

## **FACULTY OF COMPUTER SCIENCE**

University "Ukshin Hoti" Prizren  
Str. Shkronjat 1, 20000 Prizren  
Republic of Kosovo

**FACULTY OF COMPUTER SCIENCE**

# **STRATEGIC PLAN 2020-2023**



# FACULTY OF COMPUTER SCIENCE

## Strategic Plan 2020-2023

**We develop the future**

November 2019



## ABBREVIATIONS

<b>UUHP</b>	University” Ukshin Hoti” Prizren
<b>FCS</b>	Faculty of Computer Science
<b>SPEK</b>	Strategic Plan of Education in Kosovo
<b>UA</b>	University Association
<b>MoU</b>	Memorandum of Understanding
<b>EU</b>	European union
<b>OIC</b>	Office for International Cooperation
<b>OQD</b>	Office for Quality Development
<b>CAC</b>	Career and Alumni Center
<b>IAB</b>	Industrial Advisory Board
<b>IT</b>	Information technology
<b>USAID</b>	US Assistance for International Development
<b>MEST</b>	Ministry of Education, Science and Technology
<b>CQC</b>	State Quality Council
<b>SP</b>	Student Parliament
<b>AU</b>	Academic Units

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## STATEMENT FROM THE DEAN

In the capacity of the Dean of the Faculty of Computer Science (FCS) of the University "Ukshin Hoti" Prizren (UUHP), I have a special satisfaction, on behalf of the academic staff, collaborators and other students as well as on my personal behalf, to welcome you. The Faculty of Computer Science is one of six Faculties of the University "Ukshin Hoti" Prizren.

Through its own study programs, Faculty of Computer Science at UUHP provides guidance and prepares students for industry-based career.

The study of Computer Science is recognized as one of the fields European leaders in the natural sciences. During the studies the students are covered with all the knowledge necessary theoretical and practical. This enables students to create large and small projects in any company within the country or abroad, and may pursue Master studies. We guarantee you that we support the passion and desire of students, towards a successful professional career.

Assoc. Prof. Dr. Samedin Krrabaj

Dean, Faculty of Computer Science

## DRAFTING THE STRATEGIC PLAN

This strategic plan is based on the decision of the UUHP Governing Council, ref. 01-385 dated 10.10.2019.

The Strategic Plan 2020-2023 was drafted after consultations intensive and comprehensive internal and external actors external to UUHP. All UUHP development activities will be supported and guided by this strategic plan.

### Members of the commission for drafting the strategic plan

Assoc. Prof. Dr. Ercan Canhasi, chairman  
Assoc. Prof. Dr. Samedin Krrabaj, member  
Assoc. Prof. Dr. Naim Baftiu, member  
Ass. Prof. Dr. Arsim Susuri, member  
Ass. Prof. Dr. Ziriye Hasani, member  
Ermal Krasniqi, member (student representative)



## HISTORY OF THE FACULTY OF COMPUTER SCIENCE

The Faculty of Computer Science (FCS) was founded in 2010.

FCS organizes study programs at two levels (Bachelor and Master) and in three study languages (Albanian, Turkish and Bosnian). At the same time, within the medium-term plans to open the doctoral study program.

### **Bachelor level study programs:**

- Information Technology and Telecommunication
- Software Design
- Information Technology and Telecommunications (Bosnian)
- Information Technology and Telecommunication (Turkish)

### **Study program at Master level:**

- Computer Science and Communication Technology

Scientific research of academic staff:

The academic staff of the FCS is mostly young and every year new academic doctors are added to it. Given this fact also the creation of common research areas is underway. There is some

joint research among staff academic but most of them are individual being based on their doctoral research

Establishment of the Industrial Advisory Board (IAB) serves the Faculty of Computer Science for communication and interaction with regional business community.

The infrastructure of the Faculty of Computer Science is within a four-story building, shared with the Faculty of Law. The facility is located on the campus of UUHP. The building is new and of good quality. All staff are located in the same building complex with short distances between offices. Students of both levels are placed together with their teaching groups in the same object. The faculty has an organization on the floors. The first two floors belong to the Faculty of Law, while the two upper floors belong to the Faculty of Computer Science.

# 1. THE FOUNDATIONS OF THE STRATEGIC PLAN

Our goal will be the formation of high-profile research groups and motivating individual researchers, in order to benefit from funds, such as individual grants at all levels: start-ups, advanced, consolidating, and centers of excellence from various foundations.

In the next period we will continue to strengthen and we support the development of our core research areas.

## 1.1. Mission

To conduct scientific research of the highest international level in order to social and industrial development, as well as to educate distinguished students who will be leaders of the next generation.

## 1.2. Vision

The study of Computer Science is recognized as one of the fields European leaders in the natural sciences. Increasing the number of academic staff is one of the goals consistently key, as well as commitment to equality gender among academic staff. Selecting the best from it our (Master level) graduates and their inclusion in the staff academic of the FCS.

In the long-term plan to enable the teaching of at least 6 subjects in English language to enable student exchange through the ERASMUS program.

We will also focus on creating a unique department which will be distinguished from other Universities located in Kosovo with the programs it will offer.

## 1.3. Values

The values of the Faculty of Computer Science are reflected in providing knowledge on basic and advanced science and challenges technology in the field of computer science and application his in IT-industrial. Knowing that engineers in modern times should be able to resolve issues much longer complex, to design and implement software packages, to design and implement network solutions, or to improve information technologies, this Bachelor program covers techniques that will affect productivity growth in software development and information technology.

