

Quality Assurance Plan – SZTE Doctoral School of Mathematics

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1. Identification Data of the Doctoral School

1. Name of the doctoral school
 - in Hungarian: Matematika Doktori Iskola
 - in English: Doctoral School of Mathematics
2. Field of science: natural sciences
3. Discipline: mathematics and computer science
4. MAB identifier: 120
5. Research area: mathematics as a whole, its applications, mathematics didactics
6. Institution: University of Szeged, Faculty of Science and Informatics
7. Headquarters: Bolyai Institute, University of Szeged, Aradi vértanúk tere 1, H-6720 Szeged, Hungary
8. Website: <https://www.math.u-szeged.hu/phd/>
9. Year of establishment: 2002.

2. Regulatory Background of the Operation of the Doctoral School

The operation of the Doctoral School of Mathematics (DSM) is directed by the **Regulations on Doctoral Training and Doctoral Degree Acquisition of the University of Szeged** (EDSz) and the **Operational Regulations of the SZTE Doctoral School of Mathematics**, under the authority of the **Council of the Doctoral School of Mathematics** (DSM-C). The DSM-C is responsible for ensuring the high quality of doctoral training and degree acquisition, as well as for providing students access to the intellectual and material conditions of cooperating institutions participating in the training.

3. Quality Assurance Plan

3.1. Regulations and Procedures Ensuring the Operation of the DSM

The doctoral school ensures the high standard of doctoral training and degree acquisition procedures in all phases (admission, doctoral studies, acquisition of degree) by following the aspects defined in the **Quality Assurance Plan**. It also adheres to the principles set out in the document titled "**Quality Assurance Guidelines for Doctoral Training and Degree Acquisition at the University of Szeged**".

The admission and study requirements of the doctoral school are governed by the **Regulations on Doctoral Training and Degree Acquisition of the University of Szeged**, the **Discipline-specific Doctoral Regulations**, and the **Operational Regulations of the Doctoral School of Mathematics**.

The doctoral school regularly, and prior to accreditation, reviews its regulations; any modifications are approved by the DSM-C and submitted to the Discipline-specific Doctoral Council (DDC).

Each year, the DSM-C evaluates the operation of the doctoral school based on quality assurance criteria. The annual quality assurance reports of doctoral schools include experiences regarding admission procedures, complex exams, and completed defenses. The quality assurance officer is the secretary of the DSM.

The doctoral school preserves the quality assurance report in electronic form.

Students may submit their comments or complaints to the head of the doctoral school, who may forward them to the DSM council, respond directly, or make a decision if necessary.

Upon the proposal of the head of the Doctoral School of Mathematics, the DSM-C recommends core members; in case of agreement from the DDC, the University Doctoral Council (UDC) votes and makes the final decision.

Regarding supervisors for the doctoral school, based on submitted materials by applicants for supervision positions, the head of the Doctoral School of Mathematics makes recommendations, which are then voted on by the DSM-C.

The doctoral school regularly, and prior to the current MAB accreditation, reviews the composition of core members and teaching staff.

DSM documents are available on the doctoral school's website (<https://www.math.u-szeged.hu/phd/>) and the official website of the Hungarian Doctoral Council (HDC) (<https://doktori.hu>).

3.2. Announcement of Doctoral Topics

PhD topics are announced every year in December. The announced topics are valid for one year. The DSM-C evaluates each topic, and only grants permission for the announcement on the HDC platform if the scientific and infrastructural background for the research is assured and it is considered realistic that a high-quality dissertation can be submitted within three years following the complex exam.

Supervision at an external research facility is possible only at institutions that have signed a cooperation agreement with the DSM. The DSM-C may permit external or dual supervision.

A key expectation for topic proposers is active research activity: it is desirable that the publication metrics for the five years preceding the announcement of the topic significantly exceed the publication requirements set by the doctoral school for degree acquisition. The DSM-C evaluates previous supervision by the topic proposers to ensure students have supervisors who provide effective guidance.

A topic proposer becomes a supervisor if a student applies for and is admitted to the announced topic, and enrolls in the doctoral school. Each doctoral candidate is assigned one (or, in cases defined by the regulations, two) supervisors who are fully responsible for guiding and assisting the candidate in their studies, research work, and preparation for degree acquisition. Only in justified cases can a supervisor have more than three doctoral candidates.

3.3. Admission to Doctoral Training

As an admission requirement, the DSM prescribes professional knowledge implying excellent familiarity with graduate-level knowledge. It requires and examines professional commitment, a master's degree or equivalent university diploma, and a forward-looking, well-considered research plan during the entrance examination. The admission interview may be conducted in-person or online in justified cases. The DSM-C elects the admission committees, which are commissioned for one year.

Admission to doctoral training is only possible for topics announced publicly on the HDC platform (<http://www.doktori.hu>) and after a successful admission committee hearing. The professional aptitude points obtainable during the entrance examination partly evaluate expertise in the chosen topic. Successful admission requires achieving at least 50% of the maximum possible score. The DSM publishes the admission application deadline and requirements on its website (<https://www.math.u-szeged.hu/phd/>).

Participation in the entrance examination requires the complete submission of the prescribed admission documents by the given deadline, including written confirmation of willingness to accept the applicant from both the supervisor and the accepting unit (department or external

institution).

A formal requirement for admission is a master's degree diploma.

3.4. The Training

Admitted students participate in eight semesters of training. The first four semesters constitute the **training and research phase**, followed by four semesters of the **research and dissertation phase** after passing the **complex exam**. Achieving the absolutorium requires at least 240 credits according to the **training plan**. In research, students are expected to achieve internationally measurable results.

