



**BRNO FACULTY OF ELECTRICAL
UNIVERSITY ENGINEERING
OF TECHNOLOGY AND COMMUNICATION**

DOCTORAL STUDIES AT FEEC

aka.

why to continue in self-education

prof. Ing. Jaroslav Koton, Ph.D.

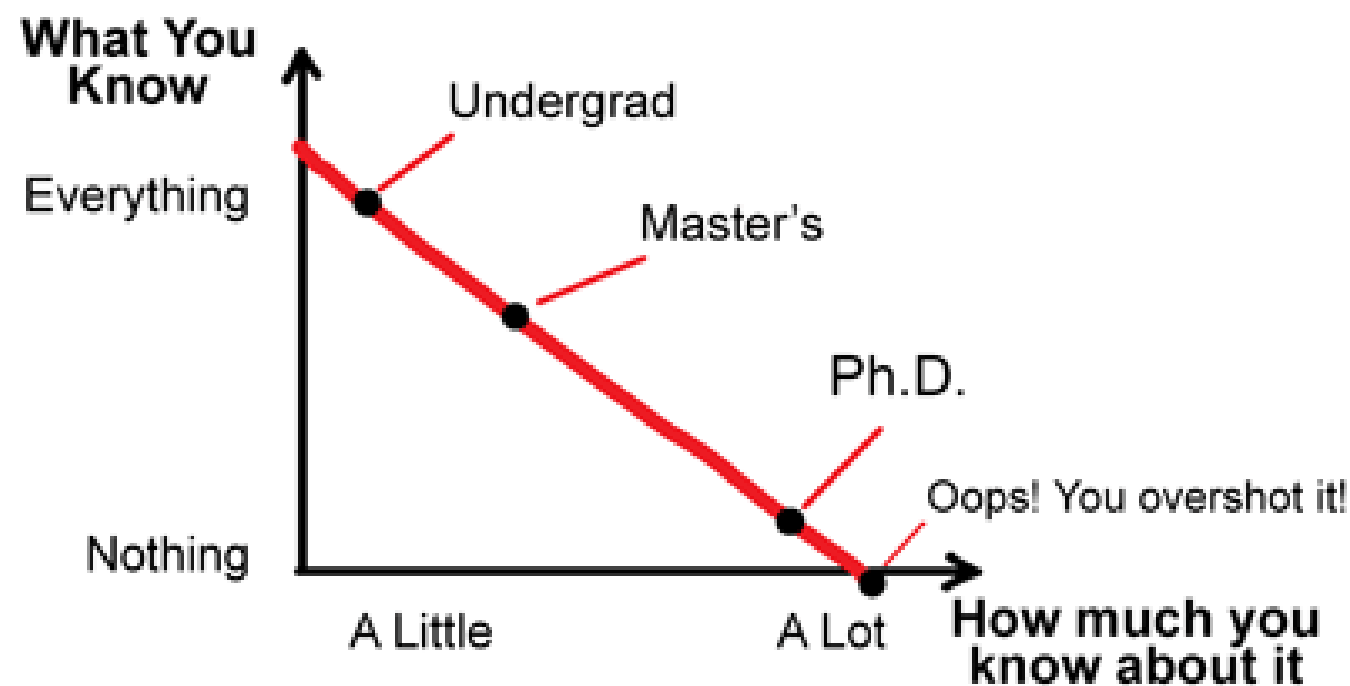
Vice-dean for R&D and PhDs studies

Warm-up questions

- **Why did come to this meeting?**
- **Why are you interested in PhD studies?**
 - 1. I want to continue in my studies, because...
 - ...I know my aims.
 - ...its fun to me.
 - 2. Just to have a look now and decide later.
 - 3. I still don't want to work.

Continue in your studies and...

