Statutes of the Doctoral School of Physics

Version of 2020-06 Adaptation to new curriculum; Conversion into new format; Specification of mentoring; Specification of the presentation of the doctoral project in the first year of study.

These statutes were written by the coordination team of the Doctoral School of Physics.

The Doctoral School constitutes the formal framework in which the members of the Doctoral School act. The members are made up of the employees with a venia legendi in the associated institutes as well as the assigned doctoral candidates. The coordination team for the Doctoral School, together with the officer responsible for study matters, is responsible for the content-related implementation of the subject-specific details according to § 3 (4) of the currently applicable curriculum.

The curriculum for the Doctoral Programme in Technical Sciences and the curriculum for the Doctoral Programme in Natural Sciences at Graz University of Technology are applicable in the currently valid version. References in this document refer to the version approved on January 15, 2019, which comes into effect on October 1, 2020.

1. Scope of the Doctoral School of Physics

The doctoral programme at the Doctoral School of Physics (German title: Doctoral School für Physik) deals with problems in the technical and natural science field of physics and closely related subject areas. The doctoral programme develops the advanced abilities of the candidates, not only in the natural sciences mentioned and in the field of their research subject, but also in related areas. The training takes place alongside research activities. Students who have been admitted to the programme in accordance with § 2 (1) of the doctoral programme curriculum may be associated with the Doctoral School of Physics independent of their previous degree, as long as the content of their doctoral subject may be classified as belonging to the subject area of physics.

In order to ensure a basic understanding of the subject area, the officer responsible for study matters can, if necessary, determine parts of the curricular workload as an introductory portion to the workings in physics.

2. Academic degree to be awarded

Graduates of the doctoral programme at the Doctoral School of Physics who were admitted to the Doctoral Programme in Technical Sciences are awarded the academic degree “Doctor of Technical Sciences” (abb. Dr. techn.). Graduates who were admitted to the Doctoral Programme in Natural Sciences will be awarded the academic degree “Doctor of Natural Sciences” (abb. Dr.rer.nat.).

It must be determined which of the two studies the doctoral candidate enrols in during the admission procedure for doctoral programme, taking into account the content of the doctoral thesis.

3. Objectives and subject-specific qualification profile

The objectives of the doctoral programme are to develop skills for independent scientific research, to advance knowledge of the graduates in the specific subject area of their doctoral thesis as well as related subject areas, and to provide doctoral candidates with the abilities needed to present and defend research results at the highest level.

Graduates of the Doctoral School of Physics have in-depth knowledge about the areas of their doctoral theses, extensive experience with the application of scientific methods in the technical and natural sciences, skills in presenting and defending research results, and the ability for teamwork. The graduate of this Doctoral School is able to independently implement the latest scientific knowledge from the fields of technical and natural sciences and their areas of application.

4. Subjects of the Doctoral School

a. Associated institutes

The Doctoral School of Physics comprises the following institutes belonging to the subject area of physics as well as associated representatives with teaching qualification from directly related subject areas along with doctoral candidates of the subject area physics. The list of associated institutes currently includes:

- Institute of Experimental Physics
- Institute of Solid State Physics
- Institute of Theoretical and Computational Physics
- Institute of Materials Physics
- Institute of Electron Microscopy and Nanoanalysis

b. Cooperation partners

The Doctoral School is intended as a cooperation with the Institute of Physics of the University of Graz as part of the Faculty of Natural Sciences NAWI. The cooperation is established within the framework of the joint bachelor's and master's degree programmes. Students at both universities can and are encouraged to take the courses offered by the partner university. The "Advanced Physics Seminar for Doctoral Students" will be held jointly according to § 6 (3) Z.2 of the curriculum.

Habilitated and appointed professors from Graz University of Technology and the University of Graz can apply for membership in the Doctoral School of Physics with the officer responsible for study matters in consultation with the coordination team.

5. Structure and tasks of the coordination team

The Doctoral School of Physics is headed by a coordination team, which is made up of one representative of the professors, one representative of the non-professorial teaching staff (habilitated) and one representative of the doctoral candidates of the subject area of physics. The members of the coordination team of the Doctoral School of Physics are nominated by their respective peers. The coordination team elects a chairperson and a deputy chairperson.

The coordination team assumes the tasks specified in the curriculum for the Doctoral Programme in Technical Sciences and in the curriculum for the Doctoral Programme in Natural Sciences at Graz University of Technology.

Officer(s) responsible for study matters

For the Doctoral School of Physics, the duties of the officer responsible for study matters are usually assumed by the Dean of Studies responsible for the Master's Degree Programme Technical Physics (in accordance with § 2 of the Excerpt of Statutes Organisation of Academic Affairs (Officers) at Graz University of Technology).

