

University of Pannonia



**Chemical Engineering and Material Sciences
Doctoral School**

Rules and Regulations of the Doctoral Programme

Approved by the Doctoral Programme and Habilitation Council of CEMSDS, Faculty of Engineering, University of Pannonia

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In effect until revoked.

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Preamble

The University Doctoral and Habilitation Council (UDHC) of University of Pannonia suggested to the Hungarian Accreditation Committee (hereinafter HAC) in October 2000 the temporary accreditation of the Doctoral School in the field of chemical engineering.

The plenum of HAC has decided in the meeting in 15 December 2000 and approved the establishment of Doctoral School in the field of chemical engineering within the engineering sciences from 1 January 2001 by the Decree No **2000/10/III/2.7/2.**

Based on the UDHC decree the Chemical Engineering Doctoral School has expanded with two research disciplines from the Material Sciences and Technology Doctoral School as follows: “Non-metal inorganic material” and “Material-, energy- and cost-effective optimal scaling of technological systems”.

The HAC’s Decree **2009/7/XIII/2/338.** has prolonged the accreditation of the Doctoral School in the fields of „material science and technologies” and „bio-, environmental- and chemical engineering sciences” to 31 December 2014.

The Doctoral School was accredited by the HAC with the Decree **2015/1/XI/16/2/845.** till 21 December 2017.

Based on the Decree of UDHC in 30 Mai 2016 the Molecular- and Nanotechnologies Doctoral School (identification number D173) has been integrated into CEMSDS from 1 June 2016, where a new discipline entitled “Molecular- and nanotechnologies” was initiated broadening further the field of material science mainly in the area of nanotechnology and biosensors.

The Doctoral School was accredited by the HAC with the Decree **2017/10/X/1/2/1157.** till 31 July 2020.

The Doctoral School was accredited by the HAC – together with a monitoring process – with the Decree **2020/3/VI/1/4.** till 9 April 2025.

The Rules and Regulations of the Chemical Engineering and Material Sciences Doctoral School incorporate the following legal Acts and Government Decrees:

- Act CCIV of 2011 on National Higher Education (hereinafter NHEA)
- Government Decree 387/2012 (XII.19.) (modified on April 26, 2013) on Doctoral Schools, doctoral procedures, and habilitation
- resolutions of the HAC
- Doctoral Rules and Regulations of the University of Pannonia.

GENERAL PROVISIONS

1. § Introduction

- (1) The Doctoral School (hereinafter DS), including various organizational units of the university, is an educational institution, operating with the approval of the University and the HAC, in which preparatory training for obtaining an academic degree is provided. Other higher education institutions or research institutes outside the DS may also associate with the doctoral school.
- (2) Official name of the DS: Chemical Engineering and Material Sciences Doctoral School (hereinafter CEMSDS), operating at the Faculty of Engineering, University of Pannonia.
- (3) The minimum personnel conditions set forth in the establishment of the school and by the accreditation must be met at all times.
- (4) Based on the resolution of the UDHC, the DS shall develop its internal operating rules in such a way that they successfully contribute to the high quality of training and obtaining a doctoral degree. It shall also be ensured that all doctoral students have access to the full intellectual properties and facilities of the school to be able to carry out research.
- (5) When devising the Doctoral Rules and Regulations of the DSCES, the Doctoral Rules and Regulations of the University of Pannonia should be taken into account along with other decisions.

ORGANISATIONAL FRAMEWORK OF THE DOCTORAL SCHOOL

2. § Members of the Doctoral School

- (1) Head of the Doctoral School
 - a) The head of the doctoral school is appointed or dismissed by the Rector with regard to the proposal of the UDHC and approval of HAC.
 - b) The head of the DS is responsible for maintaining the quality of academic and scientific work of the school.
 - c) The head of the DS is elected by the core members of the doctoral school for the period of three years.
 - d) The work of the head of the school is assisted by the DPHC.
- (2) Secretary of the Doctoral School
 - a) The secretary of the Doctoral School is appointed or dismissed by the DPHC with regard to the proposal of the head and the panel of the DS.
 - b) The Secretary of the DS is responsible for the day-to-day running of the school's administrative and organizational tasks. The Secretary is to assist the head of the DS, to facilitate the meetings of the DPHC, and to prepare and forward the reminders about them to DPHC members.
- (3) Core members
 - a) Based upon the proposal of the head of the DS, core members are appointed by the DPHC. The assignment may be revoked on the proposal of the head of the DS, or the individual may revoke it officially in writing upon individual decision. The Hungarian higher education permits individuals to be employed as a core member exclusively in one doctoral school at a time.