What You Know vs How much you know about it



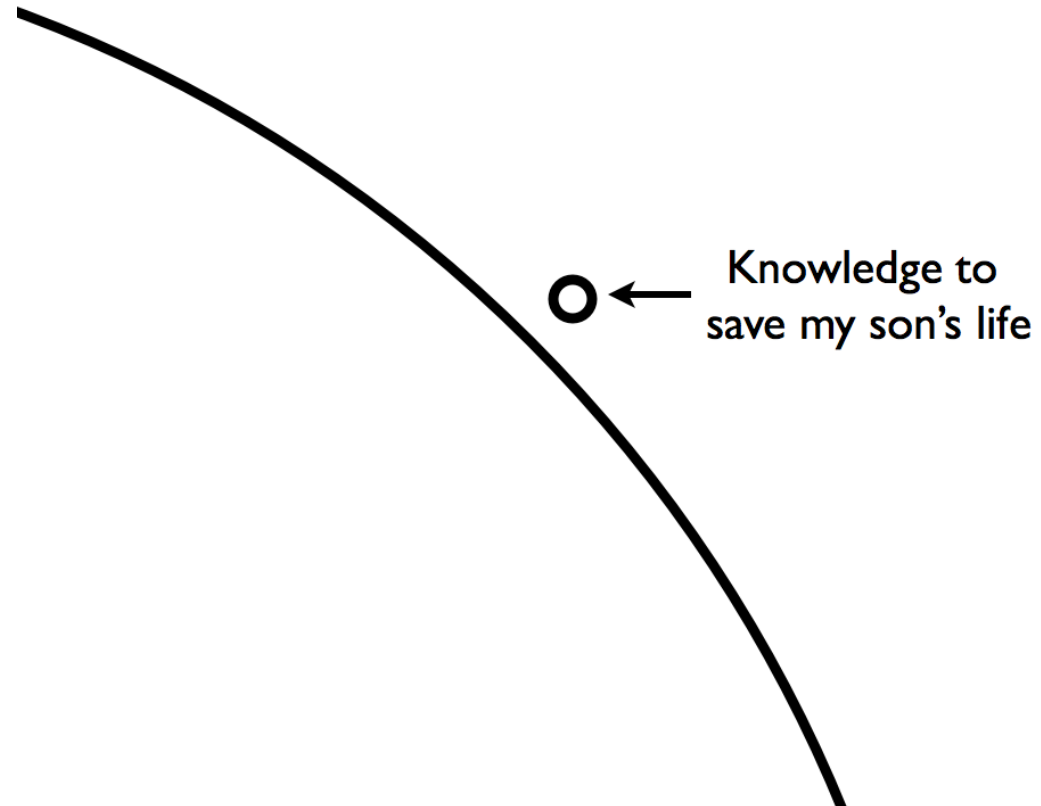
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Continue in your studies and...

Illustrated Guide to a Ph.D.

Keep pushing.

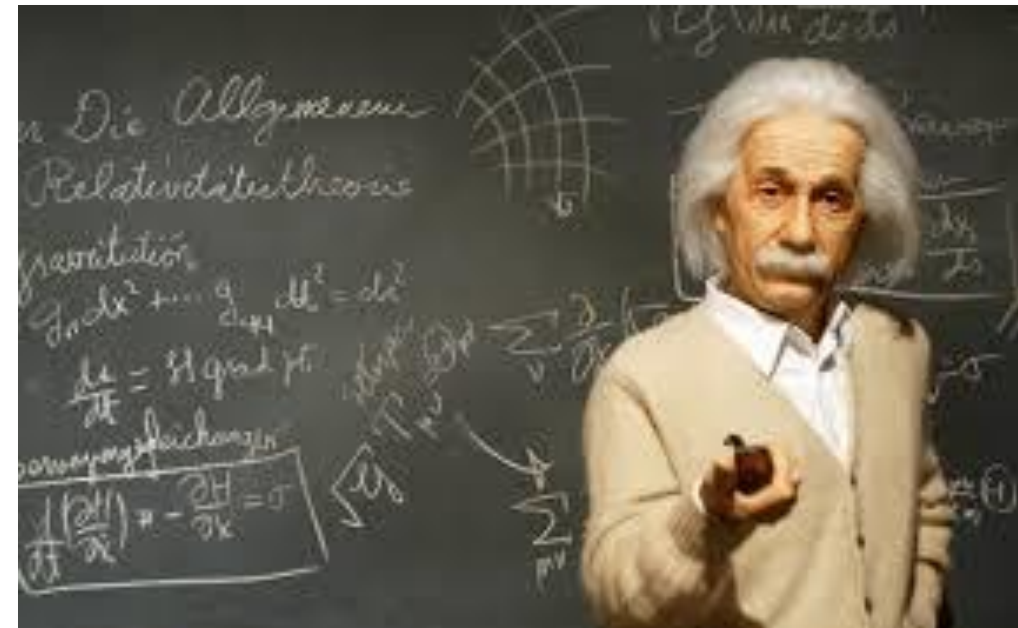


Continue in your studies and...

- ...improve yourself
- ...fulfill your desire for knowledge
- ...become part of R&D (at Faculty)
- ...become more than Engineer, gain another title

