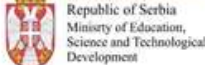


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Report 4.7.1.

ANALYSIS OF THE RESULTS OF PILOT TESTING OF EACH OF
SPECIFIC **DHEM** OF **HEI** FROM SERBIA

Project acronym:	DUALEDU
Project full title:	Implementation of Dual Education in Higher Education of Serbia
Project No:	586029-EPP-1-2017-1-RS-EPPKA2-CBHE-SP (2017-2962/001-001)
Funding scheme:	ERASMUS+
Project start date:	October 15, 2017
Project duration:	36 months

Abstract	This document represents the analysis of data collected using a questionnaire that was given to students involved in the pilot testing of the specific DHEM in a HEI from Serbia.
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Title of document:	"Result of pilot testing of specific DHEM with HEI from Serbia".
Work package:	WP 4: Pilot testing of the flexible and generic DHEM
Activity:	4.7 Analysis of the results of pilot testing of each of specific DHEM of HEI partners from Serbia
Last version date:	28/06/2021
File name:	Report 4.7.1 ANALYSIS OF THE RESULTS OF PILOT TESTING OF EACH OF SPECIFIC DHEM OF HEI FROM SERBIA
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1.0	21/06/2021	Creation of the first draft	VISER (Vera Petrovic, Goran Dikic)
2.0	28/06/2021	Creation of the second draft	VISER (Vera Petrovic, Goran Dikic)

DISCLAIMER

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1. Introduction

Respondents to the questionnaire on Dual education come from the University of Kragujevac (UNIKG), University of Novi Sad (UNS), University of Belgrade (UB), State University in Novi Pazar (SUNP), Metropolitan University in Belgrade (BMU) and Academy of Technical and Art Applied Studies, Department School of Electrical and Computer Engineering (VISER).

Questionnaire responses were collected from 74 students (30 - UNIKG, 20 - UNS, 10 - UB, 8 - SUNP, 5 - BMU and 1 - VISER). However, questionnaire responses from one student from UNIKG were not taken into account because the student had not responded to most of the questions.

The questionnaire comprises 20 items, 11 of which are close-ended, while 9 are open-ended questions. The results of closed-ended questions are given as an overview of the distribution of answers, with the corresponding comments. The results of open-ended questions are given with comments adjacent to the responses of students in the corresponding tables.

2. Overview of the analysis of data given in questionnaire sheets

1. Are you familiar with the concept of dual education – work-based learning?

The distribution of answers given in Image 1 shows that more than a third of students are familiar with the concept of dual education. At the same time, an approximately similar number of them have defined themselves as familiar, but not sufficiently familiar with the concept. One quarter of them do not have sufficient information, while others are not familiar with this concept of education.

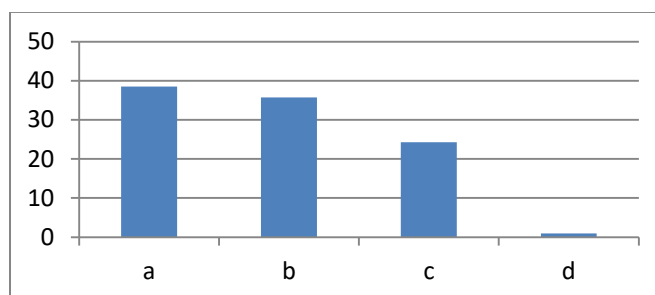


Image 1. Overview of the distribution of responses to Question 1: “Are you familiar with the concept of dual education – work-based learning”; a) Yes, b) I am familiar, but not sufficiently familiar, c) I have heard of the concept, but am not familiar with the details, d) No.

2. In your opinion, what are the advantages of dual education in comparison to the traditional approach to learning?

Table 1 lists the given responses. The majority of students (over 90 %) emphasize the fact that dual education enables the application of theoretical knowledge in practice as an advantage. Some of the students recognize the possibility of easier employability as another advantage of dual education (20 %), while some emphasize the possibility of team work as one of the advantages of dual education.

Table 1

	RESPONSES
1.	The advantage is that students have the chance to apply theoretical knowledge in practice and become familiar with, as well as participate in, real-life projects in various companies, which gives them the opportunity to acquire their first work experience (UNS).
2.	Gaining practical knowledge and better employability (UNIKG)
3.	Being equipped with the know-how for work, better employability, teamwork and personal responsibility (UNIKG)
4.	Better readiness for market demands upon graduation (UB).

