

PARTISH

Development of part-time and short cycle studies In higher education in Bosnia and Herzegovina

5.3. Report on implemented F2F PT and SCHE programs

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Abstract	This report contains description of the results of the pilot implementations of the concept of PT and SCHE studies proposed by the project. The report also contains practical guidelines for PT and SCHE program and course designers, based on experience gained after the first year of their implementation. Report contains hybrid and F2F pilots.
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1. Report on pilots at the University of East Sarajevo

The Faculty of Medicine Foca of the University of East Sarajevo is one of the participants in the PARTISH project related to the development of short cycle programs (SCP) in Bosnia and Herzegovina. At this Faculty **two short cycle programs** were realized and performed in the academic year 2023/24.

– SC Program: Dental nurse

No.	Course Name	Semester	Hours	ECTS
1	Anatomical Structures Related to Dental Therapy	I	30	3
2	Diseases in the Orofacial Region	I	45	4
3	Oral Health Promotion and Preventive Dentistry	I	30	3
4	Materials and Medications in Dentistry	I	60	5
5	Equipment and Instruments in Dentistry	I	60	5
6	Asepsis and Antisepsis in Dentistry	I	45	4
7	Communication Skills in Dentistry	I	30	2
8	Professional Ethics in Dentistry	I	30	2
9	Clinical Practice 1	I	45	2
10	Restorative Dental Procedures	II	105	10
11	Oral Surgery Procedures	II	45	5
12	Orthodontic Procedures	II	30	3
13	Dental Radiology	II	45	3
14	Emergency Conditions in Internal Medicine and Dental Practice	II	30	2
15	Digitalization and Information Technologies in Dentistry	II	30	2
16	Management in Dentistry	II	30	2
17	Clinical Practice 2	II	45	2
18	Occupational Dental Safety	II	15	1
19	Ergonomics in Dentistry	II	15	1
				60

– SC Program: Instrumentation in surgical practice

No.	Name subject	Semester	Hours	ECTS
1.	Health care in surgery	I	75	6
2.	Sepsis and antisepsis	I	60	5
3.	The methodology of the instrument operator's work in the operating room block	I	60	5
4.	Techniques instrumentation in general surgical branches	I	120	8
5.	Communication skills in surgery	I	60	5
6.	Surgical operational techniques	II	45	5
7.	Nursing ethics professions in surgery	II	30	3
8.	Preoperative health care in surgery branches	II	90	7

9.	Standardization instruments in surgical sets	II	90	8
10.	Techniques instrumentation in specialized surgical branches	II	120	8
				60

Pilot program: Dental Nurse

After preparing the documents, curriculum, and the syllabi of individual courses, the University of East Sarajevo announced an open competition for the admission of candidates to the SCP Dental Nurse in March 2023. This program was intended as an additional qualification for the acquisition of competencies in the field of work of a dental nurse, for candidates who already have a high school degree in medical education. The program lasted two semesters and covered four domains of professional practice – clinical, professional, communication, and management and leadership. According to the curriculum, 18 subjects were performed - 17 compulsory and one optional. The program carries 60 ECTS credits, and after attending classes and passing all exams, participants are awarded a certificate.

11 candidates applied for the open competition, one candidate did not meet the conditions required by the competition, and a total of **10** participants were enrolled. One of the enrolled students did not participate in classes, while two more students dropped out during the second semester due to private commitments and moving out of the country. The remaining seven participants successfully completed all the scheduled obligations and passed all the exams as of the second term of the June-July exam period of the academic year 2023/24.

The enrolled participants were from different parts of Bosnia and Herzegovina and all of them were already employed as dental nurses in the private health sector. Due to the impossibility of absenteeism from workplaces and family obligations of the participants, all theoretical classes were held via online lectures, and the material for exam preparation was available to all candidates. Practical classes were held at the Specialist Center for Dentistry of the Faculty of Medicine in Foca. Attendance at practical classes was mandatory, and due to the previously mentioned reasons, practical classes were held in November 2023 for the winter semester, and in May 2024 for the summer semester. The practice lasted one full working week per semester (two weeks for the school year), with a full-day stay in the Specialist Center from Monday to Friday, in both shifts (08:00 - 18:00). The participants were divided into groups and rotated through all departments of the Specialist Center - Dental diseases with Endodontics, Dental prosthodontics, Periodontology and Oral medicine, Children's and preventive dentistry, Oral surgery, Orthodontics and Dental radiology. The costs of accommodation and food for the participants were paid from the project funds.

The examination dates for the students of the SCP Dental Nurse were held in terms of the examination dates of the University of East Sarajevo. All participants were registered in the electronic database, and they applied for the exam in the same way as students of other study programs at the Faculty of Medicine in Foca. A total of ten teachers were hired to teach, and the exams were conducted by test, onsite, at the Faculty of Medicine Foca. For the sake of

easier organization for the participants, the exams were coordinated by the program coordinator.

In June 2024, participants were sent a link through which they participated in a survey related to the experience and satisfaction of participants in this short study program.

On this occasion, it is necessary to point out that the professional dental community has shown great interest in this educational profile. There were many subsequent inquiries for enrolment that could not be realized due to the legal framework of the open competition procedure. One of the reasons for the great interest in this educational profile is that very few vocational high schools in Bosnia and Herzegovina teach the profile of dental nurses, and the legal regulations indicate that it will not be possible to fill the position of a dental nurse with a general nurse or another related field degree. For these reasons, the University of East Sarajevo has re-announced an open competition for the admission of students to the Short Cycle Program Dental Nurse for twenty candidates in the academic year 2024/25.

This report was made by asst. professor Ognjenka Janjic-Pavlovic, head of the Short Cycle Program Dental Nurse.

Pilot program: Instrumentation in Surgical Practice

After preparing the study, plan and program, and the syllabus of individual courses, the University of East Sarajevo announced a competition in March 2023 for the admission of candidates to the KSP Instrumentation in surgical practice. This program is intended as an additional qualification for the acquisition of competences in the field of work of a nurse-instrument worker, for candidates who already have the IV degree of vocational education in the field of medicine. The program lasted two semesters and covered four domains of professional practice – clinical, professional, organizational domain and communication. According to the plan and program, classes were held in 8 compulsory subjects. The program carries 60 ECTS credits, and after attending classes and passing all exams, participants are awarded a certificate.

12 candidates applied for the said competition, all candidates met the conditions required by the competition, and a total of 12 participants were enrolled. Later, four participants dropped out during the course due to private commitments. The remaining **8** participants successfully completed all the scheduled duties and passed all the exams as of the second term of the June-July exam period of the academic year 2023/24. year.

Enrolled participants were from different parts of Bosnia and Herzegovina and all of them were already employed as nurses in different departments of numerous institutions. Due to the impossibility of absenteeism from the workplace and family obligations of the participants, theoretical and practical classes were held in combination, live and via online lectures, and the material for preparing the exam was available to all candidates. Practical classes were held in the University Hospital of Foča and the premises of the Faculty of Medicine in Foča. Attendance at practical classes was mandatory. In addition to continuous classes, practice

was also organized in blocks in different halls of the Foča University Hospital (one full working week each - 4 weeks per semester from Monday to Friday, 07:00 - 14:00).

The exam dates for the participants were held according to the exam dates of the University of East Sarajevo. All participants were registered in the registers and the electronic database, and they applied for the exam in the same way as students of other study programs at the Faculty of Medicine in Foča. Four teachers were hired to teach, and the exams were conducted by test. For the sake of easier organization for the participants, the exams were coordinated by the program leader.

In June, participants were sent a link through which they participated in a survey related to the experience and satisfaction of participants in this short study program.

We hope that there will continue to be great interest in this educational profile because there are very few high school vocational schools in Bosnia and Herzegovina, as well as additional continuing education courses that train the profile of a nurse technician, and the legal regulations are aimed at the fact that it will not be possible to fill that position of a nurse. general nurse or another related field.

The report was compiled by: Jelena Pavlović, Head of the Department of Health Care

2. Report of pilots at the University of Zenica

University of Zenica implemented one short cycle program at the Faculty of Medicine. It has been implemented in **hybrid way – online and live sessions**.

Authors of the report are: Mirza Oruč, Harun Hodžić, Adnan Mujezinović, Kenan Galijašević

Name of the program: **Education in the field of psychotherapy counselling in mental health at FBIH**

Duration: 1 year

Implementer: UNZE Faculty of Medicine

Partners: IPD, Federal Ministry of Health

Method of implementation: Hybrid (face to face, online)

Number of participants: **21** (19 participants successfully completed)

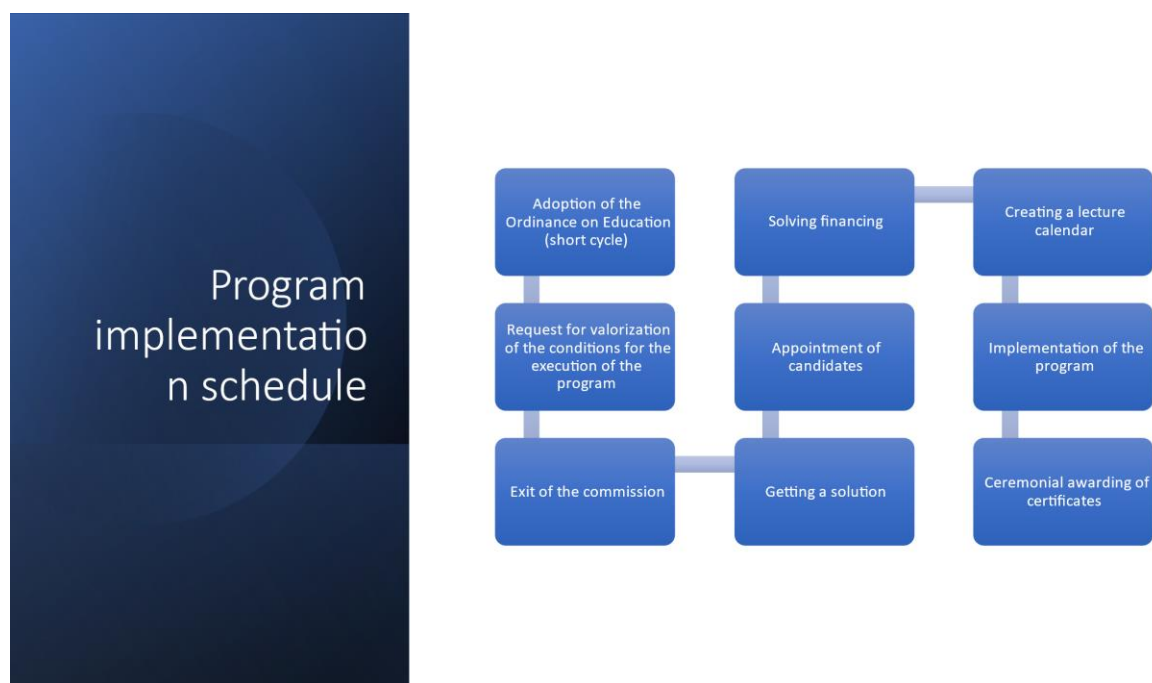
Composition of education (15 modules)

