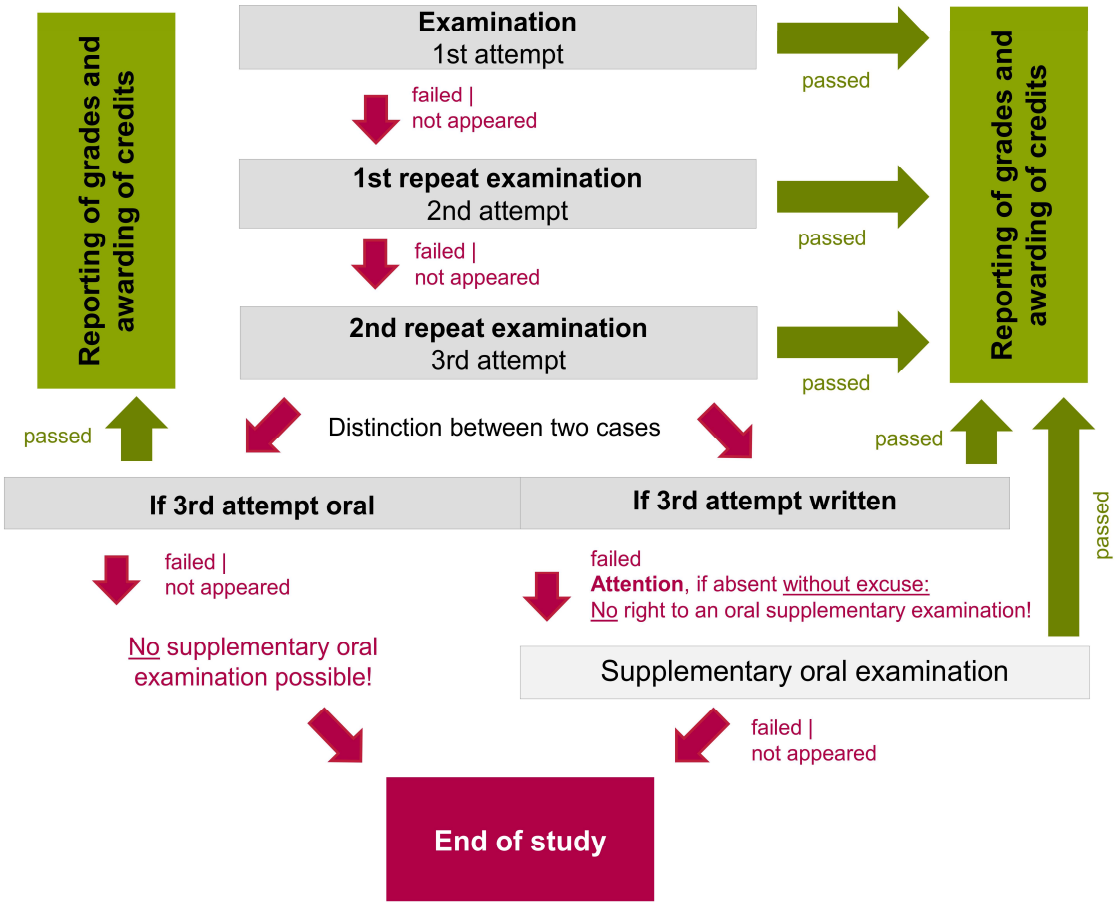
Once you have clicked the ‘Sign off/Cancel’ button, you will need to confirm your withdrawal by clicking the ‘Sign off/Cancel’ button that then appears.

Failure to attend without giving notice or providing a doctor’s certificate is treated as ‘absent’ and will be recorded as a 5.0. You have a maximum of three attempts to pass an examination.

If the first attempt at an examination is taken and passed within the standard period of study, it may be retaken within the following two semesters to improve your mark. The better result will be recorded.

exams

Repeating Examinations



If an examination is not passed on the first attempt, there are two further attempts. If the third attempt is also unsuccessful, a distinction is made between three scenarios:

1. If the examination was written, this is followed by a supplementary oral examination. If this supplementary oral examination is passed, the maximum mark that can be awarded is 4.0. If the supplementary oral examination is also failed, this results in definitive failure of the degree programme.