## 1.4. Executive Summary

Our goal will be the formation of high-profile research groups and motivating individual researchers, in order to benefit from funds, such as individual grants at all levels: start-ups, advanced, consolidating, and centers of excellence from various foundations.

In the next period we will continue to strengthen and we support the development of our core research areas. Except In addition, we have identified two "key areas", which combine high-level research competencies into several groups research, the development of which will be a priority in the period of next: side effects will be used to identify new research areas such as the Mechatronics we aim for we study in the future. The key areas are "Big Data and Data Analysis "and" Cyber Security ". We propose to create an interdisciplinary department in Faculty of Computer Science on Data Analysis and Big Data, led by Relevant Department of Computer Science, and done in combination with research and educational work. Also, based on IT and industrial technology development trends as well as interest of young

students, we propose the opening of the department of Mechatronics. This initiative will be conditioned by the allocation of additional resources.

### 1.5. General goals

- Development of research and educational side activities within "Big Data and Data Analysis" and "Cybernetics Security".
- Interdisciplinary Topic on "Big Data and its Data Analysis".
- Strengthen and support the development of our main fields of research.
- Review and improve computer science and IT programs and increasing the percentage of scientists from the field of computer science and those of IT who graduate within three years.
- Opening of the Mechatronics department.
- Attracting the best students.
- Strengthening cooperation with industry and public institutions.

### 1.6. Stakeholders

Stakeholders of the Faculty of Computer Science:

**Internal:** academic staff; administrative and technical staff; the management of the academic unit.

**External:** students; alumni (graduate students); civil societies (NGO); industry / business community; scientific community; local, national and international government institutions; various agencies etc.

### 1.7. Organization of workspace

The building is located on the campus of the University "Ukshin Hoti". The building is new and of high quality. All staff are located in the same building complex with short distances between offices. Students of both levels are placed alongside their teaching groups in the same facility. The faculty has an organization on the floors. The first two floors belong to Faculty of Law, while the two upper floors are the Faculty of Sciences Computer. The Dean and the Vice Dean of the Faculty have meetings weekly work with the Rector of the University and the Secretary. Strategic issues are discussed in meetings with the Teaching Council Faculty of Science and with committee leaders for studies. Finally, there are monthly meetings with the academic staff twice a month.

In addition, within the Faculty there are commissions for:

- Bachelor and Master Studies
- Drafting regulations
- Quality
- Offices
- Laboratories
- Seminars
- Library - within UUHP

Each committee is responsible for day-to-day decisions within their specific competencies. Faculty development policies are discussed with the directors of other Faculties of the University, who meet with the commission 1-2 times a year to discuss the strategy, action plans and committee resources.

### 1.8. Departments and research groups

Departments and research groups are not currently formed. Depending on the financial resources, it is anticipated that departments for existing departments to be formed soon. A research group consisting of 2- 4 permanent members of faculty and a number of Master level students will formed in order to strengthen and support the development of our research areas. In recent years we have started one closer cooperation between different institutions research - both public and private in relation to the goals / scientific research methods. As a result, we won project (BESTSDI - Western Balkans Academic Education Evolution and Professional's Sustainable Training for Spatial Data Infrastructures) and we are in coordination with Univerzum College to compete in the project "STIR -Institutional Capacity Building in Innovative Science and Technology for the Robot Internet". As a result of this work, projects in existing directions are targeted research topics and application areas that have nature interdisciplinary and multidisciplinary such as:

**Algorithms and Data Structure:** Algorithms and Data Structure (in classical computer models as well newer models that take into account the hierarchical memory of modern machines), algorithmic engineering.

**Continuous data systematization:** Database and data management, including processing and efficient indexing of

questionnaires, as well as collection, detection of external, similarity classification and search.

**Cryptography and Security:** Public key cryptography, cryptographic protocols, quantum cryptography, secure and diverse computing.

**Mathematical Computer Science:** Theory of Complexity computer, combinatorial optimization, algebraic algorithms, theory of algorithmic games and design of mechanisms.

**Logic and Semantics:** Models and logic for programming languages and type theories, modular reasoning for simultaneous programs, higher order, imperative programs and language-based security.

**Programming Languages: Language** design and analysis and tools, functional languages and formal semantics, languages of object-oriented.

**Computers and Interaction Everywhere:** Computing Everywhere and mobile, positioning and context awareness, Technologies with user interface, interaction design for computer science everywhere (including basic research theoretical, design methods and evolving Technologies interaction). The group manages several major research projects strategic with industrial participation.

**Computer-mediated activity:** New techniques of interaction, methods and theories for mediated activities computer work and daily life, the mechanisms that support human development and the acquisition of Information Technology.

**Use, Design and Innovation: Design Methods** for systems covering workplaces, public spaces and private homes. Most research is conducted through large projects, where users, companies and researchers collaborate on analysis, design, construction and evaluation of prototypes and usage processes.

### 1.9. Full-time academic staff

As the graph below shows, the number of academic staff of the Faculty has not been stable during 7 years. From 2010 when the Faculty was established until 2017 has 11 permanent teachers of the Faculty. Whereas the number of teachers engaged is very high. Today, number of employees engaged in all three Bachelor programs and in the Master program, in all three languages of study is a total of 41 teachers. Due to the change of study programs and permanent staff employment policies this number is decreasing.

It should be noted that the Faculty has "imported" a number of substantial temporary academic staff while there are professors who have gained the status of professor at the Faculty and have been transferred to other Universities in Kosovo.

Over the coming years it is believed that this trend will change and The faculty will be staffed with full-time academic staff.