- I - Developmental psychology and neuroscience

- II – Developmental psychopathology I
- III - Personality development
- IV – Developmental psychopathology II
- V - Psychodiagnosis of children and adolescents
- VI - Work with traumatized and abused children and adolescents
- VII - Introduction to research work and monitoring
- VIII – Self and the theory of relationships
- IX – Transference and countertransference and Projective identification
- X – Counseling therapeutic approaches
- XI - Basic methods and techniques of working with children
- XII - Basic methods and techniques of working with adolescents
- XIII - Preventive programs and legal regulations
- XIV - Work with families, schools and institutions with a special focus on high-conflict divorces
- XV – Mentoring work

Some learning materials for online learning are available on:
<https://medf.unze.ba/en/learning-materials-for-occupational-therapy/>

Program implementation schedule



Evaluation of the program and satisfaction

Evaluation of the program and satisfaction

A special questionnaire was prepared on the satisfaction of the participants and the assessment of the quality assurance of the teaching process.

Each time after the module, the participants filled out this document electronically via google forms.

The Q&A assessment was of great importance as it enabled the implementation of new aspects of education that improved the process as a whole.

University	University of Zenica
Department of Faculty	Faculty of Medicine
Title of the SC/PT	"Psychotherapeutic counseling for children and adolescents in community mental health centers"
Dates of piloting From - to	2021-2023
How many participants	21
500 words about piloting	The pilot program was designed as a result of the real need and analysis of improving mental health in Bosnia and Herzegovina. The analysis, which was carried out in detail in the territory of Bosnia and Herzegovina, but with an emphasis on FBIH, identified key needs: Health system competence of staff working in mental health, as well as the needs of mental health centers that exist in the FBIH area. The Mental Health Project and the mental health reform in BIH led to the expressed need for this type of professional staff who had to have the appropriate competencies and knowledge necessary for the health system. On the basis of Article 88 of the Law on Health Care, a Rulebook was adopted on the organization and closer conditions of space, medical-technical equipment and professional staff, which must be fulfilled by centers for mental health in the community, as well as education in the

	field of abuse of psychoactive substances ("Official Gazette of the Federation BiH", number 73/11) (hereinafter: CMZ Rulebook). The rulebook on CMZ prescribes that the center performs mental health promotion and prevention of mental disorders, treatment and rehabilitation of mentally ill persons, disability prevention and rehabilitation, and care and assistance of the disabled, as well as other tasks in accordance with Article 88 of the Law on Health Care, and that he can provide services outside the mandatory health insurance program, which are within his scope of work, to schools, employers, internal affairs bodies, courts, prosecutor's offices, agencies, etc. (Regulations on additional education) By surveying 220 professionals of all professions from CMZ from all over Bosnia and Herzegovina (34.6% nurses and technicians; 18.56% psychologists; 14.8% (neuro)psychiatrists; 11.1% social workers and 21% NN) in 2017 , it was established that professionals clearly recognize areas in which progress is visible, as well as areas that need to be improved. The results of the questionnaire indicate that for the personal development of professionals so far, the following have been most significant: new education (coordinated care, occupational therapy, education through professional associations, anti-stigma programs) and continuity in the acquisition and application of knowledge in user-oriented practice. For the improvement of teamwork, they believe that the greatest progress has been achieved in matters of a better team approach with the division of tasks within the team; joint user monitoring and insight into its improvement; improvement of communication skills with users; monitoring of quality indicators; supervisory visits and workshops; reconstruction; combustion prevention; knowledge gained from presentations of other teams and use of local community resources and recognition of resources within the team. The University of Zenica has fulfilled the conditions required by the Federal Ministry of Health for the implementation of this type of education and in accordance with the Rulebook on additional education in the field of Psychotherapy Counseling for children and adolescents in mental health centers has initiated this type of education.
Evaluation of the SC	In the process of adoption and evaluation and quality assurance for the mentioned program, a large number of steps were taken: Adoption of regulations on education, request for valorization of conditions, meeting of the committee, resolution of finances, appointment of candidates, obtaining decisions, creation of calendar, implementation of the program, ceremonial distribution of certificates. A special questionnaire was created to assess the quality and satisfaction of students, creating groups of questions that focused on: did the education adequately meet your expectations: Did the education cover what you think you need to work on The average is 95% that the answer is YES

	which is the most important or most useful part of the education in your opinion 95% of the answers were YES which in your opinion was the least important or useful part of the education Most of the answers would be 10% more theory 10% more exercise 75% more examples 5% more tasks that you would do at work Although there is little space to list all the cases, the QA system implemented in this process was satisfactory.
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3. Report on pilots at the University of Sarajevo

At the University of Sarajevo there were piloted **3 programs**.

Pilot program: Information Technologies

At the Faculty of Science, the program **Information technologies** was implemented.

Duration: Four semesters, 120 ECTS – it has been tested for one semester.

- 16 compulsory subjects, industrial practice and Final Project

In a survey among students regarding their satisfaction with their studies, students provided the following percentage responses.

- When asked how they found out about the study program, 68% of them found out from someone else, 26% through social media, and 6% by chance.
- When students were asked whether the program met their expectations and to list reasons if it didn't fully meet them, they provided the following responses in percentages. 58% of the students expressed that the study ultimately met their expectations, a significant majority. This positive feedback is a testament to the success of our program. While the majority of students were satisfied with the program, those who were not cited a lot of mathematics as the reason. This feedback is valuable and will be taken into consideration for future improvements. Partially satisfied students mentioned that they expected more graphic design subjects and less mathematics, which is an area we will strive to address.

- Has the program adequately met your expectations regarding what you would work on? Briefly state the reasons for your answer. Students provided the following percentages: 68% responded that the program completely met their expectations, 26% said it partially met their expectations, and 5% did not. While it's encouraging that a significant majority, 68% of students, found all the learning materials readily available, we understand the concerns of the 32% who found the materials only partially available. We are fully committed to addressing this issue.
- When asked about the most helpful part of the program, students consistently pointed to the practical training and professional courses as the most beneficial, citing their practical application as a key factor.
- When students were asked about the least important subjects, they generally mentioned mathematics and any subject with a lot of theory due to its difficulty.
- When asked for suggestions to improve the program, they generally recommended more practical training, fewer math subjects, and more laboratory exercises.
- When comparing digital materials to in-class instruction, it's important to discuss what is essential for each method to fulfill the expected learning objectives. While most students prefer in-class instruction, some students believe that more digital materials are necessary, especially for those who cannot attend lectures due to their place of residence.
- Are you satisfied with the schedule and conduct of classes? Rate on a scale from 1 to 4. 63% gave a rating of 3, 26% gave a rating of 2, and 11% gave a rating of 4.
- Students generally expressed satisfaction with the role of teachers, the organization of subjects, and the readiness of teachers to help students master the material.
- In the end, when asked to describe the program briefly, their responses ranged from too much mathematics and too many subjects to excellent and exciting programs with a lot of practical training and practically helpful knowledge gained.

Conclusions and Recommendations

Based on the analysis provided, here are some recommendations for improving the program:

Balance the Curriculum:

Reduce the Emphasis on Mathematics: Given the feedback that too much mathematics is a common concern, consider reducing the number of math-heavy courses or integrating math more effectively with practical applications relevant to the student's fields of study.

Increase Graphic Design Courses: Students who desire more graphic design subjects should consider adding or expanding courses to meet their expectations better.

Enhance Practical Training:

More Practical Courses: Since practical training and professional courses are highly valued by students, increasing the number and variety of these courses could further enhance their learning experience.

Expand Laboratory Exercises: More hands-on laboratory exercises can provide valuable practical experience and help students better understand theoretical concepts.

Improve Availability of Learning Materials:

Increase Digital Materials: To support students who cannot always attend in-person classes, ensure that digital materials are comprehensive and easily accessible. This can include recorded lectures, online resources, and digital textbooks.

Enhance Online Learning Platforms: Invest in robust online platforms that can host a variety of learning materials and interactive content to support remote learning better.

Optimize Class Schedules:

Review and Adjust Schedules: Given the mixed satisfaction with class schedules, conduct a thorough review to identify any areas for improvement. This might include more flexible scheduling options to accommodate different student needs.

Gather Detailed Feedback: Collect more specific feedback on what aspects of the schedule students find challenging and make targeted adjustments accordingly.

Strengthen Teacher-Student Interaction:

Encourage Teacher Availability: Continue encouraging and supporting teachers to be accessible and responsive to students' needs. This can include more office hours, online Q&A sessions, and support resources.

Professional Development for Teachers: Invest in ongoing professional development for teachers to enhance their ability to deliver engaging and practical in-person and online instruction.

Marketing and Awareness:

Leverage Word of Mouth and Social Media: Since many students learned about the program through word of mouth and social media, strengthen these channels. Encourage current students to share their positive experiences and create engaging social media content to attract prospective students.

Develop Strategic Partnerships: Build partnerships with high schools, community organizations, and industry partners to increase awareness and promote the program through various channels.

Ongoing Program Evaluation:

Regular Feedback Collection: Implement regular surveys and feedback mechanisms to assess student satisfaction and continuously gather suggestions for improvement.

Advisory Committees: Establish student advisory committees to provide ongoing input and help shape the program's future direction based on student needs and industry trends.

By addressing these critical areas, the program can become more balanced, accessible, and aligned with students' expectations and career aspirations.

Pilot program: Software Development

At the Faculty for Electrical Engineering the program **Software Development** was implemented and piloted.

Duration: Four semesters, 120 ECTS – it has been tested for one semester.

