

BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS

Doctoral School of Electrical Engineering
Operational Regulations

2024

Section 1. [Relevant legislation]

The principles and procedural order of quality assurance of the doctoral training and degree acquisition in the Doctoral School of Electrical Engineering Sciences (hereinafter: Doctoral School, briefly DI) are recorded by:

- the Doctoral and Habilitation Regulations (BME DHSZ) of the Budapest University of Technology and Economics (BME),
- the BME Code of Studies and Exams (BME TVSZ),
- the Operational Regulations of the DI (DI MSz, present document),
- the Quality Assurance Plan of the DI,
- the Training Plan of the DI, and
- the ESG 2015 (Standards and Guidelines for Quality Assurance in the European Higher Education Area).

The following section outlines requirements that partially overlap with and partially extend beyond these, without covering the mandatory quality assurance elements appearing in the related legislation (Act CCIV of 2011 on National Higher Education, Government Decree 387/2012 (XII.19.) on doctoral schools, the order of doctoral procedures and habilitation, and the resolutions of the Hungarian Accreditation Committee (MAB) regarding doctoral training).

Establishment, members and organization of the doctoral school

Section 2 [Accreditation]

PhD training has been ongoing in the Doctoral School of Electrical Engineering Sciences since 1993, and its final accreditation – in accordance with national regulations – was decided by MAB on February 22, 2002. The Doctoral School operates at the Faculty of Electrical Engineering and Informatics of BME (hereinafter: Faculty).

Section 3 [Core members]

(1) In addition to the regulations listed in Section 1 and the relevant requirements of the law, the core members of the DI, as well as the personal composition of the core members, must meet the following conditions: A core member can be someone who:

- is a full-time university professor at BME, or
- is a scientific advisor or research professor at a research institute participating in the doctoral training under a contract between BME and HUN-REN, or
- is a Professor Emeritus of BME.

All core members must hold the title of "Doctor of the Hungarian Academy of Sciences (MTA)".

(2) The doctoral school may co-opt a new core member based on the proposal of the core members, with the approval of the EHBDDT.

(3) The circle of core members is confirmed by the MAB accreditation at the time of establishment and its periodic review. The list of core members, as well as the summary of their professional work, can be viewed at www.doktori.hu.

Section 4 [Head and instructors of the Doctoral School]

(1) The head of the doctoral school is a full-time university professor employed by the University as a public servant, highly recognized scientifically, holding the title of "Doctor of the MTA," and a core member of the doctoral school, appointed by the Rector based on the proposal of the EHBDDT. The term of the mandate is a maximum of three years, which can be repeated indefinitely until the statutory age limit of 70 years.

(2) The operation of the DI – with the administrative support of the Faculty's Dean's Office – is directed by the head of the DI.

(3) The instructors of the DI can only be university instructors and researchers holding a scientific degree whom the DIT considers suitable and invites to hold doctoral courses for a given period. An instructor of the DI can be a full-time employee of a domestic or foreign research institute, university, company, or other institution that has signed a written cooperation agreement with BME to achieve the goals of the doctoral training (external instructor).

Section 5 [University Doctoral Council and Habilitation Committee, Habilitation Committee and Doctoral Council, and Doctoral School Council]

(1) According to the BME Doctoral and Habilitation Regulations (DHSz), the training in the doctoral schools and the degree acquisition procedures are supervised by the University Doctoral Council and Habilitation Committee (EHBDDT).

(2) The operative body supervising the doctoral training is the Doctoral School Council (DIT) organized by scientific doctoral school, with tasks and authorities according to Section 12 of the DHSZ. The Training Plan of the doctoral school contains the sample curriculum, the subjects of the complex exam, and the rules of assessment. If the Training Plan imposes a condition not

specified in the BME DHSZ or relevant legislation, or a stricter one, the DIT may grant an exemption from the condition in exceptionally justified cases and after consideration.

(3) The body conducting the doctoral degree acquisition process – within the competence delegated by the EHBDT – is the disciplinary Habilitation Committee and Doctoral Council (HBDT) organized by doctoral school, with tasks and authorities according to Section 6 of the DHSZ.

(4) The members of the Electrical Engineering Sciences Habilitation Committee and Doctoral Council (HBDT) are highly qualified professionals of the discipline: two-thirds of the members are university professors, and those without a university professor appointment are Doctors of the MTA.

