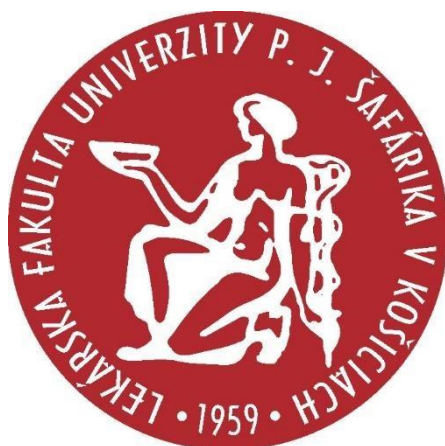


Pavol Jozef Šafárik University in Košice

Faculty of Medicine

Report on PhD study at UPJŠ FM 2019/2020



Košice

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Introduction

PhD study represents the third – highest level in the system of higher education in Slovakia, which goal is to prepare the graduate for independent, creative scientific work. The student is actively involved in obtaining new scientific results, thereby contributing to the developments of his or her field.

That is why the emphasis is placed on the creativity and originality of research works, on the independent formulation of hypotheses. A graduate of PhD studies is characterized by independent, critical and analytical thinking, which he/she applies in changing conditions. He/she is able to present and publish the results of his/her own research and development before the professional community in the Slovak Republic and abroad. He/she can determine the focus of research and coordinate a team in a scientific field in academic institutions or research organizations.

1 Strengths and weaknesses of PhD studies at UPJŠ FM in Košice

We can consider the **strengths of doctoral studies** at UPJŠ LF:

- Offer of study programs;
- guarantors of PhD studies, trainers, members of trade commissions are experienced experts in their field;
- the existence of "co-tutelle" PhD programs primarily with renowned university and academic institutions;
- the scientific dimension of educating PhD students, supported by the existence of UPJŠ's own grant scheme - the UPJŠ Internal Scientific Grant System;
- adequate publication activity of PhD students;
- research infrastructure also built from European funds;
- workplace instrumentation;
- personal development.

We consider the **weaknesses** of PhD studies at UPJŠ LF:

- different quality of publication activity of PhD students within workplaces;
- different grant success of scientific teams within the faculty;
- inadequate financial evaluation of students in clinical fields of study compared to healthcare workers;
- the amount of scholarships, which is unattractive for applicants from abroad.

2 PhD study at UPJŠ Faculty of Medicine

PhD study at UPJŠ FM was implemented as follows:

1. Since academic year 2004/2005:
 - a. study in scientific fields:
 - 15-01-9 General biology
 - 51-02-9 Normal and pathological physiology
 - 51-04-9 Pharmacology (also for the pharm. science)
 - 51-05-9 Internal Diseases
 - 51-08-9 Surgery
 - 51-10-9 Gynaecology and Obstetrics
 - 51-11-9 Paediatrics
 - 51-17-9 Dentistry
 - 51-55-9 Pathological anatomy, forensic medicine
 - b. study in study fields:
 - 7.1.4 Internal diseases
 - 7.1.5 Epidemiology
 - 7.1.6 Hygiene
 - 7.1.7 Surgery
 - 7.1.10 Paediatric
 - 7.1.3 Normal and pathological physiology
 - 7.1.12 Psychiatry
 - 7.1.16 Otorhinolaryngology
 - 7.1.25 Clinical biochemistry
 - 7.1.26 Clinical pharmacology
 - 7.2.1 Dental medicine
 - 7.3.2 Pharmacology
 - 4.2.16 Neuroscience
2. Since academic year 2005/2006:
 - 7.1.21 Pathological anatomy and forensic medicine
 - 7.1.2 Anatomy, histology and embryology
 - 7.1.9 Gynaecology and Obstetrics
 - 4.2.7 Microbiology
3. Since academic year 2009/2010:
 - 7.1.2 Anatomy, histology and embryology
 - 7.1.3 Normal and pathological physiology
 - 7.1.4 Internal diseases
 - 7.1.7 Surgery
 - 7.1.9 Gynaecology and Obstetrics
 - 7.1.10 Paediatrics
 - 7.1.25 Clinical biochemistry
 - 7.2.1 Dental Medicine
 - 7.3.2 Pharmacology

7.4.2 Public Health

4. Since academic year 2019/2020

Pharmacy

Public Health

General Medicine

Dental Medicine

2.1 Accredited study fields and programs at UPJŠ FM

Currently, there are 11 accredited PhD study programs at UPJŠ FM one can choose from. Their overview, supplemented by information on the field of study, guarantors and co-guarantors, with an indication of the time limit, is presented in Table no. 1.