The evaluation of the programme was carried out at the beginning of May through an anonymous student survey. The survey was made available to students through the online portal of the Faculty of Economics and was common to students of all three short-cycle higher education programmes at the University of Sarajevo. As the survey was conducted four weeks before the end of the summer semester, students had the opportunity to form their answers based on the entire teaching in the winter semester, but also the largest part of the teaching in the summer semester of the 2023/2024 academic year.

The aim of the first part of the survey was to collect basic data about students, their current status in their studies and how they found out about short-term higher education studies at the University of Sarajevo. In the second part of the survey, questions focused on student expectations, compatibility of programme content with student priorities, availability of learning materials, the most and the least important content according to students' opinion, suggestions for improving studies and student attitudes towards digital learning materials. In the third part of the survey, the questions focused on students' satisfaction with teaching, programme organization, role and communication with teachers, assistants and mentors from the industry. In the fourth part of the survey, students had the opportunity to say whether they would recommend the programme to someone else, as well as to summarize the programme in three words.

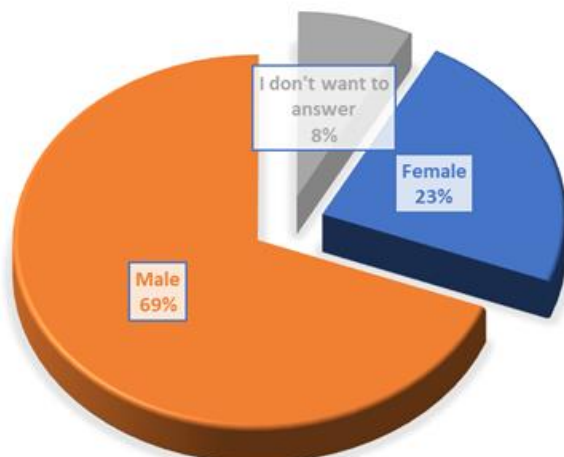


Short cycle study “Software Development”, second semester students.

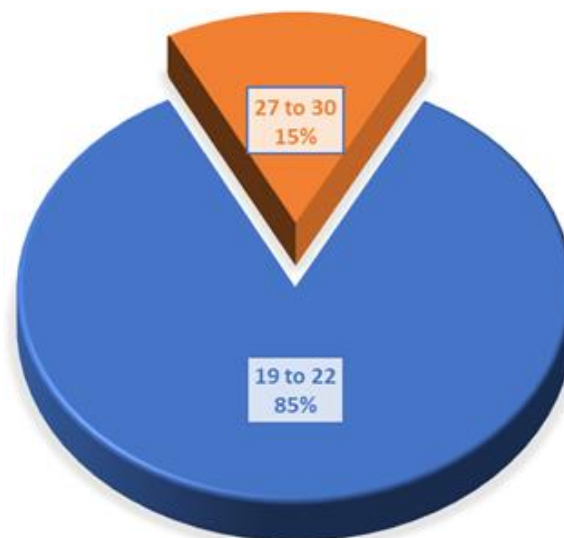
Project reference number: 617421-EPP-1-2020-1-RS-EPPKA2-CBHE-SP
Key Action 2: Capacity Building in the field of Higher Education

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Question 1: Gender?

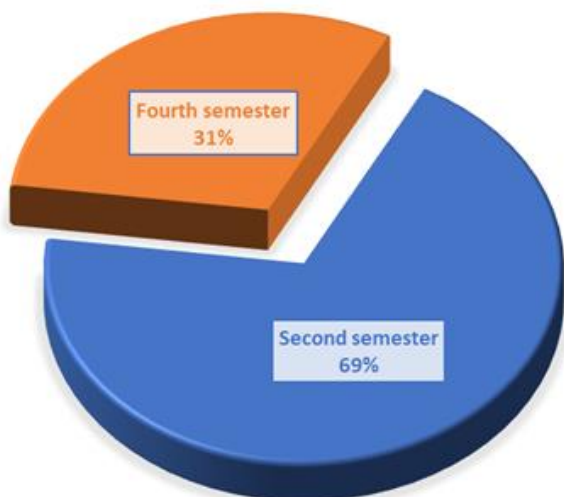


Question 2: Years of age?

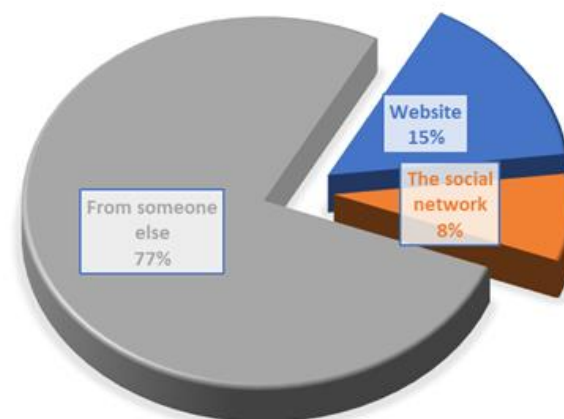


The gender distribution among respondents indicates a higher percentage of males (69%) compared to females (23%), with 8% choosing not to disclose their gender. The majority of respondents (85%) fall within the age range of 19 to 22 years old, with a smaller portion (15%) being between the ages of 27 to 30.

Question 4: What semester are you in?

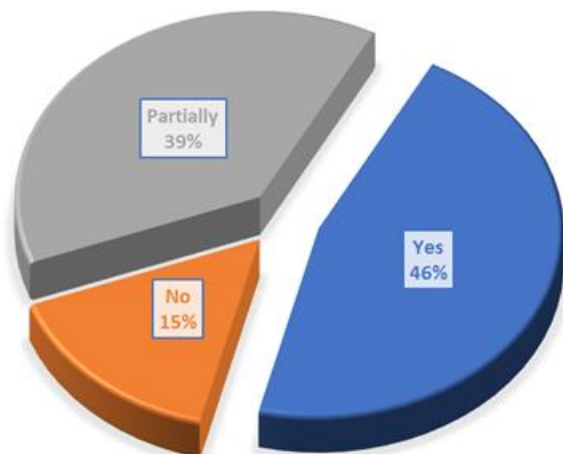


Question 5: How did you hear about this programme?

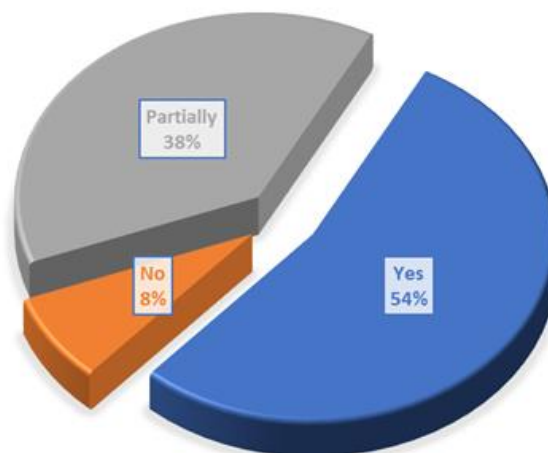


Most respondents (69%) are in their second semester, while the remaining 31% are in their fourth semester, indicating a mix of relatively new and more experienced students in the program. The primary method of discovering the program was through word of mouth, with 72% of respondents indicating they heard about it from someone else. Websites also played a significant role, with 15% of respondents finding out about the program through online sources, while 8% discovered it via social networks. Notably, no respondents mentioned awareness of the program through traditional marketing methods like brochures or flyers.

Question 6: Did the program adequately meet your expectations regarding what you will be working on?

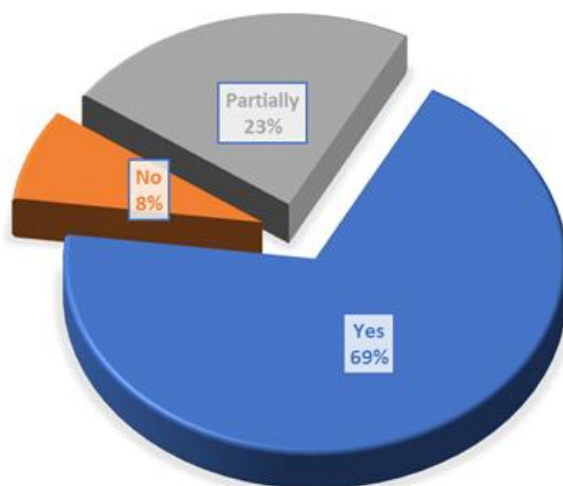


Question 7: Did the programme cover everything you think should be covered (related to topics you need to know and skills you need to acquire)?



The survey reveals that 46% of students felt that the program adequately met their expectations, while 39% indicated partial satisfaction. However, 15% expressed dissatisfaction, suggesting areas for improvement to better align with student expectations. Regarding coverage, a majority (54%) believed that the program covered all necessary topics and skills, while 38% felt it only partially covered them. Only 8% expressed dissatisfaction, indicating a generally positive perception of the program's comprehensiveness.

Question 8: Were study materials available to you and were they well prepared?



Question 9: What do you think is the most important or useful part of the programme?

- Laboratory exercises.
- Programming.
- Practical Work.
- Lab exercises.
- Programming subjects.
- Programming techniques and mathematics.
- Industrial practice.

Most students (69%) reported that study materials were available and well-prepared, indicating a positive experience in accessing learning resources. However, 23% felt that materials were only partially satisfactory, suggesting potential areas for enhancement in quality or availability. Students highlighted various components as the most important or useful

parts of the program, including laboratory exercises, programming, practical work, and programming techniques and mathematics. These responses underscore the significance of hands-on experience and technical skills development in the software development field, suggesting a preference for practical learning methods.

Question 10: *In your opinion, what is the least important part of the programme?*

- Lectures with a lot of theory.
- There is no unimportant part of the program.
- Course reform is definitely needed where only theory is covered.
- Probabilities and statistics.
- Industrial practice, due to the disinterested approach of mentors from companies.
- It is better to abolish an industrial practice than to carry it out as it is.