(5) The current composition of the bodies of the Doctoral School of Electrical Engineering Sciences – core members, DIT, and HBDT – as well as the summary of the members' professional work, can be viewed at www.doktori.hu and is also accessible through the university's or the doctoral school's website.

(6) The scope of duties and decision-making method of the DIT and HBDT are regulated by Sections 6 and 12 of the BME DHSZ. If an urgent decision is required that does not allow for convening a board meeting in time, or the topic does not justify convening a meeting, it is possible to obtain the opinion of the voting members of the board electronically in the matters requiring a public vote explicitly listed in Annex 1.

Section 6 [Termination of mandates]

The mandates according to Sections 4 and 5 terminate:

- a) upon the expiration of the mandate,
- b) by recall using the same procedure as the mandate,
- c) by the resignation of the mandated person,
- d) due to the prolonged incapacitation or death of the mandated person.

Operation of the doctoral school

Section 7 [Management of the doctoral school]

The operation of the Doctoral School – with the administrative support of the Faculty's Dean's Office – is directed by the head of the Doctoral School.

Section 8 [Announcement of topics and supervisors]

(1) The Doctoral School requests topic proposals and announces PhD topics every year. The DIT decides on the acceptance of the topics and the persons of the supervisors. The announcement of the topics takes place at the internet address www.doktori.hu.

(2) The supervisor must have at least 2 years of professional experience counted from the acquisition of the doctoral degree (PhD). One supervisor can simultaneously direct the work of a maximum of 4 doctoral students. The DIT can only grant an exemption from these conditions with the consent of the EHBDT.

(3) Each doctoral student has one and only one supervisor, who guides and supports the studies, research work of the doctoral student working on the topic, and the preparation of the doctoral candidates for obtaining the degree with full responsibility. Dual supervision is only possible in the case of training conducted within an international cooperation, or an interdisciplinary or industrial cooperation-based research topic, based on a topic announcement accepted by the DIT and announced with the prior consent of the EHBDT.

(4) The supervisor can be a full-time employee or Professor Emeritus of BME, or a full-time employee of an institution that has signed a cooperation agreement with BME for doctoral training. The DIT appoints a consultant alongside an external supervisor, who assists the supervisor's work on behalf of BME and monitors the student's professional progress.

(5) The DIT can change the doctoral topic or the person of the supervisor/consultant upon their request, upon the request of the affected student, or within its own competence. Before the decision, the DIT seeks the opinion of the supervisor's workplace superior.

(6) The instructors of the doctoral school can only be university instructors and researchers holding a scientific degree whom the DIT considers suitable and invites to hold doctoral courses for a given period. An instructor of the doctoral school can be a full-time employee of a domestic or foreign research institute, university, company, or other institution that has signed a written cooperation agreement with BME to achieve the goals of the doctoral training (external instructor).

Section 9 [The entrance exam]

(1) The entrance exam for the topics announced according to Section 8 is organized by the Faculty's Dean's Office. The Admission Committee (FB) is designated by the DIT, taking into account the professional composition of the doctoral topic announcements and the appropriate representation of the hosting departments.

(2) The condition for participating in the entrance exam is the written assurance of receptivity on the part of the supervisor and the hosting unit (department or external institution). The formal requirement for admission is a diploma with at least a "good" rating, as well as the demonstration of proficiency in English.

(3) The FB evaluates the preparedness shown at the entrance interview, previous academic results, language proficiency, and previous professional-scientific activity between 0-100 points. The condition for admission is achieving at least 60 points.

(4) Based on the proposal of the admission committee, the DIT decides on admission and the awarding of state scholarships. The DIT informs the Dean about the admission decisions.

Section 10 [Individual preparers]

(1) In the case of individual preparers, the doctoral degree acquisition procedure begins based on an application, with applying for and accepting the complex exam (Government Decree 387/2012. (XII.19.), Section 12).

(2) The condition for accepting the application is disciplinary compliance, formally fulfilling the publication and language requirements for obtaining a doctoral degree (thesis points are not yet required at the time of application, so there is no content evaluation, only the expected numerical indicators must be met).

(3) With the admission, the doctoral school recognizes the minimum credits defined as a condition for admission to the complex exam, with the provision that upon request, additional credits can be recognized based on previously acquired knowledge and competencies.