- b) The list of core members of the CEMSDS is available in the database of the National Doctoral Council /www.doktori.hu/. The list of core members is also included in Appendix 1 of these regulations.
 - c) Academics, who pursue high standard scientific activities in the academic discipline and research field matching the objectives of the doctoral school, may also join as core members of the DS upon the recommendation of the head of the DS and approval of the DPHC.
 - d) Core members of the CEMSDS are to undertake teaching and supervisory work in the DS.
- (4) Supervisors of doctoral topics
- a) A supervisor of the DS shall responsibly manage and assists the studies and research work of the doctoral students during their preparation of obtaining the doctoral degree.
 - b) The DS supervisor may be a lecturer or researcher who has held an academic degree for at least three years, whose research work is in a field corresponding to one of VMADI's main research areas, who has met the requirements for obtaining a PhD degree in the four years prior to the announcement, and whose topic announcement has been approved by the DPHC. A researcher/lecturer who, although less than three years have passed since obtaining their degree, has such excellent academic indicators that they achieve 50% of the indicators required for submitting an application for a doctorate at the Hungarian Academy of Sciences in the relevant field of science, may also be accepted as a supervisor.
 - c) Research topics to be announced at the CEMSDS shall first be sent for approval of the DPHC by January 15 or June 15 of each year. The announced doctoral topics and appointments of supervisors of doctoral topics are to be decided by the DPHC.
- (5) Teaching staff of the DS
- d) Teaching staff of the DS shall consist of lecturers and researchers holding academic/scientific degrees that has been found suitable by the DPHC to lead lecturing, research and supervisory activities in the DS. The list of lecturers of the DS can be found in Appendix 2.
 - e) Lecturers of the DS are to offer subjects as specified in the curriculum of the doctoral training/research programme. Offering new subjects or changing the content of an old subject of the curriculum is only accepted with the permission of DPHC.
 - f) The doctoral programs are revised and announced by the DPHC annually and are published in the usual way. The lecturers shall notify the head of the DS in writing of the subjects to be offered in the given semester no later than September 1 and February 1, respectively.
- (6) PhD Students/Doctoral Students
- Doctoral students participating in the doctoral programme have the rights, duties and obligations that are stipulated in the Acts governing higher education.

3. § The Doctoral Programme and Habilitation Council (DPHC)

- (1) Council of the Doctoral School: a panel that meets regularly to assist the head of the doctoral school and is elected by the core members of the DS. Its members are appointed and dismissed by the Doctoral and Habilitation Council of the University.
- (2) Members of the DPHC are elected for 3 years.

- (3) Core tasks of the DPHC:
- a) based on the requirements set by the UDHC, develops, revises and improves the doctoral training and research programmes; determines those scientific activities that can be point-based evaluated, and evaluates the academic performance of the students,
 - b) each academic year decides and selects courses to be offered based on the recommendation of the heads of departments and research institutes,
 - c) makes recommendation to the UDHC on appointing academic staff, supervisors of doctoral topics and members of the Admission Committee of the doctoral school (personal data sheet for new employees (academics/researchers) can be found at the appendix),
 - d) organises admission procedures to the doctoral training programme,
 - e) fulfils admission related administration tasks
 - f) reviews applications for obtaining a PhD degree through individual preparation, makes recommendation to UDHC,
 - g) appoints supervisors of doctoral topics of newly admitted students,
 - h) approves study plans of doctoral students,
 - i) reviews the scientific achievements of doctoral students, evaluates their research work and recognises credit points, can initiate the suspension of studies when necessary,
 - j) evaluates applications for exemption of exams
 - k) reviews and decides on deferral request and applications for part-time scholarships abroad based on the recommendation of supervisors,
 - l) defines the subjects of the comprehensive/complex exams,
 - m) appoints exam board members of comprehensive/complex exams, members of dissertation committees,
 - n) makes recommendations on awarding a doctoral degree
 - o) supervises the distribution and allocation of finances of the DS, controls the administration of the finance of the DS,
 - p) keeps records of the first employment of the alumni,
 - q) makes a proposal to the UDHC on awarding doctoral degrees and titles of honorary doctor (Doctor Honoris Causa); shall express opinion on cases the UDHC's judgement is sought after.
- (4) The DPHC is chaired by the Head/Director of the CEMSDS.
- (5) The updated list of members of the DPHC is included in Appendix 3.
- (6) The secretary of the DPHC is appointed by the Head/Director of the CEMSDS and is responsible for organising the meetings of the DPHC.
- (7) Except for the student representative, members of the DPHC must possess a doctoral degree.
- (8) The quorum and decision-making criterions of the DPHC are the same as those of the UDHC.

4. § Forum of the Chemical Engineering and Material Sciences Doctoral School

- (1) The Head/Director of the CEMSDS organises a forum to provide information about the affairs of the DS.
- (2) The forum is convened by the Secretary of the DS on behalf of the Head of the DS.
- (3) The purpose of the forum is to inform the members of the DS and to seek their opinion on important issues.
- (4) The forum can be organised online as well.

5. § Research facilities and research disciplines of the CEMSDS

- (1) In the frame of CEMSDS the following research disciplines are available, directing by the leading instructors listed in Appendix 4:

Material science and surface chemistry
Process engineering
Intelligent materials and technologies
Non-metallic inorganic materials and processes
Modern unit operations
Environmental technologies
Petrol chemistry and engineering
Molecular- and nano-technologies
Bioengineering

- (2) The main research facilities of CEMSDS can be found in the units of Engineering Faculty (University of Pannonia) in Veszprem and Nagykanizsa, moreover Institute of Mechatronics Engineering and Research (Zalaegerszeg). Additionally Centre for Energy Research (Eötvös Loránd Research Network) provide research background for the doctoral training in CEMSDS.
- (3) The University's general rules apply for any research carried out on departmental or institutional levels. Formal requirements for announcing research topics can be found in Appendix 6.
- (4) Doctoral students working in cooperative research field receive basic and complementary scholarship. Co-instructors from industry may be regarded as teachers of CEMSDS.