The graph below describes the relationship between the academic staff of permanent and the number of students admitted. The average of students is based on active students enrolled in October of every year. Detailed data on the number of students admitted in studies at this Faculty from 2010 to 2017 can look at the graph below, where the total number of students enrolled is 3080 new students for the period 2010 to 2017.

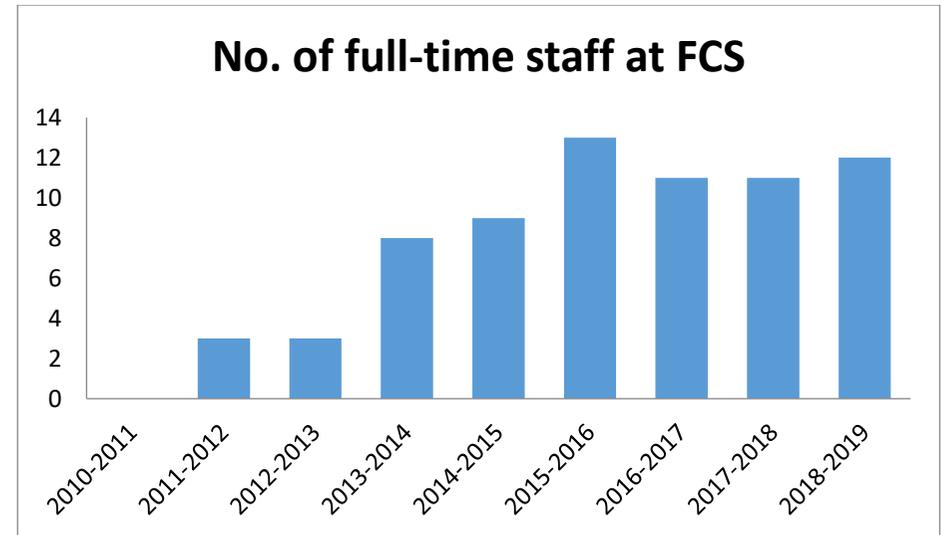


Figure 1. *Number of full-time academic staff (2010-2017)*

Since 2016 where we introduced the new study program for studies and for the development of IT products, we have managed to make a steady decrease in the number of students admitted in both SD and TIT directions of the Faculty of Computer Science. The conclusion is clear: the number of students received in the period 2010 - 2015, has increased (more than doubled) but we have not had an increase in the number of regular staff of Faculty (despite the fact that in 2015, we started with the program new study which is in progress).

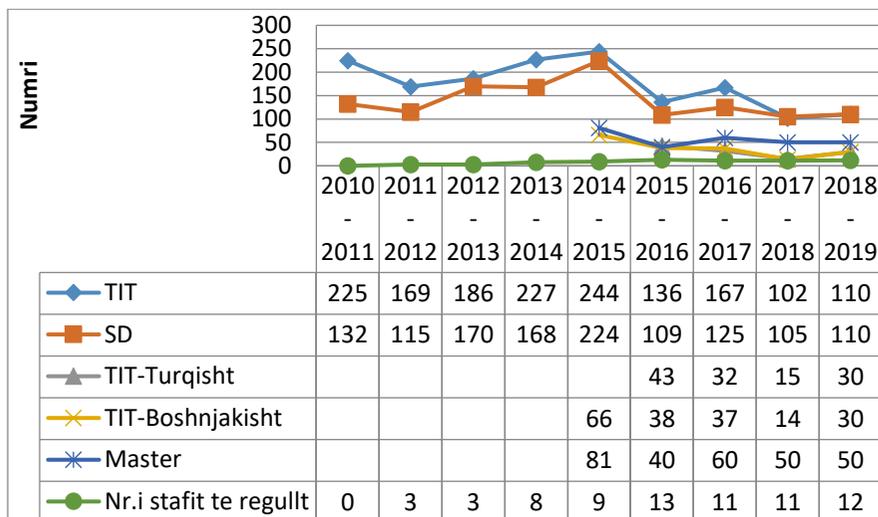


Figure 2. *Number of permanent academic staff in proportion to number of students (2010-2019)*

The regular non-academic staff consists of: IT Officer, Chief of Administration, Faculty Secretary and Assistant for students. The administrative services at the Faculty are at a high level, which helps academic staff focus on the main work.

### Staff Summary

Professor	/
Associate Professor	3
Assistant Professor	5
Assistant	3
Administrative Staff	2
Total	9
Professor	22

### 1.10. Level

The Faculty of Computer Science recognizes and evaluates the variety of different ways of engaging through which the staff of the Faculty contributes to the realization of goals of the Faculty. The faculty is characterized by a responsibility and joint solidarity in solving certain tasks.

The management is good at delegating - a lot of decisions are delegated to committees. To raise the level of work, the Faculty will benefit from staff engagement by a group of academic staff coming from Public Universities of Kosovo and from different countries of region. We hope all staff will contribute in a way equal in faculty shaping.

The faculty will continue to work systematically on improving the work environment based on assessments of mandatory for academic staff.

The faculty will continue efforts to train and advance the academic staff. We have regular monthly meetings which provide and develop a sense of equality in a faculty with interests of common. Annual seminars for permanent staff academic and non-academic, over the years, will contribute to developing a common sense of work among employees; it should become a tradition.

Traditionally, many students especially at the Masters' level, have jobs where they spend many hours a week. Thus, many students come to college only when they have lectures.