The condition for submitting the doctoral dissertation for evaluation is **at least two published or accepted for publication papers** (with at least one journal article) related to the topic of the dissertation, published or accepted in a refereed, international database-indexed journal in a world language.

The professional standard of the journal is the decisive factor for accepting or rejecting these two papers. The council of the doctoral school evaluates each publication on a case-by-case basis.

The Doctoral School of Mathematics welcomes if the candidate has a Hungarian-language publication. If the Hungarian-language publication has been covered by an international database, its inclusion may be considered by the council in exceptional cases.

Students upload their publications to the MTMT database (<http://www.mtmt.hu>).

Regarding **research**, it is also expected that doctoral students actively participate in the professional life of their host department or research group, regularly provide work progress reports and/or give or attend literature seminars. In accordance with the EDSz guidelines, students must regularly prepare written reports on their work for their supervisor and annually for the DSM-C. If possible, they should participate and present at professional forums and conferences.

The DSM-C decides on the acceptance of courses into training and the renewal of syllabuses. The syllabus must be reviewed at least every four years.

Only those instructors and researchers with a scientific degree whom the DSM-C deems suitable and appoints for a given period can teach doctoral courses. Doctoral school educators appear in the school's HDC database; anyone who belongs to more than one doctoral schools must declare in the HDC profile what percentage belongs to each school. Regularly updated, publicly available information about the current **training plan**, courses, and instructors is published on the websites of the doctoral school and HDC.

The complex exam. The complex exam must be taken before a committee in accordance with the university doctoral regulations. The committee members are outstanding professionals from the respective field, and according to the regulations, are partly from the university, with at least one-third from external institutions.

4. Degree Acquisition Procedure

The DSM's **Operational Regulations** describe in detail the degree acquisition procedure, including publication and language requirements.

4.1. The Doctoral Dissertation

The university and faculty doctoral regulations define the formal requirements of the doctoral dissertation. The DSM prescribes **preliminary workplace discussion (internal defense)** for those participating in organized training. Submission of the dissertation to the faculty is only possible after a successful workplace discussion. The workplace discussion is a strict professional filter often significantly enhancing the dissertation's quality. The discussion is evaluated by the chair, participants, and, in justified cases, an opponent invited by the DSM-C. The procedure, especially opinions and findings on modification, and any opponent's remarks, must be recorded in minutes. In case of substantial revision, the workplace discussion must be repeated.

4.2. Public Defense of the Doctoral Work

After dissertation submission, the DSM-C appoints the **defense committee** according to DDC and UDC rules. Committee members receive the dissertation and thesis booklet electronically. The identity of the opponents is not public until reviews are finished. Committee members receive the opponents' reviews after both reviews are completed and the candidate's written responses at least one week before the defense, electronically. Upon submission, the dissertation and Hungarian and English booklet of theses must be uploaded to the university's Doctoral Repository database (<http://doktori.bibl.u-szeged.hu/>) by the candidate. Upon announcement of the public defense, the dissertation and thesis booklet become public on (<http://www.doktori.hu/>), referenced from the doctoral school's website.

Dissertation plagiarism screening for the dissertation submitted for public defense is mandatory with the plagiarism detection software provided by the SZTE József Attila Study and Information Center as required by the central regulations, and may be mandated for the internal defense as well.

The dissertation sent to reviewers cannot be modified afterward. If the review committee challenges professionally incorrect statements or does not accept certain thesis points, the relevant part of the committee minutes is attached to the dissertation (also in electronic form), and the defended dissertation is published with this supplement (library, repository).

The dissertation is defended in a public debate. The composition and number of members of the public defense committee are defined by university and faculty doctoral regulations. At least one-third of the five-member committee must be experts not employed by the university. All committee members provide written declarations regarding lack of conflicts of interest with the candidate. Two reviewers, expert in the subject area, evaluate the dissertation. The candidate receives written evaluations from the reviewers and must answer their questions in writing. Reviewers assess the acceptability of the answers in writing. The defense can only be organized after receipt of the reviewers' responses.

4.3. Awarding the Degree

Based on the decision and evaluation of the defense committee, the DSM-C submits its proposal for awarding the degree to the University Doctoral Council via the Discipline-specific Doctoral Council. Both bodies vote secretly; the degree is awarded by the University Doctoral Council, considering the previous body decisions. The degree certificate is handed over in a ceremonial setting by the university rector, to be solemnly sworn in by the candidate.

5. Monitoring

The academic performance and progress of students are evaluated annually by the DSM-C, based on written work reports and professional seminars. The annually submitted work report includes research results and aggregate indicators of publications (including publications in the doctoral topic, conference and seminar presentations).

The DSM-C monitors the career path of graduates. Results are published on the doctoral school's website (<https://www.math.u-szeged.hu/phd/>) and in periodic self-evaluations in the HDC database (<http://www.doktori.hu>).

6. Closing Remarks

The regulation aims to ensure the enforcement of the following quality assurance principles:

Professional Control

Scientific community monitoring must be ensured throughout the entire doctoral training and degree acquisition process.

Publicity

Main phases of the quality assurance system must be widely public for the professional and scientific community.

Feedback

Educators, supervisors, and members of various bodies of the doctoral school must receive continuous feedback regarding the quality of their activities and have opportunity to provide feedback on their experiences.

Individual Responsibility

The responsibilities and duties of all participants in the doctoral training must be clearly defined.

Documentation

Documentation must be prepared on all decision points related to doctoral training and degree acquisition. The operation of the quality management system should impose only minimal administrative burden on educators and researchers participating in the training and degree acquisition procedures.

Szeged, 28 August 2025