(4) The work of individual preparers is not guided by a supervisor, but the DIT appoints a consultant for this task (BME DHSZ Section 14. 4).

(5) The complex exam following admission belongs to the first semester of the research and dissertation phase.

Section 11 [Tasks of the DIT]

(1) The DIT reviews the Operational Regulations and the Training Plan every two years and amends them as necessary – with the approval of the EHBĐT. In the event of a change, doctoral students already in the training must apply either the requirements valid at the time of admission or the amended requirements, according to their choice, while the change applies to newly entering students.

(2) The DIT evaluates the topic announcer applications, which is a necessary condition for announcing PhD topics and fulfilling supervisory duties. The topic announcer application is issued by the head of the department of the applicant – meeting the conditions of Section 8 –, summarizing the applicant's aptitude and professional competence.

(3) The DIT reviews and approves the PhD research topic proposals. Within this framework, it also examines the linguistic correctness and professional terminology suitability of the research topic's title.

(4) The DIT reviews and approves the subjects that can be announced by the doctoral school in the following semester and decides on the accreditation of new subjects.

(5) The DIT decides on potential credit recognition requests. According to Section 177 (6) of the TVSZ, a maximum of forty-five credits can be obtained in one semester in the training and research phase, and a maximum of sixty credits in the research and dissertation phase.

(6) The DIT makes a proposal to the dean for admission to the doctoral training based on the submission of the admission committee.

(7) Annex 1 provides for the possibility and execution of electronic voting.

Section 12 [Role of the Dean's Office]

The task of the doctoral school's registration system, administration, and information obligation is performed by the Dean's Office of the Faculty of Electrical Engineering and Informatics, taking into account the relevant points of Sections 11-12 of the DHSZ. During administrative procedures, electronic (paperless) methods should be preferred whenever possible.

Acquisition of doctoral degree

Section 13 [Degree acquisition]

(1) The organization conducting the degree acquisition procedure is the Electrical Engineering Sciences Habilitation Committee and Doctoral Council. Based on the proposal of the HBDT, the degree is awarded by the EHBDT. The requirement for the doctoral degree is obtaining the pre-degree certificate (absolutorium), submitting the doctoral dissertation within three academic years following the complex exam, and successfully defending the doctoral dissertation in a public debate organized by the HBDT (the three-year deadline can be extended by a maximum of one year in cases deserving special equity – within the HBDT's competence).

(2) Before submission, the doctoral dissertation must be submitted for a workplace debate (so-called in-house defense). The purpose of the workplace debate is to improve the dissertation and the thesis points, and to prepare for the public debate. The paper is evaluated by at least one referee holding a doctoral degree. The workplace debate is not yet part of the evaluation process (the dissertation can still be modified after the debate), so conflict of interest rules do not apply to the referee(s).

(3) The content of the debate – especially opinions regarding the modification of the dissertation – must be recorded in minutes. It is part of the minutes that the research community consisting of direct colleagues acknowledges the results contained in the candidate's thesis points (or thesis points to be corrected) as independently achieved results. The referee's opinion is an annex to the minutes. In the case of significant revision of the dissertation or thesis points, the workplace debate must be repeated.

- (4) Scientific publications presenting the own results presented in the doctoral dissertation must be assigned to the thesis points.
- (5) When examining the fulfillment of the degree acquisition conditions, only publications assigned to a thesis point can be taken into account, but there can also be thesis points to which no published or accepted-for-publication publication belongs.
- (6) The condition for sending the doctoral dissertation to the reviewers is that the publications assigned to the thesis points (published or accepted for publication) meet the detailed publication requirements of the doctoral school. A further condition for initiating the evaluation process is fulfilling the language requirements.
- (7) If someone in the doctoral training starting after September 1, 2016, does not submit a doctoral dissertation within three years following the complex exam (the three-year deadline can be extended by a maximum of one year in cases deserving special equity – within the HBDT's competence), they can only obtain a degree by repeating their studies, or as an individual preparer – without indicating a supervisor (BME DHSZ Section 14. (4) paragraph).
- (8) The dissertation sent to the reviewers cannot be modified subsequently. If the Review Committee objects to professionally incorrect statements or does not accept thesis points, the relevant part of the committee minutes is attached to the dissertation (also in electronic form), and the defended dissertation is made public with this addition (library, repository).
- (9) The members of the Review Committee receive the opponent's opinions electronically after both reviews have arrived, and the candidate's responses to them no later than one week before the defense. When the public debate is announced, the dissertation and the thesis booklet become public on the www.doktori.hu website.
- (10) The currently valid publication and language requirements for obtaining the degree are contained in Annex 2. If there is a change in the requirements, the former or the new requirements must be applied according to the candidate's choice within 2 years following the decision on the change.