The faculty strives to ensure that all lectures for students take place in halls with IT equipment. Moreover, the halls where students have to constantly develop lessons need to be maintained in order for students to look attractive to become a daily part of faculties. Students are often encouraged to exert influence on committees

relevant in the faculty and their participation is very e welcome. Eventually we agree that we are trying to create an environment for creating an entrepreneurial mindset in the faculty through a physical space and the easiest possible program of mentoring for students and graduates wishing to studies begin after graduation.

### 1.11. Summary Statistics (Quick Facts)

Graphic presentation (with diagrams) of key related statistics issues of special interest to the FCS:

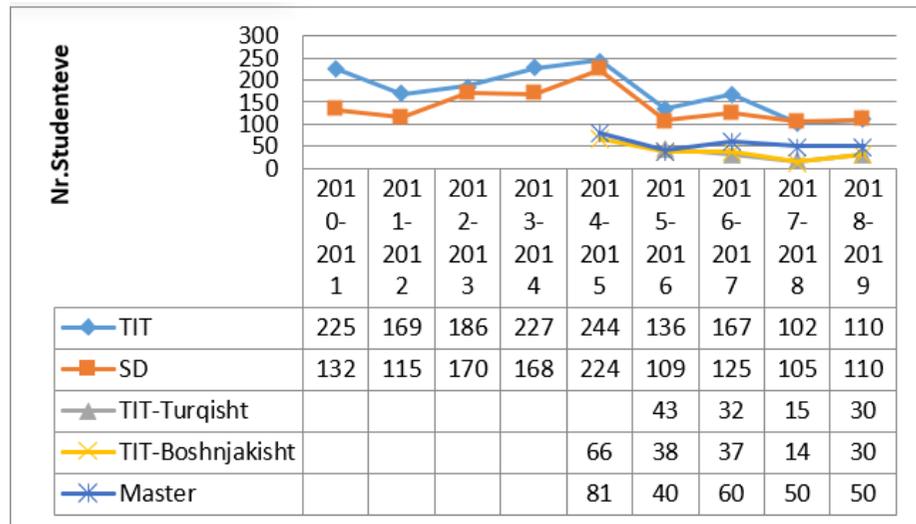
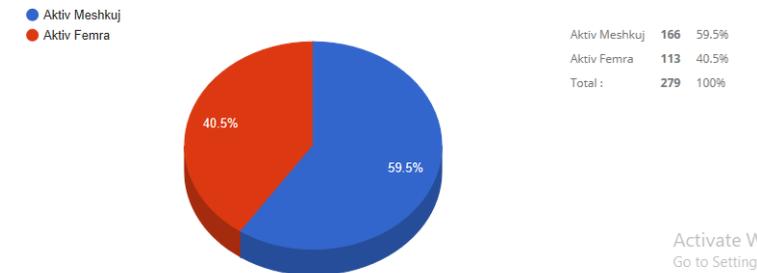


Fig. 3. Number of students enrolled in the FCS from 2010 to the academic year 2018-19

Statistics regarding the number of students and categorization of their demographics (by gender, socio-economic structure etc.) from the period of establishment of the Faculty

Niveli	Fakulteti	Departamenti	Viti akademik
Te gjitha nivelet e studimeve	Fakulteti i Shkencave Kompjuterike	Te gjitha departamentet	2019/2020

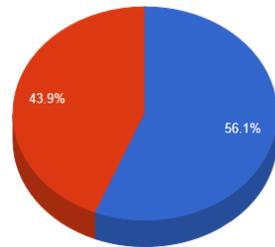


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## Statistics regarding the number of graduate students (in Bachelor and Master) for the academic year 2018/2019

Niveli	Fakulteti	Departamenti	Viti akademik
Të gjitha nivelet e studimeve	Fakulteti i Shkencave Kompjuterike	Të gjitha departamentet	2018/2019

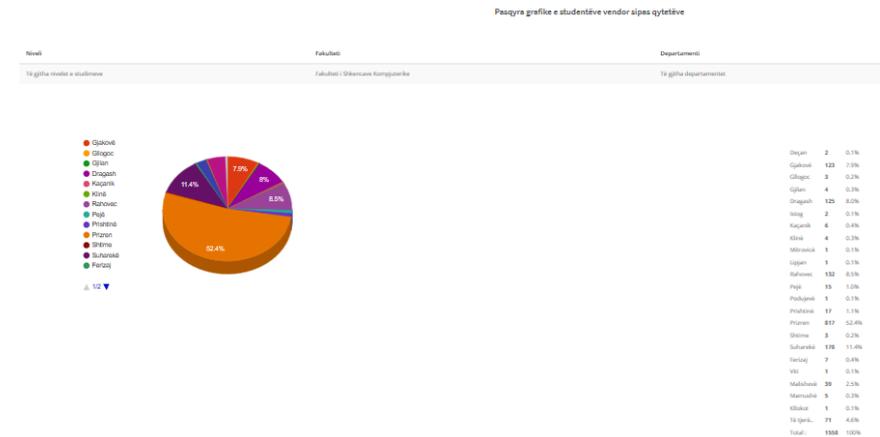
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● Aktiv Femra



Aktiv Meshkuj **92** 56.1%  
 Aktiv Femra **72** 43.9%  
 Total : **164** 100%

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## Statistics related to student residences



## Statistics related to regular academic staff (Number of staff academic with the academic vocation Prof. Dr. / Prof. Assoc. Dr.

Professor	/
Associate Professor	3
Assistant Professor	4
Assistant	3
Administrative Staff	2
<b>Total</b>	<b>12</b>

## 2. STRATEGIC PLANNING PROCESS

The Strategic Goals of the Faculty of Computer Science are designed to be in line with the UUHP strategy.

