

Quality Assurance Plan

The **Doctoral School of Physics (Doctoral School of Physics)** operates in accordance with the *Doctoral Regulations of the University of Pécs (PTE)*, the *Regulations of the Doctoral Council of the Faculty of Science*, and, through these, the higher-level regulations.

The regulations — including the *Doctoral School of Physics Regulations and Training Plan* — define the organizational framework of the PhD program, as well as the requirements for the admission of applicants and the procedures for obtaining the PhD degree.

Based on the main principles and control points related to each section, the responsibilities and duties of decision-makers are elaborated in detail.

1. Mission of the Doctoral School

The mission of Doctoral School of Physics is to train future researchers and educators in the fields of physics, as well as developers who apply the knowledge and methods of physical sciences at a high level and in an innovative way, to serve the needs of society.

The mission of Doctoral School of Physics is to educate physicists in both applied and fundamental research who are capable of conducting high-quality R&D work at leading universities, research institutes, development centers, and divisions around the world.

2. General Objectives of the Doctoral School

- **High-level scientific achievements** of doctoral students. Program-specific criteria regarding the quality and quantity of publications are set by the Doctoral School of Physics Regulations.
- **High-quality training and supervision.** This is reflected in the national and international recognition of the supervisors and lecturers, their professional networks, and their scientific qualifications, supported by scientometric indicators.
- **Successful completion of the doctoral degree.** The main components of this are the timely completion of the PhD process and the minimization of dropout rates.

Beyond these general goals, before the start of each academic year, the Doctoral Council formulates and approves verifiable *quality objectives* to be achieved by a set deadline, and monitors their implementation. These are recorded in a separate document. More detailed objectives are contained in the *Quality Policy Document*.

3. Announcement of Doctoral Research Topics

Each year (February–March), the Doctoral School invites PhD topic proposals from the participating organizational units and collaborating research institutes. For each topic, the proposers must provide their personal data as well. The Doctoral School of Physics Council evaluates all proposals and approves only those for which the intellectual and infrastructural background of the research is ensured, and where it is realistic to expect a high-quality dissertation within 3–4 years.

Supervision at external research sites is only possible in institutions that have a cooperation agreement with the Doctoral School, where the student's employment status is regulated and their rights and obligations are clearly defined.

Topic selection and research direction are free, limited only by scientific soundness and alignment with the Doctoral School of Physics profile.

Active research activity is a key expectation of topic proposers. The suitability of supervisors is evaluated in accordance with the principles of the *Hungarian Accreditation Committee (MAB)* at the

time of topic proposal. Evaluations of previous supervision records help prevent students from being assigned to supervisors with repeatedly unsuccessful outcomes.

Approved topics and supervisor data sheets are available on the www.doktori.hu website and the Doctoral School's homepage. Admission requirements and the list of admitted students are also published and regularly updated on the website.

An individual becomes a **supervisor** when a student applying for their announced topic is admitted and enrolls in the doctoral school. Normally, a supervisor may supervise no more than three PhD students, except in duly justified cases.

4. Admission to the Doctoral Program

After applying, candidates take part in an admission interview, which is evaluated by an *Admission Committee* appointed by the Doctoral School of Physics Council. The aim is to assess the applicant's preparedness and to make a ranked admission recommendation. The professional aptitude points awarded partly assess the applicant's familiarity with the chosen topic.

Using the scoring system set out in the *Doctoral School of Physics Regulations*, the admission procedure ensures that the best-performing students — those with outstanding academic records and prior student research achievements — are admitted. Candidates are ranked by total score, and the most talented are admitted accordingly. Based on the Council's recommendation, the Faculty's Doctoral and Habilitation Council (TDHT) decides on the allocation of state scholarships.

5. Doctoral Training

High-level participation in research is jointly ensured by supervisors and lecturers. The entire staff of the Doctoral School is responsible for providing all students with access to the necessary infrastructural and material conditions. The Doctoral School of Physics Council monitors the compliance of supervisors and lecturers with the requirements established by the MAB.

