Pannon Egyetem
University of Pannonia

DOCTORAL SCHOOL OF CHEMISTRY AND ENVIRONMENTAL SCIENCES

TRAINING PROGRAMME

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1. Description of the Doctoral School of Chemistry and Environmental Sciences

1.1. Aim of the program

At the Doctoral School of Chemistry and Environmental Sciences (hereinafter referred to as the "DSCES"), doctoral studies aim to train professionals who can carry out creative work in the fields of chemistry and environmental sciences of high importance, based on independent thinking and research, and in the requirements of the market economy. The training aims to establish a doctoral degree.

1.2. Main aspects of the program

Doctoral studies are a systematic activity of study, research and reporting, including fulfilling the obligations set out in the University's Doctoral Regulations. In the doctoral programme at the DSCES, the prerequisite for the award of a doctoral degree is the completion of either 6 semesters of study for those who started their studies before 1 September 2016 or 8 semesters for those who started their studies after 1 September 2016.

1.3. Structure of the program

Doctoral studies consist of three main activities: academic (i.e. learning specific subjects), research and educational (i.e. teaching) activities. The educational activity is not a compulsory part of the training, but one of the aims of doctoral training is to supply university lecturers. Under Article 16 section (1) of Government Decree No. 51/2001 (IV.3), teaching duties may not form part of the doctoral student's study obligations, but doctoral students may be required to perform educational duties equivalent to 20% of their total weekly working time. A maximum of 32 credits may be awarded for the teaching activity performed by the doctoral student. The educational activity is certified by the supervisor of the PhD student at the end of each semester.

1.4. Structure of the doctoral training

Stage 1 (24 months): study and research stage → complex exam at the end (min. 90 credits)
Stage 2 (24 months): research and dissertation stage → pre-degree certificate at the end (min. 240 credits)
Stage 3: procedures for obtaining a doctoral degree (PhD):

- pre-defence of the doctoral dissertation,
- submission of the doctoral dissertation,
- public discussion of the doctoral dissertation,
- University Doctoral and Habilitation Council (UDHC) decision on the award of the degree

2. Doctoral programs of DSCES

Doctoral program Head of program	DS supervisors, lecturers	Research topics	Research group
1. Atmospheric chemistry András Gelencsér	András Gelencsér, András Hoffer, Beatrix Jancsek-Turóczi, Ágnes Molnár, Ágnes Rostási, Balázs Kakasi	• Study of cloud processes leading to the formation of atmospheric organic aerosols • Determination of the contributions of aerosol sources to the mass concentration of atmospheric aerosol in different environment • Role of the physico-chemical properties of atmospheric aerosol in the condensation of water vapour • Condensation of atmospheric water vapour: precipitation, fog, dew and deed formation • Particle formation processes • Effect of water content of aerosol particles on PM10 concentrations and limit values	ACRG
2. Environmental mineralogy Mihály Pósfai	Mihály Pósfai, Zsombor Molnár, Ilona Nyírő-Kósa	• Crystalchemical characteristics, formation, geological and paleomagnetic significance of iron oxide and iron sulfide minerals of biogenic (bacterial) origin • Study of the mixing status and properties of individual aerosol particles by microscopic methods • Regulation of the crystal size and morphology of synthetic nanocrystalline iron oxides	EMRG

		• Production of one-dimensional magnetic nanostructures with biomimetic synthesis • Examination and experimental modelling of lake carbonate separation	
3. Limnology Judit Padisák	Judit Padisák, Csilla Stenger-Kovács, Géza Balázs Selmeczy, Edina Lengyel	• Phytoplankton of Hungary's small waters • Long-term changes in the phytoplankton of Lake Balaton • Phytoplankton ecology • The diatom flora of Hungary's streams and its hydrogeological, anthropogenic and water chemistry determinants • Impact of global climate change on lake ecosystems • Examination of the functionality of small water courses: production and demolition • Algae ecofiology • Metacommunity analysis • Character-based ecological studies • Soil productivity testing using algae • Study of the effect of endocrine disruptors and other drug residues on aquatic organisms • Ecological application of environmental DNA-based methods • Chemical and biological characteristics of sac and astic waters	RGL