They include:

- Development, improvement and updating of programs current at both levels (Bachelor and Master) so that they be closely related to the needs of the labor market not only in the region of Prizren but also beyond;
- Academic, research, and research advancements providing scholarships for FCS students;
- Increase teaching, research and service in within the FCS, retaining and hiring staff selected.
- Opening new programs, in order to connect closer to educational profiles in the Prizren region.
- Opening of Doctoral studies, as a conclusion of successful participation of the FCS in the project DI-PHDICTKES.

### 2.1. Positioning analysis

SWOT analysis of the Faculty of Computer Science identifies strengths, weaknesses, opportunities and risks of the faculty:

#### Strengths (external):

- Very good reputation at the national level
- Well-developed network with international contacts
- Some interdisciplinary projects
- Close contact and cooperation with enterprises that deal with IT development.
- Regular and engaged academic staff is qualified.
- Competent and efficient administrative staff.
- Unique age profile for academic staff.
- Many students at the Bachelor's level and Master.

#### Strengths (internal):

- Mutual respect between academic staff and administrative staff
- High degree of delegation and involvement in groups and panels
- Rapid and non-bureaucratic decision processes.
- No quarrels over minor problems and procedures.
- Many initiatives to ensure good social contact.

#### Weaknesses:

- Small number of regular academic staff
- There are no foreigners on the academic staff.
- Few women on the academic staff
- Fewer female students at all levels.
- High dropout rate in Bachelor.

#### Possibilities:

- High demand for qualified IT professionals, such as Bachelor and Master students
- High demand for computer science competencies in interdisciplinary projects.
- Entrepreneurship through the incubator for Master / graduate students / graduates who have established or work on founding their own company.
- Co-location with information science, IT engineering and other organizations
- Cooperation with various institutes
- Holding track makes it easier to offer attractive career to the best international researchers.

- Beautiful buildings where all staff and students are close to each other.

**Risks:**

- Fierce competition with other Universities and the IT industry to employ more young people talented.
- Inadequate support with IT equipment.
- Request for more teaching hours.
- An increasing measure of complacency.

### 3. STRATEGIC PRIORITIES

Strategic Plan 2020-2023 of the FCS has identified the following areas of strategic priority:



The following is a brief summary of the strategic priorities where they should be incorporated: teaching / learning and quality control; development of scientific research work; the contribution of the Faculty of Computer Science to the community in which it operates (community service activities); internationalization and networking of the Faculty of Sciences Computer (cooperation agreements, priority ones foreign faculties from which 70% of the programs have been adapted; mobility of academic staff and students, etc.);

### 3.1. Quality assurance in teaching and learning

The department runs four programs at the Bachelor level (two directions in Albanian language: Software Design and Information Technology and Telecommunication; one in Turkish: Information and Telecommunication Technology and one in Bosnian language: Information technology and Telecommunication) and a Master Level program: Computer Science and Communication Technology, all of these programs with large number of students. This means that in the future these programs will work and the staff we have covers them software needs but also in the future will be recruited new staff and work will be done to open new programs.

In 2017 and previous years more than 50% of it enrolled in the Master level were graduate students from the Bachelor level in our faculty. Number of graduates in The Master level in our Faculty is relatively low because the level of studies is high. In our Faculty since 2010 3080 students are enrolled, of which in Software Design: 1148, in TIT: 1456, TIT-Turkish: 90, TIT-Bosnian: 155 and Master: 231. So, the number of students calculated per professor is high and this reduces the time required for a professor to engage with a student.

**Goal:** Increase the number of students graduating in three years survey

**Indicators:** Percentage of students graduating in three years.

**Mechanisms (actions):** Implementation of best techniques for selection of students enrolling at the Bachelor level, perhaps by combining the grade point average of the school high school and individual entrance exam; Software improvement study by implementing various teaching techniques, by increase contact between students and faculty, and by improve the physical study environment (i.e., students will be able to work more efficiently in the department); Review of study programs.

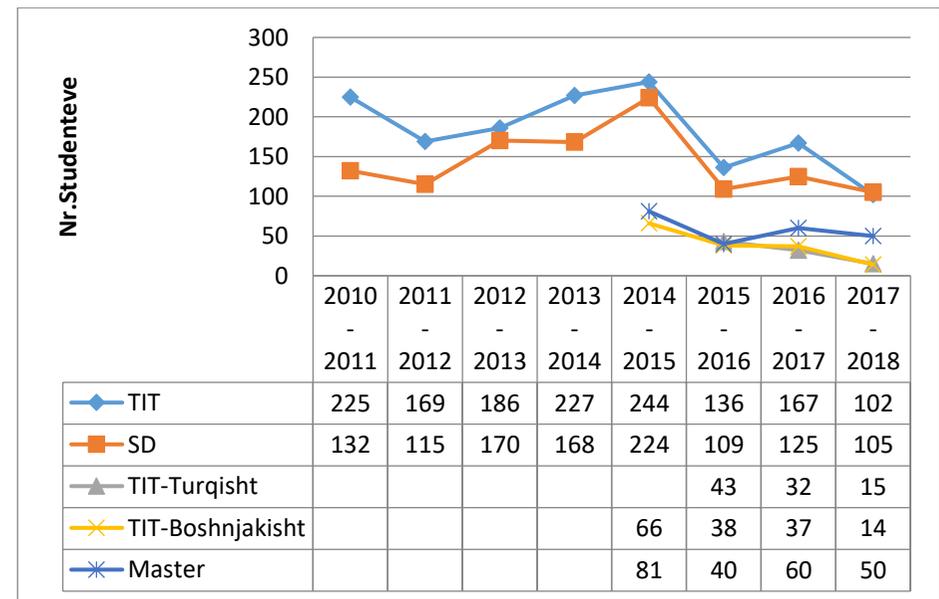


Figure 3. Number of students enrolled in the FCS from 2010 to academic year 2017-18