DOCTORAL PROGRAMME PROCEDURES OF THE DOCTORAL SCHOOL OF CHEMISTRY AND ENVIRONMENTAL SCIENCES

6. § Admission and eligibility

- (1) The Admission Committee of the DSCES shall have at least 4 members: the chair of the Admission Committee shall be the head/director of the DS or any core member appointed by the head/director of the DS, further members of the Admission Committee should be two core members of the DS and a representative of the PhD students.
- (2) Applicants, who meet the criteria set in the admission requirement of the DS, shall be

notified about eligibility one week prior to the entrance exam by the Office of the Doctoral Schools (ODS).

- (3) The Admission Committee is responsible for conducting the admission procedure and assessing the candidate's academic knowledge and intellect. The AC shall evaluate the applicant's performance and based on the entrance/admission test make a recommendation to the DPHC about accepting or refusing the application.
- (4) Applicants found eligible for admission will be ranked by the Admissions Committee based on total scores obtained at the entrance exam. The order of the ranking is determined separately for recipients of the Hungarian state scholarship and for the fee-paying training. The admission score is determined on the basis of the points awarded (qualification of the diploma, language skills, professional activity) and the performance at the entrance exam (professional language skills, relevant professional experience). Applicants, obtaining scores less than 50% on the entrance exam, may not be admitted.
- (5) The final decision on admission to the doctoral programme is made by the UDHC based on the recommendation of the DPHC.
- (6) Upon successful admission, the head of the DPHC will appoint the supervisors of doctoral topics.
- (7) Doctoral training is also available to those who wish to prepare individually for the PhD degree, provided that they have met the requirements for admission and the doctoral training. An application form shall be submitted in the case of individual preparation as well. Applications can be submitted continuously and will be evaluated during the term period. In this case, the official "doctoral student status" is acquired by applying for the complex exam and its acceptance.
- (8) Criteria of obtaining a PhD degree through individual preparation:
 - a) at least 5 years of research activity
 - b) sufficient level of publications of the last 10 years which is determined by the UDHC based on the specific field science,
 - c) master's or equivalent degree,
 - d) knowledge of two foreign languages
- (9) Application for obtaining a PhD degree through individual preparation:
 - a) Application to be submitted to the Directorate of Academic Affairs, then it is forwarded to the DS,
 - b) Formally appropriate applications are revised by the DPHC, then recommends UDHC to initiate the acceptance or refusal of application and the assignation of the subjects of the complex exam.
 - c) Applicants are to be notified about the decision in writing, refusals should be justified.
 - d) The complex exam shall be conducted following the decision of the UDHC. The research and dissertation phase of the training shall proceed along the complex exam.

7. § The doctoral training programme in CEMSDS

- (1) The study and examination regulations regarding doctoral students participating in the organised training is set out in the "Training Programme" of the DS. The training period

shall take six semesters for those who commenced their studies before September 1, 2016 and 8 semesters for those who started after September 1, 2016. Doctoral students may participate in studies abroad for a maximum of one semester. Part-time study abroad is only accepted if the doctoral student conducts research and / or studies related to the research topic. DPHC decides on the acceptance of part-time training received abroad based on the proposal of the supervisor.

- (2) Doctoral candidates, who commenced their studies before September 1, 2016, shall take a comprehensive examination after successfully fulfilled the requirements prescribed in the regulations of the doctoral programme. The comprehensive exam is a form of assessment to evaluate the doctoral candidate's knowledge acquired in the branch of science. Subjects of the comprehensive examination are included in Appendix 6.
- (3) The comprehensive exam consists of two subjects related to the topic of the dissertation: a major and a minor subject. The doctoral candidate's examination subjects are approved by the DPHC based on the supervisor's recommendation. The doctoral student or doctoral candidate shall be notified in writing of the subjects and the date of the comprehensive examination. The comprehensive examination precedes the dissertation defence in public.
- (4) The comprehensive examination shall be conducted before the Comprehensive Exam Committee. The examination committee consists of a Chair and a maximum of four additional members; one third of the committee, but at least one member shall be an external professional, not employed by the University. All members of the exam committee shall hold a doctoral degree. The comprehensive exam shall only be conducted if the chairman and two members (at least one of them external) are present. The candidate's supervisor, consultant, or the co-publisher of the candidate's doctoral topic cannot serve as members of the exam committee. The comprehensive exam is public.
- (5) The committee decides on the grades of the main and the minor subjects separately by secret ballot (on a 0-4 level marking system). The exam is successful if the sum of the number of points obtained reaches 60% of the available score for both subjects separately. The unsuccessful exam may be retaken only once after six months, but not later than within 12 months. The final grade is decided according to the following: the average of the points determined separately for the two subjects, expressed as a percentage of the points that can be obtained. At averaging the marks, the core subject shall weight double.
- (6) Minutes are taken at the comprehensive exam. Results shall be announced immediately after the exam.
- (7) No comprehensive exam is necessary to take for those who commenced their studies after September 1, 2016, or are in individual preparation as the complex exam ensures the probe the doctoral students' theoretical preparation. The two subjects of the complex exam - similar to those of the comprehensive exam – are assigned from the compulsory elective subjects of the DS and shall be related to the research area/topic of the doctoral student. The evaluation of the theoretical part of the complex exam is the same as that of the comprehensive exam (and in the case of the dissertation part it is also necessary to reach 60%).