3. What is your experience with enterprises/companies over the course of your studies?

The majority of students (some 80 %) stated that they had had positive experience over the course of their internships. About 20 % of them stated that they did not have any internship experience. In several cases, students pointed out that company staff had not had enough time to mentor/support interns. Some of the typical responses are given in Table 2.

Table 2

	RESPONSES
1.	Excellent, there are many companies which are interested in teaching students and transferring their knowledge (UNIKG)
2.	Company staff are generally “swamped” with their own obligations and do not have a lot of time to dedicate to young students (UNS)
3.	I have no experience
4.	It is a little bit intensive but it pays off (BMU)

4. What are your suggestions on how work-based learning can be improved at our Faculty?

Over 70% of students stress the need for more internship opportunities. In certain cases, they even suggest prioritizing practical work over theoretical lectures. About 10% of students suggest that certain obligatory pre-exam tasks such as seminary work could be replaced with some forms of practical learning. Around 10 % of students have no suggestions. Some of the typical responses are given in Table 3.

Table 3

	RESPONSES
1.	More internship opportunities and longer periods practical work
2.	Organizing virtual companies, from the process of setting up a company to realizing functions in certain sectors. Above all, it is highly significant for students to have, beside formal education, insight into how work is realized in practice, starting with fundamental documentation with which students do not have a chance to get familiar over the course of their studies (UNS)
3.	Execution of project tasks based on case studies (UB)
4.	Reduction of homework (where applicable) and valuation of knowledge itself, rather than forcing students to do homework and prove their “knowledge” in that particular form. Instead of assigning homework, it is better to assign two projects, one of which would be a final project, while another one would be in between semesters, and in that way bring together everything that has been done/learned. (BMU)

5. What knowledge have you gained in your engagement in companies over the course of your studies (internship, dual education, etc)?

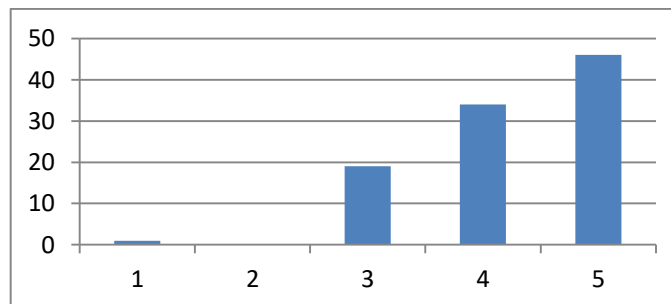
Around 70 % of students pointed out that they had gained knowledge necessary for employment, such as work organization, prioritizing, insight into teamwork, professional communication skills, etc. Around 20 % of students did not indicate or did not share their response. Some of the typical responses are given in Table 4.

Table 4

	RESPONSES
1.	Knowledge which every new, young engineer should have (UNIKG)
2.	Organization of work, participation in projects (UNIKG)
3.	First and foremost, I would like to mention the skills I have gained, some of which include communication skills, prioritizing tasks, and the like. These skills are, I believe, very useful and applicable in all work positions. (UNS)
4.	Unfortunately, I do not have such experience. I found a job only after graduation. (UNS)
5.	Organization of tasks and processes, informal team management. (UB)
6.	I gained practical knowledge and insight into teamwork, as well as knowledge I would not be able to gain through faculty courses. (BMU)

6. How do you feel about the conditions of learning at your study programme – grade 1-5 (1 - I am not satisfied at all, 5 - I am completely satisfied)?

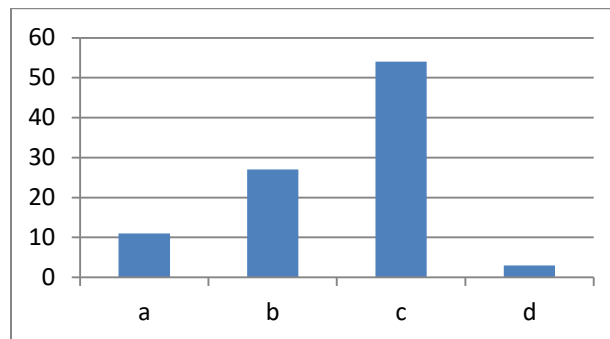
Around 45 % of students are entirely satisfied with the conditions of learning at their study programmes. Almost 35 % of students graded their satisfaction level with a grade 4, while slightly lower than 20 % opted from grade 3. The number of unsatisfied students amounts to 1 % of all respondents. The distribution of collected responses to this question is given in Image 2.



