Pázmány Péter Catholic University

Roska Tamás Doctoral School of Sciences and Technology

Quality Assurance Plan

2019

Effective: (approving Disciplinary Doctoral and Habilitation Council – Decision No. 42/November 26, 2019)

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Review planned in: 2024

The Doctoral School's basic information:

The name of the University operating the Doctoral School	Pázmány Péter Catholic University (PPCU)
The name of the Doctoral School	Roska Tamás Doctoral School of Sciences and Technology
The address of the Doctoral School	1083 Budapest, Práter u. 50/a
The year the Doctoral School was established	2002
The validity of the Doctoral School's accreditation **Hungarian Accreditation Committee decision number**	December 31, 2019 2015/9/IX/37/2/904
First year of doctoral programs	2002
The location of the doctoral program	PPCU Faculty of Information Technology and Bionics
The Head of the Doctoral School	Dr. Szederkényi Gábor, Doctor of the Hungarian Academy of Sciences, University
Contact person name, position, email address, and phone number	Vida Tivadarné PhD, Head of the Office, doktori.iroda@itk.ppke.hu, phd@ikt.ppke.hu, +36 1 886 4700
The languages of doctoral programs	Hungarian, English
The classification of the Doctoral School's discipline	technology and natural sciences
The Doctoral School's fields	biology, information science, electrical engineering
as part of the above: research and the arts	--
Name of doctoral program(s)	1. Bionics 2. Physical and virtual cellular machines 3. Optical devices, nanoelectronics technologies 4. Human language technology 5. Vehicle on-board navigation systems
Name of the conferred doctoral degree (DLA and/or PhD)	PhD

The veracity of the facts on which the Quality Assurance Plan is based	The name of the auditor Dr. Szederkényi Gábor	Date November 26, 2019
Checking the proper functioning of the Doctoral School www.doktori.hu	The name of the auditor Dr. Szederkényi Gábor	Date November 26, 2019
Compliance of the Doctoral School's core members	The name of the auditor Dr. Szederkényi Gábor	Date November 26, 2019

1. The normative basis of the Quality Assurance Plan

The Quality Assurance Plan has been prepared on the basis of the Doctoral Program and Degree Regulations (PhD) (hereinafter: UDR) of the Pázmány Péter Catholic University (hereinafter: PPCU), the pieces of legislation specified, the applicable evaluation criteria of the Hungarian Accreditation Committee and the guidelines thereto, the actual recommendations of the Hungarian Doctoral Council (HDC), and the UDR's guidelines pertaining to quality assurance.

The Head of the Doctoral School is responsible for the Doctoral School's quality assurance and is fully liable for the fulfilment of the tasks specified in the UDR from the aspect of quality assurance.

The Roska Tamás Doctoral School of Sciences and Technology develops and operates its quality assurance system on the basis of the effective positions of the Hungarian Academy of Sciences Ethics of Scientific Knowledge, and it handles science-related ethics questions that arise during the course of its operations according to the criteria laid out in such positions.

2. Doctoral programs

2.1. Announcing doctoral topics

2.1.1. The intellectual and infrastructural background of research

The PPCU Roska Tamás Doctoral School of Sciences and Technology issues doctoral degrees in the fields of biology, information technology, and electrical engineering.

The UDR specifies the tasks and responsibilities of the participants of doctoral training (establishing and operating doctoral schools, defining responsibilities in the process of training and research).

Every year, the Multidisciplinary Doctoral and Habilitation Council of Sciences and Technology (hereinafter: MDH CST) evaluates all topics, and it consents to the announcement of only those where the intellectual and infrastructural background of research is ensured and where it feels that it is realistic that a quality dissertation will be submitted within 4-5 years.

2.1.2. Supervision at external research facilities - cooperation agreements

The announced topics connected to external research facilities are implemented only in institutions (e.g. Institute of Experimental Medicine, Institute of Technical Physics and Materials Science, National Institute of Clinical Neurosciences, Institute for Computer Science and Control, Research Centre for Natural Sciences) where a cooperation agreement guarantees that students are employed and that specify the rights and obligations of students.

