

SZENT ISTVÁN UNIVERSITY
DOCTORAL SCHOOL OF MECHANICAL ENGINEERING

Head:
Prof. Dr. István Farkas DSc

STRUCTURE AND OPERATION OF DOCTORAL SCHOOL

GÖDÖLLŐ
2020

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1. ESTABLISHMENT OF THE DOCTORAL SCHOOL

Szent István University's Doctoral School of Mechanical Engineering (DSME) in Agricultural Engineering is based on the topics of Agricultural Energy and Environmental Engineering and the Foundations of Agricultural Engineering - adopted by the Hungarian Accreditation Committee (MAB) in 1993 and then temporarily accredited in 2000. Its final accreditation in the field of Agricultural Engineering took place in 2002. Year of last successful accreditation: 2019.

2. ORGANIZATION OF THE DOCTORAL SCHOOL

2.1. Name and details of the Doctoral School

Name:	Doctoral School of Mechanical Engineering
Place of operation:	Szent István University Gödöllő
Postal address:	2100 Gödöllő, Páter Károly u. 1.
Telephone:	(06-28) 522055
E-mail:	mtdi@gek.szie.hu
Homepage:	www.mtdi.szie.hu (documents can be downloaded)
Seal:	Szent István Egyetem Műszaki Tudományi Doktori Iskola 2100 Gödöllő Páter Károly u 1.

The Doctoral School operates within the framework of Szent István University. Its organizational structure is presented in Appendix 1.

2.2. Head and members of the Doctoral School

The head of the Doctoral School is appointed by the Rector on the proposal of the core members of the Doctoral School, the EDHT and the Senate. His term of office is five (5) years. His work is assisted by subcommittees, whose chairmen (executives) and members are appointed by the Council of the Doctoral School (DIT) on the proposal of the head of the DS.

The requirements imposed on the core members of the DS and other contributors (supervisors, lecturers, etc.) are determined by the HAC and the University Doctoral Regulations (EDSZ).

2.3. Doctoral School Council (DSC)

The DSC is a body that assists the work of the head of the DS, elected by the core members of the DS, and its members are appointed by the University Doctoral and Habilitation Council (UDHT).

In the DSC, doctoral students are represented by 1-1 doctoral students per grade.

The term of office of the members of the DIT is indefinite.

The president of the DSC is the current head of the Doctoral School, and his/her secretary is appointed by the DSC on the proposal of the president.

Tasks of the DSC:

- develops
 - its internal operating rules and organizational structure,
 - the system of requirements for the doctoral thesis and the habilitation procedure.
- proposes
 - the accreditation of new members of the DS,
 - to launch new topic groups,
 - the recognition a scientific degree obtained abroad,
 - to admit or reject applicants,

- to interrupt and dismiss doctoral training,
- to initiate the graduation procedure (the composition of complex examination and judging committees).
- decides
 - topics suggested to doctoral students,
 - the adoption of topics, supervisors and work plans,
 - modification of subjects and curricula,
 - acceptance of part-time studies abroad,
 - matters relating to the complex examination,
 - on the inclusion of habilitation topics.

The DCS may delegate certain tasks or powers to the head of the Doctoral School or a subcommittee.

The DCS meets at least four (4) times a year, the dates of which are set in accordance with the work program of the University Doctoral and Habilitation Council (UDHT). Meetings are usually held in September, November, February and May.

The DIT makes its opinion and decisions by open voting, by a simple majority. A quorum shall exist at a committee meeting if more than 50% of the members are present. The written resolution of non-present members shall also be taken into account.

In addition to the members, non-voting experts may be invited by the Chair to attend meetings of the DSC.

The DIT develops its working method under its own authority.

2.4. Organization of the Doctoral School

The doctoral school is based on two main groups of topics; these are the Foundations of Agricultural Energetics and Environmental Engineering and Agricultural Mechanical Engineering. The work of the DS is managed by the DSC, and the solution of the operational tasks is assisted by subcommittees:

- Training Subcommittee (TSC),
- Subcommittee on Quality (SCQ),
- Research Control Subcommittee (RCS),
- Graduation Subcommittee (GSC),
- Habilitation Subcommittee (HSC).

The Subcommittees

- their chairmen and members are elected by the DSC; their term of office is 3 years and can be extended any number of times,
- the representative of the doctoral students is invited by the President from among the state scholarship students; his/her term of office is until the end of the training period or until his/her revocation or resignation,
- their recommendations and decisions are made by open voting, simple majority,
- their meetings have a quorum if more than 50% of the members are present,
- the written resolutions of members not present personally shall be taken also into account,
- their activities support the professional work of the DS,
- develop their working methods under their authority,
- may request experts for their duties, who may attend meetings in a deliberative manner.

2.4.1. *Training Subcommittee (TSC)*

Members:

- elected members (chairman and two members),
- doctoral student representative, representing the current 2nd year students.

Tasks of the TSC:

- announcing doctoral topics,
- conducting the admission procedure for doctoral applicants, preparing a ranked list of candidates for admission by the DSC,
- reviewing work plans, research plans, monitoring the implementation of the submission for approval by the DSC,
- organizing courses, checking the admission of a subject,
- continuous contact with doctoral students,
- check Neptun records,
- control of educational activity,
- check the fulfilment of the absolutorium certificate, and issue a proposal to the DSC,
- proposing the curriculum, the development of subjects, and their credit points,
- monitoring compliance with the training obligation
- control of publishing activity and
- advice on educational matters.

With regards to the aspects of decisions and proposals in the tasks of the KÉB and their consideration, the University Doctoral Regulations (https://szie.hu/Doktori_kepzes_es_Habilitacio/Egyetemi_Doktori_Szabalyzat), and the regulations laid down in the Rules of Procedure shall prevail.

2.4.2. *Subcommittee on Quality (SCQ)*

Members:

- elected members (chairman and two members),
- doctoral student representative, representing the current 2nd year students.

Tasks of the SCQ:

- makes proposals to the DSC on:
 - the requirements for admission to doctoral training,
 - the requirements for issuing the absolutorium certificate,
 - complex examination requirements and methods,
 - the conditions for starting the degree, and carrying out the procedure,
 - the conditions for awarding the degree,
 - requirements related to the habilitation procedure,
- monitors the fulfilment of the above-listed tasks.
- prepares a report for the HAC on the work of the Doctoral School, if necessary.