8. § Regulations in CEMSDS

- (1) Doctoral students who started after September 1, 2016 the training can be divided into two parts: education and research part; research and dissertation part. In the education and research part (first 4 semesters) credit points (CP) for various doctoral courses, research work, moreover teaching activities can be obtained. To complete this part (at the end of semester 4 complex exam should be taken, which is a test on the progress on study and research of the student, as well as a criterion to start the second part. In the research and dissertation part CPs can be obtained only by research activities. Gaining all the CPs requested the institution provides an absolutorium for the student.
- (2) Doctoral students should prepare – together with the supervisor – the complete study and research plan including the education and research work. The plans should be approved by DPHC.
- (3) During the training the doctoral student accomplishes the necessary research works – according to the research plan –, takes the exams of the courses, teaching and other activities may be involved approving by the supervisor.
- (4) To complete the semester the student has to prepare the evaluation documents and send to the Secretary of DS together with the verifications. The fulfilments of the education and research work accomplished are credited in the end of the semester.
- (5) The complex exam consists of two subjects: a compulsory and an optional subjects of the DS (a major and a minor subject), related to the topic of the dissertation. For the complex exam at least 90 CPs should have, where 48 CPs have to be educational credits. Before the complex exam the semester report should be accomplished.
- (6) The Committee evaluated the theoretical (exam) and dissertation parts. The complex exam is regarded successful if both parts are successful.
- (7) The aim of the research and dissertation part is to obtain the doctoral degree. The student carries out the research activities independently, but conducted and helped by the supervisor. The research results are presented in conferences and published in high impact journals. The CPs for the publications and presentations are summarized in the Training Programme.
- (8) The students should have to have official oral report about his/her work two times a year. The presence of at least one member of DPHC is necessary.
- (9) Doctoral students who started after September 1, 2016 should take a closing report about the second part of the training and to collect at least 240 CPs to gain the absolutorium. Moreover the language requirements should be fulfilled for the degree.

9. § Procedures of obtaining a doctoral degree

- (1) To obtain a doctoral degree, doctoral students need to fulfil the degree requirements as set in the Rules and Regulations of the DS, write, and defend their thesis.

- (2) Doctoral students are required to submit the “Request for Approval of Awarding Doctorate Degree” form.
- (3) Requirements for obtaining a doctoral degree:
 - a) master’s degree
 - b) successful comprehensive/complex exam
 - c) proof of independent scientific work in forms of published or accepted for publication articles in professionally approved scientific journals, peer-reviewed journals, and books (according to the requirements set in the disciplinary regulations of the DS).
 - d) evidence of appropriate command of two languages other than Hungarian/ foreign languages (list of languages accepted and the required level is included in the Appendix.)
 - e) preparation and submission of a dissertation based on independent research (hereinafter dissertation) by using methods of scientific work, as well as its defence in a public debate before a committee
 - f) no criminal records.
- (4) Minimum requirements to obtain a doctoral degree in the DSCES are articles published or accepted for publication in three, refereed international journals in foreign language, out of which 2 should be published (accepted) in foreign journals. At least one of the journals should be qualified as Q1, and the accumulated impact factor have to exceed the value 2.00.
- (5) The criteria for obtaining a doctoral degree is the submission of a doctoral dissertation written by the doctoral student or doctoral candidate (hereinafter: author). Formal requirements of the dissertation is summarized in Appendix 9.
- (6) The most important results of the doctoral dissertation should be summarized in a theses booklet.
- (7) At the request of the author, with the consent of UDHC, the dissertation can be submitted in a foreign language.
- (8) To support the author, the dissertation should be discussed in the forum of the DSCES (possibly in other scientific forum upon request) before its completion. Objections raised during the disputation are considered at the discretion of the author. Minutes shall be kept of the presentation of the dissertation, of the disputation, of the conclusion of the referees and the scientific forum.
- (9) DPHC invites two referees with doctoral degrees (obtained at least three years earlier) to evaluate the dissertation. At least one of the referees shall be an external expert. Due to conflicts of interest or professional reasons, referees may reject the assignment within 14 days. The referee has 2 months, excluding the months of July and August, to complete the evaluation of the dissertation.
- (10) Doctoral candidates shall be notified about the appointed members of the Dissertation Committee. Except for conflict of interest or partiality, the doctoral candidate shall not object to the appointed members. In case of objection on part of the doctoral candidate, the DPHC shall decide upon changing the members of the Dissertation Committee.
- (11) The evaluation shall detail the referees’ opinion on the content, the format and the

mistakes of the dissertation, with special focus on the acceptance of the theses. The evaluation can also contain questions to the author of the dissertation.