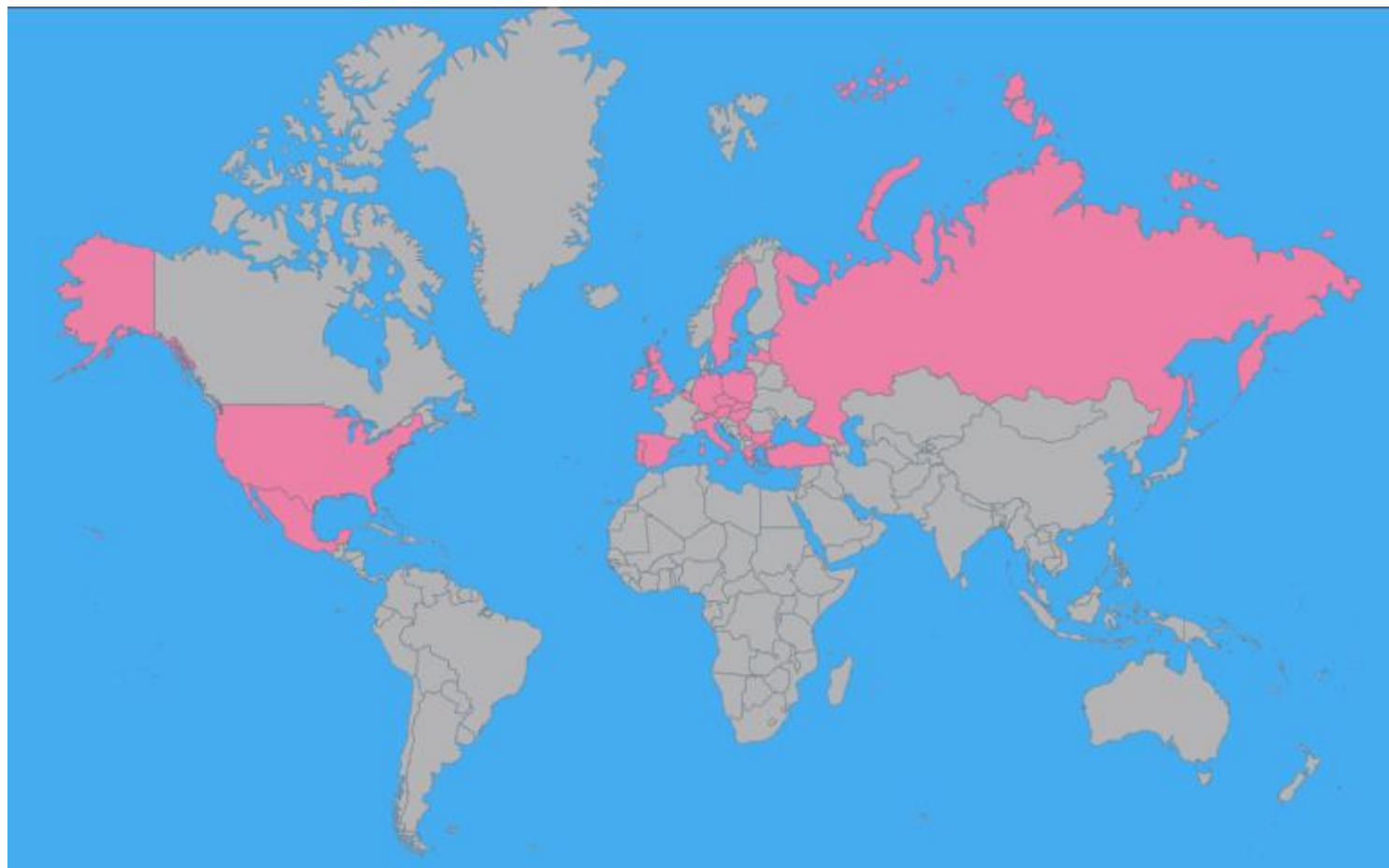
Ph.D.

to balance your name



Continue in your studies and...