**Purpose:** Review and improve study programs in Faculty of Computer Science

**Indicators:** Number of hours of consultation between the Professor and Students. Increasing the employment of graduates in the Faculty. Extent and depth of programming experience that students receive during their studies. More written documentation of their work in order to make the training of students to write. A considerable number of specializations to provide progress. Ensure harmonization between specializations and Master Thesis. Results in the evaluation of the physical and psychological study environment.

**Mechanisms (actions):** Review of study programs; Consider project-oriented learning which will supervised by experienced scientific staff, bringing in students closer to staff; The department has the student union and each the faculty has a student council. We will continue to we cooperate with these organizations and support them as much as possible as much as possible. They make a special contribution to providing a conducive environment for studying.

**Purpose:** Initiate an elite program for talented students

**Indicators:** Number of students attending the elite program  
Number of students wishing to enroll in PhD.

**Mechanisms (actions):** Design and implementation of the elite program, using experiences gained in other departments in UUHP.

**Purpose:** Make sure our faculty teaching resources spent wisely.

**Indicators:** The number of students for specialization should be reasonable (small enough to have sufficient resources of teaching per student and large enough to have one reasonable number of students per course).

Number of courses that can be used in some educational programs.

Make sure there is a longer-term plan for staff courses in IT study lines

**Mechanisms (actions):** Review of study programs. The focus of management should be on holding courses.

### 3.2. Development of scientific research work

Within this strategic priority, the FCS has defined these strategic objectives:

- Deepening the cooperation within the academic staff of FCS;
- Cooperation with academic staff of relevant regional institutions;

Potential areas of research are two "key areas", which combine research competencies from several research groups and the development of which will be a priority in the period of next. In particular, the side areas will be used for it identify new research areas to be built on it the future. The main areas are "Big Data and Analysis of Data "and" Cyber Security ".

**Big Data and Data Analysis:** The digitalization of society has radically transformed work and life around the world. Computer Science and Computer Engineering have been important enablers of this transformation. Today, we experience an exponential

increase in digital data that projected to reach a level of 40 ZB ( $10^{21}$  B) in 2021, from 2.7 ZB in 2012; for two days we now produce just as much data how much we have done since the beginning of civilization and until 2003!

There is a growing awareness that efficient use and analysis of these data can lead to radical new values for society, industry and businesses. For example, special publications in the journals *Nature* and *Science* have highlighted the great opportunities that Big Data offers in science, e.g., emphasizing how a paradigm shift occurs caused by the explosion in data availability high quality science. While in the past, researchers' individuals meticulously planned their experiments and recorded and analyzed their results, we now see one shift towards the accumulation of data sets from different in mass databases and extracting these datasets to obtain new scientific results: information (data collection, organization and transformation). Similarly, a special issue of *The Economist* has highlighted the great business opportunities in Big Data, and we have already seen examples of new businesses and many successful Big Data based. However, many opportunities of Big Data are not being realized yet. For example, it is estimated that from 2.7 ZB of data in 2012 only 3% were recorded with meta-data (additional descriptions) and much less than 3% are analyzed. That so little of the available data is examined, observed as a sub-use of existing capabilities of data analysis and a need for methods and techniques new efficient and effective analysis.

So is computer science research and innovation it is important to take advantage of scientific opportunities and trading that extend to Big Data. Combining strength existing research in several important areas, Department of Computer Science is very well

positioned to be made a side department in terms of large collection of data, their organization and analysis.

**Objectives for Big Data:** Given existing fields of research about big data, we believe we are well-positioned to decide what the center would be research on big data in Kosovo and that the center will have a considerable visibility. This ambitious goal of overall can be achieved by strengthening cooperation between groups in (and outside) the department with large activities of data. The objective will focus on basic research on methods efficient computing for its collection, organization and analysis data including areas such as sensor support, database organization, machine learning, algorithms efficient and visual analysis - and for building an education data science (specialization at Master level).

The additional focus would be on multidisciplinary collaboration and in innovation in collaboration with industry, in order to efficient computer techniques are used for problem solving social and develop products and services respectively new. Initial natural cooperation can be very disciplinary with biology researchers (e.g., based on existing cooperation with BiRC and Biodiversity researchers), engineering researchers (e.g., in analyzing data from cyber systems) as well as researchers from Food and Agriculture.

Innovation efforts will also be built on the experience of the participating collaborators and existing cooperation, and even more important in cooperation with the Alexandra Institute, which has the competencies of strong in applied research, development and innovation. Resources needed to achieve Big Data objectives Although the faculty stands well in a number of research areas relevant to Big Data, the father lacks staff and equipment

electronics, mainly hardware suitable for this field. Other faculty resources are needed to foster the initiative, running including building interdisciplinary collaboration, designing specialization of new data sciences and the provision of additional funds, providing at the same time that power in the key areas of the individual is not compromised. In addition to design already planned in the area of systems with intensity of additional facilitators are needed on the computer and comprehensive interaction and in areas of algorithms. Thus, additional staff resources are needed for the objective to be successful.