Question 11: *What would you suggest in order to improve and improve the quality of the programme and subjects/modules?*

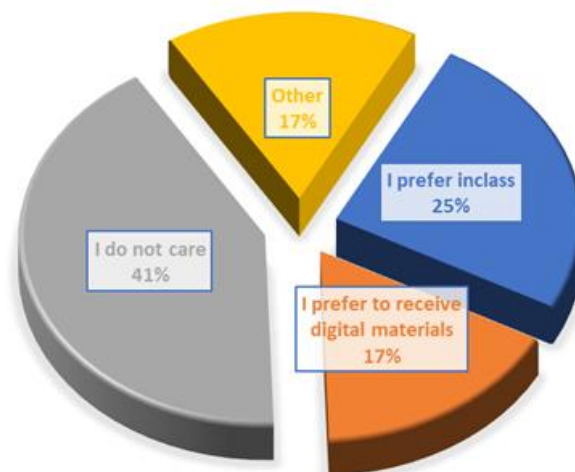


Students identified lectures heavy in theory, issues with industrial practice due to mentor disinterest, and the need for course reform as the least important parts of the program. This feedback suggests a desire for a more balanced curriculum that emphasizes practical application and relevance to industry standards, rather than solely focusing on theoretical concepts. Suggestions for program improvement included incorporating more exercises and practical tasks reflective of real-world scenarios (47%), providing more examples (18%), and maintaining a balance between theory and practice, with a preference for practical application (35%).

Question 12: What would you recommend for the improvement of this programme or what should be considered when introducing a similar professional study?

- Go through the teaching materials gradually and harmonize them.
- Adapt as much as possible to the current level of professional development.
- A detailed analysis of each subject is required.
- Professors should take this program more seriously.
- Make exercises with some real-time problems.
- Get serious about the industrial practice. Three weeks are not enough.
- Re-examine the needs of the labour market.

Question 13: Do you prefer in-class teaching or getting digital materials and preparing yourself?



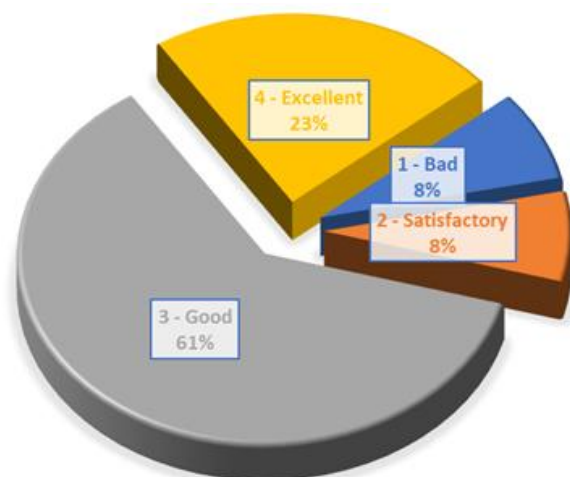
Suggestions for program improvement centred around gradually harmonizing teaching materials, adapting to current professional development levels, conducting detailed subject analysis, increasing professor engagement, and enhancing industrial practice experiences. These recommendations aim to enhance the program's quality, relevance, and alignment with industry needs. Preferences for in-class teaching versus digital materials varied among students, with 25% preferring in-class instruction, 17% favouring digital materials, 41% expressing no clear preference, and 17% selecting other options. This suggests a diverse range of learning preferences among students, highlighting the importance of offering flexible learning modalities to accommodate different needs and preferences.

Question 14: Digital materials vs. in-class teaching - discuss. What is important in one and what in the other in order to fulfil the expected learning goals?

- Digital materials should have **EVERYTHING** that we are expected to know in the exam.
- In-class teaching should be "instruction" on how to learn. The professor does not need to explain everything in detail.
- I don't have any suggestions for changes, Current is just fine.
- Definitely inclass teaching. Nothing can replace interaction.
- Digital materials should be comprehensiveness. Inclass teaching should be clear and concise.
- Some professors present very monotonously and are better to listen online.
- The preparation of the teacher is important for in class teaching. Majority of teachers have very good digital materials.

Regarding digital materials versus in-class teaching, opinions varied among students. Some emphasized the importance of comprehensive digital materials for exam preparation, while others valued in-class teaching for its instructional guidance and interactive engagement. The feedback underscores the need for a blended learning approach that leverages the strengths of both digital resources and traditional classroom instruction to effectively meet learning goals in software development education.

Question 15: Are you satisfied with the implementation of classes and the schedule of classes? Rate on a scale of 1 to 4.

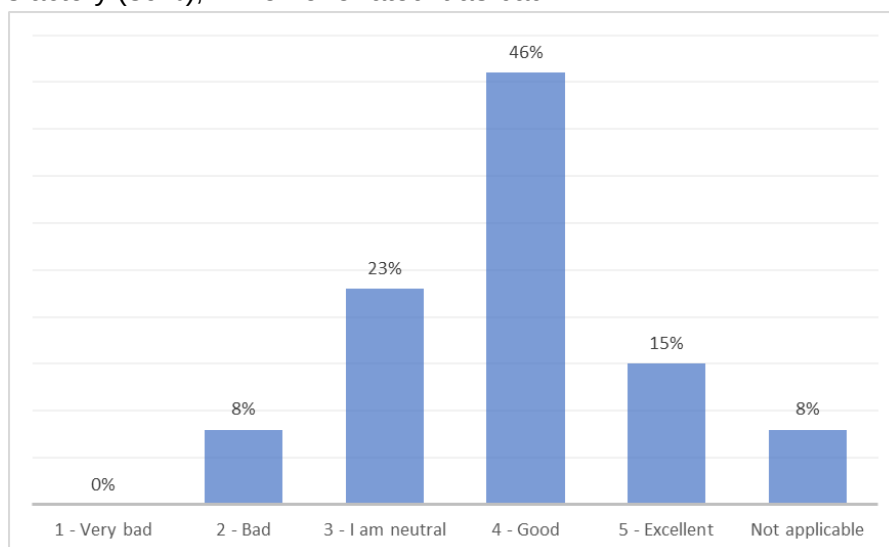


Question 16: Are you satisfied with the organization of the programme (semesters, courses, ratio of lectures and exercises...)? Rate on a scale of 1 to 4.



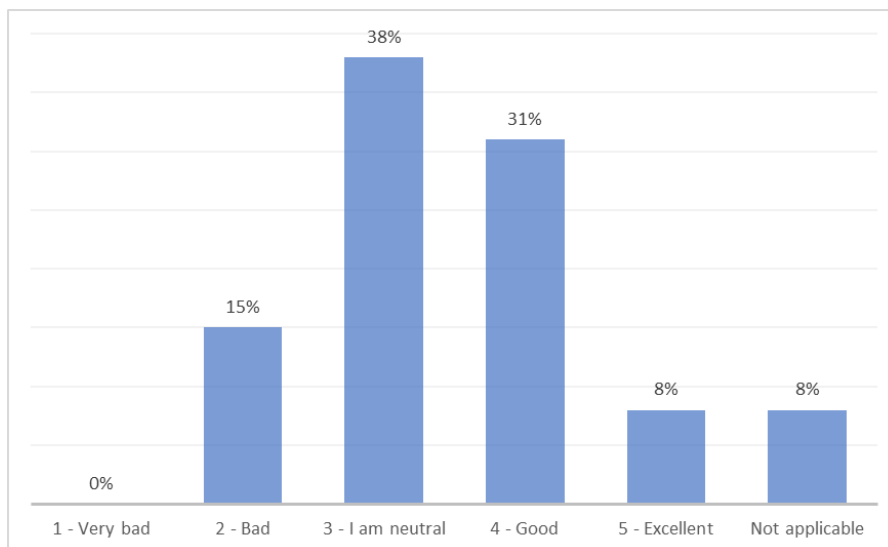
The survey indicates a high level of satisfaction with the implementation of classes and the schedule, with 61% of students rating it as good and 23% as excellent. Only a minority expressed dissatisfaction, with 8% rating it as bad. Students generally viewed the organization of the program favourably, with 46% rating it as good and 15% as excellent. However, a notable portion found it satisfactory (39%), while none rated it as bad.

Question 17.1: Assess the role of teachers. Rate them from 1 to 5.



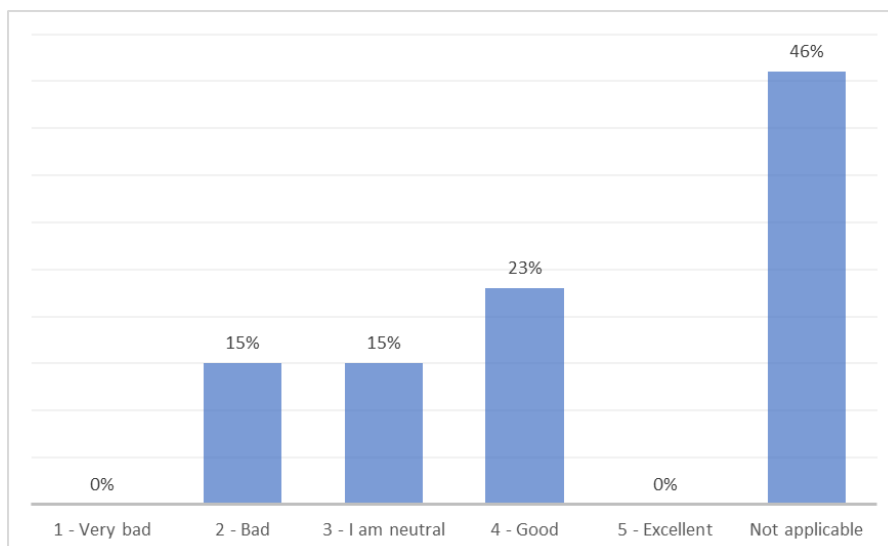
The role of teachers received positive feedback, with 46% rating them as good and 15% as excellent. Only 8% of students rated them as bad, suggesting overall satisfaction with the teaching staff.

Question 17.2: Assess the role of assistants. Rate them from 1 to 5.



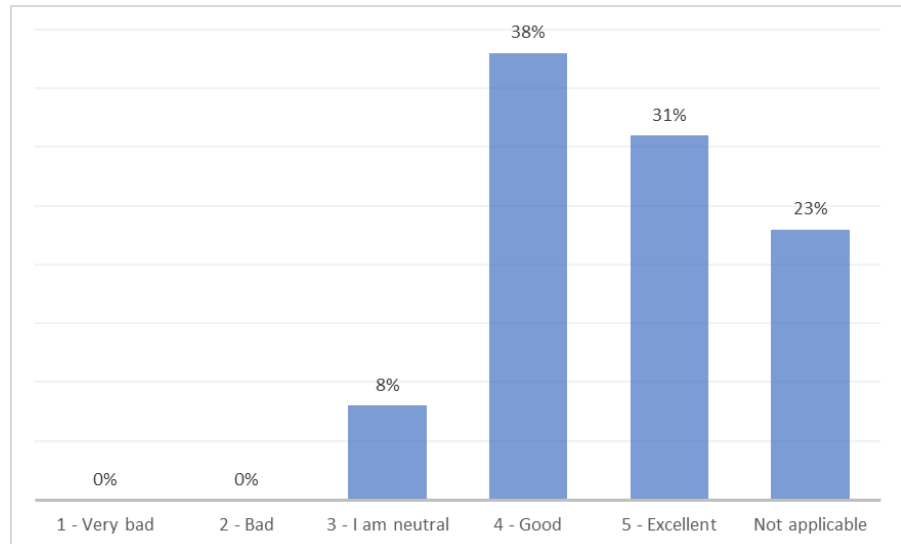
Assessments of the role of assistants varied, with 31% rating them as good and 8% as excellent. However, 15% rated them as bad, indicating room for improvement in this aspect of student support.