Table no.1

Study field	Study program	guarantor and co-guarantor	Time limit *
Pharmacy	Medical pharmacology	prof. MUDr. L. Mirossay, DrSc. prof. MVDr. J. Mojžiš, DrSc. doc. MVDr. M. Bago Pilátová, PhD.	WTL
General Medicine	Anatomy, Histology and embryology	prof. MVDr. S. Rybárová, PhD. doc. MUDr. A. Boleková, PhD. doc. MVDr. J. Veselá, CSc.	WTL
	Epidemiology	Dr. h. c. prof. MUDr. L. Siegfried, CSc. prof. MVDr. M. Halánová, PhD. doc. RNDr. M. Kmeťová, CSc., mim. prof.	WTL
	Gynaecology and Obstetrics	prof. MUDr. A. Ostró, CSc., MBA doc. MUDr. P. Urdzík, PhD., MPH, mim. prof. doc. MUDr. S. Toporcerová, PhD., MBA	WTL
	Surgery	prof. MUDr. J. Radoňak, CSc., MPH prof. MUDr. M. Kitka, CSc. prof. MUDr. M. Frankovičová, PhD.	WTL
	Clinical Biochemistry	prof. Ing. M. Mareková, CSc. doc. RNDr. M. Stupák, PhD. doc. RNDr. V. Tomečková, PhD.	WTL
	Neurology	prof. MUDr. Z. Gdovinová, CSc. doc. MUDr. J. Szilasiová, PhD. doc. MUDr. Ž. Macejová, PhD., MPH, mim. prof.	WTL
	Normal and pathological physiology	prof. MUDr. V. Donič, CSc. doc. MUDr. R. Beňačka, CSc., mim. prof. doc. MUDr. M. Pallayová, PhD.	WTL
	Internal diseases	prof. MUDr. I. Tkáč, PhD. prof. MUDr. R. Tkáčová, DrSc. prof. MUDr. P. Mitro, PhD.	WTL
Public Health	Public Health	prof. MUDr. Pa. Jarčuška, PhD. doc. MUDr. K. Rimárová, PhD., mim. prof. doc. MUDr. Vi. Vargová, PhD.	WTL
Dental Medicine	Dental Medicine	Dr. h. c. prof. MUDr. Andrej Jenča, CSc., MPH prof. W. Więckiewicz doc. dr. hab. A. M. Wieckiewicz	WTL

* WTL – Without time limit

3 Organization of PhD studies

PhD studies are governed by the provisions of Act no. 131/2002 Coll. on universities and on the amendment and addition of certain laws as amended (hereinafter referred to as "ZVŠ") and the unified "Study Regulations for PhD Studies at UPJŠ in Košice", which was last year - in connection with changes in legislative standards (Act No. 269 /2018 on ensuring the quality of higher education and amending Act No. 131/2002 on higher education institutions and on the amendment of certain laws as amended) – updated.

The currently valid Study Regulations for PhD studies at the University of Pavel Jozef Šafárik in Košice entered into force on 1 September 2019.

The LU results in the obligation for PhD students to carry out teaching activities or other professional activities related to teaching activities.

In addition to direct teaching, PhD students are involved in pedagogical activities through supervision of bachelor's theses or theses within the framework of SSA.

During the 2019/2020 academic year, full-time PhD students at UPJŠ Faculty of Arts taught 125.25 semester hours, which is an average of 1.7 hours for 1 PhD student.

The Faculty of Medicine welcomes activities organized by the University – for example, a university-wide training for starting PhD students, which is devoted to increasing the pedagogical skills of PhD students. We recommend students to participate in this event when registering, especially considering the fact that newly admitted students often have minimal experience with the pedagogical process, or they are absent, and this can significantly affect the quality of teaching in a negative direction.

Implementation of the "**Spring Internationalized School of PhD Students**" contributes significantly to gaining experience with active participation in lectures. Despite the unfavorable epidemiological situation in the Slovak Republic in connection with the COVID-19 pandemic, on 10.11. - On November 11, 2020, the 7th annual university-wide event took place online. The Faculty of Medicine was represented by 6 full-time students.

3.1 Admission procedure

3.1.1 Admission procedure in academic year 2019/2020*

Table no. 2

The number of published dissertation topics		The number of registered applicants	Number of enrolled students
Full-time form	22	21	15
external form	24	25	23
TOGETHER	46	46	38

*Accepted as of 1.9.2019

Admission procedure since 2012

Table no. 3

year	The number of accepted PhD students on a full-time basis at UPJŠ FM	The number of accepted PhD students in external form at UPJŠ FM	together
2012	37	14	51
2013	38	35	73
2014	16	25	41
2015	22	16	38
2016	20	28	48
2017	16	17	33
2018	21	30	51
2019	28	27	55
2020	15	23	38
together	213	215	428

Source: University report - PhD studies as of 31.10.