- ...explore the world

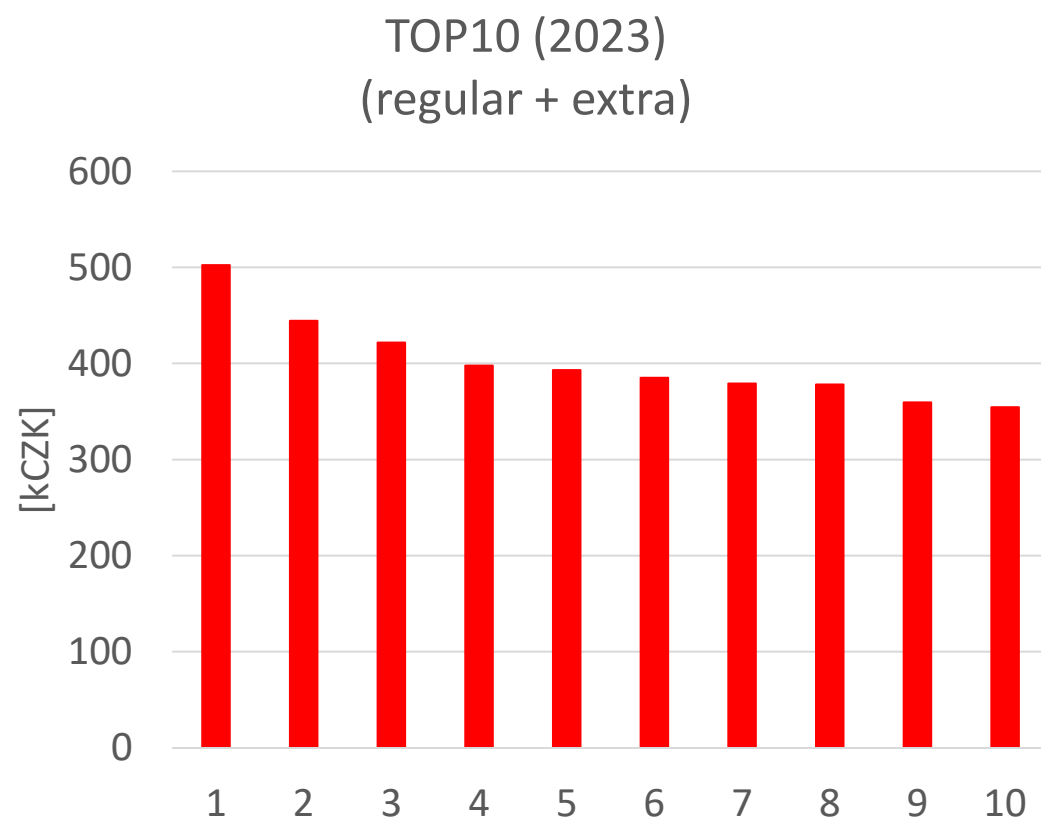


Motivation – money

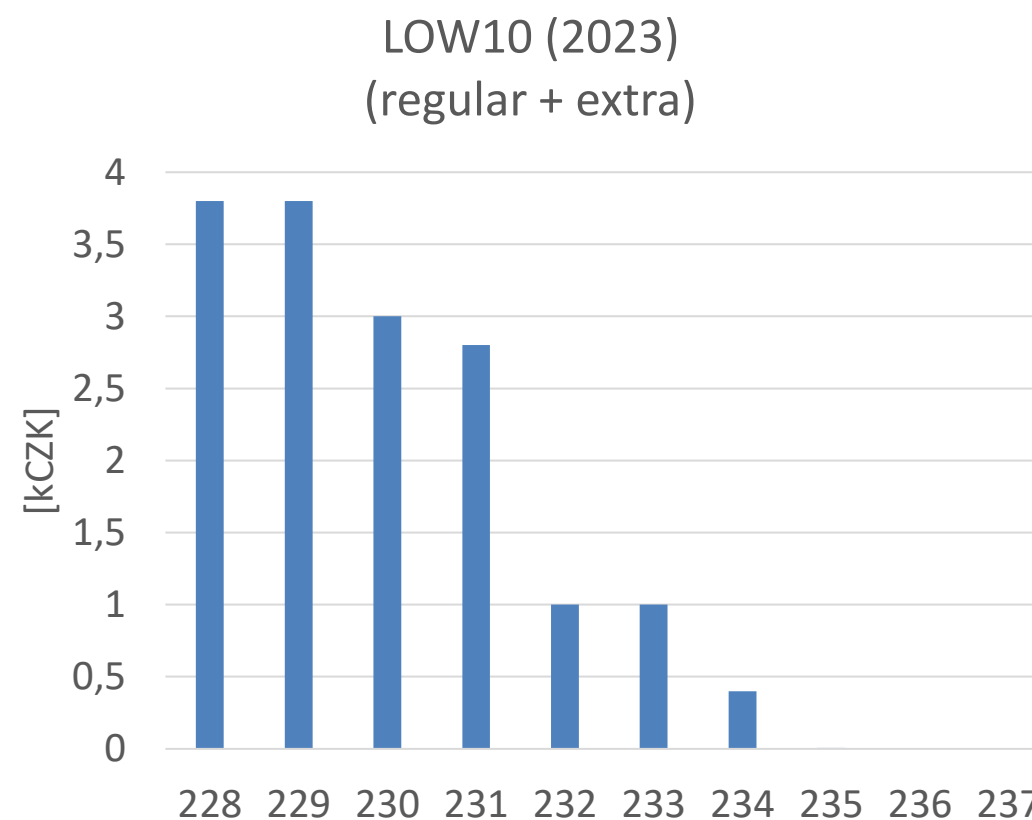
- **Regular** scholarship – upto **10 125 CZK/M**
- **Extra** scholarship – „**no limit**“ CZK/Y (2023 – **502,4 kCZK \approx 20kEUR**)
 - Activities for Dept. (Dept. Head)
 - Activities for Faculty (Dean, Vice-dean for R&D)
 - Participation in Specific research projects
 - Excelent R&D results (publications in Q1/Q2 Journals)
- „One-time“ extra schoparships
 - Merit scholarship **15 kCZK** for 1st year PhD students (Master study average below 1.3)
 - Submiting disertation thesis in time **40 kCZK**
- Active participation in projects of your supervisor/Dept/Faculty

Motivation – money

- ...*aka.* this way YES!