Question 17.3: Assess the role of mentors from the IT industry. Rate them from 1 to 5.



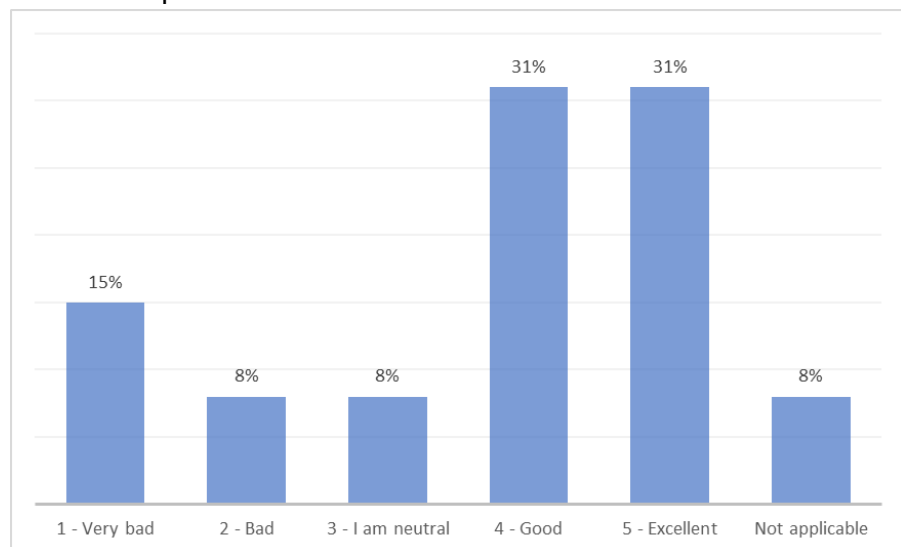
Mentors from the IT industry received mixed feedback, with 23% rating them as good and none as excellent. However, 15% rated them as bad, suggesting potential challenges in the mentorship experience. Most of the students have yet to be involved in industrial practice and therefore were not able to evaluate mentors from the IT industry.

Question 17.4: Assess the role of heads of programme. Rate them from 1 to 5.



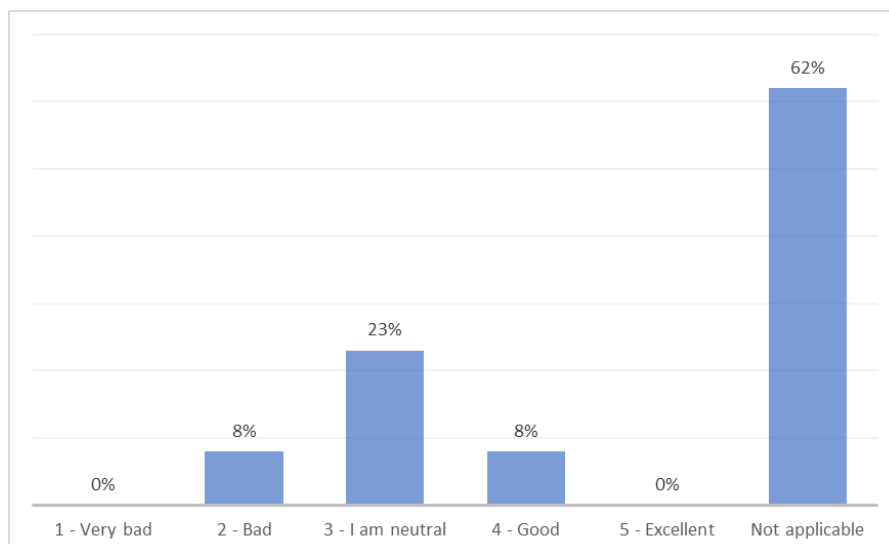
The role of heads of program was positively perceived, with 38% rating them as good and 31% as excellent. This indicates that students valued the leadership and guidance provided by program heads in their academic experience.

Question 17.5: Assess the role of faculties. Rate them from 1 to 5.



Ratings for the role of faculties were generally positive, with 31% rating them as good and another 31% as excellent. However, 15% rated them as very bad or bad, indicating some areas for improvement in faculty support and engagement.

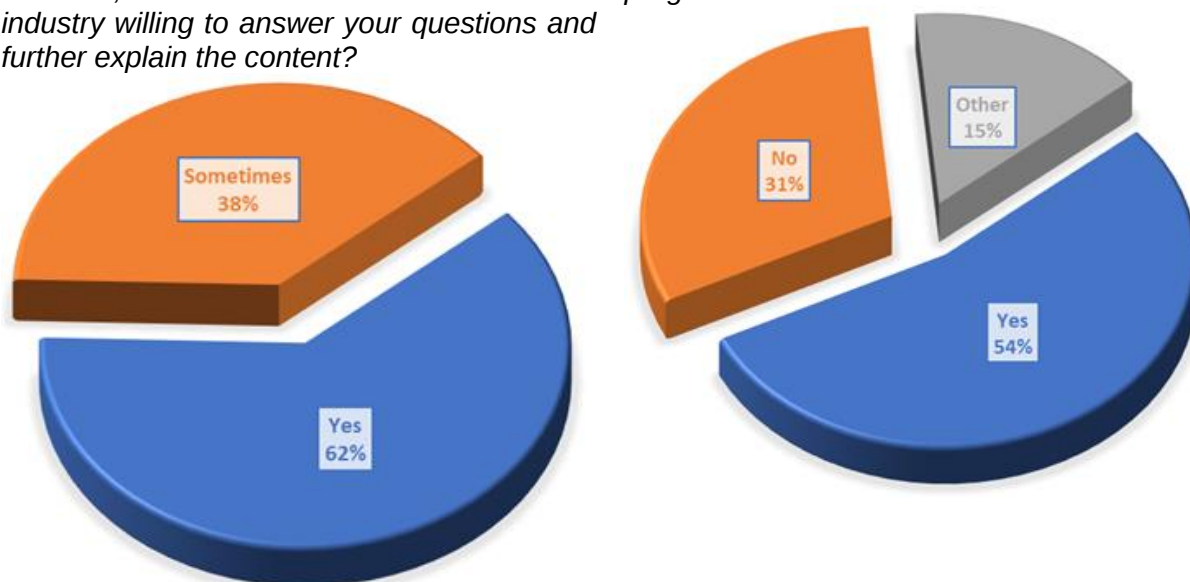
Question 17.6: Assess the role of companies where you did your internship. Rate them from 1 to 5.



Students' assessments of the companies where they completed internships varied, with 62% indicating that this aspect was not applicable to them. Among those who rated, 23% were neutral, while 8% rated the companies as good and none as excellent.

Question 18: Were the heads of programme, teachers, assistants and mentors from the IT industry willing to answer your questions and further explain the content?

Question 19: Would you recommend the programme to someone else?



The majority of students (62%) reported that heads of program, teachers, assistants, and mentors from the IT industry were willing to answer their questions and further explain content. However, 38% indicated that this support was sometimes available, suggesting a need for more consistent availability of assistance and clarification. The survey revealed mixed opinions regarding the recommendation of the program to others, with 54% of students indicating they would recommend it, while 31% would not. Additionally, 15% provided other responses, suggesting a range of perspectives on the program's suitability for others.

Question 20: Describe the programme in 3 words.

- *Good idea but...*
- *Order, work and discipline*
- *Interesting, boring, interesting*
- *Everything you need*
- *Useful, sketchy, innovative*
- *A lot of missed potential.*
- *Interesting, organized, repairable*
- *Poor idea execution.*
- *Thunder, excellent and excellent.*

Students used varied descriptors to summarize the program in three words. Some highlighted positive aspects, such as "Good idea but..." and "Interesting, organized, repairable," indicating potential and organization but also room for improvement. Others expressed more critical views, with phrases like "A lot of missed potential" and "Poor idea execution," suggesting areas where the program may fall short of expectations. Overall, the responses reflect a mix of positive and negative perceptions, indicating both strengths and areas for development within the program.

The evaluation of the short cycle study "Software Development" at the University of Sarajevo reveals valuable insights into various aspects of the program, ranging from student demographics and expectations to satisfaction with teaching, organization, and industry engagement.

Firstly, the program attracts a predominantly male student body, with most respondents falling within the age range of 19 to 22 years old. This demographic profile indicates the need for targeted outreach efforts to attract a more diverse student population, including more females and individuals from different age groups.

The survey indicates that while a significant portion of students felt the program adequately met their expectations and covered necessary topics, there is still room for improvement, particularly in addressing areas of partial satisfaction and dissatisfaction. The feedback underscores the importance of aligning program content with student expectations and industry needs to enhance overall satisfaction and effectiveness.

Regarding teaching methods, the preference for practical learning approaches and the desire for a more balanced curriculum suggest the need for a pedagogical shift towards hands-on learning experiences and real-world application of concepts. This could involve integrating more practical exercises, real-time problem-solving tasks, and industry-relevant projects into the curriculum.

Furthermore, the recommendations for program improvement highlight the importance of ongoing curriculum development, faculty engagement, and industry collaboration. To address these recommendations effectively, program administrators should prioritize regular review and updating of teaching materials, fostering stronger relationships with industry partners, and providing professional development opportunities for faculty to enhance their teaching effectiveness and engagement.

Regarding the role of mentors from the IT industry, the mixed feedback suggests the need for clearer expectations, more structured mentorship programs, and enhanced communication

between students and industry mentors to ensure a mutually beneficial experience. Similarly, the varied assessments of companies where students completed internships highlight the importance of ensuring the quality and relevance of internship placements, as well as providing adequate support and supervision during the internship period.