**Cyber-Security:** The structure of society today is woven with the themes of complex IT systems. While these systems greatly improve the quality of life ours, they also come at risk. A single weakness in one Modern information technology system can lead to critical interruptions in telecommunications, banking services, utilities, transport services and security national. Providing an IT infrastructure is a task challenging.

A common wisdom in cyber security is that "a system is insecure as its weakest link." In practice, weaker connections in large IT systems can to emerge almost anywhere - from the user interfaces designed by packets, to program errors in the kernels of operating systems, for subtle protocol flaws cryptographic. Moreover, a noticeable improvement throughout one of these aspects can compromise safety along others. For example, switching to a new system, protocol cryptographic theoretically stronger, in an *e-banking application* can result in a confusing user interaction that is susceptible to social engineering attacks. In order to similarly, an improvement in the user interface can inserts programmer errors that consequently flow user information, such as passwords or data personal.

These and many other examples suggest that approach comprehensive to cyber security requires not only in-depth expertise in key areas of computer science, but also requires an understanding of the security concerns in it all fields. Department of Computer Science at UUHP is in a unique position to form a research area in cyber security. It has a strong presence in many areas research needed, but there is also an opportunity for it built on individual power toward focused effort and principles in cyber security.

**Cyber Security Objectives:** Given existing areas of research related to Cyber-Security, we believe we are well positioned to decide what we want to be the Cyber-Security research center in Kosovo and that the center would have a considerable visibility international. This ambitious overall goal can be achieved strengthening cooperation between the current groups of independent in (and outside) department with strong activities cybernetic. The objective will focus on basic research on the science of cyber security, exploring the principles, abstracts and exchanges for building secure systems - including areas such as cryptography, programming logic and automated verification, language-based security, and human interaction with insecure systems. Here there is a natural "supply chain" running through protocols cryptography in language programming and implementation, in systems computer, and finally in the interfaces used by human users.

We need to build models that allow us to identify what information should go up and down this chain so that the resulting system is secure. Based on this, we can proceed with the design and construction of tools that will facilitate the development of secure systems in it all levels. This is a great challenge that it never is previously addressed, hence both high risk and high profit. We will



also consider building a level specialization Master in Cyber Security.

Additional focus would be multi-disciplinary cooperation and over innovation in collaboration with private companies and the sector public, to address societal challenges in cyber security. Multidisciplinary research can be done with economists (privacy transactions), engineers (combining aspects of physical and software security in connection with the collection of data, smart measurement, etc.).

Researchers doing research on people (ensuring the confidentiality of data aggregated) privacy policies), etc. Innovation efforts would also build the participants' experience in research and existing cooperation, and most importantly in cooperation with the Alexandra Institute, which has the competencies of strong in applied research, development and innovation.

**Resources needed to achieve Security objectives cybernetic:** Although the faculty fits well in a number of research areas relevant to Cyber Security, faculty lacks staff and electronic equipment, mainly hardware suitable for this field. Other faculty resources are needed to foster initiative, including building collaboration interdisciplinary, designing the specialization of new sciences of data and securing additional funds by providing in it at the same time that power in the key areas of the individual does not be compromised. In addition to the already planned design in the area of systems with data intensity, additional facilitators are needed on the computer and comprehensive interaction and in areas of algorithms. Thus, additional staff resources are needed for the objective to be successful.

### 3.3. Contribution to the community

Within this strategic priority, the FCS has defined these strategic objectives:

- Increasing the employment rate of FCS students
- in the regional market;
- Adapting the curriculum to market demands;

### 3.4. The process of internationalization and networking

Within this strategic priority, the FCS has defined these strategic objectives:

- Participation in international projects (such as, DI-PHDICTKES, HORIZONT 2020 SMART4ALL, BESTSDI,
- Open ICT Education for Youth Employability, etc.)
- Exchange of academic staff with other institutions, regional and international;

Our department has a good tradition of cooperation and knowledge exchange with private companies and institutions public. In the last ten years, there have been a large number of projects with foreign participants (GIZ, etc.). So, our research has been available to Kosovo society and international.

Industry and public institutions also contribute to study programs in the department, e.g., through courses of joint projects with students, and involving them on our advisory boards for study programs.

Most academic staff and students are interested in start creating new companies. Most of the project's students realized during the studies are implemented in our department.

The department does not have a budget with which will set up a research incubator but we try to cooperate with private companies and public institutions and we provide environment for the development of various projects.

**Purpose:** Strong cooperation with industry and institutions public.

**Indicators:** Number of projects with active participation from private companies or public institutions. With active participation we mean that the company / institution sponsors a part of project or there are employees working on the project. Participate in reference groups etc. not enough to be counted.

**Mechanisms (actions):** Support joint applications research with industry.

**Purpose:** Support the entrepreneurial activities of students, staff and young graduates.

**Indicators:** Number of successful start-up companies by students, staff and new graduates from the department.

**Mechanisms (actions):** Build laboratories where you can ideas are realized.

### 3.5. Infrastructure development

Within this strategic priority, the FCS has defined these strategic objectives:

- Expansion of the current facility (for the purpose of utilizing complete object);
  - This will be done so that the Faculty of Law moved to the facility to be built opposite facility of the FCS.

- According to the predicted dynamics, this is expected to be realized by 2021.
- Construction of a data center;
  - To accomplish this, initially a working group of The FCS will draft the project where they will be listed essential components in order to set up a data center. Then, if there are insufficient financial means within the UUHP, potential donors will be identified for the implementation of this project. The project is planned to be completed by at the end of 2021.