In the tasks of the SCQ, the proposals must be made in accordance with the provisions of the Quality Assurance System of the Doctoral Schools of the HAC, the University Doctoral Regulations, the SZIE and the specifics of the programs of the Doctoral School.

2.4.3. *Research Control Subcommittee (RCS)*

Members:

- elected president,

- head of the DS,
- dean of the faculty,
- the chairs of the subcommittees,
- topic group leaders.

Tasks of the RAS:

- taking care and qualification of literature reviews and final research reports (chairman's task), which may be delegated by the chairperson with the approval of the DIT,
- qualification of 2nd year doctoral students' research reports,
- organizing, maintaining and qualifying any necessary extra reports.

2.4.4. *Graduation Subcommittee (GSC)*

Members:

- elected members (chairman and two members),
- doctoral student representative, representing the current 2nd year students.

Tasks of GSC:

- checking the conditions for initiating the graduation procedure,
- proposing the topics of the complex exam as well as the members of the exam committee,
- proposing opponents and members of the jury,
- control the organization of the home defence,
- overseeing the graduation process.

In the tasks of the GSC, the aspects of decisions and proposals and their consideration are governed by the regulations laid down in writing by the UDR (University Doctoral Regulations).

2.4.5. *Habilitation Subcommittee (HSC)*

Members:

- elected members (chairman and two members).

Tasks of the HSC:

- checking the conditions of the habilitation procedure,
- hosting (acceptance) proposal for the DSC,
- proposal for starting the procedure and the members of the committee to the DIT.

Regarding the aspects of the decisions and proposals in the tasks of the HSC, as well as their consideration, the regulations laid down in writing by the University Doctoral Regulations and the Habilitation Regulations of the SZIU.

2.4.6. *Management of topic groups*

The Doctoral School of Mechanical Sciences carries out the professional work in two subject groups; these are the Agricultural Energetics and Environmental Engineering and Foundations of Agricultural Mechanical Engineering.

The leader of the topic group is a person accredited as a core member by the HAC.

Responsibilities of the topic group leaders:

- constant updating of scientific knowledge in the accredited field of science,
- deepening the domestic and international professional relations of the field of science,

- modernization and renewal of specific subjects included in the training,
- elaboration and supervision of research topics,
- contributing to the support and monitoring of the scientific progress of trainees.

The topic groups carry out their tasks continuously, according to a prepared plan, taking into account the uniform deadlines and regulations for completion. In addition to the founding members of the DS, they can also use the work of external specialists for certain - primarily non-operational - tasks.

2.4.7. *The supervisor*

The DSC will appoint the supervisor (possibly also the co-supervisor) for the doctoral topic recommended for publication, after the acceptance and announcement of the application submitted to the DS (Form 1), and the admission of the doctoral student applying for the topic.

Prerequisites of a supervisor :

- has a scientific degree for at least five years when the topic was announced
- has international publications on the announced topic. A minimum of 2 IF articles and uploading publications in MTMT
- habilitated senior instructor*
- has not reached the age of 65*

* In the absence of habilitation and after reaching the age of 65, it is possible to announce a topic or supervise a topic by appointing a co-supervisor.

The task of the supervisor:

- Participation in the doctoral student's admission procedure.
- Supporting all training and research activities of the doctoral student, with priority:
 - in compiling a preliminary scientific work plan for the admission of the doctoral student,
 - in joining scientific workshops,
 - in the processing of literature,
 - in compiling the final work plan,
 - in the selection of "C" subjects,
 - in continuing part-time studies abroad.
- Supervision of the doctoral student, with emphasis:
 - on cooperation with the head of department/director of the institute in the educational activity,
 - on research,
 - on publishing activities,
 - on research application work,
 - on supplementing the infrastructure necessary for research (application, use of financial resources).
- Suggestions to GSC
 - to designate the topics of the complex exam,
 - to determine the composition of the Complex Examination Commission,
 - to appoint the Judging Committee.
 - to organize the home defence.

The term of office of the supervisor is until the doctoral student is inaugurated as a doctor or expelled from the DS. After the inauguration of his/her candidate, the DIT awards the supervisor moral recognition.

3. THE ROLE OF THE DOCTORAL SCHOOL IN THE ADMISSION PROCEDURE

The recruitment procedure for DS applicants is organized by the TSC.

By January 31 of each year, by completing Form 1, applicants may propose research topics. The DS core members advertise their topics every year. At the same time, the head of the host institution declares that the infrastructure needed to manage the topic is available (Form 2). By 31 March each year, the DIT will take a position on the topics proposed by the supervisors, examining the admissibility of the topic, the supervisor's competence and the provision of the necessary research infrastructure on the basis of the submitted forms. After the approval by the EDHT, the topics will be announced on the website, www.doktori.hu.

By submitting the application form and its annexes according to the UDR, the applicant for the DS can only apply with the work plan developed for the topic announced in the given program – in agreement with the supervisor (Form 3; Form 5 when applying for an individual degree). The work plan submitted by the applicant will be evaluated and qualified by the DSC during the recruitment procedure, which will be taken into account in the recruitment decision.

Requirements for the applicant:

- a minimum of a good MSc degree related to the speciality of the DS,
- if the qualification of the diploma is lower than that of a good qualification or does not correspond to the specialised field, it must prove at least three years of successful research experience in the given topic and present the achieved results.
- in the case of a diploma classified as non-specialized, as a condition of admission, the DIT prescribes the passing of an examination within one year of the subjects corresponding to the doctoral topic in the field of mechanical engineering, after which the candidate may obtain final admission.
- research activity related to the topic for at least one year (TDK, departmental research, scientific publication, etc.).
- intermediate state "C" state language exam in one of the world languages (considered as world languages: English, German, French, Russian, Spanish and Italian).
- research commitment, which will be judged by the ad hoc selection board during the recruitment interview.

The voting members of the ad hoc admissions committee are the head of the DS, the head of the TSC, the leaders of the topic group, the dean of the Faculty, the secretary of the DS and an external expert invited by the DSC. The admissions committee will rank the candidates for the DSC on the basis of the results of the degree, previous research activity, proficiency in the topic, work plan and research habitus as described in the University Doctoral Regulations. Recruitment results will be recorded according to Form 6.