4. Ecotoxicology Nóra Julianna Kovács	Nóra Julianna Kovács, Katalin Hubai	• Testing of ecotoxicity of aerosol, sediment and soil samples with new types of tests • Analysis of genotoxicity of environmental samples	RGE
5. Behavioural ecology András Liker	András Liker, Gábor Seress, Ivett Pipoly, Bálint Kovács	• Ecological impact of climate change and urbanization on the structure and reproductivity of wildlife populations • Evolution of reproductive systems in vertebrate animals • Reproductive strategies, demography, and population changes of shorebirds • Genetic bases of behavioural adaptations in animal populations • Social networks of group-living animals • Habitat management for nature conservation purposes in Hungarian alkaline grasslands	BERG
6. Analytical chemistry, separation sciences Krisztián Horváth	Krisztián Horváth, Gábor Járvás	• Examination of the physico-chemical basis of ion and liquid chromatography • Development of retention theories and their use in the development of analytical methods • Development of chromatography methods for the monitoring of biotechnological and molecular biological processes • Development and optimisation of two-dimensional liquid chromatography separations	RGAC

		for analysis of complex samples	
7. Radio-chemistry Edit Tóth-Bodrogi	Edit Tóth-Bodrogi	• Contamination-decontamination and corrosion research and development in nuclear power plants • Combined radiochemical and electrochemical testing of sorption and transport processes	RRI
8. Radioecology Edit Tóth-Bodrogi	Edit Tóth-Bodrogi	• Determination of parameters affecting radon transport and the balance between radon and its products under different environmental conditions • Determination of movement and absorption of ^{210}Po, ^{210}Pb isotopes	RRI
9. Organic chemistry synthesis and catalysis Rita Skodáné Földes	Rita Skodáné Földes, József Bakos, Gergely Farkas	• Green chemistry (development of environmentally friendly syntheses, ionic liquids) • Organic, metal-organic and coordination chemistry • Design and synthesis of new chiral modifiers • Homogeneous catalysis (selective synthesis of organic chemical and pharmaceutical intermediates, functioning of steroids)	RGOC
10. Bioinorganic and biocoordination chemistry József Kaizer	József Kaizer	• Examination of stoichiometric and catalytic oxidation/oxygenation reactions of transient metal complexes. • Biomimicing reactions (homogeneous catalysis) • Structural and functional enzyme models	RGOC

		• Testing oxidative stress reactions (ROS particles, antioxidants)	
11. Modeling and simulation of complex molecular systems (https://mscms.uni-pannon.hu/) Dezső Boda	Dezső Boda, Tamás Kristóf, Mónika Valiskó, Szabolcs Varga, Péter Gurin, Zoltán Ható	• Thermodynamic properties of array-phase molecular systems (e.g. electrolyte activity, properties of fuel components) • Structural and phase-in behaviour of complex molecular systems (e.g. liquid crystals) • Testing of inhomogeneous molecular systems (e.g. electrical double layers, clay minerals, surface energy, corrosion research) • Testing of transport properties of nanosystems (e.g. clay minerals, nanopores, ion channels, membranes)	RGMS
12. Environmental and inorganic photochemistry Ottó Horváth	Ottó Horváth, Erzsébet Szabóné Bárdos, Zsolt Valicsek, Lajos Fodor	• Photoinduced properties of complex compounds and photoactive inorganic semiconductors in homogeneous and (micro)heterogeneous systems • Environmental photochemistry; photocatalytic degradation of pollutants and solar energy utilization	RGEIP
13. The complex system of sustainability (mitigation and adaptation) Ágnes Rostási	Ágnes Rostási, András Gelencsér, Róbert Kurdi, János Abonyi, Viktor Sebestyén, György Varga, Endre Domokos	• Exploring processes and interactions in a complex system of sustainability • Assessing the complex direct and indirect impact systems of the global ecological crisis • Methodological analysis of the development of social resilience	ACRG