The number of full-time PhD students, as in the previous academic year, at the Faculty of Medicine was also significantly affected by the regulation of the Ministry of Health of the Slovak Republic, which allowed those doctors who had at least 50% of their working hours to include work at clinical workplaces in the specialization training; which was not possible for full-time PhD students. FM continues to consider this fact to be a significant limitation of the attractiveness of studying in a day form.

3.2 Number of PhD students since 2012

Table no. 4

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Full-time form	92	113	97	85	82	68	71	77	74
External form	107	114	124	108	117	109	110	123	112
Together	199	227	221	193	199	177	181	200	186

Source: University report - PhD studies as of 31.10.

In the academic year 2019/2020, 13 foreign students studied at UPJŠ FM, of which 6 were full-time PhD students and 7 were part-time PhD students (the country and study program are listed in Table No. 5).

Table no. 5

Title, name and surname	study form	study programme	state
MUDr. Mundher Abdulkareem Salman Aljubouri	Full-time	Internal diseases	Republic of Iraq
MUDr. Joaquim Maria de Santa Cruz Ribeiro Ventosa	Full-time	Neurology	Portuguese Republic
Mgr. Mykhailo Huniadi	Full-time	Medical Pharmacology	Ukraine
Mgr. Viktoriya Karchynskaya	Full-time	Public Health	Ukraine
RNDr. Mariia Logoida	Full-time	Epidemiology	Ukraine
MUDr. Alina Putrya	Full-time	Internal diseases	Ukraine
MUDr. Szymon Gryboś	external	Normal and pathological physiology	Poland
MUDr. Marwan Issa	external	Public Health	State of Israel
MUDr. Vojtěch Jarkuliš	external	Normal and pathological physiology	Czech Republic
MUDr. Boshra Nasser	external	Public Health	State of Israel
MUDr. Oksana Nastych	external	Public Health	USA
Andriana Pavliuk-Karachevtseva	external	Anatomy, histology and embryology	Ukraine
MUDr. Ariunzaya Tsedendamba	external	Internal diseases	Mongolia

3.3 Professors and Associate professors

The upper limit of the number of PhD students per supervisor is defined by the "Study Regulations for PhD Studies at UPJŠ", where based on Art. 5, par. 4, one supervisor can supervise a maximum of 5 PhD students. Based on the data listed in Table no. 6, UPJŠ FM met the mentioned criterion.

Table no. 6

Number of study programs	Number of PhD students (D) full-time + external form	Number of professors and associate professors	Number of D to professor and associate professor full-time form / external form
11	74 + 112 = 186	48 + 48 = 96	0,77 / 1,16

4 Scientific results of PhD students

4.1 Grant activity

At UPJŠ, scientific research and educational projects are implemented within the framework of various grant schemes. UPJŠ offers young scientists and PhD students the opportunity to apply for financial support for their own scientific projects. Internal scientific grant system (ISGS) at UPJŠ. Its goal is to guide PhD students to gain experience in writing and submitting their own projects, to managing and economically managing the allocated financial resources, but also to responsible planning, the realization of goals and the defence of the achieved project results in the form of a final report. List of researchers - PhD students of UPJŠ FM - ISGS in the academic year 2019/2020 shown in Table no. 7

Table no. 7

Project code	PCOV project name	Project managers - PhD students	Faculty
VVGS-2018-746	The role of adenosine in the modulation of hemodynamic mechanisms associated with the emergence of short-term unconsciousness	MUDr. Zora Lazúrová	UPJŠ FM
		MUDr. Ervín Müller	
VVGS-2018-747	New diagnostic options for serious eye diseases	MUDr. Gabriela Glinská	UPJŠ FM
		Mgr. Kristína Krajčíková	UPJŠ FM
		Mgr. Oleg Shylenko	FS UPJŠ
VVGS-2018-946	Introduction of a dynamic method of monitoring the functionality of the intestinal barrier in vitro for the selection of effective probiotics in the prevention and therapy of intestinal inflammatory diseases	Mgr. René Link	UPJŠ FM
VVGS-2019-1226	Introduction and validation of advanced molecular biological procedures for the quantification of bacterial taxa in gut microbiome research	Mgr. Petra Zakuťanská	FS
		Mgr. René Link	FM
VVGS-2019-1300	Introduction of effective microbiological diagnostics of hyper virulent strains of <i>Clostridioides difficile</i>	Mgr. Annamaria Miklosova	FM
Project code	Project name IPPH2020	Project managers - PhD students	Faculty
VVGS-2018-819	Dissemination of scientific excellence in order to improve the life chances of vulnerable groups of adolescents	Mgr. Andrej Belák	UPJŠ FM
		Mgr. Jaroslava Macková	

4.2 Publication activity of PhD students

It is the duty of every PhD student to carry out his own scientific work, which includes the publication of his own scientific works. This is also a necessary condition for the successful completion of PhD study.