Lectures announced by instructors are approved by the Doctoral School of Physics Council according to the Training Plan. The range and content of lectures are updated annually; new courses are introduced by the instructors and supervised by the Council. Completion of credit-based courses is verified by program directors.

Each lecturer determines the method of assessment for their course, subject to review by the Doctoral School of Physics Council. Theoretical courses are considered completed when the student passes an examination with a grade of "Pass" before the instructor. In case of failure, one retake is allowed. Practical courses are considered completed when the instructor confirms active and successful participation.

At the end of the first two semesters, students must submit a written report or present their progress at an institutional seminar. Based on these, and the results of the comprehensive exam after the first four semesters, the Doctoral School of Physics Council continuously monitors both the PhD students' and supervisors' performance. In cases of unsatisfactory progress, the Council provides professional feedback and guidance.

Participation in professional evaluation within the national and international community is ensured through conference attendance prescribed by supervisors. Supervisors must encourage participation in international training programs and professional internships.

The Doctoral School of Physics Council oversees the annual review of research topics. The acquisition of new instruments, books, and databases, as well as continuous improvement of infrastructure, are the responsibilities of the head and core members of the School. Members are also expected to facilitate the invitation of guest lecturers from Hungary and abroad.

For individual (non-program-based) PhD candidates, the initiation of the degree procedure is permitted once the professional requirements set by the Doctoral School of Physics Council have been met.

6. Student Performance and Progress

The fundamental measure of student performance is credit points, approved by the Head of Doctoral School of Physics and forwarded to the academic coordinator, who ensures their registration in the electronic system (NEPTUN).

Further components of successful student progress include the end-of-first-year report and the comprehensive exam, both verified by the Head of Doctoral School of Physics and reported to the coordinator.

Students must maintain up-to-date records of their publications in the MTMT and doktori.hu databases.

7. Data Collection and Analysis

The scope of data to be collected and made public regarding students is determined by the Council of the Doctoral School, and recorded in the minutes.

The implementation of data collection and analysis processes is monitored by the Council of the Doctoral School.

8. Requirements of the Doctoral Degree Procedure

The quality assurance rules of the PhD degree awarding process are set out in the Doctoral Regulations of the University of Pécs (PTE).

The publication requirements of the Doctoral School of Physics are as follows:

At least two publications in peer-reviewed journals with an impact factor, classified in Q1–Q4 according to Scimago, are required—either published or accepted for publication. The combined impact factor of these publications must be at least 2. Furthermore, if the research field allows, the candidate must be the first author of at least one of the publications.

For the “*Scientist–Teacher Training*” program, the requirement is at least two publications published or accepted in Q1–Q4 journals according to Scimago, or journals classified as A–D by the relevant section of the Hungarian Academy of Sciences (MTA); alternatively, an independently reviewed monograph or a book chapter in a peer-reviewed volume may fulfill the requirement.

The student must demonstrate active participation in professional events and submit a dissertation that reflects a coherent scientific concept.

The doctoral dissertation is reviewed by two official reviewers (opponents), at least one of whom must be independent of the University of Pécs.

The theses of the dissertation must be defended before a defense committee that includes at least one external member.

Language exam requirements for PhD students are governed by the Doctoral School of Physics Regulations.

9. Systematic Integration of Student Feedback

In the self-assessment process of the Doctoral School, special emphasis is placed on the regular collection and analysis of feedback from students and external stakeholders (contracted lecturers and supervisors).

For student feedback, the process is coordinated by the OMHV Committee (Student Evaluation of Teaching Committee).

These evaluations assess not only the performance of lecturers and supervisors, but also serve as a basis for continuous improvement of the training and educational system. Student expectations help fine-tune the curriculum and communication processes.

The Doctoral School also continuously monitors the employment data of its graduates.