Closing provisions

Section 14 [Entry into force of the regulations]

- (1) Where these regulations impose a requirement not fixed in legislation and BME regulations, or a stricter one, modifying the requirement to the extent permitted by higher regulations may be exceptionally authorized. The authorization (based on a detailed justified request submitted in writing) can be granted by the DIT in the case of doctoral training, and by the HBDT in the case of a degree acquisition procedure, with a minuted decision.

(2) These regulations were discussed and approved by the BME EHB DT on May 25, 2023. Those participating in the four-year PhD training started before June 29, 2021, can decide until June 28, 2023, to conduct the degree acquisition procedure according to the requirements of the regulations in force until June 28, 2021, and they must deliver their declaration about this to the Doctoral School simultaneously with the submission of the doctoral dissertation.

Annexes:

- Annex 1: Electronic committee voting
- Annex 2: Publication and language requirements for obtaining a degree

Annex 1: Electronic voting in doctoral matters (DIT, HBDT) – Doctoral School of Electrical Engineering

If an urgent decision is required that does not allow for convening a board meeting in time, or the topic does not justify convening a meeting, it is possible to obtain the opinion of the voting members of the board electronically in the matters requiring a public vote explicitly listed below. The head of the board decides on ordering the voting, its starting and closing times. The submission containing the draft resolution and the justification must be sent electronically to every member with the exact designation of the voting closing deadline (year, month, day, hour) and the web address marking the location of the voting. Electronic voting cannot be held, or the electronic voting cannot be evaluated, if any member of the board – no later than the voting closing time – requests convening a meeting to discuss the draft resolution.

Formal conditions for electronic voting and decision-making:

- the identity of those participating in the voting during the decision-making process and the quorum can be credibly established;
- the written documentation substantiating the decision is sent out electronically to the council members at least 3 working days prior to the closing time of the voting;
- the submitted votes are not public until the voting is closed;
- the draft resolution is accepted if at least two-thirds of the council members participated in the voting and more than half of the members participating in the voting supported it.

Electronic voting is possible in the following DIT and HBDT matters:

- acceptance of topic announcer applications
- announcement of doctoral subjects
- announcement of doctoral topics
- designation of doctoral Admission Committee
- acceptance of the report of the doctoral Admission Committee
- acceptance of the list and waiting list of state scholarships
- acceptance of the syllabus of complex exam subjects
- assigning complex exam subjects to students, designating examination committees
- cooperation proposals regarding doctoral training (after the preliminary distribution of the document urging cooperation)
- modification of committee composition
- closing of an unsuccessful degree acquisition procedure

The votes are aggregated by the administrator of the Dean's Office and authenticated by the president of the board and a member appointed by them. The members of the board must be informed about the result of the voting within 24 hours after the closing of the voting.

Annex 2: Publication and language requirements for obtaining a PhD degree

General requirements according to BME DHSZ Section 17

In accordance with BME DHSz Section 17 (3), the knowledge of the foreign language necessary for cultivating the discipline must be proven by a B2 level complex state-recognized English language exam, or an equivalent certificate, no later than the submission of the dissertation. In accordance with BME DHSz Section 17 (5) (quoted exactly): For scientific, informatics and technical works, the minimum requirement is

- at least 3 published (or accepted for publication) peer-reviewed publications.
- Of these, at least 2 must be in a foreign language,
- at least 2 journal articles,
- at least 2 quality publications from the candidate's own work, marked with their defining share, respectively
- at least 2 publications must be indexed in the Web of Science or Scopus database.

The defining share and the quality expectations, as well as the exact definition of a qualified artistic work, taking into account the specifics of the specialized field, and with potential further minimum conditions, are determined by the competent HBDT and recorded in its regulations with the approval of the EHBDT. Fulfilling the publication requirements constitutes a necessary condition for initiating the evaluation process.

