هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

Annual Program Report

Program Name:	Computer Science
Qualification Level:	Bachelor's degree
Department:	Department of Computer Science
College:	College of Computer Science and Information Systems
Institution:	Najran University
Academic Year:	2021/2022 (1443/1444 H)
Main Location:	CCSIS, Najran University
Branches offering the Program:	• Male Campus • Female Campus

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A. Implementation of Previous Action Plan

Considering the recommendations of previous year annual report, list the planned actions and their status.

Planned Actions	Responsibility of Action	Planned Completion Date	Level of Completion		If Not Completed	
			Completed	Not Completed	Reasons	Proposed Actions
1. Execution of CS program unit's operational plan	CS department units	2022/6/15	√			
2. Implementation of NCAAA recommendations action plan	CS program NCAAA standard committee	2021/10/30	√			
3. Implementation of recommendations in semester 1 and semester 2 given by course instructors in course report.	Course Instructors of CS program courses	2022/6/15	√			
4. Encourage students to attend workshops supported to improve the level of English language proficiency	Student Activity Unit	Before the end of the academic semester	√			
5. Support newly joined faculty members at the male and female campuses by workshops in Blackboard	Head of Department and E-Learning unit	Before the end of the academic semester	√			
6. Newly joined students should see their academic advisors regularly	Head of Department and Academic Advising unit	Before the end of the academic semester	√			
7. Introducing Webinars and workshops for students skill development	Academic Advising unit	30/4/2022	√			
8. Encouraging faculty members to participate in research	Research unit	1/6/2022	√			
9. Organizing scientific, cultural, research and community service lectures	Research unit	1/6/2022	√			
10. Developing student handbook	Academic Advising unit	20/1/2022				

B. Program Statistics

1. Students Statistics (in the year concerned)

No.	Item	Results
1	Number of students who started the program	**35**
2	Number of students who graduated	**53**
3	Number of students who completed major tracks within the program (if applicable)	
	a.	
	b	
	c.	
4	**a.** Number of students who completed the program in the minimal time	**31**
5	**a.** Percentage of students who completed the program in the minimal time (Completion rate)	**88.57%**
6	Number of students who completed an intermediate award specified as an early exit point (if any)	
7	Percentage of students who completed an intermediate award specified as an early exit point (if any)	

Comment on any special or unusual factors that might have affected the completion rates:

The percentage of those who succeeded in minimal time is more than 58% according to the students who graduated in the current year which is a very low rate, the reason for the increasing in the number of graduates out of the minimal time is because there are a number of students who have one or more courses remaining, and they have succeeded in this semester after studied summer semester.

2 . Cohort Analysis of Current Graduate Batch

Student Categories / Years		Total cohort enrollment	Withdrawn	Retained till year end	Not passed	Passed	Passing rate
Three Years Ago	M	12		1	1	11	91.66%
	F	23		13	13	12	51.17%
	Total	35		14	14	23	67.64%
Two Years Ago	M	11		0	0	11	100%
	F	12		0	0	12	100%
	Total	23		0	0	23	100%
Last Year	M	11		1	1	10	100%
	F	12		0	0	12	100%
	Total	23		1	1	22	100%
Current Year	M	10		1	1	9	90%
	F	22		0	0	22	100%
	Total	32		1	1	31	96.87%

Comments on the results:

The percentage of those who succeeded in minimal time is more than 88.57%, which is a very high rate. The reason for the high success rate is that a number of students studied in the summer semesters, which increased the percentage of graduates in the minimal time.

* add more rows for further years (if needed)
** attach separate cohort analysis report for each branch

3.Analysis of Program Statistics

(including strengths, areas for improvement, and priorities for improvement)

Strengths :
After tracking the cohort of current graduated in the year 1443, we found the percentage of those who succeeded in minimal time is more than 88.57% , which is a very reasonable rate. Also if we compare the number of those who graduated this year with students who graduated in minimal time, the percentage is 58.49%. this is as acceptable percentage, and the reason for the increasing in the number of graduates is because there are a number of students who have one or more courses remaining, and they have succeeded in this semester.
Areas for Improvement:
Each semester, academic advising is required to contacts students who are willing to postpone semesters or drop the courses after the midterm exams results as it delays their graduation and urges them to continue their education.
Priorities for Improvement:
Academic Advisors need to keep track of students' academic performance throughout the semester and guides them not to postpone their semester as it delays their graduation.