When making decisions on doctoral candidates under their own supervision, the officer responsible for study matters is required to recuse himself/herself from their tasks as officer responsible for study matters due to possible conflicts of interest (see (7) of the Graz University of Graz's Code of Conduct) and allow their deputy to take over.

Doctoral candidate representative in the coordination team

The doctoral candidates of the Doctoral School elect a representative and a deputy representative for a two-year term. The representative participates in the preparation of the course plans for "Scientific Methods" and the doctoral seminar. The representative has the right to be heard in the event of disagreement (as outlined in § 4 (8) of the curriculum).

6. Guidelines for supervision and mentoring

Educational agreement

At the beginning of the doctoral programme, the doctoral candidate and the supervisor jointly sign an educational agreement that must be uploaded on TUGonline under "Mein Doktorat" (My Doctoral Programme) and must be confirmed by the supervisor. The educational agreement must be accompanied by a brief description of the doctoral project.

Mentoring

The doctoral candidate has the right to a mentor. Mentors should come from the Doctoral School environment and have earned at least a doctorate or equivalent academic degree. They do not have to be explicitly affiliated with the Doctoral School of Physics or Graz University of Technology (e.g. mentor from cooperating company).

Students can request a mentor from the coordination team at any time. If no specific person is requested by the doctoral candidate, the coordination team will look for a suitable person together with the doctoral candidate.

Mentoring should aim to provide informal and confidential support to the doctoral candidate. The mentors should support the mentees in making progress with their studies and in dealing with the supervisor throughout the entire duration of the doctoral programme.

To maintain confidentiality, both the mentor and the mentee must sign a separate non-disclosure agreement before mentoring begins.

Supervision dialogues

The supervisor must conduct a formal dialogue with the doctoral candidate at least once a year, in which the progress of work is discussed and the goals for the following year are set. This dialogue is the basis of the progress report, which must be prepared by the doctoral candidate.

Progress report

Doctoral candidates have to upload a progress report in TUGonline via "Mein Doktorat" (My Doctoral Programme) once a year. The progress report should reflect on the successes/failures and personal development in the past year and provide an outlook on the following year. The form to be used for the progress report is provided on the website of the Dean's Office for Physics on TU4U, the intranet of Graz University of Technology. A list of the courses selected for the curricular workload of the doctoral programme must be submitted along with the first progress report (no later than 12 months after the start of the doctoral project). Further progress reports must indicate the progress made regarding the completion of these courses and include an adapted course list if necessary.

7. Instructional classes

The scope of the curricular workload totals 14 semester course hours per week (SWS) and consists of subject-specific basic courses totalling 6-8 SWS, courses from Soft Skills totalling 0-2 SWS, the course "Scientific Methods" (2 SWS), the "Advanced Physics Seminar for Doctoral Students" (2 SWS) and an exclusive tutorial for doctoral programmes totalling 2 SWS (§ 6 (4) of the curriculum). It should be mentioned once again that the course offer of the University of Graz is also available.

a. Subject-specific basic courses (6-8 SWS)

The course catalogue for subject-specific basic courses includes all courses (with the exception of those of the bachelor's programme) offered at the institutes associated with the Doctoral School and commissioned by the Dean of Studies. Each doctoral candidate must submit a list of the courses selected for the curricular workload, which must then be discussed with the supervisor and confirmed by the Dean of Studies. This list of the courses selected should include courses both relevant for and supporting the work on the doctoral thesis. To support the concept of a broad basic educational foundation at a high level, doctoral candidates are strongly discouraged from choosing only lectures that are given at the institute of their supervisor.

It is expressly stated that doctoral candidates also have the option of choosing courses from outside the course catalogue of the Doctoral School (see § 6 (2) 4 of the curriculum).

Examinations completed at recognised national or international post-secondary educational institutions, universities or non-university research institutions (for instance summer

schools or specialist courses) may also be approved by the officer responsible for study matters if equivalence is met. Courses that doctoral candidates have already completed as part of their master's degree programme are not admissible.

b. Scientific Methods and Communication (4-6 SWS)

i. The course Scientific Work (2 SWS) imparts knowledge and skills useful for a scientific career.

ii. In the course Advanced Physics Seminar for Doctoral Students (2 SWS), this knowledge is expanded upon using practical exercises to teach doctoral candidates how to present and defend their research results. The seminar is held at least twice a year in the form of a DocDay. All doctoral candidates and all members of the Doctoral School are invited to participate. As part of these events, all doctoral candidates are to present their research project in poster form within the first year as well as their research achievements at the end of their doctoral programme in the form of a presentation.

iii. The possibility is also provided to complete courses on soft skills within a maximum total of 2 SWS. This reduces the required total of the subject-specific basic courses by up to 2 SWS. A current list of possible courses is available on the intranet-site (TU4U) of the Dean's Office of the Faculty of Mathematics, Physics and Geodesy.