- ...*aka.* this way NO!



Motivation – space for your creative activities

- Research Centers run at FEEC
 - **SIX** – Sensor, Information and Communication systems
 - **CVVOZE** – Centre for Research and Utilization of Renewable Energy
- Top class infrastructure in research labs
- Participation in projects
- Interdisciplinary research
- Contacts to abroad institutions



Centre for Research
and Utilization
of Renewable Energy

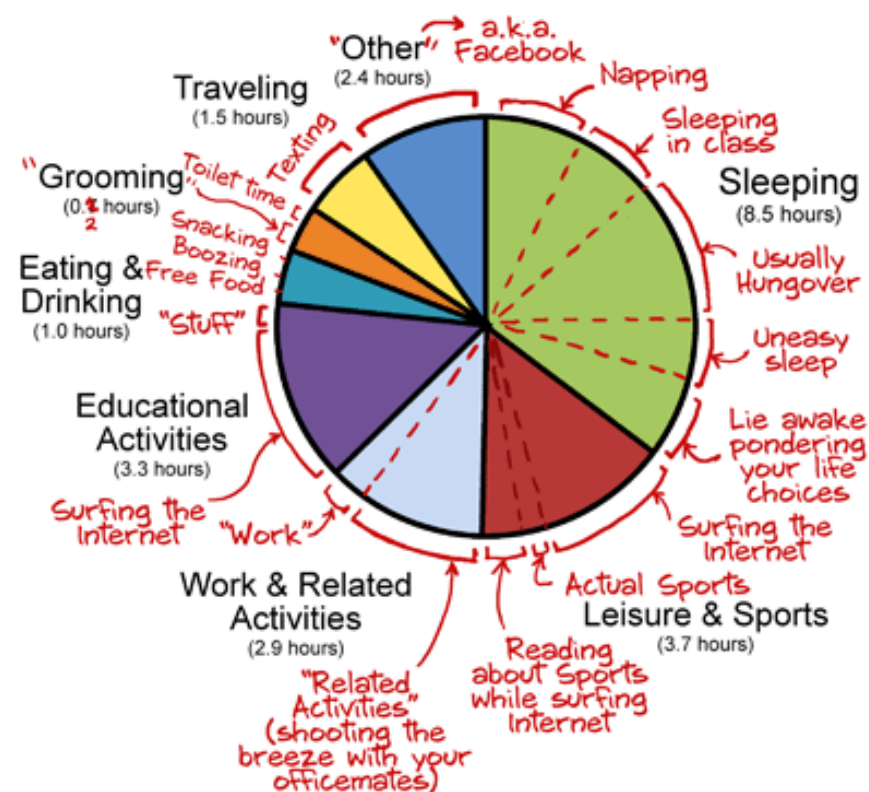
Doctoral studies at a glanc

- 1st – 4th term
 - Compulsory studies in specific blocks („courses“)
- 4th term
 - EN exam, Doctoral State Exam
- 1st (4th) – 8th term
 - R&D activities, participation in projects, internship, publication of reached results, submission/defence of disertation thesis.
- Study Domain
- Teaching Experience
- Professional, Scientific, and Technical Activities
- Internship (or participation in international project)

<https://www.vut.cz/en/board/internal-legislation-feec/-d226258> (CZ and EN version)

Doctoral studies at a glance

- Individual Study Plan



SOURCE: Bureau of Labor Statistics, American Time Use Survey of Full Time University Students.

Study Domain

Specialized (track-specific) DS course completed with an exam	4
General DS course completed with an exam	2
DS course attended abroad and completed with an expert discussion at FEEC	6
Internship or study abroad (one co. or uni.)/international project participation	5
English course completed with an exam	4
Aims of the doctoral thesis*	4
Semi-finished doctoral thesis**	0 - 4

MS1	Minimum score for courses attended and internship or study abroad at the end of the 1st year of DS	8
MS2	Minimum score for subjects attended, internship or study abroad, and English course when submitting state doctoral exam application	16
MS4	Minimum score when submitting semi-finished thesis	22

* Points for „Doctoral thesis Aims“ are **recorded by FEEC SciDept** (Jana Noskova) after successfully **passing the State Doctoral Exam**

** Points for „Semi-finished doctoral thesis“ are **recorded by the supervisor after submitting Semi-finished doctoral thesis**

Internship

- Part of Study Domain
- Compulsory for each student
- Passed „somewhere“ within studies
- For 1 month at least
 - Can be summed up by multiple short internships, each at least 2W (for full time studies) or 1W (for distant studies) – *but not recommended*
- Can be substituted by active participation in international project with co-authoring R&D results of this project