C. Program Learning Outcomes Assessment

1. Program Learning Outcomes Assessment Results.

#	Program Learning Outcomes	Assessment Methods (Direct and Indirect)	Performance Target	Results
Knowledge and Understanding				
K1	An ability to apply knowledge of computing and mathematics appropriate to the discipline	**Direct Methods:** 1. Course Learning Outcomes assessment (Each Semester) 2. Formative assessment cycle for Learning Outcomes. **Indirect Methods:** 1. Exit Survey (Each Semester) 2. Current Student Survey (Each Semester)	70% of the students at the accomplished or above levels	Target achieved in male campus but did not achieved in female campus
K2	An understanding of professional, ethical, legal, security and social issues and responsibilities		According to PLO assessment plan cycle III (2021-2025), K2 not selected for assessment during the academic year 2021/2022.	
K3	An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modelling and design of computer-based systems in a way that demonstrates comprehension of the trade-offs involved in design choices		According to PLO assessment plan cycle III (2021-2025), K3 not selected for assessment during the academic year 2021/2022.	
Skills				

S1	An ability to analyse a problem, and identify and define the computing requirements appropriate to its solution	**Direct Methods:** 1. Course Learning Outcomes assessment (Each Semester) 2. Formative assessment cycle for Learning Outcomes. **Indirect Methods:** 1. Exit Survey (Each Semester) 2. Current Student Survey (Each Semester)	70% of the students at the accomplished or above levels	Target not achieved in male and female campus
S2	An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs		According to PLO assessment plan cycle III (2021-2025), S2 not selected for assessment during the academic year 2021/2022.	
S3	An ability to analyse the local and global impact of computing on individuals, organizations, and society		According to PLO assessment plan cycle III (2021-2025), S3 not selected for assessment during the academic year 2021/2022.	
S4	An ability to use current techniques, skills, and tools necessary for computing practice.		70% of the students at the accomplished or above levels	Target not achieved in male and female campus
S5	An ability to apply design and development principles in the construction of software systems of varying complexity.		According to PLO assessment plan cycle III (2021-2025), S5 not selected for assessment during the academic year 2021/2022.	
Values				
V1	An ability to function effectively on teams to accomplish a common goal	**Direct Methods:** 1. Course Learning Outcomes assessment (Each Semester) 2. Formative assessment cycle for Learning Outcomes. **Indirect Methods:** 1. Exit Survey (Each Semester) 2. Current Student Survey (Each Semester)	According to PLO assessment plan cycle III (2021-2025), V1 not selected for assessment during the academic year 2021/2022.	
V2	An ability to communicate effectively with a range of audiences		70% of the students at the accomplished or above levels	Target achieved in male and female campus
V3	An ability to recognize the need for and an ability to engage in continuing professional development		According to PLO assessment plan cycle III (2021-2025), V3 not selected for assessment during the academic year 2021/2022.	

Comments on the Program Learning Outcome Assessment results.

Department of Computer Science adopted the ABET-Computing Accreditation Commission-CAC's (a-k) Student Outcomes (SO) for the Computer Science program as a Program Learning Outcome (PLO). According to the PLO assessment plan 2021-2025, following two PLOs were selected to collect data and evaluate during the first semester 2021/2022 (1443/1444).

PLO (K_1): An ability to apply knowledge of computing and mathematics appropriate to the discipline.

PLO (S_4): An ability to use current techniques, skills, and tools necessary for computing practice.

Moreover, following two PLOs/SOs were selected to collect data and evaluate during the second semester 2021/2022 (1443/1444).

PLO (S_1): An ability to analyse a problem, and identify and define the computing requirements appropriate to its solution

PLO (V_2): An ability to communicate effectively with a range of audiences

Program Learning Outcome Assessment results for First Semester 2021/2022 (1443/1444)

PLO (K_1): Two courses (i.e. Data Structures and Theory of Computation) were selected to assess the PLO (K_1) in male campus and two courses (i.e. Data Structures and Software Engineering) in female campus . The overall assessment shows that 73.22% of students achieved the PLO (K_1) in the male campus and 24.60% students achieved on the female campus. Overall achievement rate in male and female campus is 48.91% which did not achieved the target of 70%. Moreover, target achieved in male campus but did not achieved in female campus.

PLO (S_4): Two courses (i.e. Computer Organization & Architecture and Internet Technologies) were selected to assess the PLO (S_4). The overall assessment shows that 61.11% of students achieved the PLO (S_4) in the male campus and 45.25% students achieved in the female campus. Overall achievement rate in male and female campus is 53.15% which did not achieved the target of 70%.

Program Learning Outcome Assessment results for Second Semester 2021/2022 (1443/1444)

PLO (S_1): Three courses (i.e. Data Structure and Algorithms, Internet Technologies and Data Communication and Computer Networks were selected to assess the PLO (S_1). The overall assessment shows that 66.67% students achieved the PLO (S_1) in male campus and 42.68% students achieved in female campus. Overall achievement rate in male and female campus is 54.68% which did not achieved the target of 70%.

PLO (V_2): Three courses (i.e. Object Oriented Programming, Software Engineering and Artificial Intelligence were selected to assess the PLO (V_2). Overall shows that 79.16%

students achieved the PLO (V_2) in male campus and 100% students achieved in female campus. Overall achievement rate in male and female campus is 89.58% which achieved the target of 70%.

Note: Detailed analysis of PLOs is given below in section 2 (analysis of program learning outcome assessment)

* Include the results of measured learning outcomes during the year of the report according to the program plan for measuring learning outcomes

** Attach a separate report on the program learning outcomes assessment results for male and female sections and for each branch (if any)

2. Analysis of Program Learning Outcomes Assessment

(including strengths, Areas for Improvement:, and priorities for improvement)

Program learning outcomes (PLOs) can be assessed by using both direct and indirect assessment methods. In this report, we presented PLO assessment data from the following direct assessment method:

- Assessment of program learning outcomes using course learning outcome (CLO) achievement by using embedded questions.

