

Quality Assurance Plan of the Doctoral School of Physics

The quality assurance plan of the Doctoral School of Physics at the University of Szeged is based on the principles and rules set out in the documents: “REGULATIONS GOVERNING THE DOCTORAL TRAINING PROGRAMMES AND THE AWARDING OF THE DOCTORAL DEGREE” and “Quality Assurance Guidelines for Doctoral Training and the Awarding of the Doctoral Degree at the University of Szeged”.

1. Quality Assurance in the Doctoral Training

General provisions:

- The operation of the doctoral school is described in terms of regulations, which are available both on the websites of the Doctoral School of Physics and of the Hungarian Doctoral Council.
- There is at least one Doctoral Council of Physics meeting in each semester. The participants of the Doctoral Council meeting are *i)* the head or the deputy head of the doctoral school, chairing the council, *ii)* the leaders of the education programs or their deputies, *iii)* the secretary of the doctoral school or his/her deputy, *iv)* the core members of the doctoral school are permanent participants of the meetings.
- The Doctoral Council approves both the training regulations and the quality assurance plan of the doctoral school. These are reviewed on yearly basis.
- The Doctoral Council approves the annual report of the doctoral school.
- The leaders of the doctoral programs are members of the council responsible for managing the doctoral school. The program leaders present any emerging proposal from supervisors and doctoral students in the framework of the program to the Doctoral Council.
- Annual reports of the doctoral school are presented on the webpage of the school.
- The regulations of the doctoral school are available on the webpage of the doctoral school.
- Doctoral students are allowed to formally complain to the head of the doctoral school, the doctoral program leaders, or the secretary of the doctoral school. In the event of a complaint, the head of the doctoral school or the head of the corresponding doctoral program is entitled to act. The head of the doctoral school, the corresponding program leader and the secretary of

the doctoral school have authority in matters concerning the doctoral formation of the student.

Rules related to the supervisors and lecturers:

- The council of the doctoral school checks the suitability of core members of the doctoral school and of the operating conditions annually, and decides on the necessary changes.
- The supervisors and lecturers are approved by the Doctoral Council following the procedures:
 - The prospective supervisor (either internal or external) submits an admission application to the secretary of the doctoral school, attaching his/her CV, publication list (which can be a MTMT link) and a description of the doctoral topic to be announced. The supervisor must have a PhD or an equivalent academic degree. The minimum publication requirement of the doctoral school for the future supervisor is to have at least five articles (to which the supervisor made an important contribution) in the last five years related to the doctoral topic to be announced, all published in high-impact, prestigious, international journals (ODT requirement). Once the supervisor is admitted to the doctoral school, the supervisor may announce new doctoral topics, provided the publication requirements are met. The supervisor must announce the doctoral topics on the ODT website (doktori.hu).
 - The prospective lecturer submits an admission application to the secretary of the doctoral school, to which he/she encloses the CV, a list of publications (this can be a MTMT link), and the description of the doctoral course to be announced. The lecturer must have a PhD or an equivalent academic degree. Once the lecturer is admitted to the doctoral school, the lecturer can announce courses. The lecturer reports the doctoral course to be announced to the secretary of the doctoral school during the course announcement period of the semester.
- The doctoral topics and courses belong to different doctoral programs. The leader of the doctoral program reviews the supervisors and lecturers annually and proposes the necessary changes to the Doctoral Council. The doctoral program leaders annually review the doctoral topics.
- The doctoral school will provide the students with high-level theoretical and practical knowledge for their doctoral studies through careful selection of supervisors and lecturers.
- The student can initiate the change of the supervisor by submitting a request to the secretary, attaching supporting letters of both the new and previous supervisors. The doctoral school's council approves the change of supervisor.

- The school notifies the Doctoral Council of the Natural Science and Engineering about the new supervisors, lecturers and supervisor changes and registers them in the “ODT” database (doktori.hu).
- The heads of departments have insight into the opinions of students attending the doctoral courses. The doctoral program leaders and the department heads discuss the opinions received and, in relevant cases, make proposals for development of the course to the lecturer.