Im. 2 Overview of the distribution of answers to Question 6: “How do you feel about the conditions of learning at your study programme – grade 1-5 (1 - I am not satisfied at all, 5 - I am completely satisfied)?”.

7. How time-consuming are lessons, from your point of view, over the course of the semester?

More than a half of students (about 55 %) believe that the time consumed by lessons is within the expected limit. About a quarter of students believe that lessons are very time-consuming, but they still manage to meet all the pre-exam obligations. Only 10 % believe that the lessons are too time consuming and cannot meet their pre-exam obligations. The distribution of the collected responses to this question is given in Image 3.



Im. 3 Overview of the distribution of responses to Question 7: “How time-consuming are lessons, from your point of view, over the course of the semester?” a) Lessons are highly time-consuming and I don’t have enough time to meet my pre-exam obligations, b) Lessons are time-consuming, but I have enough time to meet my pre-exam obligations, c) The consumption of time is within the expected limits, d) Lessons are insufficiently time-consuming and I have plenty of time for other related activities“.

8. If, in the previous question, you have circled a, b or d, please explain in more detail:

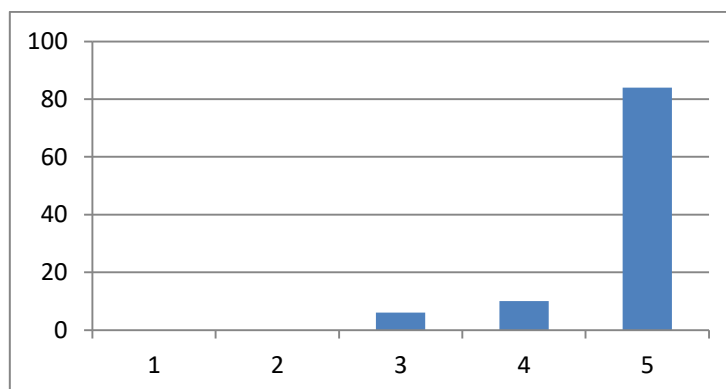
Some of the typical elaborations pertaining to the previous question are given in Table 5.

Table 5

RESPONSES	
1.	With all the lessons and work in the dual education programme, there is little time for resting and pre-exam obligations. (BMU)
2.	Since courses related to machine engineering are done in teams, machine engineers have the biggest workload because of the fact that they have to share background information for the lectures with colleagues from other faculties, while, when mathematical problems have to be solved, the work is done 'solo', so it turns out that we get the hardest parts from both groups of courses. (UB)
3.	The number of papers we have to write is large. I think the mistake lies in the fact that this faculty focuses, in its master studies, on creating academic human resources (for whom there is no market demand). I think that master studies should focus more on the creation of business-oriented human resources who would be in demand in the labour market and who, over the course of their work experience, may get to the desired positions, based on the knowledge gained in master studies. (UNS)
4.	Many obligations for employed students. (UNIKG)

9. Are lessons realized on a regular basis – grade 1-5 (1 - Lessons are not realized at all, 5 - Lessons are realized entirely in accordance with the plan)?

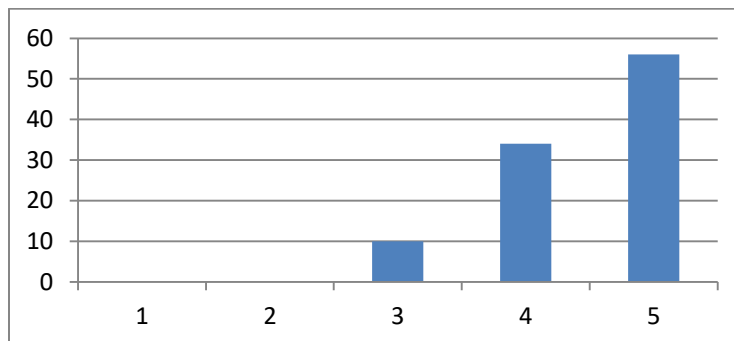
More than 80 % of students responded that lessons were realized according to the plan. Overview of the distribution of responses to this question is given in Image 4.