Admission or rejection is decided by the UDHT based on a proposal from the DSC. Following the decision, it is the responsibility of the UDHT Secretariat to notify students to enrol.

The reception and orientation of the first-year doctoral students is organized by the head of the DS within the DS forum at the beginning of the academic year.

The DS can also accept applicants as individual graduates. A doctoral student admitted as an individual degree candidate can start the research and dissertation phase after successfully passing the complex exam.

Conditions to be fulfilled by an individual degree candidate before admission (in addition to fulfilling the conditions for admission into the DS):

1. at least five years of research experience,
2. specialized diploma (if the diploma is not related to the field, the DIT assesses the suitability for admission and may require the completion of examinations before starting the degree).
3. proof of publication activity related to the research field by completing 60 points,

4. the candidate fulfils the language and publication requirements for admission to the complex examination.

Doctoral training in the framework of international cooperation is regulated by UDHT and DS.

4. EDUCATIONAL WORK OF THE DOCTORAL SCHOOL

4.1. General guidelines

The educational work of the DS is organized and managed by the TSC with the participation of the topic group leaders on the basis of the Uniform Study and Examination Regulations of the Credit System of the SZIE Doctoral Schools.

Full-time and correspondence students continue their studies for four semesters and must complete a total of 120 credits. Deviations from the model curriculum set out in Annex 2 may be made by 10% per year in justified cases.

The student is required to enrol and take the subjects by *September 30 in the fall semester* and by *February 28 in the spring semester*.

Students are required to attend classes in accordance with the curriculum agreed with the lecturer. The schedule must be reported in the form prescribed in the curriculum. The exam takes place in front of the subject lecturer.

The *autumn semester* must be completed by *February 15* and the *spring semester* by *September 15*.

The DSC decides on the part-time study abroad on the proposal of the supervisor and the TSC.

The curriculum of the topic groups of the Doctoral School of Engineering Sciences is included in Appendix 2, and its subjects in Appendix 3. The DSC is entitled to change this on the basis of a proposal from the head of the DS.

4.2. The structure of the doctoral school's educational and research program

Out of the 120 credit points required for doctoral students during the training period, they can achieve 41 points by fulfilling their examination obligations, 8 points by teaching, and the rest can be achieved by research work carried out during the training period. The different activities that can be carried out during the training are divided into units by the DS as follows: (The minimum required points can be obtained based on these).

- **Unit I.** Comprises of the prescribed subjects to be completed by the student. This includes taking subjects, listening to them in contact classes and fulfilling the exam requirements..
 - The "A" subjects of the Doctoral School of Engineering Sciences are those that cover the general fields of research and technical research, which are indispensable for the students of both subject groups. *These subjects are mandatory for all scholarship and correspondence students* in the DS.
 - The "B" subjects, based on the previous "A" subjects, help to answer the theoretical and methodological questions of research in the given topic group. These subjects are *compulsory for the students of the given topic group*.
 - Topic-specific subjects marked "C" are primarily related to the specific research topic. From these, students in both subject groups can choose at will but must meet the required minimum number of subjects to be taken. "C" subjects may be added with the consent of the supervisor. It is also possible to take subjects from other doctoral schools, with which, after prior agreement, the "C" subjects of the DS can be replaced. Possibly, the subject B of one topic group can be taken as the "C" subject for the student of the other topic group.

- **Unit II.** comprises the **teaching work** of the student during the training period, which is a university, college (classroom or laboratory practice) **teaching activity related to the research topic of the doctoral student.** The DS expects the students to teach a minimum of two hours per week every six months, for which he / she will receive two credit points (see the sample curriculum in Annex 2). This is accepted by the DS with the joint certification of the director of the institute and the supervisor (Form 7), which is confirmed by the president of KÉB in the Neptun system. If the doctoral student carries out the educational activity at another university or college, the completion of the subject is certified by the dean of the institution and the supervisor.
- **Unit III. stands for research work** during the training period, which consists of research work evaluated as described in Chapter 5.
- **Unit IV.** refers to the student's **publication activity.** The point system for evaluating the publication activity is included in Annex 4. the points calculated on the basis of these are the credit points that can be accounted four times for in the training phase and twice in the dissertation phase.

Table 4.1 summarizes the required and mandatory credits.

Table 4.1. Credit points for the units

Unit	Limits required by DSME (credit points)	
	minimum	maximum
I. Graduation of subjects	41	
II. Teaching activity	0	8
III. Research		43
IV. Publication activity	28	50

A doctoral student who does not have the opportunity to carry out educational activities in a higher education institution may present his/her work to the student within the framework of the educational activities of the supervisor's institute, for which he/she may receive an educational credit point. The points that were not obtained by completing the study unit can only be substituted by points obtained in unit IV. The student who was unable to complete 100% of the research work according to Unit III., can also substitute his/her lost points with points obtained in Unit IV.

The subject structure and curricula of the DS presented above are presented in Appendix 2. A short, five-line description and detailed topics of the taught subjects are available on the website of the Doctoral School (mtdi.szie.hu).

4.3. Complex exam

The training phase is completed by a complex examination consisting of two parts, the successful completion of which is a condition for entering the Research and Dissertation phase. The student initiates the complex examination procedure by submitting the application form according to the EDSZ and its annexes.

Admission to the complex examination is conditional on at least a basic "C" type language examination from a second foreign language, or an equivalent document, or a language examination in one of the world languages (considered as world languages: English, German, French, Russian, Spanish and Italian). If the intermediate "C" type state language examination certified at the time of admission is not in English, the second language examination must in any case be an English basic "C" type state language examination. Applicants for individual training must also prove that they have passed a secondary "C" type state language exam in one of the world languages (English, German, French, Russian, Spanish and Italian) that meet the first language test requirement.

The publication condition for admission to the complex exam is at least publications on the topic of the research, and one of those took place in a journal.

For the theoretical part of the complex examination, the Council of the Doctoral School determines two subjects (topics) for the candidate, which are suitable for the research topic.

In the dissertation part of the complex exam, the candidate reports on his/her literature knowledge, reports on his/her research results, describes his/her research plan for the second stage of doctoral training, and the schedule for preparing the dissertation and publishing the results.