10. Ensuring Academic Integrity and Ethical Compliance

A key component of quality assurance is the protection of academic integrity, which includes the prevention of plagiarism and the enforcement of ethical standards.

To this end, the Doctoral School requires doctoral students to submit a declaration of originality and provides access to plagiarism detection software (e.g. *Turnitin*) to safeguard the authenticity of scientific results and uphold research ethics.

11. Quality Assurance for Core Members, Supervisors, and Lecturers

According to Section 20 (1b) of Annex 13 of the PTE Organizational and Operational Regulations (SzMSz), Doctoral Regulations, the Doctoral Office periodically reviews the data of doctoral schools recorded in the National Doctoral Database, focusing mainly on compliance with core membership requirements.

It is the responsibility of the Doctoral Council to monitor the ages of core members and ensure that replacements are prepared well before reaching the age limit, ideally before any automatic warning is issued by the Doctoral Office.

The professional performance criteria for core members, supervisors, and lecturers are defined in the Doctoral School of Physics Regulations.

12. Processes of the Doctoral School's Quality Management System

The fundamental principle of the Doctoral School's quality management system is that not only the final output (the awarded doctoral degrees), but the entire training, research, and degree-awarding process is subject to quality and compliance evaluation.

These processes include: admission, training, and degree awarding.

To ensure traceability, it is essential to maintain individual student records in admission minutes, registers, and electronically in the university's academic system (NEPTUN), as well as in the minutes of the comprehensive examination, workplace and public defenses. Additionally, minutes must be taken of all council meetings, and correspondence must be registered and archived.

A key part of quality management is quality assurance, which focuses on the training activities, their compliance, and their ability to guarantee quality. It encompasses all factors that may affect the quality of the awarded doctoral diploma.

The fundamental objective is to preserve and improve the quality of training and degree awarding.

The following quality assurance requirements apply to the Doctoral School:

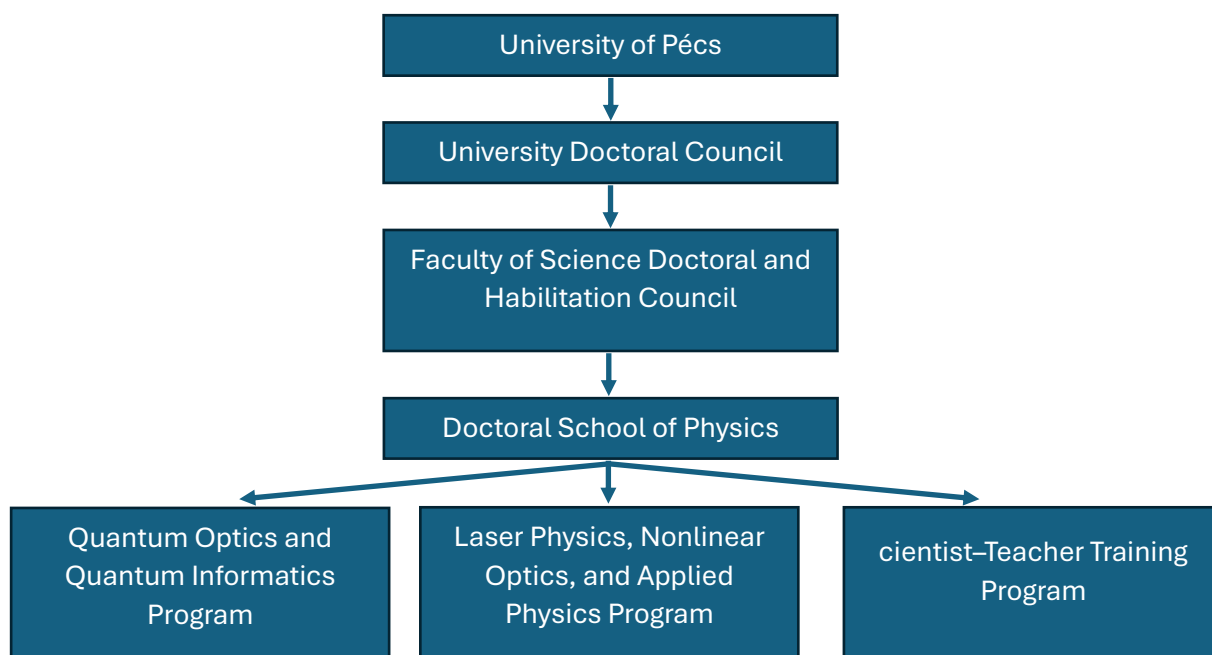
- Work must be carried out according to pre-planned, written training and research plans, as well as official working plans and instructions.
- Inspections must be performed before, during, and after the training.
- All activities must be continuously and traceably documented.

