

A black and white photograph of a large, multi-story university building with a modern architectural style, featuring a grid of windows. In the foreground, there are several large, ornate stone urns or vases, some of which are partially obscured by trees and foliage. The scene is set outdoors with a clear sky.

The First Steps in Establishing Informatics PhD Studies in English at Faculty of Mathematics, University of Belgrade

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Outline



- Organization I come from
 - University of Belgrade
 - Faculty of Mathematics
 - Department for Computer Science

- SWOT analysis
 - Strengths
 - Weaknesses
 - Opportunities
 - Threats

Outline (2)



- Objective: Informatics PhD Studies in English
 - Current situation, potential benefits, anticipated problems
- SWOT analysis of the Objective
- Steps for achieving the Objective
 - Building consensus at Department level
 - Shaping future PhD study program
 - Project 2005: Defining the core of future PhD program
 - The newest development
- Conclusion

University of Belgrade



→ Facts about University of Belgrade:

- a public university
- the oldest and the largest university in Serbia
6 427 academic staff, 3 724 administrative staff
94 458 students, 4 171 international
172 + 194 + 66 = 432 study programs
- one of the most important educational and research centers in Southeast Europe (6 174 research staff)

→ University of Belgrade strives:

- to set the strongest standards in higher education
- to cherish and encourage intellectual and personal growth
- to stimulate meaningful work and effort which serve to the well-being of the entire society

University of Belgrade



Performance in Academic Ranking of World Universities by Subject Fields

Subject Fields	2009	2010	2011	2012	2013	2014	2015
Mathematics	/	/	/	/	101-150	151-200	/
Physics	/	/	/	/	/	151-200	/
Chemistry	/	/	/	/	/	/	/
Computer Science	/	/	/	/	/	/	/
Economics/Business	/	/	/	/	/	/	/

Faculty of Mathematics



- Within University of Belgrade, faculties are very independent
 - Faculty of Mathematics is one of several faculties from University of Belgrade that offers studies in Computer Science

- Facts about faculty:
 - we have three academic programs at BSc, MSc and PhD level (Mathematics, Informatics, Astronomy and Astrophysics)
 - up to present day, we have more than 6000 graduate mathematicians, 400 PhDs and 700 MScs and specialists
 - more than 150 professors and assistants with about 2000 students on undergraduate and postgraduate studies

Faculty of Mathematics



Concerning scientific achievements, Faculty of Mathematics performs very well in comparison to rest of the University.

	Shanghai list (ARWU list)		Taiwan list (NTU list)		US News list		URAP list	
Year	MATH	UB	MATH	UB	MATH	UB	MATH	UB
2017	201-300	201-300	159	316	78	397	324	231
2016	201-300	201-300	98	323	69	423	197	242
2015	>200	301-400	121	339	87	388	115	208
2014	151-200	301-400	85	315	-	-	89	200
2013	101-150	301-400	100	339	-	-	104	237
2012	>200	401-500	196	>600	-	-	271*	310
2011	-	-	184	-	-	-	411*	357

Global position of University of Belgrade on the world university ranking lists (column UB) and its positions in the subject Mathematics (column MATH)

Department for Computer Science



→ The largest Department on the Faculty of Mathematics



→ Facts about Department:

- formally established in 1987 (first Informatics courses in 1961)
- In 2017/18 there are 15 teachers and 24 assistants; among them, 21 women and 18 men; average age is less than 29 (for assistants) and less than 43 (for professors)

Department for Computer Science



- Main research areas within Department:
- Algorithmics
 - Automatic Reasoning
 - Bioinformatics
 - Data Mining
 - Natural Language Processing
 - Optimization

SWOT analysis



- SWOT analysis aims to identify the key internal and external factors important to achieving an objective.



SWOT analysis



→ Properties of SWOT analysis:

- It may be used in any decision-making situation when a desired end-state (objective) is defined
- Analysis may view the internal factors as strengths or as weaknesses depending upon their effect on the objectives
- The external factors may include macroeconomic matters, technological change, legislation, and sociocultural changes, as well as changes in the marketplace or in competitive position
- It can be used as a tool to identify positive and negative factors within organizations, communities, and the broader society that promote or inhibit successful implementation of the change

Informatics PhD Studies in English



→ Current status:

- in this moment, every program should be accredited
- in this moment, in order to be offered to foreign students, the program should pass accreditation process
- in this moment, there is no accredited PhD study program in English offered by Faculty of Mathematics

→ Potential benefits:

- better visibility
- easier communication with researchers and experts from abroad
- eligibility for participation in wider range of international projects
- easier engagement of foreign researchers and experts

Informatics PhD Studies in English



→ Experience from the past:

- In previous years accreditation was not necessary, several PhD students from abroad started, but only a few successfully finished
- Main reason for that outcome is **lack of systematic approach** - almost everything was up to adviser
- At that time, Department have to solve important problems (increasing workload, various organizational issues) ,so we couldn't deal with all problems simultaneously

→ Initially, one problem is anticipated:

- PhD Studies should have focus, and at the same time all professors (with various research interests) should be included to the widest possible extent