ACRG: Air Chemistry Research Group; BERG: Behavioural Ecology Research Group; EMRG: Environmental Mineralogy Research Group, RGAC: Research Group of Analytical Chemistry; RGE: Research Group of Ecotoxicology; RGEIP: Research Group of Environmental and Inorganic Photochemistry; RGL: Research Group of Limnology; RGMS: Research Group of Modeling and Simulation of Complex Molecular Systems, RGOC: Research Group of Organic Chemistry – Synthesis and Catalysis; RRI: Institute of Radiochemistry and Radioecology

3. Admission procedure

Applicants apply for research topics published by the DS, which will be published on the DS website by the end of April. Research topics shall be approved by the Doctoral Programme and Habilitation Council (DPHC) before publication. Applications for admission must be submitted to the Directorate of Education (DE) by the deadline specified on the DS website at the end of each fall and spring semester. Information on the documents to be submitted is also available on the DS website.
The entrance exam is held after the final examination period (end of January for the fall semester and end of June for the spring semester). Candidates will be informed directly via email about the date of the exam. The Admissions Committee will assess candidates according to a uniform interview process and scoring system.
The University Doctoral and Habilitation Council (UDHC) decides on the admission (by the first week of February for the fall semester and by 15 July for the spring semester) and notifies applicants within eight working days. The notification also includes the start of the school year and the date of enrolment.

4. Fulfilling study and research obligations

4.1. The work plan

The students' work plan should be prepared during the first semester with the help of the supervisor(s). The work plan shall be approved by the DPHC.

The work plan must include the subjects that the student intends to take. Any subject can be included, which is promulgated by the DSCES of the University of Pannonia (UP) or by any other doctoral school accredited in Hungary. A subject in a related field (natural sciences) or PhD programme may also be included with the support of the supervisor(s) and the approval of the DPHC. Subjects at foreign universities are also permitted (moreover, recommended). For each subject, the name (title), lecturer (lecturer who is responsible for the subject), place of promulgation (university, doctoral school or course), content and number of hours of the course must be provided. A course of study and/or teaching completed at a doctoral school affiliated with another institution must be accepted by submitting an application which is on the DS website,

for which the DHPC will determine the number of credits to be awarded based on an individual assessment.

The work plan must be submitted by the end of the first semester at the latest:

- electronically to the DS secretary's e-mail address, and
- in the printed version – signed by the student and the supervisor(s) – to the Directorate of Education.

The work plan shall be approved by the DPHC no later than the start of the student's second semester of study.

Table summarising the subjects available in the DSCES:

MANDATORY SUBJECTS				
Subject code	**Subject name**	**Credit**	**Number of hours per semester**	**Lecturer**
PEDICHEN029	Evolution of the Earth's Environment	8	20	Ágnes Molnár
PEDICHEN037	Global climate change: causes and consequences	8	20	András Gelencsér
PEDICHEM037	Nuclear Energetics	4	10	Edit Tóth-Bodrogi
PEDICHEN045	Introduction to light pollution studies	6	15	Zoltán Sámuel Kolláth
PEDICHEN022	Introduction to the theory of complex systems	6	15	Dezső Boda
PEDICHEN005	Bioanalytical methods	4	10	András Guttman
PEDICHEM040	Biochemistry II.	8	20	Rita Földes Skodáné
PEDICHEM041	Chemistry of Biocoordination	8	20	József Kaizer
PEDICHEN007	Biostatistics	6	15	Bálint Kovács
PEDICHEM059	Theoretical organic chemistry	8	20	József Kaizer
PEDIENV005	Separation methods in analytical chemistry	8	20	Krisztián Horváth
PEDICHEN032	Evolutionary biology	6	15	Ivett Pipoly
PEDICHEM069	Metalloorganic Chemistry	8	20	József Kaizer
PEDICHEN034	Sustainable energy systems	8	20	Endre Gábor Domokos
PEDICHEN031	Communication of sustainable development	8	20	Georgina Tóth-Nagy