The individual steps of the quality assurance process — including the awarding of the doctoral degree — are based on quality control, since the system becomes complete only through proper verification.

The responsible persons and bodies authorized for quality management and control throughout the training and degree-awarding processes are summarized in Table 1.

Table 1. Quality Management and Control System of the Doctoral School (Doctoral School of Physics) During the Training and Degree Awarding Process

Management	Process		Control
Training and Research Phase			
	Education	Research	
Supervisors	Training Plan	Research Plan	Doctoral School of Physics Council
Program Directors and Secretary of Doctoral School of Physics	Course instruction and supervision	Literature review, research, evaluation of results	Head of Doctoral School of Physics
Supervisors and Heads of Organizational Units	Independent professional development and teaching activities		Head of Doctoral School of Physics, Program Directors
Head of Doctoral School of Physics and Doctoral School of Physics Council	Comprehensive Examination		Doctoral School of Physics Council
Research and Dissertation Phase			
	Education	Research	
Supervisors	Training Plan	Research Plan	Doctoral School of Physics Council
Program Directors and Secretary of Doctoral School of Physics	Course instruction and supervision	Literature review, research, evaluation of results	Head of Doctoral School of Physics
Supervisors and Heads of Organizational Units	Independent professional development and teaching activities	Publication, conference presentations	Head of Doctoral School of Physics, Program Directors
Head of Doctoral School of Physics	Admission to the degree procedure		Doctoral School of Physics Council, TDHT (Faculty Doctoral and Habilitation Council)
Supervisors and Heads of Organizational Units	Dissertation and internal (workplace) defense		Head of Doctoral School of Physics
Head of Doctoral School of Physics, TDHT	Public defense		TDHT, University Doctoral Council (UDC)
Chair of the University Doctoral Council	Awarding of the degree		University Doctoral Council, Rector



Organizational Chart (Organogram)

Public Access to Data and Documents

The Doctoral School publishes the following documents and data related to its operation on its official website:

- a) The Organizational and Operational Regulations of the Doctoral School, which are also published in the National Doctoral Database (ODT Database) at <http://doktori.hu>;
- b) Training Plan;
- c) Quality Policy;
- d) Quality Assurance Plan;
- e) Quality Objectives and Their Evaluation;
- f) Organizational Structure (Organogram);
- g) Doctoral Regulations of the University of Pécs;
- h) Study and Examination Regulations of the University of Pécs;
- i) Regulations on Fees and Allowances of the University of Pécs;
- j) The tuition fees for each doctoral training program.

The doctoral dissertation and theses are recorded and stored in full-text electronic form in a dedicated database, within the Doctoral Repository of the University of Pécs Library's Institutional Repository (Pécsi Egyetemi Archívum – PEA).

The Doctoral School ensures that the repository is updated before the defense procedure. Following data management by the Library, the dissertation and its theses are placed in the "Dissertations Pending Defense" collection of the PEA.

In addition to archiving in the repository, the Doctoral School ensures that the dissertation (in the language of the public defense) and its theses (in Hungarian and English, or in other languages as appropriate to the scientific field) are made publicly accessible via the University's website and through the link provided on www.doktori.hu.