Overall, the evaluation findings emphasize the importance of continuous improvement and adaptation in meeting the evolving needs and expectations of students, industry stakeholders, and the broader community. By addressing the identified areas for enhancement and building upon the program's strengths, the University of Sarajevo can further enhance the quality, relevance, and impact of its software development program, ultimately better preparing students for success in the field.

Pilot program: Business and Information Technology

The BIT program underwent a thorough evaluation in its fourth semester with seven students participating in the assessment process. The evaluation aimed to gauge the effectiveness of the program in meeting the expectations of the students regarding the relevant skills and knowledge the program was supposed to impart. The evaluation of the BIT program has provided valuable insights into both its strengths and areas for improvement. While the program is well-regarded for its practical focus and the quality of its internships, there is a clear call from students for a greater emphasis on IT-related content and skills training from the onset of the program. Addressing these concerns will be crucial for maintaining the program's relevance and effectiveness in preparing students for successful careers in the intersecting fields of business and information technology.

The program generally met the expectations of most students in providing relevant knowledge and skills. However, there were mixed reviews regarding the integration and timing of specific subjects within the program, particularly concerning the balance between IT and economic topics.

- A recurrent theme in student feedback was the suggestion for an increased focus on IT-related subjects from the beginning of the program, as many students felt that the early semesters were too heavily focused on economic theories, which were less relevant to their career aspirations in IT.
- The practical component of the program, particularly internships and hands-on projects facilitated by collaborations with local banks (notably Raiffeisen Bank), was highlighted as the most valuable aspect of the program. However, some students noted that the execution of these practical components varied in quality across different semesters.
- Materials for learning were generally accessible and well-prepared, although there were comments about the need for better organization and timely availability of some resources.
- Students proposed several improvements to enhance the quality of the program. These included more practical exercises, integration of real-world IT applications, better alignment of courses with actual market needs, and improved collaboration between the university and external partners.
- Suggestions also pointed towards the necessity for a clearer definition of program costs and structure to ensure transparency and align expectations from the outset.

- There was a preference among students for receiving digital materials that allow for self-paced learning, supplemented by in-class sessions that facilitate interaction and clarify complex topics.
- The overall satisfaction with the program's organization, course scheduling, and the balance between lectures and practical sessions was rated positively.
- The role of faculty, assistants, and industry mentors received generally high marks for their responsiveness and ability to engage with students. However, some students indicated the need for more consistent quality across different teaching staff and mentors.
- The majority of students expressed a willingness to recommend the program to others, highlighting its dynamic and engaging approach as well as the practical skills it offers, which are tailored to the demands of the modern IT and business sectors.

The chart below displays the frequencies of responses from students participating in the evaluation regarding whether the program met their expectations. 57.14% of students answered "Yes," indicating that the program fully met their expectations in terms of what they expected to work on. 42.86% of students answered "Partially," suggesting that while the program met some of their expectations, there are areas where it did not fully align with what they anticipated they would work on. This data indicates a generally positive response, with the majority feeling that the program meets their expectations. However, the significant proportion of "Partially" responses highlights areas for potential improvement. It suggests that while the program is effective to some degree, there could be a need to adjust the curriculum or provide more detailed descriptions of what students should expect from the program.

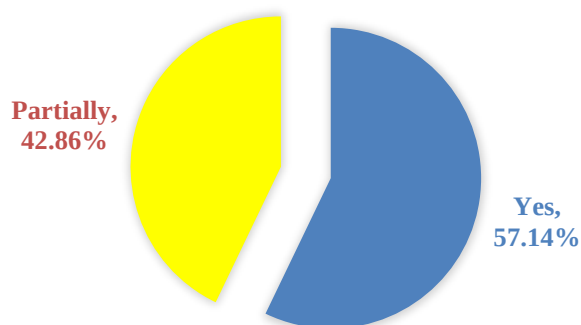


Figure 1. Frequencies of responses to the question "Did the program adequately respond to your expectations related to what you would work on?"

Regarding students' comments about their expectations, feedback indicates that while the program generally meets the needs of students, there is also a call for improvement in the structure of the curriculum. Namely, one student states that "It is necessary to make a better systematization of the subjects".

Figure below displays the responses from students regarding whether the program covered everything they need to know and the skills they need to acquire for their careers. Half of the students (50%) feel that the program fully met their needs in terms of the topics and skills required for their career paths. A significant portion, one-third of the respondents, believe the program only partially met their needs. This indicates areas where the program could

potentially improve or expand its offerings to better align with student expectations and industry requirements. 16.67%, a smaller, yet notable fraction of the students feel that the program did not meet their needs at all. This feedback is crucial as it points to potential gaps in the curriculum that might be critical for student success and employability. The data indicates a generally positive outlook, with half of the students satisfied, but also highlights significant room for enhancement in curriculum design and content delivery. Addressing the concerns of those who answered "Partially" and "No" could lead to a more robust program that is more closely aligned with the needs and expectations of all students, thus increasing the overall effectiveness of the educational offering. Students expressed that the current curriculum does not adequately meet their interests and professional aspirations in IT. They suggest that subjects related to computer science be introduced already in the first semester, because the prevailing focus on economics is not in line with their primary interests. Many students, especially those in their final year, have noticed that even though they have contracts with banks for practical experience and future employment, they struggle with first-year exams of courses unrelated to the IT skills they want to acquire. This feedback highlights a curricular gap that, if addressed, could improve the relevance and effectiveness of the program for students focused on IT careers.

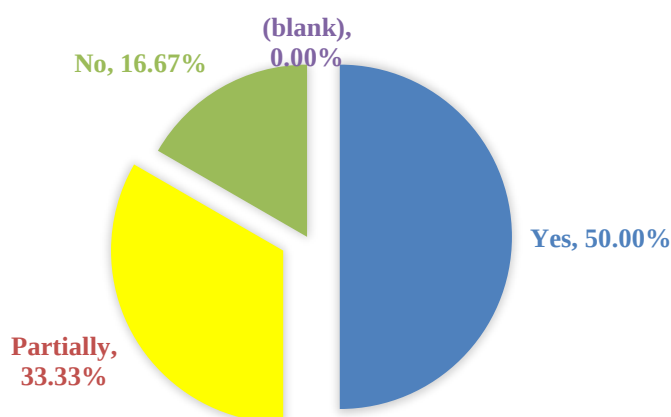


Figure 2. Frequencies of responses to the question "Did the program cover everything you think you need to work on (related to topics you need to know and skills you need to acquire)?"

Figure 9 presents the student responses to the question: "Were study materials available to you and were they well prepared?" Half of the students reported that the study materials were available to them and were well-prepared. This indicates that for these students, the materials met the expectations for accessibility and quality, supporting their learning process effectively. The other half of the students felt that the study materials were only partially satisfactory. This suggests that while some aspects of the materials were adequate, there are areas where improvement is necessary, either in terms of the quality of the materials or their availability.

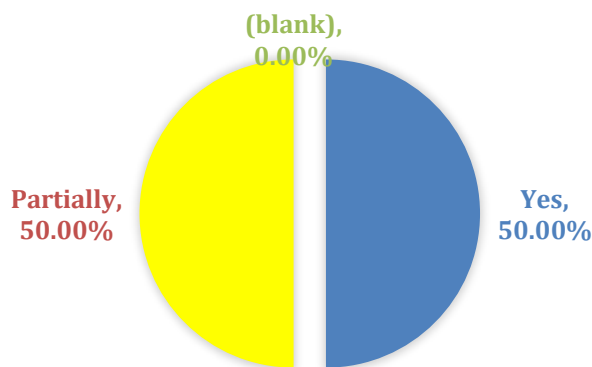


Figure 3. Frequencies of responses to the question "Were study materials available to you and were they well prepared?"

The student feedback collected suggests a strong preference for enhancing the practical aspects of the program. A significant majority of the students (6 out of 7) indicated a desire for more exercises and practical learning opportunities, underscoring a clear demand for hands-on experience that aligns with professional real-world applications. In contrast, there was minimal interest in increasing the theoretical content or adding more examples, with only one student advocating for more theory. This feedback aligns with the comments that highlight the program's professional or practical nature, reinforcing the need for a curriculum that is not only theoretically robust but also rich in practical, applied learning experiences. This suggests that the program could benefit from a greater focus on integrating real-life tasks and simulations that prepare students for the challenges they will face in their careers, thereby enhancing both student satisfaction and educational outcomes.

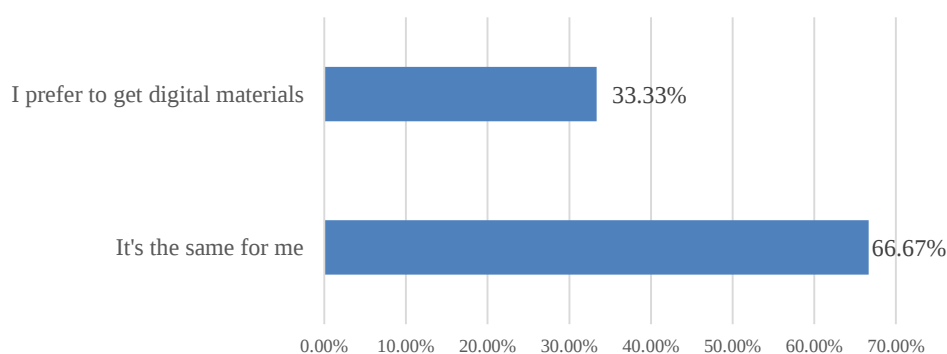


Figure 4. Frequencies of responses to the question "Do you prefer in-class teaching or to receive digital materials and prepare them yourself?"

The bar chart in Figure 10 illustrates the preferences of students regarding the format of learning materials in their educational program. It specifically addresses their preference for in-class teaching versus receiving digital materials for self-preparation. 33.33% of students prefer to receive digital materials. 66.67% of students state 'It's the same for me'. A significant majority of students are indifferent to whether they receive in-class instruction or digital materials. This suggests a level of flexibility in learning preferences, indicating that these students are adaptable and potentially comfortable with both traditional and modern educational delivery methods.