PEDICHEN033	Waste Management – Sustainability	8	20	Róbert Kurdi
PEDICHEN035	Sustainable water management	6	15	Viola Somogyi
PEDICHEN050	Complex system of sustainability	8	20	Ágnes Rostási
PEDICHEN042	Implementation of sustainability projects	6	15	Róbert Kurdi
PEDICHEM001	Physical Chemistry I.	8	20	Dezső Boda
PEDICHEM002	Physical Chemistry II.	8	20	Dezső Boda
PEDICHEM003	Statistical thermodynamics of fluids	8	20	István Szalai
PEDICHEN014	Computer simulation of liquids	8	20	Tamás Kristóf
PEDICHEM006	Computer simulation of liquids II.	4	10	Zoltán Ható
PEDICHEM074	Hydrobiology	8	20	Judit Padisák
PEDICHEN008	Hydrogeology	4	10	Ádám Zoltán Tóth
PEDICHEM038	Interpretive spectroscopy I.	8	20	Rita Földes Skodáné
PEDICHEM063	Interpretive spectroscopy II.	8	20	Rita Földes Skodáné
PEDICHEM022	Experimental photochemistry: steady-state methods	8	20	Ottó Horváth
PEDICHEM023	Experimental photochemistry: time-resolved methods	4	10	Lajos Fodor
PEDICHEM077	Coordination Chemistry	8	20	Lajos Fodor
PEDICHEN048	Corrosion testing and corrosion protection	4	10	Tamás Kristóf
PEDIENV004	Environmental mineralogy	8	20	Mihály Pósfai
PEDICHEN018	Environmental DNA	6	15	Kálmán Tapolczai
PEDICHEM024	Environmental Photochemistry	8	20	Lajos Fodor
PEDIENV002	Environmental Chemistry	8	20	Zsolt Valicsek
PEDICHEM053	Presentation I.	20		
PEDICHEM054	Presentation II.	20		

PEDICHEM055	Presentation III.	20		
PEDICHEM049	Quantum Chemistry I.	4	10	György Tamás Lendvay
PEDICHEM050	Quantum Chemistry II.	4	10	György Tamás Lendvay
PEDICHEN030	Atmosphere - Biosphere Interaction	8	20	Ágnes Molnár
PEDIENV003	Atmospheric Science	8	20	Ágnes Molnár
PEDIENV006	Atmospheric Chemistry	8	20	András Gelencsér
PEDIENV11	Limnology	8	20	Judit Padisák
PEDICHEM034	Nuclear and Particle Physics	8	20	Péter Gurin
PEDICHEM035	Nuclear Metrology	4	10	Edit Tóth-Bodrogi
PEDIENV001	Ecology	8	20	Judit Padisák
PEDICHEM044	Polymer chemistry	8	20	József Kaizer
PEDICHEM052	Uses of radioisotopes	4	10	Edit Tóth-Bodrogi
PEDIENV008	Radioecology	6	15	Edit Tóth-Bodrogi
PEDICHEM021	Vibrational and electron spectroscopy	8	20	Zsolt Valicsek
PEDICHEM062	Stereochemistry of organic compounds	8	20	Gergely Farkas
PEDICHEM020	Inorganic Photochemistry	8	20	Lajos Fodor
PEDICHEN051	Soil contamination and remediation	4	10	Renáta Rauch
PEDICHEM011	Natural and artificial radiations	4	10	Edit Tóth-Bodrogi
PEDIENV009	Toxicology	8	20	Nóra Julianna Kovács
PEDICHEN006	Transmission electron microscopy	6	15	Mihály Pósfai
PEDICHEM018	Transition metals and their compounds	8	20	Zsolt Valicsek
PEDICHEM016	Biogeochemical cycles	8	20	Zsolt Valicsek
PEDICHEM019	Theoretical inorganic chemistry	8	20	Margit Kovács
PEDICHEN013	Behavioral ecology	6	15	András Liker