2. Quality Assurance During the Doctoral Admission Procedure

- The doctoral school’s council approves the doctoral admission committee, which consists of at least three members, all of whom have a PhD or an equivalent academic degree. The chair of the admission committee is member of the doctoral school's council, while the additional committee members are selected from the supervisors and lecturers registered for the doctoral school in the ODT database. The prospective doctoral supervisor of an applicant cannot be member of the admission committee. The exception to this last rule is the composition of the Stipendium Hungaricum Scholarship admission committee, where the future supervisors are usually also among the members of the committee.
- The examination for admission to the doctoral school takes place in person. If this is not possible, the admission exam can also be online. The admission committee designates the online platform.
- The applicant must request letters of recommendation from two professionally competent lecturers or researchers. These letters are sent to the admission committee. One of the recommenders must be the prospective supervisor.
- The admission point system can be found on the school's website. The criteria for admission are:
 - MSc (or equivalent) degree.
 - Documented scientific work,
 - Successful oral admission exam, which consists of two parts: i) an exam based on a list of topics and ii) a presentation of previous scientific work.

The selection is according to a list based on the unified point system, approved by the Doctoral Council of the Natural Science and Engineering:

- Qualifications of the BSc and MSc degrees:

max. 25 points if the graduation was within 3 years: $(\text{BSc average} - 3.5) * 20/3 + (\text{MSc average} - 3.5) * 10$

max. 20 points if the graduation was more than 3 years ago: $(\text{BSc average} - 3.5) * 16/3 + (\text{MSc average} - 3.5) * 8$

- **Scientific achievements:** max. 25 points if the graduation was within 3 years, and max. 30 points if the graduation was more than 3 years ago (the detailed point system can be found on the website of the doctoral school)
 - OTDK awards: 14 - 20 points
 - International refereed publications: 10 - 20 points
 - International conference publications: 5 - 13 points
 - Publications in Hungarian: 5 - 10 points
 - Patents: 1 - 20 points
- **Oral examination:** max. 30 points.
- **Language examination certificates**

3. Quality assurance during the doctoral training

- The doctoral student discusses the courses to be taken with his/her supervisor. It is the task of the supervisor to introduce research methods and ensure access to the necessary research materials.
- The doctoral student reports on her/his research annually as a part of the work report course.
- The doctoral student regularly reports on the progress of his/her studies to the supervisor. Furthermore, the student reports how many credits he earned during his active semesters to the secretary of the doctoral school. The latter serves as the primary data source on the drop out rate.
- Students have the opportunity to participate in ERASMUS study trips. In this case, they can contact the institute's ERASMUS officer. As far as possible, the supervisors help the students to get involved in the international academic life. It is also the supervisor's task to introduce high-quality scientific journals related to the student's research topic and to encourage publishing in them.
- The supervisor helps the students in the high-quality phrasing of the scientific results, as well as in choosing the most suitable journal for publication.
- The supervisor helps the students in uploading the scientific publications to the SZTE repository and MTMT.
- During the regular 2+2 year training, a complex exam should be taken by those students who have obtained at least 90 cumulative credits and completed at least 5 professionally relevant courses finished with a colloquium. In the case of students pursuing individual studies, there are no credit and course requirements, they should take the complex exam in the first semester of their training. The complex exam subjects and exam requirements are selected

individually for the examiner, taking into account the topic of the student's research work. Based on the decision of the doctoral school's council, the secretary submits a proposal for the examination subjects and examination committee to Doctoral Council of the Natural Science and Engineering. The list and content of subjects for the complex exam are available on the website of the doctoral school. Additional rules:

- In the regular 2+2 training, the PhD students are required to take a complex exam on one major and one minor subject, while during the individual preparation they have to take this exam on one major and two minor subjects.
 - The examination committee consists of at least three members; all of them having a PhD or an equivalent academic degree. The supervisor cannot be the member of this committee. The chair of the committee is a professionally competent professor of the university, or professor emeritus, or a lecturer or researcher with the title of Doctor of the Hungarian Academy of Sciences.
 - During the complex exam, the student reports on her/his research.
 - The supervisor submits a written evaluation of the student to the chair of the examination committee.
- Data on the drop out rate is provided by the annual student reports. The secretary shares this data with the doctoral school's council. The secretary will contact the student who falls behind.
 - The program leaders review the doctoral courses annually.