SWOT matrix for the objective



	Helpful	Harmful
Internal origin	<p>Strengths:</p> <ol style="list-style-type: none"> 1. People - potential for research within Department 2. Consensus that studies should be carefully planned and managed 3. Successful PhD Studies Program for Serbian students 4. Space and equipment – a year ago, we enlarged space for 60% 5. Efforts to agree on topics that should be offered to foreign PhD students 	<p>Weaknesses:</p> <ol style="list-style-type: none"> 1. Possibility that some research areas “covered” by Department won’t be offered on PhD Studies 2. Knowledge level of the prospective PhD Students 3. Difficulty in achieving balance between domestic and foreign students
External origin	<p>Opportunities:</p> <ol style="list-style-type: none"> 1. Position of Department within Faculty 2. Position of Faculty within University 3. Good collaboration with other faculties and institutes 4. Recognition that Education and Research in Informatics is very important for society 5. Recognition that High education should be open and prepared for collaboration 	<p>Threats:</p> <ol style="list-style-type: none"> 1. Changes in huge systems, like University of Belgrade, tend to be very slow 2. Some educational organizations (either within University, either outside of University) are already taking the similar steps, or will do that soon 3. Legislative changes are very often in the High education area 4. Financial issues – accreditation is not cheap

Steps for achieving the objective



- We decided to establish accredited PhD studies in Informatics in English language
- Building consensus at Department level should be done very carefully
- One problem is defining PhD Study program:
 - PhD Studies should have focus
 - At the same time, all professors (with various research interests) should be included to the widest possible extent
 - Program should be flexible and extensible
 - At the beginning, number of disciplines courses should be small, otherwise program won't be sustainable – so we decided to think about small number of, so called, **core** courses

Shaping future PhD program



- Initial idea is to select one research area studied at our Department, which have clear and good connection with most other research areas, and to structure core courses around it, taking into account other areas
- We choose Bioinformatics
 - Bioinformatics is relatively **new** and very **hot**, with great potential
 - Researchers from our Department already have significant contributions in that area
 - Bioinformatics is naturally connected to research areas (algorithmics, data mining, natural language processing and optimization) that are successfully studied by researchers from our Department

Project 2005



- In December 2017, Serbian Ministry of Science's have Project 2005 call within Program for Development of Higher Education
 - With the support of the Faculty and the Department, I've submitted a project proposal, related to developing the PhD studies in Informatics in English
 - Project was approved for funding and we have just successfully completed its implementation.
 - Project team consists of three full professors, two associate professors and three assistant professors from our Department
 - We selected six courses and produced curriculums for them, as well as elaboration of course materials

Project 2005



- We used curriculum of similar PhD courses in Serbian, but contents of “general” courses is slightly changed to be compatible with Bioinformatics
- Curriculum for following courses are created as a project outcome:
 1. Nature-Inspired Metaheuristics in Optimization
 2. Computational Intelligence
 3. Machine Learning
 4. Selected Topics in Bioinformatics
 5. Data mining in Bioinformatics
 6. Information Retrieval and Web Searching

The latest development



- Now, we are well prepared to submit program for accreditation when the time comes:
 - Core (prepared in Project 2005) can be easily expanded
 - There is consensus on the Department
 - Management of the Faculty support that idea
- However, things are changed in last ten days!

The latest development



Browser window showing a news article on B92.net. The article title is "Produženje su dobili studenti koji su fakultet upisali po starom planu i programu, koji su školovanje morali da završe do 30. septembra, ali i 'bolonjci' koji su potrošili maksimum od osam godina za četvorogodišnje studije." The article text discusses the extension of the deadline for students to complete their studies by September 30th, and mentions that the Ministry of Education official Bojan Tubić has stated that older students will get another chance to finish their studies on the old plan and program.

Novina u Zakonu je i da fakulteti mogu organizovati deo nastave na stranom jeziku ukoliko imaju osposobljen nastavni kadar, a da im za to nije potrebna posebna, dodatna akreditacija.

"Do sada su fakulteti morali da akredituju posebne studijske programe na stranom jeziku. Samo nekoliko visokoškolskih ustanova je imalo akreditovane studijske programe na engleskom jeziku", kaže Tubić.

Mogućnost da se deo nastave i ispiti organizuju na stranom jeziku uvodi se zbog sve veće potrebe za internacionalizacijom fakulteta, privlačenjem stranih studenata, ali i zbog gostovanja studenata i nastavnika iz inostranstva koji dolaze na razmene preko projekta Erasmus plus.

Predviđeno je da se u Zakon unese odredba kojom se priznaju osporeni doktorati stečeni na fakultetima koji u momentu izdavanja diploma nisu imali dozvolu za

Right sidebar contains a list of other news items:

- Zvezda sa navijačima u Ligi šampiona! 275 | SPORT
- Istorija ispisana rukopisom Vladana Milojevića 174 | SPORT
- Zvezdina satnica – čeka Napoli, pa gostuje na "Parku prinčeva" 140 | SPORT
- Trener Salzburga: Zaslužili smo da prođemo, bili smo bolji od Zvezde 126 | SPORT
- Da li smo posle 40 godina dočekali novu Ladu Nivu? FOTO 124 | AUTOMOBILI
- Srce nadjačalo glavu – da li sledi nova kazna za Zvezdu? VIDEO 121 | SPORT

PROČITAJTE JOŠ NA B92

Kinezi preuzimaju RTB Bor
Kineska kompanija "Zijin" izabrana je za strateškog partnera Rudarsko-topioničarskog basena "Bor" (RTB)
saznaje Tanjug.

- Đoković: Wimbledon je beo, Njujork je bučan
- Index: Hrvatska umire
- I posle optužbe za silovanje, ostala s Polanskim: "Nije mi dosadno"
- Kako je Jeljcin izabrao Putina i sve to rekao Klintonu

Conclusion



- It seems that it won't be necessary to formally accredit PhD Study program in English
- However, whole process, discussion and work that is conducted is very useful:
 - PhD study in English is analyzed in depth, using SWOT
 - Department agreed that PhD study in English should be systematically supported
 - Proposal for consisted and focused PhD study program is prepared and discussed
 - Ties with other organizations are strengthen
 - Curriculums for selected subset of PhD courses are created

Thank you!



→ Contact

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→ Any questions?