Im. 4 Overview of the distribution of responses to Question 9: „Are lessons realized on a regular basis – grade 1-5 (1 - Lessons are not realized at all, 5 - Lessons are realized entirely in accordance with the plan)?“.

10. Are you satisfied with the clarity and the manner of lesson execution set by the plan and curriculum – grade 1-5 (1 - Lessons are not realized at all, 5 - Lessons are realized entirely in accordance with the plan)?

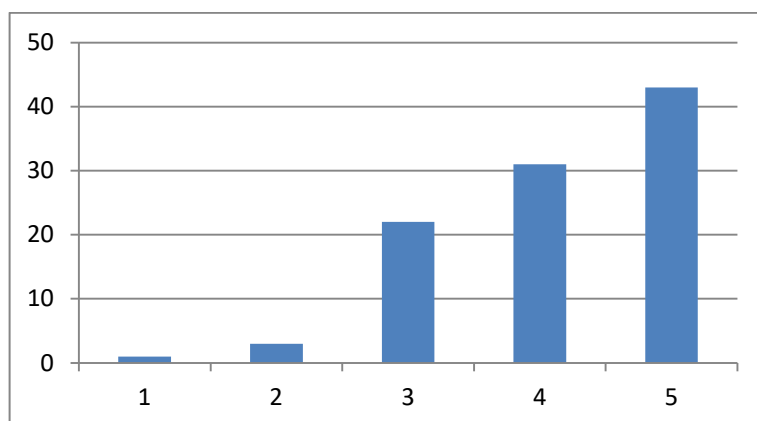
The level of satisfaction with the clarity and the manner of lesson execution were graded with the following grades, in the following percentages: 5 (56 %), 4 (34 %) and 3 (10 %). Overview of the distribution of grades is given in Image 5.



Im. 5 Overview of the distribution of answers to Question 10: “Are you satisfied with the clarity and the manner of lesson execution set by the plan and curriculum – grade 1-5 (1 - I am not satisfied at all, 5 - I am entirely satisfied)?”

11. Does a given study programme support creativity, critical thinking and activity - grade 1-5 (1 - It does not support it at all, 5 – It supports it significantly)?

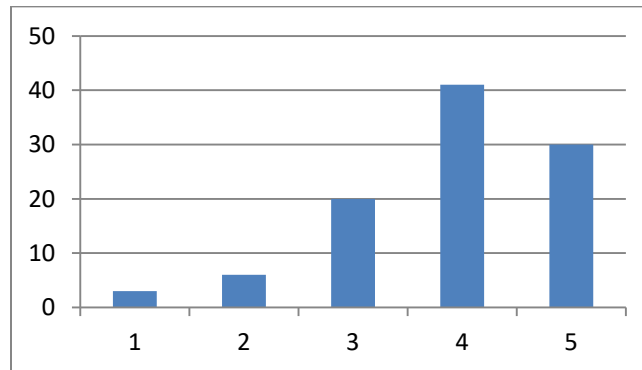
The largest number of students responded to this question with grades 5 (43 %), 4 (31 %) and 3 (22 %). The distribution of all responses to this question is given in Image 6.



Im. 6 Overview of the distribution of responses to Question 11: “Does a given study programme support creativity, critical thinking and activity - grade 1-5 (1 - It does not support it at all, 5 – It supports it significantly)?”.

12. Do you receive useful information for your future professional career? - grade 1-5 (1 - No, none at all, 5 – Yes, I receive a significant amount of information)?

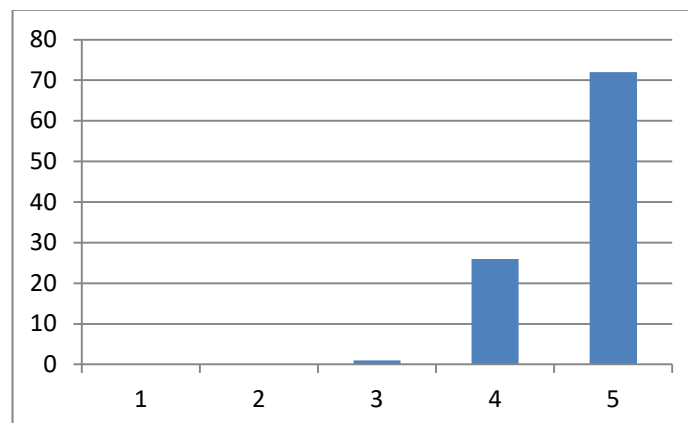
Most students responded to this question with grades 4 (41 %), 5 (30 %) and 3 (20 %). The distribution of all responses to this question is shown in Image 7.