From the records of the UPJŠ library documents, it follows that the full-time students of the PhD study were authors/co-authors in 2020:

- **1** publication output of the monograph type,
- **24** scientific publications,
- **13** scientific articles in foreign or domestic journals,
- **5** original scientific works in journals that are registered in the Web of Science or Scopus databases (as of 31.1.2020),
- **12** works published in reviewed collections.
-

According to SCI, 11 citations were registered for the works of PhD students.

5 Graduates of PhD studies

During the academic year 2019/2020, the academic title "PhD" was awarded to 27 graduates of UPJŠ FM (numbers shown in Table No. 8).

Table no. 8

Overview of UPJŠ FM graduates			
study programme	Full-time form PhD study	External form PhD study	together
anatomy, histology and embryology	-	4	4
epidemiology	1	-	1
normal and pathological physiology	1	1	2
neurology	1	1	2
internal diseases	1	3	4
surgery	2	1	3
gynaecology and obstetrics	-	1	1
clinical biochemistry	2	1	3
public health	-	5	5
dental medicine	-	2	2
together	8	19	27

5.1 Applicability of PhD graduates

As part of monitoring the success of PhD studies, we approached graduates regarding their application after completing PhD studies at UPJŠ.

Out of the 27 graduates of the PhD study UPJŠ FM who were contacted, they answered the above questions in the questionnaire survey - 18, i.e. j. 66.6%. A detailed overview of the employment of UPJŠ FM graduates is given in Table no. 9.

Table no. 9

Answer	number	%
A - I applied in the field in the academic sphere (SAS, university, college)	11	40,6
B - I applied myself in the field but outside the academic sphere	4	15
C - I applied outside the studied field	0	-
D - I haven't found a job at the moment	2	7,4
E - I am currently on maternity leave	1	3,7
Answered	18	66,7
Didn't answer	9	33,3

5.2 Evaluation of the success of PhD studies

One of the criteria for evaluating the success of a PhD study is the ratio of the number of graduates to the number of admitted students. Based on this comparison in Table no. 10 it can be seen that during the evaluated interval (students admitted in the years 2011-2016) the average success rate of PhD studies in the full-time form is 46.03%, in the external form of study, it is 42.42%.

Table no. 10

Form of study	number of admitted PhD students in the period from 1.9.2011 to 1.9.2016 (inclusive)	number of dissertations defended those PhD students who were admitted during the mentioned period	%
Full-time	126	58	46,03
External	99	42	42,42

The number of full-time PhD students who left/interrupted their PhD studies in the last 4 academic years is shown in Table no. 11.

Table no. 11

Number of full-time students admitted in AY 2016/2017 to 2019/2020			
Enrolled	Interrupted	Left	Left in %
87	8	14	16,1

Reasons for leaving studies:

- low interest due to financial evaluation compared to offers in healthcare, commercial companies,
- student entering a PhD study that is a temporary place until they get a more favourable job offer
or students with lower scientific potential who meet the conditions of admission, but in a longer time horizon will not be able to fulfil the set criteria for the defence (e.g. quarantined publication),
- non-renewal of PhD study after the interruption (due to ML, change of workplace,...).

Conclusion

Ku The following can contribute to improving the quality of doctoral studies:

- to look for **motivational mechanisms** for the full-time form of doctoral studies
- increase the quality of PhD students' publication outputs;
- to improve cooperation between PhD study programs within UPJŠ,
- support the organization of projects and seminars for students - e.g. "Spring school of PhD students" - with the active participation of students;
- **to increase the share of PhD students** in the use **of Erasmus+ program mobilities.**

Threats can affect the realization of these goals. We consider them to be the main limitations:

- the fact that full-time PhD students in clinical fields performing medical practice in contractual medical facilities of the UPJŠ FM have a low tenure in these medical facilities, especially in UNLP, that they are not included in specialized training. This fact fundamentally limits the attractiveness of full-time doctoral studies in clinical fields;
- **departure of prospective graduates** to other universities, to medical facilities;
- **funding of science**, to which PhD studies are necessarily linked.