The examination committee evaluates the theoretical and dissertation part of the examination separately. A report containing a textual assessment will be prepared for the complex exam. The result of the examination must be announced on the day of the oral examination. The complex examination is successful if a majority of the members of the committee consider both parts of the examination to be successful. In case of a failed theoretical part of the examination, the candidate may repeat the examination one more time in the given examination period from the failed subject(s). The dissertation part of the exam cannot be repeated in the given exam period in case of failure.

4.4. The absolutorium certificate

The prerequisite for obtaining the absolutorium certificate is to obtain all required credits.

5. RESEARCH ORGANIZATION TASKS OF THE DOCTORAL SCHOOL

5.1. Supervision of the doctoral student's research work

The DS generally contributes to the successful development of the research topic as follows:

- provides professional support on specific methodological issues of the research,
- supports the publication of research results and their presentation at conferences,
- helps to organize part-time study opportunities abroad, taking into account the topic and the doctoral student's language skills.

It is the task of the supervisor to give concrete help to the research work. The DI assists the research work with continuous accountability and reporting.

Accordingly, doctoral students must complete the following tasks:

- By the end of November of the first academic year, a **Work Plan** signed by the supervisor must be submitted according to Form 4. The submitted work plan will be issued by the DI to a reviewer, who will present his review at the February meeting of the DIT. Here, the doctoral student must defend his or her ideas. A modified work plan will take effect, taking into account what has been said, the changes will be checked by the supervisor and possibly seen by the reviewer.;
- By February 28 of the first academic year, a **Literature review** (see Form 8) must be submitted in writing by the doctoral student, which is certified by the head of the DS or his / her representative. This can be done by returning for revision or given 10-18 points depending on the value of the work. The literature review should include a critical analysis of publications related to the topic, identifying areas where there are contradictions or unclear issues as described in Form 8.;
- By 15th of December of the second academic year, a consolidated **Research Report** (see Form 9) containing the doctoral student's previous research results must be submitted in written form, which will be presented at a home conference in front of the TSC, the doctoral students and possibly other doctoral schools. The research report must be presented and defended. The appendix to the report is a list of the doctoral student's publications related to the topic. The committee evaluates the submitted material (which would have been reviewed

by a reviewer appointed by the DSC). Points are awarded based on the presentation and the professional discussion. If the doctoral student does not receive 50% of the available score, he/she must submit a new report in due time and re-defend it. Lectures given at the home conference will be published in the DS booklet, but they do not count as publications. Those who do not submit the research report on time can do that no later than the following year.

- By the end of the second academic year, the results achieved so far must be submitted in the form of a **Final Research Report**. The written material must be accompanied by a list of the doctoral student's publications related to his/her research topic. The material must also include additional specific tasks to be performed before the preparation of the dissertation, as well as the planned thesis points of the dissertation. Preparation of the Research Final Report at the appropriate level (which is the opinion of the Quality Control Subcommittee) is a condition for admission to the complex exam.

5.2. Publication practice of the Doctoral School

The evaluation of the publication activities of the doctoral student is carried out as follows.

A scientific publication is a publication that appears in a professional/scientific journal covering the research areas of the Doctoral School, or in another major journal (which has an editorial board and the authors also enclose a summary in English). It must have demonstrable material (the doctoral student's own achievements) in relevance to the given field.

The DSC does not accept a publication of scientific value published in a daily or weekly newspaper, however, it has a place in the list of literary activities - in the other category, as it also refers to its professional public activity and habitus.

6. THE RESEARCH AND DISSERTATION PERIOD

6.1. Home defence

The completed dissertation must be defended by the doctoral student in a home defence. The setting of the workshop discussion is initiated by the supervisor.

The organization of the home defence can only take place if the candidate's publication activity can be evaluated with at least 60 points according to Annex 5 and has at least three (3) publications in peer-reviewed domestic and two (2) international journals (at least one of the five must be an impact factor journal, or at least two (2) Q1 or Q2 rated) with no less than 50% participation (co-authorship of the supervisor is allowed). At this stage, it is still possible to submit journal articles with a statement of acceptance.

For the home defence, a dissertation must be prepared in accordance with the content and form requirements specified in the doctoral regulations, a printed, spiralled copy of which must be submitted to the head of the Doctoral School for formal review, at least one (1) month before the planned date, together with the electronic reprints of the candidate's scientific publications.

Simultaneously with the presentation of the dissertation, the supervisor – using the home defence form in printed and electronic copy - makes a proposal for the two reviewers (opponents). By complying with the conflict of interest rule, one of the judges must be an SZIU FME lecturer with an academic degree, the other must be the main external reviewer (in the case of students in English language training, both may be external reviewers), and one of them can be an opponent in the public defence also. The supervisor also proposes a secretary, who is a colleague with a PhD degree.

After the approval of the dissertation and the identity of the opponents, the actual workplace discussion can be organized. In doing so, the DSME Secretariat first invites the opponents to take on the task, and then - in case of a positive answer - the candidate/supervisor agrees on the date with the chair, the opponents and the secretary.

The chair of the workshop discussion is the head of the doctoral school or his/her representative. Based on a suitable date for everyone, the candidate prepares a sample invitation, which is sent to the Secretariat of the Doctoral School. A copy signed by the head of the school and sent to the faculty/university community in electronic form by the secretariat of the Doctoral School one week before the workshop discussion. If external professional guests are required, they must be invited by the candidate/supervisor.

The workshop discussion is documented (minutes, attendance sheet, request for opponents' opinions) by the clerk and these materials submitted to the UDHC Secretariat after the defence.

The minutes should include the date and place of the home defence, the names of the chair and opponents, the names of the participants and their main questions and comments, the answers given by the doctoral student, and the proposal for the future of the dissertation.

Contents of the attendance form should include date and place of the workplace discussion, in the header the name of the doctoral student and the topic (title) of the dissertation as well as the names, academic degree, place of work and signature of the participants.

Additional materials for conducting the workshop discussion (Home Defence Appointment Request, Home Defence Invitation Sample) are included in Forms 10 and 11.

6.2. Public defence

The doctoral student must submit a doctoral dissertation as defined in the University Doctoral Regulations within two years after the complex examination. This period may be extended by a maximum of one year in cases of special merit. In the degree acquisition procedure, the suspension of the student's legal relationship may not exceed two semesters.