Im. 7 Overview of the distribution of responses to Question 12: “Do you receive useful information for your future professional career - grade 1-5 (1 - No, none at all, 5 – Yes, I receive a significant amount of information)?”.

13. Is communication with the lecturers at a satisfactory level - grade 1-5 (1 - There is no communication, 5 – Communication is at a high level)?

Most students responded to this question with grades 5 (72 %) and 4 (26 %). The distribution of all responses to this question is given in Image 8.



Im. 8 Overview of the distribution of responses to Question 13: “Is communication with the lecturers at a satisfactory level - grade 1-5 (1 - There is no communication, 5 – Communication is at a high level)?”.

14. In which specific area of work do you plan to pursue your professional career upon graduation?

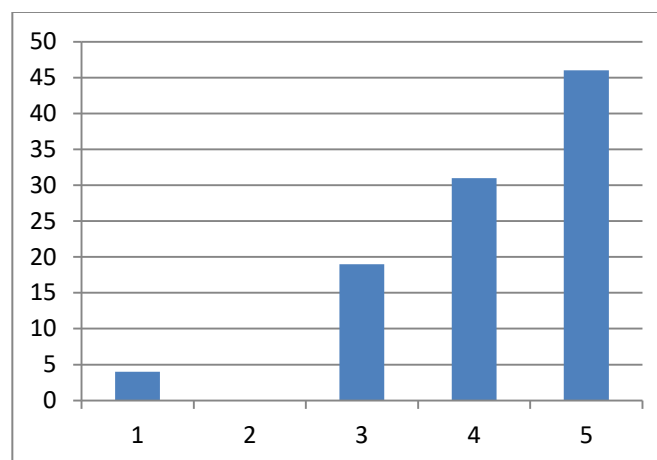
The majority of students (around 80 %) have some idea about where they intend to pursue their career. A smaller portion of them (around 10%) are still not entirely certain with regard to this matter. Some of the typical responses are given in Table 6.

Table 6

	RESPONSES
1.	I am planning to continue working in my field of expertise, develop new ideas and realize them, of course. Also, I am planning to open my own company (BMU)
2.	Machine learning, artificial intelligence and/or related areas. (UB)
3.	I am still not sure and haven't yet decided which specific area of work to pursue, I am in the process of considering several of them. (UNS)
4.	Projecting and executing work on transformation stations and their remote control (UNIKG)
5.	IT industry. (UNIKG)

15. Are you satisfied with the relation of Faculty departments toward students and their communication with you – grade 1-5 (1 - I am not satisfied at all, 5 - I am entirely satisfied)?

The majority of students responded to this question with grades 5 (46 %) and 4 (31 %). The distribution of all responses to this question is given in Image 9.



Im. 9 Overview of the distribution of responses to Question 15: "Are you satisfied with the relations of Faculty departments toward students and their communication with you – grade 1-5 (1 - I am not satisfied at all, 5 - I am entirely satisfied)?".

16. Do you have any recommendations on how studies can be improved?

Most students (40 %) expressed the need for the teaching material to be more associated with the practice. One part of students (around 10 %) wish to have more distant learning because they are employed and it would be easier for them to balance studies and work. Around 40 % of students shared no recommendations.