The valid cooperation agreements are available on the doktori.hu website: https://doktori.hu/index.php?menuid=191&lang=HU&di_ID=105

2.1.3 Fulfilment of requirements regarding announcers of topics and supervisors

One of the most important requirements pertaining to the teachers and researchers who announce topics is that the indices of their scientific publications of the last five years significantly exceed the publication requirements set as a condition for obtaining their degrees.

Where the announcer of the topic undertakes to provide a research topic that involves fields on the boundaries of those dealt with by the Doctoral School and therefore requiring two supervisors, both fields shall be equally involved in the development of the topic's thesis and dissertation and the announcers of and the student applying for the topic shall cooperate in a coherent fashion. We

continuously uphold the principle that colleagues who join us and who are suited for announcing research topics should acquire the title of Doctor of the Hungarian Academy of Sciences and/or should have special training in their field of expertise.

Those announcers of topics become supervisors whose students applying for the announced topic gain admission and enroll in the Doctoral School.

Research topics are available both on the www.doktori.hu website and the Roska Tamás Doctoral School of Sciences and Technology website.

The MDH CST continuously reviews the compliance of the professional robustness of announced doctoral research topics and the participants of doctoral training and procedures (thus especially complex examination, admission, and evaluation committee members): all doctoral actions require the approval of the MDH CST.

The MDH CST Organizational and Operational Rules lay down the detailed requirements pertaining to announcers of research topics and supervisors. The Organizational and Operational Rules are available on the Faculty of Information Technology and Bionics Doctoral School website: https://itk.ppke.hu/oktatas/doktori-iskola-phd/szabalyzat

2.2 Admission to the Doctoral School

2.2.1. Definition of admission requirements

The topics annually updated and approved by the MDH CST are also available in the HDC database and on the Doctoral School website. Based on the student's educational achievements, scientific results, publications, awards, language exam(s), and research goals, the Admissions Committee shall hold a hearing to form a decision on the admission of students to topics thus announced. The formal requirements and documentation necessary for participating in the admission examination are available for download from the PPCU Roska Tamás Doctoral School of Sciences and Technology admissions website: https://itk.ppke.hu/oktatas/doktori-iskola-phd/felveteli

2.3. Courses in doctoral programs

2.3.1. The Doctoral School's subjects and topics (training scheme)

The Roska Tamás Doctoral School of Sciences and Technology's Training Scheme sets out in detail the documentation pertaining to the Doctoral School's subjects and topics. Based on a proposal submitted by the competent program leader, the MDH CST shall decide on whether to accept subjects as part of the program.

The training scheme is available on the Faculty of Information Technology and Bionics Doctoral School website: https://itk.ppke.hu/oktatas/doktori-iskola-phd/kepzesi-terv

Students studying at the Doctoral School progress according to individual training schemes, with respect to the multidisciplinary nature and the large number of topics bordering on two fields. In other words, the individual training scheme means that the work plan and report that has to be submitted every semester makes it possible to track the rate and progress of the scientific advancement specified by the supervisor and approved by the program leader and the head of the Doctoral School.

In addition to the relatively stable presence of feeder courses and seminar series in the list of available subjects, we aim to ensure the continuous appearance of new subjects.

2.3.2. Doctoral School teachers

Only those teachers and researchers with academic degrees may become the Doctoral School's teachers who are considered suitable by the MDH CST. The Doctoral School's teachers are included in the Doctoral School's HDC database, including the amount of time, expressed as a percentage, that they devote to the Doctoral School. https://doktori.hu/index.php?menuid=189&lang=HU&tip=O&diID=105

2.4 The research work of doctoral students

2.4.1. Requirements pertaining to research work

The experimental laboratories were built in a manner that ensures that the Jedlik Laboratory, which incorporates all the laboratories, offers both laboratory access at cooperating institutes and a number of experimental workplaces that are considered special even in an international relation.

We would like to continuously ensure that brief visits by renowned foreign professors and the participation of foreign doctoral students at the School become a natural part of everyday work.