Figure 11 illustrates the average ratings for various aspects of the program, each rated on a scale from 1 to 5. The most highly rated aspect is the role of the internship company, which achieved a near-perfect average score of 4.7, indicating strong satisfaction with the practical experience provided by the bank. The role of practice mentors also received a high score of 4.3, suggesting that the guidance and support from mentors are highly valued by students. In contrast, the roles of assistants and the program's organization received relatively lower scores pointing to areas where improvements could be beneficial. The role of professors and the faculty's performance were rated moderately showing room for enhancement but generally positive feedback. Lastly, class schedule and maintenance satisfaction had a modest rating indicating mixed feelings about the logistical aspects of the program. These insights provide a clear indication of strengths in practical training and mentorship, while highlighting potential improvements in support roles and program structure

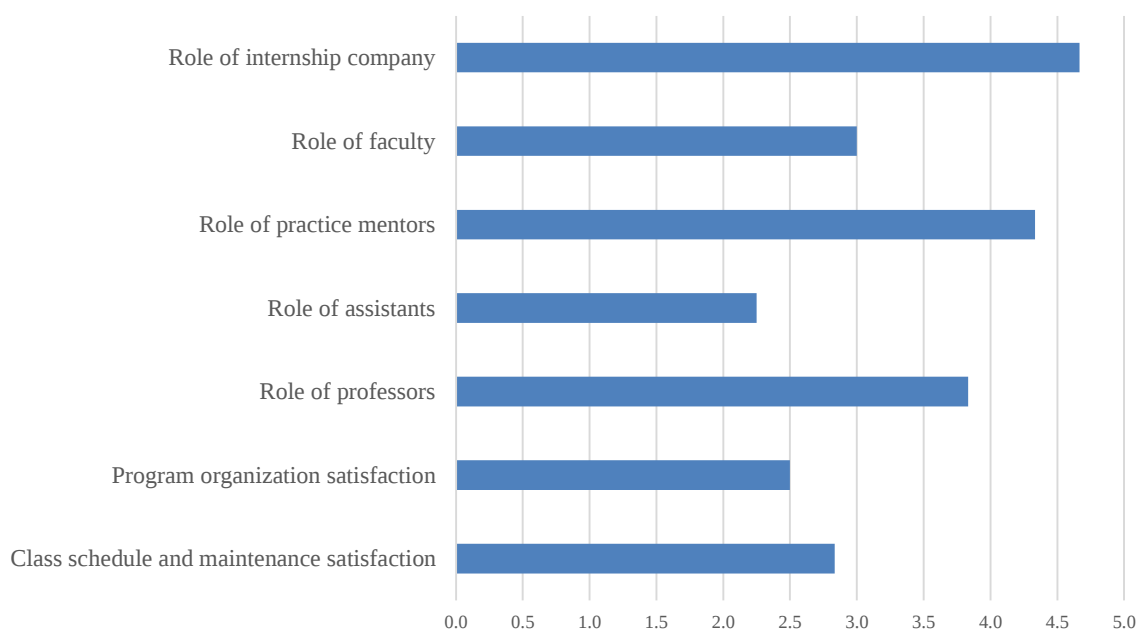


Figure 5. Rating of different aspects of the program from 1 to 5 from 1 to 5 – average

The responses to the question asking participants to describe the program in three words vary significantly, reflecting a diverse range of experiences and perceptions among the students. Some describe the program as "Quick, Relaxed, Interesting," suggesting that it is efficiently paced, stress-free, and engaging. Another response "nice, short, instructive" points to a positive overall experience, emphasizing the program's conciseness and educational value. The phrase "Practice, short enough, opportunities" highlights the program's practical focus and adequacy in duration while noting the potential it offers for future opportunities.

Responses illustrate that while the practical elements of the program, particularly the internships, are generally well-received, there are mixed feelings about the educational structure and execution, which could suggest areas for improvement in the academic components of the program.

The evaluation included students' comments that offer valuable insights into what aspects of the program are considered most and least beneficial according to the students' perspectives.

Most valuable aspects:

Students highlight the practical sessions, especially those conducted at Raiffeisen Bank, as the most useful part of the program. They appreciate the hands-on experience which directly correlates with their career aspirations in IT and business. However, there's a note of inconsistency in the quality of these practical sessions across different semesters, with the fourth semester being notably better executed. This indicates that while the practical experience is highly valued, its execution needs to be consistently high-quality across all semesters to fully meet student expectations and program objectives.

Least valuable aspects:

A significant concern among students is the emphasis on theoretical subjects in the first semester, which they find difficult to pass and not directly relevant to their practical-oriented career goals. Students enrolled in this program with a clear expectation of gaining practical skills, and the heavy theoretical focus at the start of their studies does not align well with their needs or interests. Students also mentioned that the program often involves an excessive volume of theoretical learning, which could be overwhelming and less applicable to their immediate practical needs in IT settings.

Students' recommendations:

Recommendations for enhancing the program, based on student feedback, emphasize several key aspects: firstly, the curriculum must focus on imparting skills and knowledge that are directly applicable and necessary for the students' future careers, avoiding the inclusion of unnecessary information. There is also a critical need for serious and effective agreements between educational institutions and partnering organizations, such as banks, particularly concerning the timing and structure of internships. Improved collaboration between faculties and external partners is highlighted as essential for integrating practical experiences effectively. Additionally, the cost of the program should be clearly defined to ensure transparency for prospective students. Lastly, aligning this program with other academic directions within the faculty could enable students to achieve higher qualifications, thus making the program more comprehensive and appealing. This holistic approach to program enhancement is aimed at not only improving educational outcomes but also at ensuring the program's relevance and value in a competitive academic and professional landscape.

The Business and Information Technology (BIT) program at the School of Economics and Business has established a robust platform for bridging the gap between theoretical knowledge and practical application in the field of business and IT, especially within the banking sector. This innovative program, developed in partnership with Raiffeisen Bank, responds effectively to the dynamic needs of the global job market, which is increasingly driven by technological advancements. The program not only aligns with the strategic educational goals of the Sarajevo Canton but also addresses the acute need for IT-skilled professionals as evidenced by ongoing demand highlighted by the Employment Agency of Bosnia and Herzegovina.

The structured feedback from the students has revealed invaluable insights, suggesting that while the internship experiences and the role of practice mentors are highly appreciated, there is a notable demand for enhancing the practical aspects of the curriculum from the onset of the program. This feedback underscores the need for continuous improvement in curriculum design to ensure that it remains relevant and adequately prepares students for their future careers. The students' responses also indicate a desire for a more balanced integration of

practical and theoretical content, which would better suit their professional aspirations and learning preferences.

Moreover, the collaboration with Raiffeisen Bank has been particularly effective in providing students with real-world experience that complements their academic learning. However, the variation in the quality of practical training suggests a need for more consistent execution across all facets of the program. Addressing these aspects will not only enhance the educational impact of the BIT program but also its attractiveness and competitiveness in the educational landscape.

The evaluation of the BIT program has been thorough and insightful, reflecting a well-structured approach to measuring its efficacy and alignment with student expectations and industry needs. Conducted during the fourth semester, the evaluation focused on the relevance of the skills and knowledge imparted by the program, particularly highlighting the strengths in its practical training components and areas requiring enhancements, especially in IT-focused education from the start of the course.

Most students generally felt that the program met their expectations by providing the necessary skills and knowledge. However, feedback varied concerning the integration and timing of subjects, particularly the balance between IT and economic topics. There was a strong call for a shift in focus towards more IT-related subjects right from the early semesters of the program, as the initial focus on economic theories did not align well with the practical IT skills that students expected to gain.

Internships and hands-on projects, especially those facilitated through partnerships with local banks like Raiffeisen Bank, were cited as the most beneficial aspects of the program. Yet, students noted inconsistencies in the quality of these practical experiences across different semesters. While learning materials were generally accessible and well-prepared, there were remarks about the need for better organization and timely availability.

Students made several recommendations to enhance the program quality, including more practical exercises, the integration of real-world IT applications, better alignment of courses with market needs, and improved collaboration between the university and external partners. They also emphasized the need for clearer information on program costs and structure to ensure transparency and manage expectations effectively.

Preferences were noted for digital materials to allow for self-paced learning, supplemented by in-class sessions to facilitate interaction and address complex topics. The role of faculty, assistants, and industry mentors was generally well-received, with high marks for their engagement and responsiveness, although there were calls for more consistent quality across different teaching staff.

Table 1. Program strengths

Strength	Description
Strong practical focus	The program is well-regarded for its practical focus, particularly through internships and hands-on projects that allow students to apply their knowledge in real-world settings.
Quality internships	Collaborations with local banks, notably Raiffeisen Bank, provide high-quality internships that are valued for their direct relevance to the professional environment.

Accessible materials	learning	Students appreciate the general accessibility and preparation of learning materials, which support effective learning processes.
Responsive and engaging faculty	and	The role of faculty, assistants, and mentors has been positively noted for their responsiveness and ability to actively engage with and support students throughout their studies.
Flexibility in learning options	learning	The program offers a mix of digital and in-class learning options, accommodating different learning preferences and schedules, which enhances student satisfaction and convenience.
Recommendation willingness		A majority of students expressed a willingness to recommend the program to others, highlighting its dynamic approach and the practical skills it imparts.

Below is a table summarizing the recommendations for improvement based on the evaluation findings.

Table 2. Recommendations for program improvement

Recommendation	Description
Increase IT focus early on	Integrate more IT-related subjects from the beginning of the program to align with the practical needs of students and better prepare them for IT-focused careers.
Enhance practical components	Ensure consistency in the quality of practical components, such as internships and hands-on projects, across all semesters to provide a uniformly high-quality learning experience.
Improve resource organization	Better organize and ensure timely availability of learning materials to facilitate smoother course progress and enhance study efficiency.
Clarify program costs and structure	Provide clear and detailed information about program costs and structure upfront to ensure transparency and help students manage their expectations and financial planning.
Strengthen collaboration	Improve collaboration between the university and external partners, such as local banks and industry entities, to enhance the relevance and applicative value of the practical training offered.
Expand digital material access	Increase the availability of digital materials to support self-paced learning, complemented by strategic in-class sessions to address complex topics and facilitate interactive learning.
Standardize instructor quality	Ensure a consistent level of quality across all instructors, assistants, and mentors involved in the program to maintain a high standard of education and support for all students.