Upon request, other courses with corresponding course content may be accepted by the officer responsible for study matters.

c. Exclusive tutorial for doctoral programmes (2 SWS)

The exclusive tutorial for doctoral candidates is offered by all teaching staff with a teaching qualification and aims to provide personal supervision of the doctoral candidate by the supervisor.

8. Publication guidelines at the Doctoral School

Every doctoral candidate must provide evidence of at least one publication on the subject of the doctoral thesis in an internationally refereed scientific journal. The acceptance for publication shall be deemed sufficient as proof of publication. The coordination team may, together with the officer responsible for study matters, also accept a publication in international conference proceedings, subject to a majority vote. If no publication exists, at least three reviews must be obtained for the assessment of the doctoral thesis.

9. Guidelines for the doctoral thesis

It is strongly recommended to write the doctoral thesis in English.

The doctoral candidate must submit a list of recommended reviewers to the coordination team of the Doctoral School of Physics at the latest eight weeks before submitting the doctoral thesis and after consultation with the supervisor. The proposal is to be accompanied by a list of the doctoral candidate's own published works and works possibly still in progress of being accepted for scientific publication, which are to be used for the doctoral thesis. After a pre-selection by the coordination team, all evaluators must familiarise themselves with the preliminary version of the doctoral thesis. This enables the doctoral candidate to take any suggestions for improvement into consideration in good time.

The final version of the doctoral thesis must be submitted to the Dean's Office no later than eight weeks before the oral examination.

A current checklist for the completion of studies process is available on the intranet-site (TU4U) of the Dean’s Office of the Faculty of Mathematics, Physics and Geodesy.

10. Guidelines for the assessment of the doctoral thesis

In accordance with § 31 (4) of the Excerpt of Statutes Legal Regulations for Academic Affairs, the doctoral thesis is assessed by two evaluators, at least one of which must not be an employee of Graz University of Technology. If no publication exists according to point (8), at least three evaluators must assess the doctoral thesis. The pre-selection of the evaluators according to § 5 (2) of the curriculum is carried out by the coordination team members of the Doctoral School.

The habilitated members of the Doctoral School must be informed of the pre-selection and have the option of giving their opinion on the selection. Pre-selection of the evaluators should be completed at least 8 weeks before submitting the doctoral thesis.

11. Guidelines for the doctoral examination

a. Guidelines for the doctoral examination process

The doctoral examination consists of two parts, these are (i) a presentation with a maximum length of approx. 30 minutes followed by a discussion and (ii) an oral exam by the board of examiners with a maximum length of 1 hour on the subject area of the doctoral thesis.

It is possible for external examiners to join the doctoral examination remotely using digital media. However, this requires the consent of the entire board of examiners. Furthermore, the reliability of the technical method used must be tested in advance.

b. Structure of the board of examiners

The composition of the board of examiners is defined under § 7 (1) and (2) of the currently valid curriculum. Evaluators do not have to be members of the board of examiners.

12. Confidentiality agreement

The habilitated members of the Doctoral School of Physics and the doctoral candidate representative on the coordination team must provide a written confidentiality agreement. This

agreement refers in particular to (i) reports and statements issued by the doctoral candidate and his/her supervisor (§ 4 (4, 6) of the curriculum), (ii) any aspects regarding the assessment of a doctoral thesis (§ 5 (2) of the curriculum), and (iii) the overall scope of the doctoral project and the doctoral thesis as whole, if access to the doctoral thesis is blocked or restricted by the officer responsible for study matters (§ 5 (1, 7) of the curriculum).

13. Transitional arrangement

The present statutes are applicable to doctoral candidates who are subject to the curriculum for the Doctoral Programme in Technical Sciences and the curriculum for the Doctoral Programme in Natural Sciences at Graz University of Technology, version 2019, which came into effect on October 1, 2020.

Full-time doctoral candidates who began the Doctoral Programme in Technical Sciences or the Doctoral Programme in Natural Sciences at Graz University of Technology before October 1, 2020 and did not submit to the curriculum in the 2019 version are entitled to continue and complete their doctoral programme in accordance with the statutes that were previously valid until September 30, 2024.