The student initiates the defence procedure - after the successful workshop discussion - by submitting the application form according to the UDR and its appendices, including the dissertation and the thesis booklet.

The DSC will then propose the composition of the public defence judging committee. Only one of the opponents of public defence can be the same as one of the opponents of the home defence. The proposal is approved by the UDHC.

7. TASKS OF THE DOCTORAL SCHOOL DURING THE HABILITATION PROCESS

In the habilitation procedure, the Habilitation Subcommittee of the DS acts on the basis of the UDR. The relevant regulations are contained in the UDR.

In addition, the Doctoral School of Engineering requires the following:

- A prerequisite for submitting a habilitation application is a minimum of 180 publication points according to Annex 5.
- When applying for the habilitation procedure, the candidate must submit a short written summary of approximately ten (10) pages of the most significant scientific results on which the habilitation is based.;
- An external and an internal member of the committee appointed to conduct the habilitation procedure are invited by the DIT primarily to formulate a written opponent's opinion evaluating the candidate's scientific activity. The opinion must be sent to the candidate, to which he must reply orally (possibly in writing) before beginning his lectures. The committee shall then deliver its first opinion by secret ballot.

8. DOCTORAL SCHOOL QUALITY ASSURANCE SYSTEM

The quality assurance system of the DS is based on the principles formulated in the Quality Assurance System of the Doctoral Schools of SZIU. The specific requirements for the DS are summarized below. These include methods for applying the general principles.

8.1. Quality control requirements for the recruitment process

The supervisor may receive a doctoral student in the field and topic group announced and approved by the Council of the Doctoral School. To this end, prospective supervisors may submit their topics to be announced in the following year by 31 January, and each subsequent year (see point 3).

The Uniform University Regulations of Doctoral Schools shall apply to the admission procedure and evaluation.

8.2. Quality control standards for the doctoral training

The DSC reviews the list of compulsory and optional subjects, topics and credit values at least once every three years.

The DSC defines compulsory and optional subjects in the training phase (Appendix 3). The subjects required for all students ("A") cover general technical research activities. There are two further groups of subjects: one is the compulsory subjects ("B") related to the topic groups announced by the DS, and optional subjects related to the topics ("C").

The announced subjects are based on earlier university education, but their content is of a high scientific standard, and the theoretical procedures prevail better in their content.

The lecturer of the subject submits to the DIT approximately 2-3 pages of each of the announced subjects comprising of:

- its thematics, detailed time structure,
- literature,
- presentation methodology,
- the method and technique of the exam (the subject descriptions are available on the mtdi.szie.hu website).

The teaching method of the subjects should promote

- the establishment of a direct teacher-student relationship,
- shaping the spirit of discussion and critical vision,
- simultaneous implementation of comprehensive knowledge and proficiency in details,
- the high standard of exams.

The TSC classifies the performance of the scientific activity required for the complex exam on the basis of the given criteria.

8.3. Quality control requirements for defending

During the complex doctoral examination, the student gives an account of the comprehensive level of knowledge in the field of science and its application in the topic he/she is studying.

The doctoral dissertation must contain new scientific results.

The home defence should take place (without time limit) in front of the widest possible panel of external and internal experts.

Members of the defending committees may be invited by the Council of the Doctoral School only from recognized experts in the field.

8.4. Quality control standards for habilitation

The following addition is attached to Section 6 (3) (h) of the University Habilitation Regulations:

The DS will issue an acceptance statement if the applicant is in the field of study of the DS

- obtained a PhD degree at least five years before the application was submitted, and
- is active in higher education.

The DI will process the application for habilitation submitted to him within three months.

9. ACCOUNTING SYSTEM OF THE DOCTORAL SCHOOL

Training

(Maximum score available: 49 credits)

1. *Admitted subjects* must be completed in order to meet the training conditions (41 credits) until 1st of March (at the latest), or until 10th of September (at the latest).
 - every semester is closed until 10th of March, or until 20th of September,
 - failed subjects will be deleted, and the student must repeat the subject.
2. The *educational activity* ($4 \times 2 = 8$ credits) must be verified up to 1 March, and September 1 resp.
 - The certificate is issued by the head of
 - department or by the dean in case of an external institution,
 - Those who do not work in an educational institution do not need such a certificate,
 - The educational activity is recorded in the index by the head of education of the DS,
 - Anyone who does not complete or certifies the educational activity can only replace his / her missing credits with publications.

Research

(Maximum score available: 43 credits)

1. The *reports* (literature review, research report, final report) must be completed on time.
 - a. Literature review (18 credits, minimum of ten (10) credits to be achieved)
 - its submission is a condition for issuing the pre-degree certificate;
 - rating is given as a percentage by the head of the SCQ, and the score is determined accordingly;
 - the qualifier may return the work for revision in case of the performance below 50%; then the rating can only be up to 60%.
 - anyone who does not submit by the deadline can get a one-month deferral by deducting five (5) credit points;
 - can then be entered with a deduction of 10 credit points;
 - lost points can be replaced by additional publication.
 - b. Research report (home conference) (25 credits, minimum of 13 credits to be achieved)
 - the report will be published in an internal publication until the date of the conference, before which the DI management will judge its acceptability, and returned for its revision if necessary;
 - graded by the committee set up for this purpose;
 - lost points can be replaced by additional publication.
 - c. Final research report

- submission is a condition for admission to the complex exam and the issuance of a pre-degree certificate;
- the qualification is performed by the head of SCQ of the DS with the grading of "passed" or "failed", in the latter case the candidate gets the report back for revision .

d. Research activity in the dissertation phase

- In the dissertation phase, ten (10) credits can be awarded for the research activity every six months, which is evaluated and certified by the supervisor (assessed in the last semester by the Research Audit Committee).

2. *The publications*

- anyone who does not complete the publishing activity in the required semester may replace it until the end of the training research phase;
- the credit value of the publication score in the training phase is four times the publication score, a minimum of twenty-eight (28) and a maximum of fifty (50) credits can be completed;
- in the dissertation phase, the credit value of the publication score is twice the publication score, of which an average of twenty (20) credits must be completed per semester;
- the student's qualification is submitted by the head of the TSC to the management of DI for decision.
- the candidate must present his / her results in at least three domestic and two foreign scientific peer-reviewed journal articles within the minimum publication score (one of the five must be published in an impact factor or at least two in Q1 or Q2 rated journals).