PEDICHEN016	Final report	20		

FACULTATIVE SUBJECTS				
Subject code	**Subject name**	**Credit**	**Number of hours per semester**	**Lecturer**
PEDICHEM032	The Origin of Colours	4	10	Ottó Horváth
PEDICHEN003	Materials' structure elucidation methods: infrared and Raman spectroscopy	6	15	Balázs Zsirka
PEDICHEN004	NMR spectroscopy for chemists	6	15	Margit Kovács
PEDICHEM075	Bioindication	4	10	Csilla Stenger-Kovács
PEDIENV13	Structure and function of biological macromolecules	6	15	Ferenc Vonderviszt
PEDICHEN047	Light pollution workshops	6	15	Zoltán Sámuel Kolláth
PEDICHEM015	Physical and chemical properties of liquid crystals	4	10	Szabolcs Varga
PEDICHEM010	Dielectric properties of liquids	4	10	Mónika Valiskó
PEDICHEM029	Photoinduced processes in microheterogeneous systems	4	10	Ottó Horváth
PEDICHEN009	Chemometrics	6	15	Krisztián Horváth
PEDICHEM036	Quantum mechanics	4	10	Péter Gurin
PEDICHEN046	Limnoecology	8	20	Géza Balázs Selmeczy
PEDICHEN044	Physiological effects of microplastic pollution on aquatic ecosystem organisms	4	10	Réka Svigruha

PEDICHEN040	Ecophysiology and Experimental design	6	15	Edina Lengyel
PEDICHEM076	Fieldwork	8	20	Géza Balázs Selmeczy
PEDICHEN038	Conservation biology	6	15	Csilla Stenger-Kovács
PEDICHEN011	Science theory and communication in science	8	20	Judit Padisák
PEDICHEM065	Water chemistry laboratory I.	8	20	Katalin Eszter Hubai
PEDICHEM066	Water chemistry laboratory II.	8	20	Katalin Eszter Hubai

A separate work plan must be prepared for the second stage, which is part of the second part of the complex examination, the scientific report.

4.2. Fulfilment of study obligations

The student enrols in the subjects set out in the work plan, which is free of charge by 31 December for the fall semester and 31 May for the spring semester. Courses will be advertised in Neptun only upon feedback from the lecturer, which should be reported to the Faculty of Engineering's Doctoral Administrator by email. Instructors can choose to require regular class attendance, give lectures in blocks, or give students individual assignments. The completion of the course is certified by the lecturer by registration in the NEPTUN system.

You can deviate from the subjects set out in the work plan during your studies. The new subjects to be added should be selected as indicated in the original work plan. A change can be requested by submitting an application to DPHC and amending the original work plan. Amendments to the work plan are approved by the DPHC, at the latest by the beginning of the academic semester following the submission of the student's application.

At the end of each semester, the PhD student prepares an evaluation sheet, in which he or she reports on the study, publication and educational credits he or she has acquired so far. The necessary form can be found on the DS website.

The evaluation sheet must be signed by the PhD student, the supervisor(s) and the head of the doctoral school:

- electronically to the DS secretary’s e-mail address, and
- the printed version to the Directorate of Education.

4.3. Completion of research work and reports

The most important activity of the PhD student is scientific research. Students carry out their research independently, under the guidance and with the help of their supervisor(s). They present the results at relevant conferences and publish as independently as possible in high-quality journals. Credit points for publications and presentations are given in the table at the end of the Training programme.

At the end of each year, the PhD student gives an oral report on his/her work in English (Presentation I, II and III). The reporting forum can be a DPHC meeting, a DS forum, a professional community of the research centre, or an academic or other professional forum (if accepted by the DHPC, a national or foreign conference). The invitation template for the report can be found on the DS website. The fourth year-end report is the final report, the deadline for which is 31 July. An electronic summary of 6 to 10 pages shall be submitted to the secretary of the DS 10 working days before the presentation of the final report. The accepted presentations and the final report are worth 20 credits each.

4.4. The complex exam

The complex exam provides an opportunity to test of the PhD student's theoretical knowledge. The complex exam must be taken in a primary and a secondary subject at the end of the first (study and research) stage during the examination period. As a primary or secondary subject, any of the mandatory subjects announced in the DS can be chosen that are related to the PhD student's research area and topic. You must have at least 50 credits when you apply for the exam. Application forms for the complex exam can be found on the DS website.

You must register for the **exam by the last day of the academic term**:

- apply **in the Neptun study system**, and
- submit a printed application form - signed by the student, the supervisor(s), the head of the institution and the head of the doctoral school - together with the necessary documents to the **DS secretary**.