Teaching Experince

Teaching (one period a week, in-semester)*	2
Supervising semester project or Bachelor's/Master's thesis; per academic year**	4
Teaching materials***	4

MS1	Minimum score for teaching experience at the end of the 1st year of DS	8
MS2	Minimum score for teaching experience when submitting state doctoral exam application	16
MS3	Minimum score for teaching experience when enrolling in the 4th year	28
MS4	Minimum score when submitting semi-finished doctoral thesis	36

* Within teaching (numerical, computer, and laboratory practica), not more than 28 points can be granted

** As regards students' projects or theses (semester project, Bachelor's or Master's theses), not more than 8 points are available.

*** Producing at least 20 pages of instructional and teaching materials (classes handbook; participating in the completion of textbooks); designing a laboratory tool; completing a training program.

Professional, Scientific and Technical Activities

Original paper in a journal with IF indexed by WoS (Jimp); Patent	30
Original paper in a journal indexed by SCOPUS (Jsc) or ERIH; book	20
Original paper at an international conference (D)	10
Submitting a project proposal to receive a grant	2
Receiving a foreign grant	20
Receiving a Czech Republic grant	5
Applied research and science results (semi-industrial installation and pilot production; validated technology; prototype; applied methodology; functional sample; authorized software; utility model)	5

MS1	Minimum score for professional and scientific activity at the end of the 1st year	8
MS2	Minimum score for professional, scientific, and technical activity when submitting state doctoral exam application	20
MS3	Minimum score when enrolling in the 4th year	40
MS4	Minimum score when submitting semi-finished doctoral thesis	50
MS5	Minimum score on the doctoral thesis defense date	60

Overall evaluation – limits

MS 1	Total minimum score at the end of the 1st year	26
MS 2	Total minimum score when submitting state doctoral exam application	57
MS 3	Total minimum score when enrolling in the 4th year	89
MS 4	Total minimum score when submitting semi-finished doctoral thesis	113
MS 5	Total minimum score on thesis defence and study completion date(s)	123

Evaluation and monitoring of ISP

- Annual evaluation
- Evaluation/monitoring Milestones:
 - **MS1**: June 30, the 1st year
 - **MS2**: April 30, the 2nd year (simultaneously with submitting for the doctoral state examination)
 - **MS3**: at enrollment in the 4th year of study
 - **MS4**: at submission of a semi-finished version of the doctoral thesis
 - **MS5**: doctoral thesis defense application
- Maximum study length: 8 years

Evaluation and monitoring of ISP – IS Apollo

Detail : Přehled hodnocení a kontroly studia

The individual study plan Annual evaluation The topic of study Institute Tutors Trainers specialists Subjects Pedagogic practice The Diploma Supplement Summary of evaluations and controls

Overall rating:

the total number of points

The general point conditions

- ☐ (26 pts) condition of the minimum boundary for the enrollment to 2nd year of study
- ☐ (57 pts) condition of the min. boundaries for filing the application for the state PhD exams
- ☐ (89 pts) condition of the min. boundary for enrollment to 4th year of the study
- ☐ (113 pts) condition of min. boundary at the deadline of submission of the dissertation thesis in
- ☐ (123 pts) condition of min. boundary for the dissertation thesis defence and termination of DS

Evaluation of study results

of points for completion of courses

the total number of points

Point conditions for study results

- ☐ (8 pts) condition of the minimum boundaries for courses or internship for enrollment to 2nd year of the
- ☐ (16 pts) condition of the minimum boundary for the courses or an intership and eng. language for the
- ☐ (22 pts) condition of min. boundary at the deadline of submission of the dissertation thesis in draft

Back Save

Evaluation of the pedagogic practice:

of points for the pedagogic practice

Point conditions for pedagogical practice (36 pts max.)

- ☐ (8 pts) condition of the minimum boundary for the enrollment to 2nd year of study
- ☐ (16 pts) condition of the min. boundaries for filing the application for the state PhD
- ☐ (28 pts) condition of the min. boundary for enrollment to 4th year of the study
- ☐ condition of a min. boundary of (36 pts) at the deadline for submission of in draft dissertation thesis

Evaluation of the scientific-research activities:

number of points for RD activity

Display and edit

Score conditions for research-development activity

- ☐ (8 pts) condition of the minimum boundary for the enrollment to 2nd year of study
- ☐ (20 pts) condition of the min. boundaries for filing the application for the state PhD exams
- ☐ (40 pts) condition of the min. boundary for enrollment to 4th year of the study
- ☐ (50 pts) condition of min. boundary at the deadline of submission of the dissertation thesis in
- ☐ (60 pts) condition of min. boundary for the dissertation thesis defence and termination of DS