Minimum publication requirements at the Doctoral School of Electrical Engineering Sciences

The minimum requirements of the DI are in some cases stricter than the requirements formulated in the BME DHSz; these are contained in the following list. The minimum requirements according to the DI and the BME DHSZ must be met simultaneously. Fulfilling the conditions formally does not guarantee either the initiation of the evaluation process or its successful completion. In decision-making, the HBDT substantially examines the level of publication of new scientific results, as well as the candidate's contribution to the published results. The publication list must be prepared using the MTMT publication repository. During the checking of publication requirements, only publications complying with the provisions of the BME Publication Protocol can be taken into account. Journal publications that had a 0 or X rating on the "Norwegian list" in the year of publication cannot be taken into account.

Minimum publication requirements Minimum number of total publications: 4 scientific publications published in English, of which:

- at least 2 published (or accepted for publication) peer-reviewed journal articles
- at least 2 indexed in the Web of Science or Scopus database

- At least 1 publication with the candidate's minimum 50% participation (understood after ignoring the supervisor)
- From the 4 publications, 1 can be substituted with a granted patent

The minimum score to be achieved: **12**

Minimum language requirements The requirement is at least a B2 level, complex, state-recognized language exam, or an equivalent internationally recognized language exam covering all 4 basic skills (reading, reading comprehension, writing, speaking) equally, with the following result:

- IELTS: min 5.5
- TOEFL IBT: min. 80
- Cambridge FCE: min. 162
- Pearson PTE: min. 51

Scoring of publications

The scores to be given for individual publications (related to the specialized field) are as follows:

- Book in a foreign language: 8
- Book section, book chapter in a foreign language: 6
- Book in Hungarian: 5
- Book section, book chapter in Hungarian: 3
- Article in an edited volume (at least 10 pages): 4
- Journal articles:
 - **Peer-reviewed:**
 - Published abroad in a foreign language: 6
 - Published in Hungary in a foreign language: 4
 - In Hungarian: 2
 - **Non-peer-reviewed:**
 - Published abroad in a foreign language: 3
 - Published in Hungary in a foreign language: 2
 - In Hungarian: 1
- Foreign language presentation published in the proceedings of a conference with international participation: 3
- Foreign language presentation published in the proceedings of an event with local participation: 2
- Hungarian language conference presentation published in proceedings: 1
- Foreign patent: 2
- Hungarian patent: 2
- Review (printed evaluation of another author's work): 1
- Electronic publication (on journal/company website, findable via Google Scholar, e.g., BME technical report – publishing on one's own website does not count as a scorable publication): 1

From the candidate's perspective, the individual scores are to be multiplied by the proportion falling on them. In this calculation, the doctoral student's supervisor is automatically excluded from the co-authors. Thus, for example, in the case of two-author articles shared with the supervisor, the candidate receives 100% of the score. If the doctoral student has several supervisors (co-supervisor, consultant, or corporate expert in the case of doctoral research conducted in industrial cooperation), only one of them can be excluded for a publication. In our profession, the general publication practice is that the contribution of co-authors to the given topic is approximately equal, so the share by default is the reciprocal of the number of co-authors (excluding the supervisor). For those publications where the authors' share recorded in MTMT is not equal, the co-authors must declare what % of the individual publications can be considered their own work. If the co-authors do not declare for any reason, or if the specified total

percentage of the co-authors exceeds 100%, the corresponding scores are to be divided by the number of authors. In the event of a co-author declaration contradicting a previous declaration, when this comes to light, the HBDT is obliged to initiate an investigation and inform the BME Habilitation Committee and Doctoral Council about it. If the editor declares in writing the acceptance of an as-yet unpublished article, but requests minor revisions, the basis should be half of the peer-reviewed score; if publishing without changes, then the full score above. The diploma project, as a mandatory work, cannot be accounted for. The TDK (Scientific Students' Associations) paper cannot be accounted for either. The presentation delivered at the BME doctoral symposium can only be accounted for if its full text (at least 4 pages) was published in a publication with an ISBN number and is also available on the web. A conference counts as international if it is organized by an international organization. A conference cannot be considered international if the overwhelming majority of the participants and/or organizers are Hungarian. Problematic cases are examined individually by the HBDT.

Budapest, April 25, 2024.