Documents to be submitted in hard copy (with original signatures):

- application form
- student's publication list
- a minimum committee proposal of 3 members
- 2-4 pages summary of results and plans

Documents to be sent by email:

- minimum 3-person committee proposal (in Word format)
- date and venue proposal

The complex exam must be organized by the PhD student or the supervisor(s) for the examination period. The annual report must be taken before the complex exam. At the time of taking the complex exam, the PhD student must already have at least 90 credits. Of these, at least 48 must be study credits, of which at least 36 credits must be mandatory.

The complex exam is held in front of a committee of at least 3 people and consists of two parts:

- the theoretical part in which the doctoral student proves her/his knowledge of the relevant discipline literature, and his current theoretical and methodological knowledge, and
- a presentation about her/his scientific progress., at the end of which the work plan for the research and dissertation stage will also be presented.

A report of the complex exam must be taken. The results of the examination shall be published on the day of the last part of the examination. The assessment (rating) of the complex examination may be qualified or inadequate. If the theoretical part is unsuccessful, the PhD student may repeat the complex exam once before the end of the semester (by 31 January for the fall semester and 31 August for the spring semester). If the report presenting the scientific results so far is unsuccessful, the complex exam cannot be repeated.

4.5. Final (pre-degree) certificate

To obtain the final (pre-degree) certificate, students must have completed the final report of the second stage (research and dissertation) and have acquired at least 240 credits, as well as the language requirements for the degree. The PhD student will make a statement of the credits earned on the evaluation sheet, which will be certified by the supervisor(s) and the head of the doctoral school. To request the final (pre-degree) certificate, the application form on the DS website must also be submitted.

The documents (evaluation sheet and pre-degree certificate request form) must be submitted by the end of the 8th semester at the latest (31 January for the fall semester and 31 August for the spring semester):

- electronically to the DS Secretary's e-mail address, and
- in hard copy - signed by the student, the supervisor(s) and the head of the doctoral school - to the administrator of the Directorate of Education

The issue of the final (pre-degree) certificate shall be decided by the DPHC no later than one month after the application has been submitted.

5. The procedure for obtaining a doctoral degree

5.1. Preparation of the dissertation

PhD students must submit the dissertation within three academic years of the complex exam. This deadline may be extended by no more than one year, as decided by the DPHC, in cases of particular appreciation, provided that the student is unable to meet her/his obligations under the student relationship due to childbirth, accident, illness or other unexpected reasons, but not through her/his fault. The dissertation may be submitted in a foreign language at the request of the author with the consent of the DPHC. The main results of the doctoral dissertation should be summarised in thesis statements, also in the form of a thesis booklet. The formal requirements for the preparation of the dissertation and the thesis booklets can be found in the DS's Rules and Regulations and on the DS website.

5.2. Pre-defence of the dissertation

To support the candidate, the dissertation should be debated in a professionally competent forum before it is finally completed. The PhD student and the supervisor(s) are responsible for organising the pre-defence. Before the public debate, the institute director invites two reviewers, at least one of whom must be external to comment on the dissertation, based on a proposal of the supervisor(s). The chairman of the pre-defence is also asked by the institute director. The details of the pre-defence must be agreed with the DI secretary, which is the responsibility of the PhD student and/or the supervisor(s). The form for the invitation to the pre-defence can be found on the DS website and, once completed, should be sent by email to the DS Secretary for publication.

The reviews will be taken into consideration at the candidate's discretion when preparing the final version of the dissertation. A report and an attendance sheet must be kept of the pre-defence and submitted to the Faculty of Engineering's Doctoral Administrator when the dissertation is submitted. The necessary form is also available on the DS website.

5.3. Submission and public discussion of the doctoral dissertation

The submission of the doctoral dissertation is conditional on obtaining a pre-degree certificate and meeting the minimum publication requirements set out in the DSCES's Rules and Regulations.