The publication activities of students who have recently acquired PhD degrees aims to serve as a benchmark for subsequent students. To promote this, we wish to maintain the possibility of doctoral students participating in conferences every year. A perfect occasion to do so is the PhD Proceedings mini-conference held in English and organized annually by the Doctoral School, which invites the representatives of doctoral schools operating at other universities and dealing with the same fields as the Doctoral School.

Actions and achievements attained abroad and participation in important international scientific conferences are strongly emphasized. Those students are given an opportunity to do so who achieve new and significant results.

Making use of the Doctoral School's extensive connections, we create the prerequisites that are necessary for students to spend at least one semester at a notable foreign university. The list of foreign universities with partnerships based on agreements with the University is available on the Doctoral School website: https://itk.ppke.hu/oktatas/doktori-iskola-phd/nemzetkozi-kapcsolatok

2.5 Monitoring

2.5.1. The evaluation of students' academic performance and progress

In addition to the presentations given at the PhD Proceedings mini-conference, the academic performance and progress of students is evaluated by supervisors and program leaders based on biannual reports submitted in writing. The MDH CST provides an annual assessment. We aim to continuously maintain the biannual-annual system feedback system.

This also extends to holding examinations and the preparation of biannual progress report-type written reports.

The Doctoral School keeps records of the academic progress of PhD students and of decisions and resolutions in connection with doctoral programs and the awarding of degrees, taking into account the applicable pieces of relevant legislation and in line with the competence of the MDH CST.

2.5.2. Monitoring the careers of graduates

We have prepared the plan for monitoring the careers of graduates in accordance with the recommendations of the Hungarian Accreditation Committee.

PPCU Faculty of Information Technology and Bionics graduates 2005-2019

	year	Academic career					Technical career*		other**		total number of graduates
		higher education			research institute						
		Hungary		foreign	Hungary	foreign	Hungary	foreign	Hungary	foreign	
		PPCU	Other								
PPCU Faculty of Information Technology and Bionics	2005				1				0	0	**1**
	2006	2						2	0	0	**4**
	2007		1			1	1	3	0	0	**6**
	2008	1	1	1	2		1	2	0	0	**8**
	2009							1	0	0	**1**
	2010				5		2	1	0	0	**8**
	2011	1			2		1	1	0	0	**5**
	2012	1					2	1	0	0	**4**
	2013				1		3	1	0	0	**5**
	2014	3			1	2	4	1	0	0	**11**
	2015	**3**			**2**	**2**	**5**	**1**	**0**	**0**	**13**
	2016	**2**			**4**		**1**	**1**	**0**	**0**	**8**
	2017				**1**		**3**				**4**
	2018	**2**			**4**	**1**	**3**				**10**
	2019	**2**					**3**	**1**			**6**
	total	**17**	**2**	**1**	**23**	**6**	**29**	**16**	**0**	**0**	**94**

*utilizes PhD degree **employed in a different profession

2.5.3. The self-assessment content requirements, which have been defined on the basis of the Hungarian Accreditation Committee's guidelines, are set out in the Doctoral School's document entitled Self-Assessment. The C-SWOT analysis prepared as part of the self-assessment is included in the appendix to the Quality Assurance Plan.

3. Awarding doctoral degrees

3.1 Publication requirements for a PhD degree

3.1.1. A publication system of criteria that takes the specialties of the field into account + university requirements

As prerequisites for obtaining the degree, we have developed requirements that form a serious professional challenge. Students may only submit a doctoral dissertation if they already have two articles with 'approved' status published in international peer-reviewed publications with high impact factors, which articles describe their own results in connection with thesis points. The MDH CST is responsible for examining whether the condition is met.

These publications provide an objective reflection of the quality of the work performed by the teachers and PhD students participating in the doctoral program. The publication requirements pertaining to teachers and the system of criteria pertaining to the publications of doctoral students are laid out in the Doctoral School's Organizational and Operational Rules. Publication activities at the Roska Tamás Doctoral School of Sciences and Technology are shown in the table prepared on the basis of the data electronically available at the Magyar Tudományos Művek Tára [Database of Hungarian Scholarly Works] and the HDC database.