- (12) The DSCES requests two copies of the referees' evaluation. The third page of the dissertation shall be filled in with the necessary data (name of the referees, their evaluation, and the dates). One copy of the referees' written report/evaluation shall be handed back to the author, who shall respond to the questions asked by the referees. The response of the author shall be submitted electronically and in printed form to the Doctoral Programme Administrator. The response is sent to the referees before the defense by the Doctoral Programme Administrator. The date and place of the doctoral defense shall be announced within 2 months of the receipt of the evaluation reports and other supporting documents.
- (13) If both referees object to defend the thesis, the procedure to obtain a doctoral degree shall be terminated. In case only one of the referees objects to defend the thesis, then the DPHC is responsible to call upon another referee. The assessment/evaluation of the third referee shall finalise the decision.
- (14) The doctoral thesis shall be defended before a Dissertation Committee appointed by the DPHC in a public disputation. The Dissertation Committee shall consist of at least 5 members: the Chair, being a professionally qualified university professor or professor emeritus, the referees, and two additional members. It shall be ensured that two members of the Dissertation Committee are external experts who are not employed by the University. All members of the Dissertation Committee shall hold an academic degree. The supervisor, the consultant, and the co-author of any publications of the doctoral candidate shall not be members of the Dissertation Committee.
- (15) The public disputation shall be conducted after successfully passing the comprehensive/complex exam.
- (16) The doctoral candidate, members of the DPHC, along with all the relevant faculty, departments or institutes involved in the programme, shall be notified about the time and date of the public disputation. The notification shall contain that anyone wishing to comment may do so during the disputation, alternatively, can also reflect in writing beforehand.
- (17) The doctoral dissertation shall be made accessible to anyone.
- (18) Members of the Dissertation Committee shall be provided the opportunity to review the assessment of the dissertation and the responses given to the evaluation of the referees.
- (19) In case the dissertation was prepared in a foreign language, the defence can be held either in Hungarian or in a foreign language.
- (20) At the defence, the doctoral candidate shall summarise the main points of the dissertation/present the abstract of the thesis. The doctoral candidate shall respond to the questions and comments by the members of the Dissertation Committee and the audience. At the end of the defence, the referees and the audience declare whether they accept the candidate's responses.
- (21) After closing the disputation, the Dissertation Committee shall decide in a closed session, by secret voting (on a 0-4 level points grading) whether the defence was

successful or not. The referees are also included in the voting. The doctoral thesis is considered successful/accepted if the candidate receives at least 60% of the maximum points.

- (22) Minutes shall be taken about the disputation and of the closed session that shall be signed by the members of the Dissertation Committee. The third page of the dissertation shall be signed at the same time (sample of the third page is included in Appendix 8.)
- (23) Following the closed session, the Chair shall publicly announce the outcome of the defence.
- (24) A failed defence cannot be repeated. The author may submit a new dissertation in a similar topic only after two years and in one occasion.
- (25) A certificate shall be issued about the evaluation of the defence.
- (26) Based on the minutes taken at the defence, DPHC prepares a proposal to the UDHC
- (27) A copy of the successfully defended doctoral dissertation along with the evaluations and the responses is to be kept in the Central Library of the University, the additional copy and further documents are to be saved at the administration unit for preservation.

**CORE MEMBERS OF THE CHEMICAL ENGINEERING AND MATERIAL
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PhD student representative

Secretary:

Edit Tóth-Bodrogi

**RESEARCH DISCIPLINES AND LEADING INSTRUCTORS OF CHEMICAL
ENGINEERING AND MATERIAL SCIENCES DOCTORAL SCHOOL**

Material science and surface chemistry

Leading instructors: János Kristóf DSc., Imre Tímár CSc

Process engineering

Leading instructors: János Abonyi DSc and Sándor Németh PhD

Intelligent materials and technologies

Leading instructors: István Szalai DSc

Non-metallic inorganic materials and processes

Leading instructors: Erzsébet Horváth DSc

Modern unit operations

Leading instructors: Dóra Rippelné Pethő PhD, Géza Horváth CSc

Environmental technologies

Leading instructor: Endre Domokos, PhD

Petrol chemistry and engineering

Leading instructors: Jenő Hancsók DSc, László Bartha CSc

Molecular- and nano-technologies

Leading instructors: Ferenc Vonderviszt DSc, István Bársony DSc

Bioengineering

Leading instructor: Katalin Bélafi-Bakó DSc, László Gubicza DSc

Analysis of economic processes

Leading instructor: Csaba Hegedűs, Ph.D

Personal Data Sheet**(For lecturers/researchers of the CEMSDS)****Name:** _____**Date of birth:** _____**Academic degree and date of obtaining the academic degree:**
_____**Discipline of the obtained degree:** _____**Type of employment with the University:**

- full time
- part-time
- contract based
- retired
- professor emeritus
- other: _____

Position at the University:

- professor
- associate professor
- scientific/research work
- other: _____

Habilitant's denomination from the university: _____**Date of habilitation:** _____**Active supervisor:** yes/no**Currently supervising the following student(s):**

Name	Semester

Participating in the doctoral programme in form of (please choose one):

Chair

core member

supervisor

lecturer

Information regarding scientific work:

(List the 10 most important publications of the last 5 years including bibliographic data)

Specific data on scientific work (patents, inventions of the last 5 years).

Please include your Curriculum Vitae (max. 2 pages).