Minimum publication requirements in the DSCES:

- either three publications published or accepted for publication in refereed international journal, all of which having an impact factor more than 1, regardless the order of the authors; **or** at least two articles published or accepted for publication in refereed international journal, all of which have an impact factor, in at least one of which the candidate is the first author;
- an oral presentation and/or a poster on at least one international scientific conference

The information about the submission and public discussion of the doctoral dissertation can be found in the document "Information about the doctoral dissertation" on the DS website. The doctoral dissertation must be submitted together with the requested documents to the Doctoral Administrator of the Faculty of Engineering.

The steps for organising and conducting the public defence are set out in the DS's Rules and Regulations, which can be assisted by the "Dissertation defence committee proposal" and the "Checklist – doctoral defence" on the DS website.

Based on the report of the defence the Final Examination Committee makes a proposal to the UDHC for the award of the doctoral degree. The classification of the doctoral degree is determined on the basis of the percentage result of the defence. The classification of the degree is "summa cum laude" (excellent) in case of 90 or more percent, "cum laude" (good) in case of at least 80%, and at least 60% shall be achieved for the "rite" (pass) classification.

6. Procedure for doctoral training in the case of individual preparation

Doctoral studies can also be taken up by students who have prepared for a degree individually, provided that they have fulfilled the requirements for admission and doctoral studies. In this case, the student's status is established by passing the complex exam.

The conditions for participation in individual preparation and the procedure for applying for a degree are set out in the DS's Rules and Regulations.

After a successful complex examination, the UDHC decides on the admission. The applicant will receive written notification of the decision. Students can enrol and start the research and dissertation stage of the course from the study period following the decision of the UDHC. In the first active semester, the student can take his/her final report and apply for the final (pre-degree) certificate by completing 240 credits. The procedure is the same as for the general doctoral programme. After obtaining your pre-degree certificate, you can conduct a pre-defence discussion of your dissertation and

submit it with the necessary documents. The procedure for the submission and public discussion of the dissertation is also the same as for the general doctoral programme.

7. Rules in case of training started before 1st September 2016

7.1. Fulfilments of study and research obligations

- the study part of the training consists of 36 months
- the work plan is for 36 months
- the final (pre-degree) certificate is awarded on successful completion of a final report and the acquisition of at least 180 credits by the requirements

7.2. Acts to obtain a PhD

In the case of the training started before the 1st of September 2016, a doctoral degree can be obtained through a separate procedure. The person participating in the procedure for obtaining of doctoral degree is the doctoral candidate. Applications for the degree-acquisition procedure may be submitted within three years of the final (pre-degree) certificate's issue. If the doctoral student begins the course of her/his degree within the training period, she/ he is also a doctoral candidate in addition to his or her status as a student. Before the 1st of September 2016, she/he was also a doctoral candidate who did not participate in doctoral training but was individually prepared to obtain a degree. The status of the doctoral candidate shall cease to exist after the degree-acquisition procedure or if the doctoral candidate has not submitted her/his doctoral dissertation within two years of the date for the beginning of her/his status of the doctoral candidate, or she/he has not obtained the doctoral degree within three years.

7.2.1. Doctoral comprehensive examination

For doctoral candidates involved in training started before the 1st of September 2016 as well as for individual doctoral candidates who commenced before this date, a doctoral comprehensive examination is part of the procedure for obtaining a doctoral degree, which is a summary and overview form of accountability of the person involved in the doctoral degree process.

Entry for the doctoral comprehensive examination is subject to:

- acquisition of final (pre-degree) certificate (i.e. successful completion of their studies) for PhD students in organised training;
- admission to DS for individually prepared students;
- submission of a doctoral application for a doctorate.

The doctoral comprehensive examination consists of one major and one minor subject exam. Any compulsory subject announced in the DS and related to the PhD student's research field and topic may be chosen as a major or minor subject for the examination.

The student may apply for the comprehensive examination at the same time as the acquisition of the final (pre-degree) certificate (or after it) in the official request submitted. The application shall indicate the major and minor subjects chosen by the student.

The application must be submitted

- electronically to the DS Secretary's e-mail address, and
- in hard copy - signed by the student and the supervisor(s) - to the administrator of the Directorate of Education

The DPHC shall decide on the request no later than one month after the application has been submitted.