4. Report on pilots at the University of Mostar

University	University of Mostar
Department of Faculty	Academy of the University of Mostar for Lifelong Learning
Title of the SC	Application of Industrial and Service Robots
Dates of piloting From - to	15/09/2024 – 15/12/2024
How many participants	6
500 words about piloting	Training in the application of industrial and service robots is becoming crucial in the modern economy, where robotics plays an increasingly important role in increasing productivity, safety and efficiency. Industrial robots are used to perform repetitive, dangerous or precise tasks, thereby reducing the need for human intervention in hazardous environments, increasing worker safety. On the other hand, service robots are used in medicine, logistics, catering and other service sectors, providing support that is particularly important in working with customers and in sectors where personalized service is required. Quality training ensures professional skills for proper programming, maintenance and management of robots, which reduces the risk of errors, extends the working life of the equipment and enables faster adaptation to new technologies. Such training contributes to competitiveness on the labor market, while at the same time providing employers with access to the qualified workforce needed for optimal use of technological resources. A short cycle in the field of application of industrial and service robots is carried out face-to-face, which enables participants to work practically and collaborate in a robot environment. This short cycle includes courses that cover basic and advanced training in the field of robotics, enabling participants to acquire the knowledge required in the labor market. Some of the short cycle courses are directly related to the corresponding courses of the Bachelor and Master study programme in Mechanical Engineering, providing participants with the opportunity to recognize these courses and acquired competencies in case of enrollment in those study programmes. Courses are: • Basics of robotics. This course introduces students to key robotics concepts, including types of robots, basic components

	such as sensors and actuators, and principles of motion and control. Students learn about robot kinematics and dynamics, which enables them to understand and analyze robot motion. Basic algorithms for control and navigation are discussed, providing a foundation for further studies in this area. • Design and application of mechatronic systems in robotics. Focused on the integration of mechanical and electronic components, this course explores how mechatronic systems for robots are developed. Students analyze the design of the system of sensors, actuators and control units, which is crucial for the functionality of the robot. Methods for developing prototypes are also discussed, as well as how to improve robot performance through mechatronic design. • Basics of programming for robotics. The goal of this course is to introduce students to programming languages and tools that are specific to robotics. Students learn the basic algorithms, data structures and syntax needed to program robots, as well as work with simulation software. Also, they acquire practical skills in writing basic code for managing and controlling robotic systems. • Artificial intelligence. The course covers the fundamental concepts of artificial intelligence with an emphasis on machine learning algorithms, neural networks and deep learning. Students learn about ways machine learning can improve robotic functions, such as object recognition and decision-making. They also explore the ethical aspects and potential applications of AI in robotics. • Application and programming of industrial and service robots. Students in this course study specific applications of industrial robots in production, assembly and storage, and service robots in service industries. They learn about programming robot functions using industry standard languages. There is a special emphasis on practice, where students have the opportunity to work on real robotic tasks and simulations.
Evaluation of the SC	Participants of the short cycle filled out the survey after half of the planned duration of the cycle. The results are as follows. Out of a total of 6 participants, 5 (83,3 %) participants are men, and 1 (16,7 %) participant is women. As for the age of the participants, all 6 (100,0 %) participants are under 25 years old. The participants heard the information about the short cycle in different ways. In total, 2 (33,3 %) participants heard about the

	short cycle through a brochure, 2 (33,3 %) participants found out about the information via the website, and 2 (33,3 %) participants heard about the short cycle in other ways. To the questions Did the education adequately meet your expectations regarding what you would like to work on?, Did the education cover what you think needs to be worked on? and Were the learning materials well prepared? a total of 5 (83,3 %) participants answered Yes, and 1 (16,7 %) participant answered Partially. To an open question What in your opinion was the most important or most useful part of the education? students opted for project work (4 participants – 66,7 %) and collaboration with robot (2 participants – 33,3 %). To an open question What was the least important part of your education in your opinion? the majority of students opted for the theoretical part of the class (5 participants – 81,7 %). To the question What would you suggest in order to improve and improve the quality of education and workshops? a total of 2 (33,3 %) participants answered More exercises, and 4 participants (66,6 %) answered More examples. To question Are you satisfied with the structure and program of one day of education? a total of 4 (66,7%) participants answered Excellent, and 2 (33,3%) participants answered Good. To question Are you satisfied with the organization of the short study cycle? a total of 5 (83,3%) participants answered Excellent, and 1 (16,7%) participant answered Good. To the open question, describe the short cycle program in three words: the answers Useful (4 times – 66,7%), Practical (3 times – 50,0 %) and Interesting (3 times – 50,0%) were the most frequently answered. To the question Were the educators ready to answer your questions and further clarify the content? a total of 5 (83,3 %) participants answered Yes, and 1 (16,7 %) participant answered Partially. To the question Assess the role of the educator during the holding of the short cycle: the participants responded using the Likert scale. In all categories (Organized, Clear, Familiar with the topic, Inclusive for all, Motivating) the scores of Excellent (average 73,3%) were in the lead. A smaller part of the participants rated Very good (average 20,0 %) and Good (average 6,7%).
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Pilot Program: Automation and Control Systems

University	University of Mostar
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Department of Faculty	Academy of the University of Mostar for Lifelong Learning
Title of the SC	Automation and Control Systems
Dates of piloting From - to	15/09/2024 – 15/12/2024
How many participants	5
500 words about piloting	Training in the field of automation and control systems is essential for the modernization and improvement of production processes, energy efficiency, and safety in industry and everyday life. Automation enables the reduction of human intervention in repetitive and risky tasks, which increases productivity and reduces the possibility of human error. Also, skills in this area enable better control over technological processes, optimization of resources, and cost reduction. Given the increasing presence of technologies such as IoT, advanced algorithms and smart sensors, training provides professionals with the competencies to work with modern systems that use data for autonomous decision-making. The demand for experts in this field is growing on the labor market, and quality training opens up employment opportunities in the industrial and energy sectors, and even in the development of smart city and home systems. A short cycle in the field of automation and control systems is conducted face-to-face, which enables participants to work practically and gain experience in the environment of programmable logic controllers. This short cycle includes courses that cover basic and advanced training in the field of automation and control systems, enabling participants to acquire the knowledge required in the labor market. Some of the short cycle courses are directly related to the corresponding courses of the Bachelor and Master study programme in Electrical Engineering, providing participants with the opportunity to recognize these courses and acquired competencies in case of enrollment in those study programmes. Courses are: • Basics of electrical engineering. This course provides a foundation for understanding electrical circuits, devices, and the principles of electrical systems. Students gain knowledge about laws and concepts such as Ohm's law, Kirchoff's laws, and concepts of voltage, current and resistance. The subject also includes the study of alternating and direct currents, electromagnetism and components such as resistors, capacitors

	and coils. This knowledge forms the basis for more advanced studies and applications in electronics and energy. • Basics of automation. This course introduces students to the basic principles of automated systems and their importance in industry and everyday life. Basic components of automation systems, such as sensors, actuators and controllers, and how they interact with each other are studied. The course also covers basic process management strategies, including regulation and control. The goal is to train students to recognize the application of automation in various industrial processes. • Automatic control. This course focuses on methods and techniques for the design and analysis of control systems that maintain process stability and efficiency. As part of the course, students learn about feedback systems, regulators and control algorithms such as PID regulation. Emphasis is on modeling, simulation and optimization of control systems for real industry applications. The subject enables the acquisition of knowledge necessary to solve complex challenges in automatic regulation. • Computer systems management. This course deals with the application of computers in the supervision and management of technical systems and processes. Students learn about the use of software and hardware for data collection, analysis and decision making. Computer systems and algorithms that enable autonomous decision-making based on real-time data are studied. The focus is on practical applications in industrial, transport and energy systems. • Plant and process automation. This course deals with the development and implementation of technologies for the automatic operation of complex industrial systems. The course covers the design and integration of sensors, actuators and controllers for monitoring production processes. Students are introduced to PLCs (programmable logic controllers) and SCADA systems that enable the management of large industrial plants. The aim of the course is to train students to design and maintain automated plants for more efficient, safer and environmentally friendly operation.
Evaluation of the SC	Participants of the short cycle filled out the survey after half of the planned duration of the cycle. The results are as follows. Out of a total of 5 participants, 4 (80,0 %) participants are men, and 1 (20,0 %) participant is women.

	As for the age of the participants, 4 (80,0 %) participants are under 25 years old, and 1 (20,0 %) participant is between 25 and 34 years old. The participants heard the information about the short cycle in different ways. In total, 1 (20,0 %) participants heard about the short cycle through a brochure, 2 (40,0 %) participants found out about the information via the Facebook page, and 2 (40,0 %) participants heard about the short cycle in other ways. To the questions Did the education adequately meet your expectations regarding what you would like to work on? and id the education cover what you think needs to be worked on? all 5 (100,0 %) participants answered Yes. To the question Were the learning materials well prepared? a total of 4 (80,0 %) participants answered Yes, and 1 (20,0 %) participant answered Partially. To an open question What in your opinion was the most important or most useful part of the education? the majority of students opted for practical work (4 participants – 80,0 %). To an open question What was the least important part of your education in your opinion? the majority of students opted for the theoretical part of the class (4 participants – 80,0 %). To the question What would you suggest in order to improve and improve the quality of education and workshops? a total of 3 (60,0 %) participants answered More exercises, and 2 participants (40,0 %) answered More examples. To questions Are you satisfied with the structure and program of one day of education? Are you satisfied with the organization of the short study cycle? a total of 4 (80,0%) participants answered Excellent, and 1 (20,0%) participant answered Good. To the open question, describe the short cycle program in three words: the answers Useful (2 times – 40,7%), and Interesting (2 times – 40,0%) were the most frequently answered. To the question Were the educators ready to answer your questions and further clarify the content? a total of 4 (80,0 %) participants answered Yes, and 1 (20,0 %) participant answered Partially. To the question Assess the role of the educator during the holding of the short cycle: the participants responded using the Likert scale. In all categories (Organized, Clear, Familiar with the topic, Inclusive for all, Motivating) the scores of Excellent (average 72,0%) were in the lead. A smaller part of the participants rated Very good (average 24,0 %) and Good (average 4,0%).
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Summary

Number	University	Title of the SC or PT course	Face to face or online	Number of participants	Duration of pilot
1	UES	Dental Nurse	Face to face	10	One semester
2	UES	Instrumentation in Surgical Practice	Face to face	8	One semester
3	UNZE	Education in the field of psychotherapy counselling in mental health at FBIH	Hybrid	21	One semester
4	UNSA	Information technologies	Hybrid	46	One semester
5	UNSA	Business and Information Technology (BIT)	Hybrid	6	One semester
6	UNSA	Software Development	Hybrid	25	One semester
7	UNMO	Application of Industrial and Service Robots	Hybrid	6	One semester
8	UNMO	Automation and Control Systems	Hybrid	5	One semester
Total number of participants				127	