Research Topics of the CEMSDS

Research topic: <div style="text-align: center;">[Title]</div>		Supervisor: [Name] [position] [Scientific degree]
Discipline:	Main research area:	Research site:
Details of the research topic:		
Precedents of the research topic:		
Additional information:		
Signature of the supervisor:	Head of the research facility:	
Decision of the DPHC of the DSCES on the research topic: <div style="text-align: center;">[accepted / not accepted].</div>		Signature of the Director of the Doctoral School:

PhD Entrance Exam Evaluation Guide

A) Evaluation of the scientific and other results: max. 41 points

1. Results of the university degree: max. 15 points

= 5 (excellent)	15
$4.51 \leq \text{GPA} \leq 4.99$	12
$4.01 \leq \text{GPA} \leq 4.51$	9
$3.76 \leq \text{GPA} \leq 4.01$	6

2. Language Proficiency: max. 6 points

	L1	L2
Professional, advanced language exam	3p	3p
Advanced language exam (C)	2p	2.5p
Advanced language exam (A or B)	1p	2p
Professional, intermediate language exam	1p	2.5p
Intermediate language exam (C)	-	2
Professional, intermediate language exam A or B	-	1
Intermediate language exam A or B	-	1
Basic language skills (C)	-	1

3. Scientific work: max. 20 points

3.1. TDK (Students' Scientific Association) competition max. 10 points

National TDK I. award	10p
National TDK II. award	9p
National TDK III. award	8p
National Excellence award	6p
TDK of the University I. award	5p
TDK of the University II. award	4p
TDK of the university III. award	3p
Excellence award by the University	2p
Participation at the TDK at institutional level	1p

3.2. Publication max. 10 points

Referenced article in foreign language, as the first author	10p
Referenced article in foreign language, as the co-author	8p
Peer-reviewed article in foreign language, as the first author	8p
Peer-reviewed article in foreign language, as the co-author	6p
Referenced article in Hungarian language, as the first author	6p
Referenced article in Hungarian language, as the co-author	4p
Peer-reviewed article in Hungarian language, as the first author	3p
Peer-reviewed article in Hungarian language, as the co-author	2p
Publication in foreign language (min. length of 4 pages) as conference proceeding, as first author/co-author	6/3p
Publication in Hungarian language (min. length of 4 pages) as conference proceeding, as first author/co-author	4/2p
Book, book chapter(s) in foreign language	7p

Book, book chapter(s) in Hungarian language	4p
Foreign language presentation at international conference (author)	6p
Foreign language presentation at international conference (co-author)	2p
Hungarian language presentation at conference (author)	3p
Poster in foreign language by participating at international conference	2p
Poster in Hungarian language by participating at conference	1p

3.3. Professional activities max.: 10 pont

(Only the best result should be counted)!

Professional practice fitting to the research field (5 years)	10
Professional practice fitting to the research field (3 év)	8
Professional practice fitting to the research field (1 év)	6
Instrumental knowledge fitting to the research	10

B) Evaluation of the oral entrance examination: max: 30 points

Assessment of academic background by the Examination Board (both in Hungarian and foreign language, as stated in the Rules and Regulations of the Doctoral School)

List of subjects of the comprehensive/complex exam of the DSCES

MAIN SUBJECTS:

- The basics of micro and nano detection (*in Hungarian: A mikro- és nanoérzékelés alapjai*)
- Examination of material structure (*in Hungarian: Anyagszerkezeti vizsgálatok*)
- Material Science (*in Hungarian: Anyagtudomány*)
- Bio-nanotechnology (*in Hungarian: Bio-nanotechnológia*)
- Process Engineering Sciences (*in Hungarian: Folyamatmérnöki Tudományok*)
- Functional micro- and nanoparticles (*in Hungarian: Funkcionális mikro- és nanorészecskék*)
- Modern oil and petrochemical processes (*in Hungarian: Korszerű kőolajipari és petrolkémiai eljárások*)
- Modern chemical industry operations (*in Hungarian: Korszerű vegyipari műveletek*)
- Environmental Engineering (*in Hungarian: Környezetmérnöki Ismeretek*)
- Special materials for mechatronic systems (*in Hungarian: Mechatronikai rendszerek speciális anyagai*)
- Technical biotechnology (*in Hungarian: Műszaki biotechnológia*)
- Radioisotopic techniques and their application (*in Hungarian: Radioizotopos technikák és alkalmazásuk*)
- Selected organic chemical technologies (*in Hungarian: Válogatott szerves vegyipari technológiák*)

MINOR SUBJECTS ACCORDING TO THE MAIN LINES OF RESEARCH:

Materials Testing Methods and Surface Chemistry

- IR and Raman Spectroscopy (*in Hungarian: IR és Raman spektroszkópia*)
- Modern surface analysis methods (*in Hungarian: Modern felületanalitikai módszerek*)
- Nuclear measurement technology (*in Hungarian: Nukleáris mérés technika*)
- Rheological studies (*in Hungarian: Reológiai vizsgálatok*)
- X-ray diffraction (*in Hungarian: Röntgendiffrakció*)
- Computer microscopy (*in Hungarian: Számítógépes mikroszkópia*)
- Determination of mechanical properties of solid bodies (*in Hungarian: Szilárd testek mechanikai jellemzőinek meghatározása*)
- Thermal analysis (*in Hungarian: Termikus analízis*)

Process Engineering Sciences

- Data Modeling Methods (*in Hungarian: Adatmodellezési módszerek*)
- Process Synthesis and Optimization (*in Hungarian: Folyamatszintézis és optimalizálás*)
- Management/Control algorithms (*in Hungarian: Irányítási algoritmusok*)
- Modern technology development (*in Hungarian: Korszerű technológiafejlesztés*)

- Modeling and Simulation (Integrated Course) (*in Hungarian: Modellezés és szimuláció (integrált tantárgy)*)