Study schedule example *aka*. I can make it

Study year	Milestone	Study Domain	Points	Points (cum.)	Teaching experience	Points	Points (cum.)	R&D activities	Points	Points (cum.)	Poits total (cum.)	Min points req. (cum.)
1/W		Technical course 1	4	4	PC/num/labs (4 hour/week)	8	8					
		General course 1	2	6								
1/S		Technical course 2	4	10	PC/num/labs (4 hour/week)	8	16	Conf. paper (co-author - 20%)	2	2		
		General course 2	2	12				Conf. paper (main author - 60%)	6	8		
	MS 1	(min limit is 8)		12	(min limit is 8)		16	(min limit is 8)		8	36	26
2/W		Technical course 3	4	16	PC/num/labs (4 hour/week)	8	24	Project proposal (main investigator)	2	10		
								Indexed journal paper (co-author - 20%)	6	16		
2/S		English (DxX-JA6 or DxX-QJA)	4	20	PC/num/labs (2 hour/week)	4	28	Conf paper (main author - 60%)	6	22		
					Superviso of 2 bc/mgr theses (4 p./th.)	8	36					
	MS 2	(min limit is 16)		20	(min limit is 16)		36	(min limit is 20)		22	78	57
		PhD proposal/aims	4	24								
3/W		Internship	5	29				Indexed journal paper (co-author - 40%)	12	34		
3/S								Indexed journal paper (main author - 60%)	18	52		
	MS 3	(min limit not defined)		29	(min limit is 28)		36	(min limit is 40)		52	117	89
4/W												
	MS 4	(min limit is 22)		29	(min limit is 36)		36	(min limit is 50)		52	117	113
		Semi-finished thesis (0 to 4 p.)	4	33								
4/S								Indexed journal paper (main author - 50%)	15	67		
	MS 5	(min limit not defined)		33	(min limit not defined)		36	(min limit is 60)		67	136	123

Hmmm...



<https://pixabay.com/photos/thinking-person-person-thinking-2681494/>

Doctoral Study Programmes

FEEC > STUDENTS > STUDY PROGRAMMES

Study programmes

Level of course unit
DOCTORAL

Mode of study
ALL

Academic year
2024/2025


Language of in...
ALL

SEARCH

Doctoral

PROGRAMME	BIOMEDICAL TECHNOLOGY AND BIOINFORMATICS [DPC-BTB]	4 years • title Ph.D. • full-time study • Czech
PROGRAMME	BIOMEDICAL TECHNOLOGY AND BIOINFORMATICS [DKC-BTB]	4 years • title Ph.D. • combined study • Czech
PROGRAMME	BIOMEDICAL TECHNOLOGIES AND BIOINFORMATICS [DPA-BTB]	4 years • title Ph.D. • full-time study
PROGRAMME	BIOMEDICAL TECHNOLOGIES AND BIOINFORMATICS [DKA-BTB]	4 years • title Ph.D. • combined study
PROGRAMME	ELECTRONICS AND INFORMATION TECHNOLOGIES [DPA-EIT]	4 years • title Ph.D. • full-time study

Program detail
and Study topics



CZ: https://www.fekt.vut.cz/pro_studenty/studijni_programy EN: https://www.fekt.vut.cz/en/students/study_programmes

Program detail and Study topics

ZIVOT NA VUT

PRO UCHAZECE

PRO STUDENTY

VEDA A VYZKUM

SPOLUPRACE

O UNIVERZITE

EN

VUT > STUDIUM NA VUT > STUDIJNÍ PROGRAMY > DETAIL PROGRAMU

STUDIJNÍ PROGRAM

Elektronika a komunikační technologie

Fakulta: FEKT • Zkratka: DPC-EKT • Ak. rok: 2020/2021

Typ studijního programu: doktorský

Kód studijního programu: P0714D060009

Udělovaný akademický titul: Ph.D.

Jazyk výuky: čeština

Akreditace: 28.5.2019 - 27.5.2029

FORMA STUDIA

Prezenční studium

STANDARDNÍ DOBA STUDIA

4 roky

GARANT PROGRAMU

prof. Ing. Aleš Prokeš, Ph.D.

VYPSANÁ TÉMATA DOKTORSKÉHO STUDIJNÍHO PROGRAMU

2. kolo (podání přihlášek od 01.07.2019 do 31.07.2019)

1. Aktivní prvky v perspektivních třídách pro telekomunikační aplikace

Cílem projektu je řešení zesilovačů v perspektivních třídách E, F, G a dalších na mikrovlnných kmitočtech. Tyto třídy

vhodnou metodiku měření pro použití u těchto obvodů.

Školitel: Urbanec Tomáš, Ing., Ph.D.