10. FINANCIAL MANAGEMENT OF THE DOCTORAL SCHOOL

The available resources are distributed among the doctoral schools according to the UDR.

In the DS, the division between the topic groups is decided by the DIT on the basis of the proposal of the TSC.

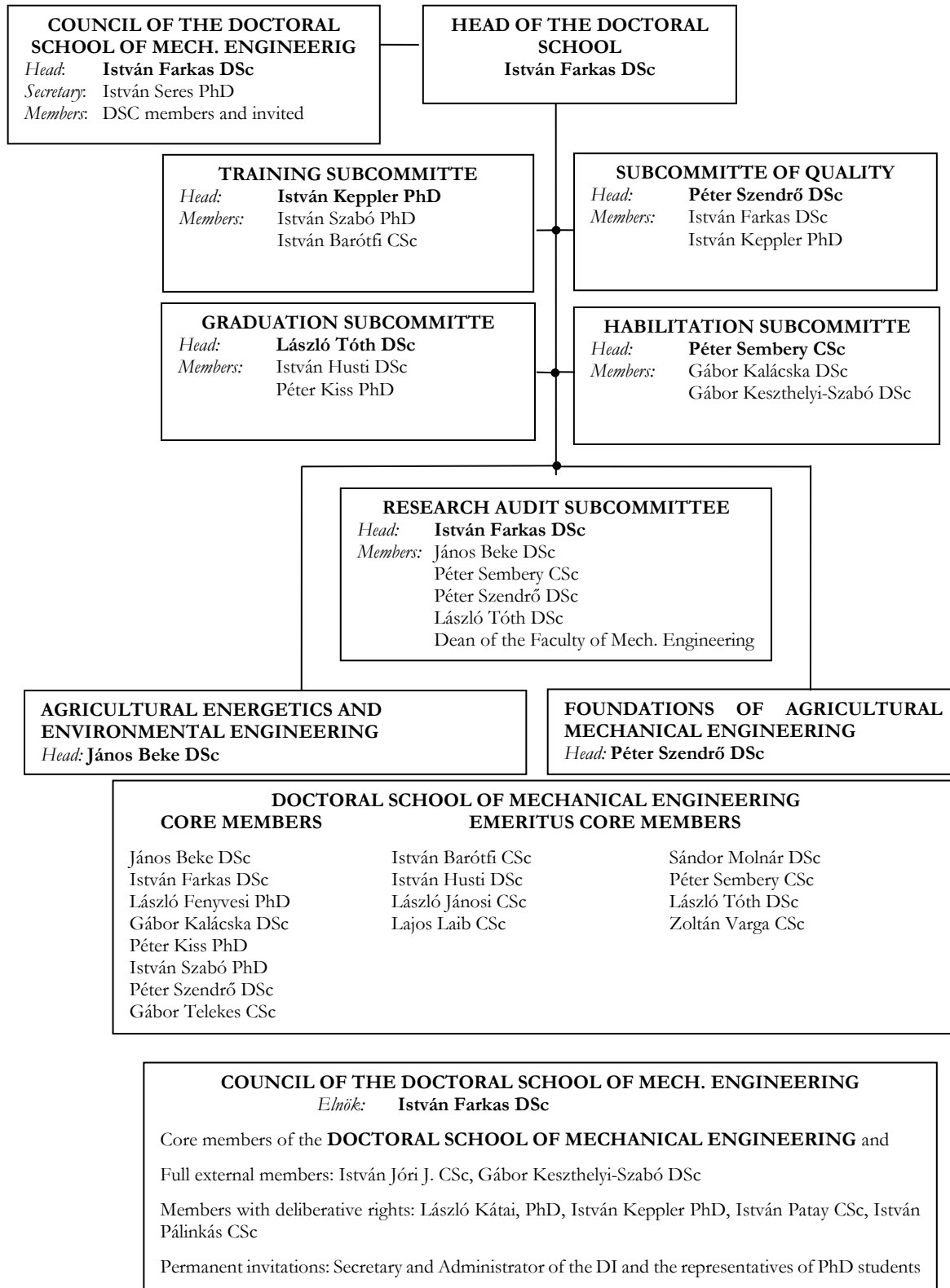
The DS financial management practices:

- the amount set aside for the common costs of the DS is determined by the DSC,
- the head of the DI communicates to the supervisor and the doctoral student the material framework that can be used in the given year,
- the supervisor and the doctoral student prepare a financial plan for the use of the annual framework. The available frame is approx. 1/3 on accumulation, 1/3 on material expenses, and the remaining 1/3 on publication expenses, attending a conference or study trips. Participation in a conference or study trips in 1st year is only allowed in exceptional cases.
- the doctoral student can use the available amount only with the consent of the supervisor, and the purchase invoice (invoice form) must also be marked by the supervisor,
- the invoice must be handed over to the DI's administrator, who, after registration, forwards it to the Finance Department, signed by the Head of School, for inspection and payment.

APPENDICES

APPENDIX 1.

STRUCTURE OF THE ORGANIZATION OF THE DOCTORAL SCHOOL OF MECHANICAL ENGINEERING



CURRICULUM OF THE DOCTORAL SCHOOL

Curriculum of the Doctoral School of Mechanical Engineering					
Agricultural Energetics and Environmental Technology topic group					
I. year		1. semester	I. year		2. semester
Subject	Hours	Credit	Subject	Hours	Credit
	sem.			sem.	
Research ethics (A)	30	5	General research methodology (A)	30	5
Modeling and simulation (A)	30	5	Theory and practice of engineering research (A)	30	5
Heat and mass transfer (B)	30	4	Measurement technology (B)	30	4
Elective subject C	30	3	Elective subject C	30	3
Educational activity	30	2	Literature review	-	18
			Educational activity	30	2
Credits summarized:		19	Credits summarized:		37
II. year		3. semester	II. year		4. semester
Subject	Hours	Credit	Subject	Hours	Credit
	semester			semester	
Environmental technology (B)	30	4	Research report	-	25
Elective subject C	30	3	Educational activity	30	2
Educational activity	30	2	Publication		8
Publication	-	20			
Credits summarized:		29	Credits summarized:		35
Units:					
Training:				41	
Educational activity:				8	
Research:				43	
Publication:				28	
Total credits during the training phase:				120	
III. year		5. semester	III. year		6. semester
Research activity		10	Research activity		10
Publication		20	Publication		20
Total		30	Total		30
IV. year		7. semester	IV. year		8. semester
Research activity		10	Research activity (final)		10
Publication		20	Publication		20
Total		30	Total		30
Total in the dissertation phase				120	
Total number of credits				240	