Intelligent Materials and Technologies

- Engineering applications of HIL / SIL technologies (*in Hungarian: HIL/SIL technológiák mérnöki alkalmazásai*)
- Soft intelligent materials and their applications (*in Hungarian: Lágy intelligens anyagok és alkalmazásaik*)
- Micro-electromechanical systems (*in Hungarian: Mikro-elektromechanikus rendszerek*)
- Optimal scaling of technology systems (material, energy and cost saving) (*in Hungarian: Technológiai rendszerek optimális (anyag-, energia- és költségtakarékos) méretezése*)

Material Systems and Procedures of Ceramic Industry

- Composite materials (*in Hungarian: Kompozit anyagok*)
- Modern technical ceramics (*in Hungarian: Korszerű műszaki kerámiák*)
- Modern technical glasses (*in Hungarian: Korszerű műszaki üvegek*)
- Nanostructured metals, ceramics, plastics (*in Hungarian: Nanoszerkezetű fémek, kerámiák, műanyagok*)
- Silicate chemistry (*in Hungarian: Szilikátkémia*)

Modern chemical operations

- Energetics (*in Hungarian: Energetika*)
- Modern liquid separation operations (*in Hungarian: Korszerű folyadékszeparációs műveletek*)
- Reaction Technique (*in Hungarian: Reakciótechnika*)
- Transport Theory (*in Hungarian: Transzportelmélet*)
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Environmental Engineering and Technology Systems

- Life cycle analysis (*in Hungarian: Életciklus elemzés*)
- Pharmaceutical chemistry and syntheses (*in Hungarian: Gyógyszerkémia és –szintézisek*)
- Homogeneous catalytic technological processes (*in Hungarian: Homogénkatalitikus technológiai eljárások*)
- Waste management (*in Hungarian: Hulladékgyártás*)
- Industrial organic chemistry (*in Hungarian: Ipari szerves kémia*)
- Catalysis (*in Hungarian: Katalízis*)
- Environmental impact assessment, auditing (*in Hungarian: Környezetállapot értékelés, auditálás*)
- Environmental management systems (*in Hungarian: Környezetmenedzsment rendszerek*)
- Air quality protection (*in Hungarian: Levegőtisztaság-védelem*)
- Membrane separation processes in environmental protection (*in Hungarian: Membránszeparációs eljárások a környezetvédelemben*)
- Ecological risk assessment (*in Hungarian: Ökológiai kockázatbecslés*)
- Radioecology (*in Hungarian: Radioökológia*)
- Wastewater treatment technologies (*in Hungarian: Szennyvízkezelési technológiák*)
- Soil contamination, damage prevention (*in Hungarian: Talajszennyezések, kárelhárítás*)

- GIS applications (*in Hungarian: Térinformatikai alkalmazások*)

Petroleum industrial and petrochemical processes and products

- Chemistry and technology of lubricants (*in Hungarian: Kenőanyagok kémiaja és technológiája*)
- Modern engine and jet engine fuels (*in Hungarian: Korszerű motor- és sugárhajtómű üzemanyagok*)
- Petroleum industry equipment and scaling (*in Hungarian: Kőolajipari berendezések és méretezésük*)
- Polymer chemistry and technology (*in Hungarian: Polimerek kémiaja és technológiája*)
- Hydrocarbon industrial catalytic processes (*in Hungarian: Szénhidrogénipari katalitikus eljárások*)

Molecular and Nanotechnologies

- Analytical system biology (*in Hungarian: Analitikai rendszerbiológia*)
- Fundamentals of materials (*in Hungarian: Anyagszerkezeti ismeretek*)
- Bioellipsometry (*in Hungarian: Bioellipszometria*)
- Structure and function of biological macromolecules (*in Hungarian: Biológiai makromolekulák szerkezete és működése*)
- Electronmicroscopy in materials science (*in Hungarian: Elektronmikroszkópia az anyagtudományban*)
- Controlled release of drug: theories and applications (*in Hungarian: Ellenőrzött gyógyszerkioldás elmélete és gyakorlata*)
- Surface chemistry in biosensors (*in Hungarian: Felületkémia a bioszenzorokban*)
- Glycomics (*in Hungarian: Glikomika*)
- Integrated microsystems (*in Hungarian: Integrált mikrorendszerek*)
- Ion beam characterization and material modifications (*in Hungarian: Ionsugaras anyagvizsgálat és anyagmódosítás*)
- Label-free optical biosensors and their applications (*in Hungarian: Jelölésmentes optikai bioszenzorok és alkalmazásaik*)
- Up-to-date separation methods in biotechnology (*in Hungarian: Korszerű elválasztási módszerek a biotechnológiában*)
- Quantum chemistry I. (*in Hungarian: Kvantumkémia I.*)
- Quantum chemistry II. (*in Hungarian: Kvantumkémia II.*)
- Nanoscale physics (*in Hungarian: Nanoszerkezetek fizikája*)
- Particulate systems of controlled release (*in Hungarian: Szabályozott hatóanyagleadású részecskerendezetek*)

Technical Biotechnology

- Bioreactors (*in Hungarian: Bioreaktorok*)
- Enzymatic catalysis in non-conventional media (*in Hungarian: Enzimkatalitikus reakciók nem-konvencionális közegben*)
- Integrated systems in biotechnology (*in Hungarian: Integrált rendszerek a biotechnológiában*)
- Kinetics of complex enzymatic reactions (*in Hungarian: Komplex enzimes reakciók kinetikája*)

Formal requirements for doctoral theses and abstract booklets

The **doctoral thesis** shall be submitted in 2 identical, bound copies and in electric form as well. One of the bound copies is the property of the University Central Library, one copy is the property of the educational unit or the supervisor. If the candidate requires an own bound copy, she/he must provide it with an additional bound copy.