Table 7

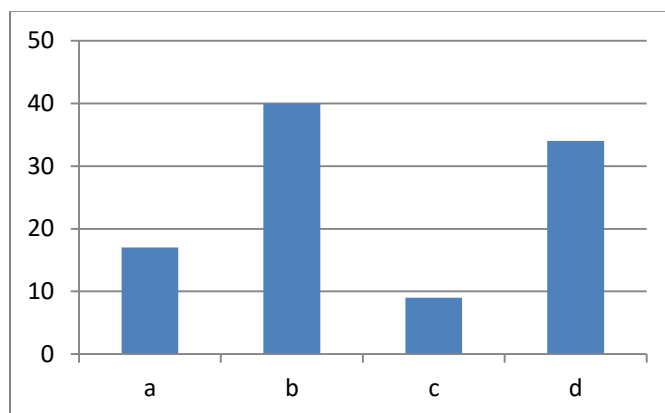
	RESPONSES
1.	For students who are employed, enable "online" lectures, especially for those from cities other than Kragujevac, because I personally had issues with leaving the workplace, travelling to Kragujevac to attend lectures and going back to work, all in the same day, which can be quite problematic. (UNIKG)
2.	Better cooperation with the economy, subsidies for students who work, better equipment in the laboratories. (UNIKG)
3.	Master studies should be realized online because most students work and that would be a good solution for them to attend all lectures and practice lessons. (UNS)
4.	More practice lessons - less tedious theory. (UB)
5.	To have better examples of how, where and why something is used embedded in the lectures, rather than just tedious theory (there are professors who do this, but the majority do not). As per practice lessons, they are mostly alright but there are professors who seem like they don't know how to do something themselves, and they ask us to do it. (BMU)

17. State your work experience thus far, if you have any?

Most students (around 65 %) have some work experience, while others do not.

18. What motivated you to choose this study programme?

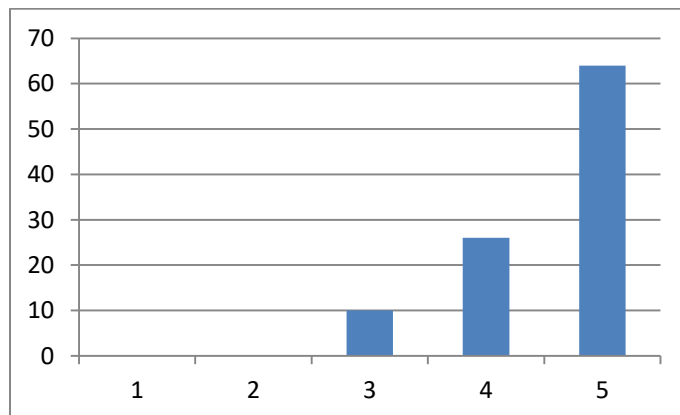
Most students opted for this study programme due to its contemporary nature (40 %). The distribution of all responses to this question is given in Image 10.



Im. 10 Overview of the distribution of answers to Question 18: “What motivated you to choose this study programme”: a) It was recommended to me by my classmates, b) The study programme is contemporary, c) The possibility of work-based learning, d) Other.

19. Is information about the study programme available to students - grade 1-5 (1 - It is not available at all, 5 – It is extremely available)?

The majority of students graded the availability of information with a grade 5 (62 %). The distribution of responses to this question is shown in Image 11.



Im. 11 Overview of the distribution of responses to Question 19: “Is information about the study programme available to students - grade 1-5 (1 - It is not available at all, 5 – It is extremely available)?”

20. List some of the teaching material you think is missing in a specific study programmes (if there is any):

Only one third (37 %) of students wrote a suggestion on how the study programme could be adjusted.

3 Conclusion

Students are largely familiar with the concept of dual education and think that the information on this specific study programme is available to them. In their responses, they emphasize the benefits of dual education because of the possibility of applying theoretical knowledge in practice, as well as bringing together teaching material and practice. They mostly had positive experiences over the course of their internships and are interested in having the learning process improved by adding additional hours of practical work.

Students underlined that, over the course of their internships, they gained knowledge necessary for further professional work, such as: organization of work, setting priorities, insight into teamwork, professional communication skills, etc.

Most students are happy with the conditions of learning at their study programme. They mostly think that the time consumed by lessons is within the anticipated boundaries. However, one quarter of them believe that lessons are time-consuming but still have enough time to meet their pre-exam obligations, while 10 % think that lessons are too time-consuming.

The majority of respondents said that lessons were realized in accordance with the curriculum. Their communication with the lecturers is at a satisfactory level. The clarity of teaching and the manner of lesson execution is such that it encourages their creativity, critical thinking and active engagement. The relation of Faculty departments toward students and their communication with them is also at the anticipated level.

Most students have some idea about where they plan to pursue their career. In line with that, one third of them recommended ways to improve the existing study programmes.