Curriculum of the Doctoral School of Mechanical Engineering							
Agricultural Mechanical Engineering topic group							
I. year		1. semester		I. year		2. semester	
Subject	Hours	Credit	Subject	Hours	Credit		
	sem.			sem.			
Research ethics (A)	30	5	General research methodology (A)	30	5		
Modeling and simulation (A)	30	5	Theory and practice of engineering research (A)	30	5		
Farm machinery construction (B)	30	4	Differential equations (B)	30	4		
Elective subject C	30	3	Elective subject C	30	3		
Educational activity	30	2	Literature review	-	18		
			Educational activity	30	2		
Credits summarized:		19	Credits summarized:		37		
II. year		3. semester		II. year		4. semester	
Subject	Hours	Credit	Subject	Hours	Credit		
	semester			semester			
Material sciences (B)	30	4	Research report	-	25		
Elective subject C	30	3	Educational activity	30	2		
Educational activity	30	2	Publication		8		
Publication	-	20					
Credits summarized:		29	Credits summarized:		35		
Units:							
Training:				41			
Educational activity:				8			
Research:				43			
Publication:				28			
Total credits during the training phase:				120			
III. year		5. semester		III. year		6. semester	
Research activity	10		Research activity	10			
Publication	20		Publication	20			
Total	30		Total	30			
IV. year		7. semester		IV. year		8. semester	
Research activity	10		Research activity (final)	10			
Publication	20		Publication	20			
Total	30		Total	30			
Total in the dissertation phase				120			
Total number of credits				240			

SUBJECTS OF THE DOCTORAL SCHOOL

Subject structure of the Doctoral School of Mechanical Engineering (since 2016)		
No.	Subject	Teacher
"A" subject group (5 credits)		
1.	Modeling and simulation	István Farkas DSc professor
2.	Theory and practice of engineering research	Rita Kiss DSc professor
3.	Research ethics	István Szabó PhD professor
4.	General research methodology	Péter Szendrő DSc prof. emeritus
"B" subject group (4 credits)		
Agricultural Energetics and Environmental Technology		
1.	Environmental technology	Gábor Géczy PhD ass. professor
2.	Heat and mass transfer	János Beke DSc professor
3.	Measurement technology	István Seres PhD egyetemi docens
Foundations of Agricultural Mechanical Engineering		
1.	Material Sciences	Gábor Kalácska, DSc professor
2.	Farm machinery construction	László Kátai PhD ass. professor
3.	Differential equations	Zoltán Varga CSc prof. emeritus
"C" subject group (3 credits)		
1.	Drying theory	János Beke DSc professor
2.	Artificial intelligence	István Farkas DSc professor
3.	Economy of development	István Husti DSc prof. emeritus
4.	Mechatronical systems	László Jánosi CSc prof. emeritus
5.	Propulsion theory	László Kátai PhD ass. professor
6.	Classical mechanics	István Keppler PhD professor
7.	Food industry processes	Gábor Keszthelyi-Szabó DSc professor
8.	Vehicle dynamics, off road theory	Péter Kiss PhD professor
9.	Solid state physics	Csaba Mészáros PhD ass. professor
10.	CFD modeling	István Oldal PhD ass. professor
11.	Design of experiments	István Oldal PhD ass. professor
12.	Data collection and processing in agriculture	István Szabó PhD egyetemi tanár
13.	Biotechnics	András Szász CSc professor
14.	Wind and geothermal energy utilization	László Tóth DSc prof. emeritus

Students may choose C subjects or B subjects of the other topic group as C subjects, as well as courses of other doctoral schools, in each case with a C credit value determined by the Doctoral School of Engineering, only with the consent of the supervisor and prior permission of the doctoral school management.

SCORE CALCULATION FOR THE EVALUATION OF THE PUBLICATION AND SCIENTIFIC ACTIVITY

1. Publications and citations		Number of publications	Weight factor	Number x weight factor
Journal articles	IF journal publications		15	
	Publications in English		10	
	Reviewed publication in Hungarian		5	
	Other Hungarian scientific publication		2	
	Other English scientific publication		2	
Conference proceedings	International conference proceedings		5	
	Hungarian conference proceedings		3	
	International conference abstract		2	
	Hungarian conference abstract		1	
Electric publications and databases	English, reviewed		3	
	Hungarian, reviewed		2	
Book, chapter, editorial activity	English book/Chapter		6 (3)/token	
	Hungarian book/Chapter		2 (1)/token	
	English editing activity		10	
	Hungarian editing activity		5	
Patent)	Patent in Hungary		2	
	International patent		4	
Citation ⁽⁹⁾	Hungarian citation		2	
	International citation		5	
1. Publication scores altogether:				
2. Specific creations ⁽¹⁰⁾ ⁽¹¹⁾				
Technological development, technological plan			2	
Documented technological development			3	
Software development			2	
2. Creations altogether:				
3. Research activities				
Leader of Hungarian scientific research project			3	
Participant of Hungarian scientific research project			1	
Leader of an International scientific research project			5	
Participant in an International scientific research project			1	
Leader of other International research projects			2	
Leader of other Hungarian research projects			1	
International expert			2	
3. Research activity altogether:				
4. Education of the young scientists				
Head of a doctoral (PhD, DLA) School			5	
Officer of a doctoral (PhD, DLA) School			3	
Senior officer of a doctoral (PhD, DLA) School			4	
PhD or DLA supervisor: successfully completed			3	
during the process			1	
PhD opponent			1	
Students scientific research supervisor: finished report			0, 5	
prized report			1	
4. Altogether:				
5. Other scientific activities				
Officer of a national professional committee			10	
Member of a national professional committee			2	
Member of a Hungarian editorial board			5	
Member of an International editorial board			10	

Officer of the organizing committee of a congress, conference		5	
Member of the organizing committee of a congress, conference		2	
Officer of a Hungarian scientific society		2	
Officer of an International scientific society		5	
Opponent of an academic doctoral process		1	
5. Other scientific activities altogether:			
Publications and scientific activities altogether (1+2+3+4+5):			

Remarks:

The starting point of the evaluation is the habitus test used in the procedure for obtaining the DSc title of the Department of Agricultural Sciences of the Hungarian Academy of Sciences, which is based on the publication impact factor, based on SCI and provides an internationally comparable evaluation as an objective measure. In addition, when compiling the evaluation system, we tried to develop a measurement method that is compatible with other fields of science.