2. Analýza a modelování přenosu digitální televize druhé generace využívající techniku prostorové diverzity

Druhá generace standardu pro terestrické digitální televizní (DVB-T2) vysílání umožňuje využít k vysílání a příjmu i techniky prostorové diverzity multiple-input single-output (MISO). Téma doktorské práce je zaměřeno na analýzu

!! Study topics for academic year 2024/25 will be visible first at April 1, 2024 !!

e-Application, by April 30, 2024

E-APPLICATION [FAQ](#) [Log in](#) [Česky](#)

BRNO UNIVERSITY OF TECHNOLOGY **FACULTY OF ELECTRICAL ENGINEERING AND COMMUNICATION** **CHOOSE A PROGRAMME**

Type of study: Mode of study: [SEARCH](#)

BIOMEDICAL TECHNOLOGIES AND BIOINFORMATICS

Type: Form: Degree: Language: 1. round from

Guideline no. 7/2023 - Rules regarding application and admission to doctoral study programs in the academic year 2024/25 – Internal Legislation FEEC – BUT (vut.cz)

BIOMEDICAL TECHNOLOGIES AND BIOINFORMATICS [Programme information](#)

Pay attention to:
- **Study Form**
- **Study Language**

CZ: <https://www.vut.cz/eprihlaska/cs/zadani/vybrat-obor/fakulta/5?formID=filter-obory&typStudiald=2&formaStudiald=0&btnFilter=1>

EN: <https://www.vut.cz/eprihlaska/en/zadani/vybrat-obor/fakulta/5?formID=filter-obory&typStudiald=2&formaStudiald=0&btnFilter=1>

e-Application – supplementary documents

- Simple scan/copy of **university degree certificate(s)**
 - Holds for applicants out of BUT-FEEC
 - If the certificate was not issued yet, upload justification and later bring the certificate for Entrance exam (holds for all applicants)
- **Applicant's CV** in English
- **Applicant Statement**
 - Interest in study topic
 - Previous activities linked to study topic (own experience from practice, own research, participation in projects, internships,...)
 - Expected results and contribution to the area of study topic
 - Written in English, max 2 A4 pages
- Documents attached as PDF filed to e-Application, Originals passed over during the entrance examination

Entrance examination

- **June 7, 2024** (1st round); August 27, 2024 (2nd round*)
- April 27, 2024 – alternative date (1st round); April 29, 2024 (2nd round*)
- Oral examination in front of a board of examiners:
 - questions related to the field of the future doctoral thesis;
 - discussion about your motivation;
 - discussion on the applicant's creative activities;
 - conversation-based and/or other tasks to verify competence in English;
 - conversation-based and/or other tasks to verify competence in Czech, in foreign nationals wishing to enroll in a Czech language study program.

* The announcement of 2nd round of submitting e-applications is up to dean's decision. Later check for Faculty News

Main norms linked to PhD studies at FEEC

- [Směrnice č. 1/2022 \(EN\)](#)
 - Pravidla pro organizaci studia na FEKT
 - Rules for organization of studies at the Faculty of electrical engineering and communication, BUT
- [Směrnice děkana č. 7/2023 \(EN\)](#)
 - Pravidla přijímacího řízení a podmínky pro přijetí ke studiu v doktorských studijních programech pro akademický rok 2024/25
 - Rules regarding application and admission to doctoral study programs in the academic year 2024/25

I am in!

What are my next steps?

- **Preferably in person meet your potential supervisor!**
 - Clarify your ideas, what do you/does your supervisor expect from the study area
- **Submit your e-Application**
 - 1st round April 1-30, 2024; 2nd round July 1-31, 2024
- **Attend the entrance exam**
 - Regular: 1st round June 7, 2024; 2nd round April 27, 2024
 - Alternative: 1st round August 27, 2024; 2nd round April 28, 2024
- **Continue in your studies**

I am in!

Can I do something more?

- **Don't wait for April 1 to see the final list of Study topics!**
- **Contact your „old“ supervisor of your Master (Bachelor) thesis**
 - If he/she cannot be your supervisor you may get a recommendation
- **Propose and agree on a Study topic**
 - by March 18, 2024 supervisors submit their Study topics

Doctoral studies make sense!!



Wireless system for precise indoor localization and monitoring
Milan Šimek, FEEC Alumnus



Application Záchranka to call for emergency by tapping single button
Filip Maleňák, FEEC Alumnus

- **JIC – South Moravia Innovation Center**
 - Support of people in their business that may change the world!



Student vs. Student

Time for your questions

- **Ing. Radek Theumer**
 - 2nd year PhD full time student
 - Dept. of Radio Electronics (UREL)
 - Study topic: Synthesis of fractional-order transfer structures
- Possible questions
 - Own motivation?
 - Pros and cons identified so far?
 - Common day at university?

The next step is only up to you

koton@vut.cz