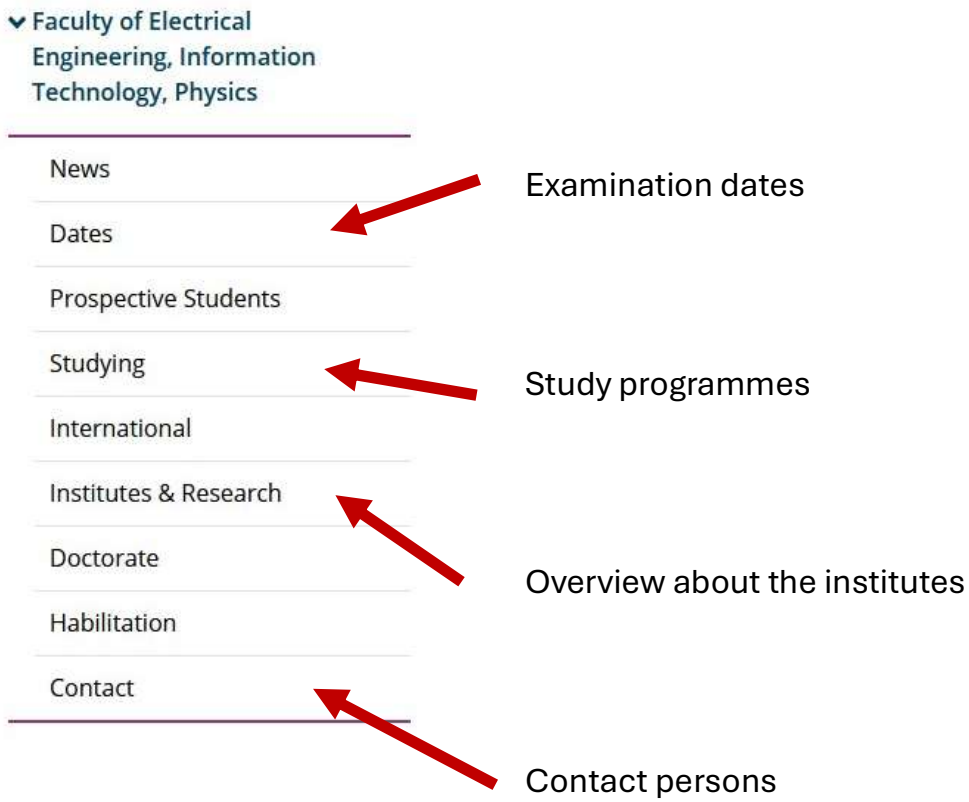
2. If the third attempt was an oral examination, there is no supplementary oral examination. Failure results in definitive failure of the degree programme.

3. If a student is absent without valid reason from the third attempt at a written examination, the student is not entitled to a supplementary oral examination and the absence is counted as a failed attempt. This also results in definitive failure of the degree programme.

Where can I find what I'm looking for?

The faculty's website provides a wealth of information.
https://www.tu-braunschweig.de/en/eitp

The side menu links to many important pages.



homepage

Your contacts

Please join the **Stud.IP group** 'Study group: Solar System Physics'. This portal provides important information about your degree programme.
(https://studip.tu-braunschweig.de/)

Stud.IP

For specific enquiries about the Solar System Physics degree programme:
Study programme coordinator Physics and Solar System Physics
Dr. Cindy Döring
Phone: +49 (0)531 391 7976
E-Mail: sgk-eitp@tu-braunschweig.de
Faculty office EITP (Faculty 5)
Hans-Sommer-Straße 66, Room 108

contact

For specific enquiries about the exams in the study programme Solar System Physics:
Examination office Physics and Solar System Physics
Manuela Schmitt
Phone: + 49 (0)531 391 8166
E-Mail: pruefungsamt-physik-eitp@tu-braunschweig.de
Faculty office EITP (Faculty 5)
Hans-Sommer-Straße 66, Room 112

Information from students for students:
Fachgruppe Physik
E-Mail: fgphysik@tu-bs.de
Mendelssohnstraße 3, Room A035
(signposted as Fachgruppenraum)

Fachgruppe

Note

Please use only your TU email address! Section 3(2) of the Enrolment Regulations states:

"Students must use only the email address provided by TU Braunschweig, ending in '@tu-braunschweig.de', as their contact email address. Students are obliged to check their inbox at this address regularly. Forwarding incoming emails to another email address provided by a third party is not permitted."