- (1) Peer-reviewed journal
 - has an editorial board.
 - has a summary in English
 - minimum one reviewer who makes written report
- (2) *English, German, French, Russian, Spanish and Italian* shall be considered as world languages.
- (3) Articles published in the world language, revised, published in the Bulletin may also be included here.
- (4) The official language of an international conference is a world language in which at least one-third of the speakers are foreign.
- (5) Proceeding: the fully published material of the conference presentation or poster was published in a publication with the ISBN or ISSN number of the conference and other evaluable publications. The abstract does not count as a conference publication.
- (6) The editorial board, proofreading, publisher, referral, and the keyword for finding an electronic publication are required.
- (7) A patent may be filed from the date on which it is published, or when its utilization begins. The utilized patent receives an extra point, the extent of which should be proportional to the extent of the references.
- (8) In patents, the weighting factor should be taken into account on the basis of the proportion of the contribution of the inventors. The division of the weight factor among the co-authors also applies to the profession-specific work (technological development, technical work, pharmacological test method, adaptation of new diagnostics, new healing procedure, educational methodological innovation, scientific and educational film, educational CD, software development).
- (9) Among the references, references published in print may be taken into account, a reference in a dissertation cannot be assessed as a reference. Self-reference, co-author's reference does not count.
- (10) When listing profession-specific scientific works (eg technical works, in the case of a procedure), it is necessary to indicate their economic and/or social usefulness, their domestic and foreign distribution. Utilized profession-specific works will receive extra points, the amount of which should be proportional to the number of references.
- (11) Expert opinion is not a scientific activity. OM patronage and non-scientific applications cannot be accepted among the won applications.
- (12) In the case of two or more authors, the performance of each author may be assessed by dividing the score of the publication by the number of authors. In the case of doctoral students, the authorship of the supervisor in the publication does not have to be taken into account in the division.
- (13) Also published at an international conference in Hungarian language.
- (14) 50% of the publication conditions can be met from this source.

EVALUATION OF SCIENTIFIC RESEARCH ACTIVITY

Point limits For home defence application (see points available under appendix 4)	
Type of scientific activity	points
1. Publications and their references	
1.1. Publication	35 or 30 ⁽¹⁾
1.2. References	5 ^{(1), (2)}
1. Total (minimum)	40
2. Profession-specific works	
3. External research sources	
4. Education of the young scientific community	
5. Other scientific activity	
1-5. Total (minimum)	60⁽³⁾

Remarks:

Achieving a minimum of 60 points is a necessary condition for submission to a workplace debate. *An additional requirement is that the publications include at least three domestic and two foreign, peer-reviewed articles published in world languages (at least one of the five must have impact factor - according to the Web of Science JCR database (<https://jcr.clarivate.com>), or at least two (2) pieces of Q1 or Q2 corresponding to the subject area according to the Scopus SJR database (<https://www.scimagojr.com>), which must be taken into account at the time of acceptance of the article.* The doctoral student carries out a self-assessment according to Appendix 4, which is evaluated by the appointed reviewer (see Chapter 5): e.g. the admissibility of the listed publications, the publication of the same article in several places, resp. or judging the connection to the dissertation. The Subcommittee on Quality will then form an opinion on admissibility and submit it to the DI Council.

- (1) the figures indicated are minimum requirements for participants in individual degrees
- (2) for judgments to be done, their documents must be submitted in an identifiable manner
- (3) according to appendix 4.

Point limits in the case of application for habilitation	
Type of scientific activity	points (minimum)
1. Publications and references	
1.1. Educational publication	30
1.2. References for 1.1.	5 ⁽¹⁾
1.3. Scientific publication	100
1.4. References for 1.3.	15 ⁽¹⁾
1. Publications and references total	150
2-5. Other scientific activities ⁽²⁾	30
1-5. Total	180

Remarks:

Achieving a minimum of 180 points is a necessary condition for the acceptance of submission. A sufficient condition is given by the positive opinion of the two reviewers, which states the eligibility of the listed activities and their content value (e.g. admissibility of the listed publications, publication or inclusion of the same article in several places, or assessment of the connection to the dissertation, etc.). The complete documentation used for the scoring must be made available to the nominated judges. Based on these, the DS Habilitation Committee formulates an opinion on admissibility and submits it to the DS Council.

The condition for habilitation is also the fulfilment of 50% of the requirements of the academic doctoral degree established by the competent Department of the Hungarian Academy of Sciences.

References must be substantiated in a documented form (copy) as above.

ELECTRONICALLY AVAILABLE MATERIALS

FORMS

1. Doctoral topics recommended for publication
2. Institutional declaration of acceptance
3. Research work plan (in case of application)
4. Research work plan (for doctoral students)
5. Outline of the dissertation (in case of an individual degree holder)
6. Admission protocol
7. Certificate of the doctoral student's teaching activity
8. Literature review
9. Research report
10. Home defence request
11. Home defence invitation sample

The forms can be downloaded online , in editable form from <http://mtdi.szie.hu>.

The appendices issued by the University Doctoral and Habilitation Committee (Application form for doctoral training, application form for obtaining a degree, content and form requirements of the doctoral dissertation, etc.) can be downloaded from the EDHT website:
https://szie.hu/Doktori_kepzes_es_Habilitacio/Egyetemi_Doktori_Szabalyzat

DETAILED DESCRIPTION OF DSME SUBJECTS

A detailed description of the subjects can be downloaded from <http://mtdi.szie.hu>.