The front cover shall contain the following: DOCTORAL (PhD) DISSERTATION, name of the author, place and year of submission. On the inside of the back cover, it is recommended to place a suitable paper case to place the reviews of the referees and the answers in it.

The first page of thesis is blank, followed by the second page, which is the title page. This page shall display (apart from the previously mentioned data) the title of thesis, the supervisor's name, and the name of the Doctoral School of the University of Pannonia.

The template of the 3rd page of the dissertation is included in Annex 10 of the rules and regulations. The content of the 3rd page is not allowed to change. The known information shall be filled in by the author; the rest shall be left blank.

Components of the thesis:

- table of contents,
- abstract with the translation of the title (in Hungarian, English and another world language), a summary of the literature of the research field, with a critical remarks,
- research part (detailed description of the materials used and methods applied), the research results and their evaluation, (with special attention to the knowledge gained through the research to express the development and improvement in the given scientific field),
- detailed summary (longer and more detailed than the extract),
- bibliography/reference list including all sources cited in the work (shall be displayed in a way that the cited documents can be identified with complete certainty),
- numbered results of the hypothesis of the thesis in Hungarian and English.

The maximum length of the thesis is 250,000 characters, including tables and diagrams as well. The details of extensive series of measurements are not necessary to be included, unless the author insists, they can be added to the appendix. It falls into the jurisdiction of the UDHC to grant an exemption from length constraint.

The **abstract booklet** shall provide a brief summary of the preliminary research work, the aims, the applied research / experimental methods and the findings of an independent scientific work (thesis conclusions) in a numbered format. The booklet shall contain a list of the author's publications with bibliographic data regarding the topic of the dissertation.

The abstract booklet shall be submitted in Hungarian and in English, bound together or separately - in a number of copies depending on the number of people to be invited - and in an electronically version as well (in a separate files). Usually, 30 copies of the printed form are sufficient.

Aspects of the abstract at the end of the thesis in Hungarian language:

- in terms of structure, it shall stand as an "independent work" with a clear line of thought and following a simple style,
- the paragraphs shall be logically connected, but topically separated from each other,
- the use of terminology shall be uniformed/standardized and clear,
- the use of first person singular shall be avoided, instead "the author ...", "the dissertation ..." is advised to be used,
- its length shall not exceed 2,500 characters,
- it shall contain a clearly and briefly prepared summary of the aims and objects of the research, experimentation and work that contributed to the writing of the dissertation. It should also entail the description of the applied method(s), procedure(s) - if the method/procedure is new or modified, then only the nature and the quality of the novelty shall be outlined - including the achieved specific results and the realised or possible applications.

Based on the content of the thesis, the author shall contemplate the weight, the inclusion or exclusion of the above mentioned aspects in the abstract.

The abstract shall exclude:

- an introduction, a detailed explanation of the choice of topic, known statements...etc.
- a thematic presentation of each chapter of the thesis,
- figures or chemical formulas.

Aspects of the English or other foreign language abstracts:

- its content shall not exceed 8-10 lines,
- the aspects of the content are the same as above, but it is advised to focus on the method applied, the obtained result and their application.

In compiling these abstracts, special attention shall be paid to the correct use of language and grammar, in particular to the terminology in English and German.

[PhD THESIS TITLE]

Thesis for obtaining a PhD degree in the Doctoral School of [NAME OF SCHOOL] of the
University of Pannonia

in the branch of [NAME] Sciences

Written by [NAME OF PhD-CANDIDATE]

Supervisor(s): [NAME(S)]

propose acceptance (yes / no)

.....
[SIGNATURE(S) OF SUPERVISOR(S)]
(supervisor/s)

The PhD-candidate has achieved % in the comprehensive exam,
Veszprém, [DATE]

.....
[SIGNATURE OF THE CHAIRMAN OF THE EXAMINATION COMMITTEE]
(Chairman of the Examination Committee)

As reviewer, I propose acceptance of the thesis:

Name of Reviewer: yes / no

.....
[REVIWER'S SIGNATURE]
(reviewer)

Name of Reviewer: yes / no

.....
[REVIWER'S SIGNATURE]
(reviewer)

The PhD-candidate has achieved% at the public discussion.

Veszprém, [DATE]

.....
[SIGNATURE OF THE CHAIRMAN OF THE COMMITTEE]
(Chairman of the Committee)

The grade of the PhD Diploma (..... %)

Veszprém, [DATE]

.....
[SIGNATURE OF THE CHAIRMAN OF UDHC]
(Chairman of UDHC)

[PhD THESIS TITLE]

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Written by [NAME OF PhD-CANDIDATE]

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(supervisor/s)

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.....
[REVIWER'S SIGNATURE]
(reviewer)

Name of Reviewer: yes / no

.....
[REVIWER'S SIGNATURE]
(reviewer)

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.....
[SIGNATURE OF THE CHAIRMAN OF THE COMMITTEE]
(Chairman of the Committee)

The grade of the PhD Diploma (..... %)

Veszprém, [DATE]

.....
[SIGNATURE OF THE CHAIRMAN OF UDHC]
(Chairman of UDHC)