This translation of the German version is provided for information purpose only. If there is a discrepancy or inconsistency of meaning or interpretation between the English version and the original German version, the German version shall prevail.

Excerpt

Special Part of the Examination Regulation

This translation of the German version date 27.09.2023 is provided for information purpose only. If there is a discrepancy or inconsistency of meaning or interpretation between the English version and the original German version, the German version shall prevail.

Master study programme Solar System Physics

Degree “Master of Science “

§ 1 – Subject matter and standard period of study

(1) These examination regulations govern the Master's degree programme Solar System Physics of the Fakultät für Elektrotechnik, Informationstechnik, Physik, in particular the examination procedure, study regulations and provisions.

(2) The period of study in which the degree programme can be completed is 4 semesters (standard period of study).

§ 2 - University Degree and Certificate

(1) After passing the Master's examination (cf. § 4), the TU Braunschweig awards the degree of "Master of Science" (abbreviated to "M.Sc."). The TU Braunschweig issues a certificate in German and in English with the date of the certificate in accordance with the model of the APO.

(2) In addition, a certificate and a Diploma Supplement are issued in German and in English according to the models in the appendices of the APO, taking into account the components specific to the degree programme. The programme-specific components of the Diploma Supplement are listed in Annex 1.

(3) In addition to the overall grade according to § 16 (2) APO, the grades of the individual modules with their credit points (CP) are listed in the transcript. Ungraded modules are only listed with their credit points. The grade "passed with honours" is awarded for a grade point average up to and including 1.1 as part of the calculation of the overall grade.

§ 3 - Structure and scope of the degree programme

(1) The Master's degree programme in Solar System Physics begins in the winter and summer semesters.

(2) The study programme is organised in modules and comprises a total of 120 credit points.

(3) The study programme is divided into the parts "Specialised in-depth phase" (60 LP) and "Research phase" (60 LP).

(4) In the specialised deepening phase, which consists of three compulsory modules and one compulsory elective module, at least 60 LP must be acquired as follows:

Module	CP
Planetary Bodies	15
Solar System	15
Hands-On Solar System Physics	15

In the compulsory elective area "Special Courses", modules amounting to at least 15 CP must be completed. For this purpose, at least three modules from the modules listed in the compulsory elective area "Special Courses" (Annex 2) must be taken.

(5) In the research phase, 60 CP must be proven as follows:

Module	CP
Scientific Key Qualifications	10
Literature Research	5
Research Internship	15
Master Thesis	30

§ 4 - Examination and study achievements

(1) The Master's examination consists of the subject examinations of the modules and the Master's thesis.

(2) The modules, qualification objectives, type and scope of the assigned examination or study achievements and the number of assigned credit points are specified in Annex 1. The examination contents result from the qualification objectives of the modules. For their interpretation, the professional requirement may also be used as an alternative.

(3) The provisions of the APO, as amended from time to time, shall apply to the registration, admission, performance and repetition of examinations.

(4) The language of the courses and examinations is generally English. If the course, together with the examination language and examination modalities, is marked as a German-language course in the course catalogue and the module handbook, the course and examination language shall be German. Students have the option of submitting an informal application for an English-language examination to the examination board up to three weeks before the examination date at the latest.

(5) In addition to § 9 (1) of the APO, the following examination and study achievements shall be included:
a) Homework: In homework, subject-specific tasks set by the lecturer in the context of an exercise are worked on independently and in writing by the students and, if necessary, explained orally. Homework can be completed in classroom lectures or in self-study and can also contain programming components. The criteria for successful completion are announced by the lecturer at the beginning of the course.
b) Internship protocol: An internship protocol comprises the description of the structure, implementation and result of an internship carried out, including and evaluating relevant literature. Type and scope are announced at the beginning of the course.