The Roska Tamás Doctoral School of Sciences and Technology's publications between the years of 2009 and 2019, based on data obtained from the Database of Hungarian Scholarly Works and the HDC							
1. publications		**2. citation index**			**3. SUMMARY**		
articles in periodicals	405	**type of publication**	**independent citation**	**self-citation**	**number of independent citations**	**1027**	
book excerpts	160	**articles in periodicals**	**798**	223	**number of pending citations**	**377**	
conference publications	19	**book excerpts**	**176**	104	**impact factor total**	**42.848**	
conference volumes	28	**conference publications**	**49**	48	**expected impact factor total:**	**58.808**	
PhD dissertation	94	**dissertation**	**3**	2	**total**	**101,656**	
total number of own publications	**706**	**total number of citations**	1027	377	**total number of own publications**	**706**	

3.2 Home and public defense

3.2.1. Rules pertaining to the home and public defense

According to the practice, only that dissertation may be submitted for a public defense in the 3rd or 4th year of the Doctoral School that the Committee has found suitable at a home defense, subject to any small or large revisions recommended. The minutes of both the home and the public defense form part of the documentation, and the opinions of two opponents (generally written by an in-house and an external opponent) form annexes to the minutes. The final dissertation and thesis meant for public defense are published both in hard copy format (PPCU Faculty of Information Technology and Bionics Library) and electronically (Roska Tamás Doctoral School of Sciences and Technology database/current defenses). In addition, the requested opponents and the requested participants of the public defense committee also receive copies. After students acquire their degrees, the PhD dissertations are given DOI numbers both electronically and in hard-copy format, and are then placed in the dedicated repository at the Hungarian Academy of Sciences.

Doctoral defenses are public. Their dates and times are published on www.doktori.hu and the Doctoral School website.

Professional control is provided by the following

The Roska Tamás Doctoral School of Sciences and Technology uses the public events of the annual PhD Proceedings to provide control of scientific publications, in the frame of which all active doctoral students are obligated to hold presentations in English about their research. The control provided in the form of the public opinion of the general scientific community is ensured by inviting representatives of the doctoral schools operating in the same fields as the Roska Tamás Doctoral School of Sciences and Technology. The event's presentations are made available electronically on the Doctoral School's website.

The PhD dissertations being written at the Doctoral School may be defended at a public defense only after the publications in support of the theses have been published in a foreign, peer-reviewed publication with a high SCI index. We aim to ensure that the external participants of public defenses and the external opponents of PhD dissertations are eminent representatives of the field and topic in question. The scientific cooperation described in point 2.1.2 of the present document takes place as part of regulated agreements.

Dissertations written at and published by the PPCU Roska Tamás Doctoral School of Sciences and Technology after 2005 are available, starting with the first degree conferred, electronically on the www.doktori.hu website, the Doctoral School's own website, and in the Hungarian Academy of Sciences repository, as well as in printed form at the PPCU Faculty of Information Technology and Bionics library (1083 Budapest Práter u. 50/a).

The Roska Tamás Doctoral School of Sciences and Technology operates in compliance with Hungarian and European legislation pertaining to the protection of intellectual property and in line with Hungarian and international requirements. In the interest of enforcing the principle of the protection of intellectual property, the MDH CST shall temporarily suspend the publication of PhD dissertations subject to the scope of a patent proceeding.

Appendix

C-SWOT analysis

Constraints

Of external constraints, reduced grant resources for basic research in engineering are the most significant.

Strengths

Our students and doctoral students trained in the areas of info-bionics and molecular bionics, in addition to the young researchers with multidisciplinary education and the significant number of internationally renowned research professors, are an important comparative advantage.

Weaknesses

The fact that the Faculty is relatively new (17 years) and the currently developing and expensive infrastructure of certain research fields.

Opportunities

As molecular bionics training is developing, our doctoral students are progressing towards a special, pioneering world view matched in only a few places in the world. The opportunity to make use of this in terms of both research and innovation.

The strengthening of technology transfer via the launched spin-off companies.

Threats

The reduction in the appeal of research positions in Hungary and the relatively high initial wages in the field.