4. Quality assurance requirements during the procedure to obtain a doctoral degree

- The formal requirement for submitting a doctoral thesis for the candidate is to obtain an absolution in the doctoral school and at least two peer-reviewed articles published or accepted for publication in recognized international journals (having nonzero impact factor), which serve as the basis of the thesis. Furthermore, the candidate must be the main author of at least one of these articles.
- The condition for obtaining the absolution is the achievement of at least 240 cumulative credits in the doctoral school and the successful completion of the complex exam.
- The candidate must send the dissertation together with the thesis booklets electronically to the secretary of the doctoral school.
- The dissertation can be written in either Hungarian or English, with length between 40 and 120 pages (this does not include the appendices, the reference list and the full-page

figures). In the case of a dissertation in Hungarian, the thesis must contain a short summary in English. The dissertation should be prepared in such a way that the reviewers can clearly understand the candidate's scientific work. The thesis must contain the scientific background, antecedents, the purpose of the research, the results with their interpretations and the conclusions.

- A 10-15 pages thesis booklet must be attached to the dissertation. It must include a brief summary of the background of the research, the methods used and the results achieved. In the thesis points, it is necessary to indicate where the described result was published. The supervisor must check the thesis points. According to the university doctoral regulations, a statement of co-authorship must be attached to the thesis booklet. In this, the living co-authors declare that the candidate had a decisive scientific role in achieving the results presented in the thesis points, and they did not and will not use them to obtain a scientific degree. It is not necessary to request a declaration of co-authorship from who did not work in Hungary.
- When a doctoral thesis is submitted, the secretary of the doctoral school appoints a referee from among the members of the doctoral school's council, who checks the fulfillment of the required formal and publication requirements, presents the application to the council and proposes whether it can be supported. Based on this referee opinion, the doctoral school proposes the composition of the thesis defense committee by open voting.
- The doctoral thesis defense committee consists of the chairman, two reviewers (one of them being an external specialist) and additional two to four members (hence 5-7 members in total). At least one third of the committee members should be external scientist. Only those with a scientific degree can be members of the committee. One member of the committee performs the secretarial duties during the defense. The chairman of the council of the doctoral school is a professor, or professor emeritus, or a lecturer or researcher with the title of Doctor of the Hungarian Academy of Sciences, competent in the field of research of the thesis. A person who is not expected to judge the defense objectively may not participate in the doctoral process as an official reviewer or committee member. No member of the committee may have joint publications with the doctoral candidate. The supervisor of the candidate cannot be a member of the committee.
- The secretary forwards the proposal of the Doctoral Council for the evaluation committee to the Doctoral Council of the Natural Science and Engineering.
- The doctoral defense takes place publicly, in front of a professional audience. Anyone can view the dissertation. Anyone can ask the candidate questions, either in writing beforehand or orally during the defense.
- The defense can take place in either Hungarian or English.
- Following the defense, the Doctoral Council listens to the report presented by a member of the defense committee. Then, the members of the Doctoral Council with voting rights vote secretly on whether they support the candidate's degree. Voting options are yes or no, the support threshold being the yes vote attaining at least 2/3 of the votes. In the

cases when the defense evaluation reached 90%, the council voting can be done electronically.

- The PhD degree is awarded by the University Doctoral Council, based on the proposals of the defense committee, of the Doctoral Council of Physics and of the Doctoral Council of the Natural Science and Engineering.