The organization of the comprehensive examination will be carried out in the following steps:

- Approval of a request including the suggested Committee of the Comprehensive Examination. The Committee shall be composed of a chairman, two examiners and two other members. At least one-third of the Committee shall be qualified external experts. In the proposal for examiners, the DPHC shall seek the opinion of the supervisor(s). The chairman of the Committee ought to be an active or emeritus professor of the UP. The candidate's supervisor shall not be a member of the Committee. The composition of the Committee shall be approved by the DPHC, if necessary by electronic voting. It shall inform the student, her/his supervisor(s) and the Dean's Secretariat about its decision.
- Selection of the material for the examination. The student contacts her/his examiners to select the subject matter and begins to prepare.
- Selection of the material for the examination. The student contacts her/his examiners to select the subject matter and begins to prepare.
- Technical organization of the examination The Dean's Secretariat organizes the comprehensive examination (hall, official notification of the members of the committee, travel expenses, examination fees, and publication of the invitation to the examination on the UP website). The secretary of the DS will also publish the invitation to the examination on the DS's website.

7.2.2. Preparation of the doctoral thesis

To obtain a doctoral degree the candidate must submit the dissertation written by the doctoral candidate. The doctoral dissertation must be submitted at the same time as the application for the doctorate or within two years of its acceptance.

7.2.3. Defending the dissertation

To apply for the dissertation defence, you must prepare and submit the dissertation and the thesis booklet with the necessary documents (copies of language examination certificates, copies of articles, etc.) to the Doctoral Administrator of the Faculty of Engineering. The dissertation defence can only be held after the successful completion of the doctoral comprehensive examination.

8. Cooperation agreements

The doctoral school may initiate and assist the establishment of cooperation agreements at the university level with appropriate research institutes and centres, both to involve external supervisors and lecturers and to improve research conditions, to strengthen its training. Pending the update of the agreements previously concluded, if this is necessary as a result of the reorganisation and re-name of the partner institutions, the previous agreement will be considered valid with the partner's successor.

The documentation of the cooperation agreements is available at the following link:

https://mk.uni-pannon.hu/index.php/en/dsces-info#coop

9. Credits (cr) for each performance in the research programme:

For those started before 1st September 2016, at least 50 credits must be completed through publication activity, for those started after 1st September 2016, at least 75 credits must be completed through publication activity.

Condition for requesting final (pre-degree) certificate	
min. 180 cr in the case of trainings started before 1st of September 2016 min. 240 cr in the case of trainings started after 1st of September 2016	
Study obligations min. 48 cr (min. 36 cr mandatory subject)	
Educational activity (optional) max. 32 cr	
4 credit/14 contact hours (no maximum per semester limit)	
Publication activity (min. 50 cr in the case of trainings started before 1st of September 2016, min. 75 cr in the case of trainings started after 1st of September 2016)	
Lecture note, educational aid	15 credits/pc *participants share
Article appeared or accepted in a peer-reviewed international journal (1st author)	impact factor*26 credits/pc, but at most 45 credits/pc
Article appeared or accepted in a peer-reviewed international journal (co-author)	impact factor*14 credits/pc, but at most 35 credits/pc
Article in (non-peer-reviewed) international journal	8 credits/pc
Article in Hungarian journal	8 credits/pc
Book chapter	1 credit/15 pages
Educational curriculum	1 credit/15 pages
Poster (Hungarian): with abstract publication	2 credits/pc
Poster (Hungarian): with full-text publication	3 credits/pc
Oral presentation (Hungarian) with abstract publication	3 credits/pc
Oral presentation (Hungarian) with full-text publication	6 credits/pc
Poster in foreign language with full-text publication	6 credits/pc
Poster in foreign language with abstract publication	5 credits/pc
Oral presentation in foreign language with full-text publication	11 credits/pc
Oral presentation in foreign language with abstract publication	8 credits/pc
Patent	20 credits/pc *participants share
Annual report*	20 credits
Final report*	20 credits
Report on research project, participation in scientific study	6 credits/pc *participants share

*Credits for annual reports are not included in the credits to be completed by publication activities.

Approved by DPHC on 16th February 2026.