§ 5 - Mentoring system
(1) Each student is assigned a professor as mentor at the beginning of the programme. The change of a mentor is possible at the request of one of the participants.

(2) In the course of the Master's programme, preferably in the first semester, each student must have at least one counselling interview with his or her mentor. The mentor shall issue a certificate of participation in the respective counselling interview, which must be submitted to the examination office by the end of the semester in question.

(3) If less than 30 CP have been achieved by the end of the second semester of study, a further mentoring interview will take place as a compulsory counselling interview in the sense of § 8 (2) APO. In deviation from § 8 (2) P. 2 APO, proof of participation is not a prerequisite for admission to further study and examination achievements.

§ 6 - Master Thesis
(1) The Master Thesis is the final thesis according to § 14 APO. It shall show that the student is able to work on a scientific problem from his/her subject within a given period of time under the guidance of a supervisor and to present the results appropriately.

(2) The candidate shall be given the opportunity to make suggestions for the topic of the Master's thesis.

(3) The topic of the Master's thesis can be assigned by the members of the university teaching staff and the full-time non-scheduled professors and private lecturers of the faculty who represent the subject Solar System Physics. The subject Solar System Physics is represented by those who are active as lecturers in one of the modules of the specialised deepening phase according to § 3 (4), or who were active in the past 3 years before registration of the topic of the Master's thesis. The topic can also be issued by retired professors of the faculty who represent the subject Solar System Physics. With the consent of the examination committee, the topic may also be issued by other persons authorised to conduct

examinations according to § 5 (1) APO. The examiner who has issued the topic (first examiner) is also the supervisor of the thesis. In the case of sentence 3 or sentence 4, the second examiner must be a full-time professor of the faculty and represent the subject Solar System Physics.

(4) Students who have completed at least 60 CP of examinations and study achievements and have been definitively admitted to the Master's degree programme may be admitted to the Master's thesis upon application. The examination board may allow the Master's thesis to be admitted even if less than 60 CP have been completed.

(5) The time from the issue of the topic to the submission of the Master's thesis is a maximum of eight months. The topic can only be returned once and only within the first third of the processing time according to sentence 1. Upon justified application, the examination board may exceptionally extend the processing time by up to 2 months in individual cases.

(6) Only an original thesis may be submitted as a Master's thesis, i.e. a thesis written by the student him/herself, which - also in parts - has not yet been presented in another examination (also not in other departments or faculties).

(7) The Master's thesis shall be written in English. Languages deviating from this may be approved by the examination committee upon application if this appears appropriate due to the topic and/or the person of the examiners. In this case, a summary in English must be included.

(8) The Master's thesis must be submitted in due time.

(9) The Master's thesis is to be evaluated independently by two examiners. If the evaluations of the Master's thesis differ from each other by a grade of 2.3 or more, the examination committee shall request the examiners to reconsider the evaluation of the Master's thesis.

§ 8 - Calculation of the overall grade

(1) The overall grade is calculated as the weighted average of the graded modules according to § 12 (1 – 4) APO. If the overall grade is up to and including 1.1, the grade "with honours" shall be awarded.

§ 9 - Part-time study

(1) In accordance with § 22 of the Matriculation Regulations, the Master's degree programme is suitable for part-time study. Thus, a maximum of 15 credit points can be acquired semester by semester. The application for admission to part-time studies must be addressed to the Admissions Office and must be accompanied by an individual study plan, which must be confirmed by signature of the chairperson of the examination board or a person appointed by him/her. It should be noted that in particular practical courses and experimental exercises that take place over a period of one or more weeks must be attended throughout the entire working day.

§ 10 - Entry into force

(1) These examination regulations shall enter into force on 01.10.2023.

Notes

Notes

Technische Universität Braunschweig



Technische Universität Braunschweig
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