### 3.6. Financial sustainability

Within this strategic priority, the FCS has defined these strategic objectives:

- Financial benefits from the projects (both in terms of equipment laboratory as well as potential infrastructural investments);

### 3.7. Opening of unique study programs

Within this strategic priority, the FCS has defined these strategic objectives:

At the Bachelor level the goal of the future is to open the direction Industry 4.0. This objective comes as a result of market needs international in this field. So far, we have not had this program in Bachelor level studies.

**Goal:** To open the Industry 4.0 program at the Bachelor level.

**Indicators:** Number of students in Industry 4.0 number of faculty staff. Ability to accept student with high qualification from Kosovo and the region.

**Number:** Number and quality of courses offered in this field. The quality of studies in this regard increases when our students are in able to be compared to top university students.

**Mechanisms (actions):** Improving selection methods of Bachelor level students; Offering various courses in PhD level are the key element of research and education in our department, and the department intends to open well PhD studies. So far, we have not had PhD studies but from Master level studies we have seen a great deal of interest of students to continue with PhD studies.

**Purpose:** To open the PhD study program.

**Indicators:** Number of PhD students by number of staff faculty; Ability to accept highly qualified student from Kosovo and the region

**Number:** Number and quality of courses, seminars and schools summer offered by the department; Quality of PhD studies rites when our students are able to compare themselves with students of top universities.

**Mechanisms (actions):** Providing external finance for PhD students through research grants; Improving of PhD student selection methods; Offering of various PhD courses; Continue to improve conditions for PhD student research.

**Faculty Recruitment:** Over the past few years, the department has succeeded in employing a considerable number of qualified academic staff. But despite this it still remains challenge increasing the number of qualified staff.

**Purpose:** To attract and recruit excellent faculty staff.

#### **Indicators**

- A significant number of new staff
- Recruitment of international staff.
- Recruitment of female staff

#### **Mechanisms (actions)**

- Positions should be announced through open competition, with some priority areas
- Formation of review committees composed of faculty staff to select qualified staff
- Make sure that all members of the academic staff assist in the process of selecting new staff academic.
- Provide international visiting staff who can be potential faculty staff in the future.
- In Computer Science it is difficult to found experienced staff due to the direction which is new therefore, we must keep in mind that the staff will be mostly young.



# UUHP Campus

# UUHP Infrastructure



**25,000 m<sup>2</sup>**

Kampusit universitar

**14,820 m<sup>2</sup>**

Hapësira e infrastrukturës

**1,701 m<sup>2</sup>**

4 Amfiteatro

**3,068 m<sup>2</sup>**

40 Salla të mësimit

**527 m<sup>2</sup>**

3 Biblioteka

**476 m<sup>2</sup>**

9 Laboratore

**356 m<sup>2</sup>**

3 Kabinete të informatikës

**1,423 m<sup>2</sup>**

47 zyra administrative dhe stafit akademik

**7,269 m<sup>2</sup>**

Hapësira ndihmëse

## CONCLUDING REMARKS

The Faculty of Computer Science is proud to offer modern programs, in line with market demands. Value of The Faculty of Computer Science are reflected in the provision of knowledge of basic and advanced science and challenges technology in the field of computer science and application in IT-industry.

Knowing that graduates and engineers in modern times should be able to solve much more complex issues, to design and implement software packages, to design and implement network solutions, or improve technologies of information, our programs at the Bachelor and Master level cover techniques that will affect productivity growth in software and information technology development.

## SUMMARY VOCABULARY

### SWOT analysis

A tool developed by the business development strategy that allows organizations to analyze environmental variables to develop an optimal strategy to pursue organizational objectives.

### Accreditation Process

The process through which a third party formally acknowledges that the organization has the competencies and tools to perform certain tasks.

### The Bologna Process

In June 1999, a number of European Education Ministers met signed an agreement at the University of Bologna. The Bologna Process took place following this historic agreement that aims to reform and harmonize higher education systems in all over Europe. The main objective of the process would take place, until in 2010, a European Higher Education Area (EHEA).

### European Higher Education Area

Ministerial level agreements reached between 1998 and 2010 in the European dimension of higher education policy as it is developed in the context of the Bologna Process.



## ACTION PLAN

Nr.	Strategic Objective	Activities	Measures	Holders	Time frame	Cost €
<b>Strategic priority 1: Quality assurance in teaching/learning</b>						
1.	Increase of academic staff (Bachelor and PhD)	Additional vacancy notices		UUHP, FCS, Senate, MEST	2020-2023	100.000,00
<b>Strategic priority 2: Development of research</b>						
1.	Creation of research groups			FCS	2020-2023	000,000
<b>Strategic priority 3: Contribution in community</b>						
1.	Ability of graduates to work	Graduation	Close correlation of theory and practice	FCS	2020-2023	000,000
<b>Strategic priority 4: Internationalization and networking</b>						
1.	Participation in DI-PHDICTKES project			ERASMUS+, LNU, NTNU, UUHP, FCS	2019-2022	909.347,00
2.	Participation in SMART4ALL project			HORIZONT 2020, UUHP, FCS	2020-2023	000,000
<b>Strategic priority 5: Infrastructure development</b>						
1.	Lab for the new program			UUHP, FCS, Senate		40.000
<b>Strategic priority 6: Financial stability</b>						
1.						000,000
<b>Strategic priority 7: Opening of unique programs</b>						
1.	Opening a new Bachelor program (Industry 4.0)			UUHP, Senate, FCS, MEST		50.000,00