Currently, the College of CSIS has planned a new cycle for the academic years 2021-2025 to assess the PLOs. A new assessment plan is described below:

1. **Assessment Types**
   - **Direct assessment:** It will be achieved through performance indicators (PIs) and by using course learning outcome (CLOs) for all CS SOs. Direct assessment methods are used for the direct examination or observation of student knowledge, skills and/or behaviors. e.g. Exams, Presentation, etc.
   - **Indirect assessment:** It will be done through indirect methods, e.g. exit surveys, current student survey and meeting and survey with program advisory committee.

2. **Assessment Methods**

The formative and summative assessment methods which will be used in the assessment plan for the year 2021 – 2025 are:

- **Formative Assessment.**
  1. Formative assessments are ongoing assessments, reviews, and observations in a classroom and or within an academic year or predetermined time.
  2. We should use formative assessment to improve instructional methods and student feedback throughout the teaching and learning process.

3. The goal of formative assessment is to monitor student learning to provide ongoing feedback that can be used by instructors to improve their teaching and by students to enhance their learning.
4. Examples of formative assessment are quizzes, assignments, midterms, etc. It will be used in level 3 to 6.

- **Summative Assessment.**
  1. Summative assessments are typically used to evaluate the effectiveness of instructional programs and services at the end of an academic year or at a predetermined time.
  2. The goal of summative assessments is to make a judgment of student competency after an instructional phase is complete.
  3. The goal of summative assessment is to evaluate student learning at the end of an instructional unit by comparing it against some standard or benchmark.
  4. Example of summative assessment is final exams, nationwide Tests, and it will be done from levels 7, 8 and 9.

As it is mentioned above that according to the assessment plan 2021-2025, following two PLOs were selected to collect data and evaluate during the First semester 2021/2022 (1443/1444).

1. **PLO (K_1):** An ability to apply knowledge of computing and mathematics appropriate to the discipline.
2. **PLO (S_4):** An ability to use current techniques, skills, and tools necessary for computing practice.

Moreover, following two PLOs were selected to collect data and evaluate during the Second Semester 2021/2022 (1443/1444).

1. **PLO (S_1):** An ability to analyse a problem, and identify and define the computing requirements appropriate to its solution
2. **PLO (V_2):** An ability to communicate effectively with a range of audiences

College's development and quality unit (DQU) formed following five groups which are responsible for collecting the data and evaluating the PLOs according to the assessment plan.

Program Learning Outcome (PLO) Assessment Groups
(Computer Science Program)
(PLO Assessment Cycle 2021-2025)

Group No.	Coordinators	Members	Program Learning Outcome (PLO)
Group 1	Dr. Anwar Esmail aaesmail@nu.edu.sa	Dr. Abdulwahab Alazeb afalazeb@nu.edu.sa Dr. Saeed Alahmari ssalahmari@nu.edu.sa Mr. Sultan Mansour Alajmi smalajmi@nu.edu.sa Ms. Saira Bano sbrasool@nu.edu.sa Ms. Morady Mohammed mmalsoma@nu.edu.sa	PLO (K_1) PLO (S_4)
Group 2	Mr. Muhammad Akram maakram@nu.edu.sa	Dr. Hanan Halawani hthalawani@nu.edu.sa Dr. Sultan Makdi saalmakdi@nu.edu.sa Ms. Albetool Hashan ahmehthel@nu.edu.sa Ms. Amal Saeed Mohammed asaljarah@nu.edu.sa Mr. Emad efalhabsy@nu.edu.sa	PLO (S_1) PLO (V_2)
Group 3	Dr. Hani Alshahrani hmalshahrani@nu.edu.sa	Dr. Abdullah Khanfor aikhanfor@nu.edu.sa Ms. Raniah Zaheer rzzaheer@nu.edu.sa Ms. Soad Fadl almula smfadlmula@nu.edu.sa Ms. Sahar Alwadei saalwadei@nu.edu.sa Ms. Zahara zmalwadi@nu.edu.sa	PLO (V_1) PLO (K_3)
Group 4	Dr. Adel Sulaiman aaalsulaiman@nu.edu.sa	Dr. Adel Rajab adrajab@nu.edu.sa Dr. Sultan Sughair Alamer ssalamer@nu.edu.sa Mr. Adlan Balola Ali abahmed@nu.edu.sa Ms. Maha Alwetheynani mmalwetheynani@nu.edu.sa Ms. Awatif Alqahtany amalqahtany@nu.edu.sa	PLO (S_2) PLO (K_2)
Group 5	Dr. Mohammed Alshehri msalshehry@nu.edu.sa	Dr. Naif Almudawi naalmudawi@nu.edu.sa Ms. Nyla Khadim nkkhadem@nu.edu.sa Ms. Ferial Al alharith fmalalharith@nu.edu.sa Mr. Hattan Al sharif hhalsharif@nu.edu.sa Ms. Mzoon Mohammad	PLO (S_3) PLO (V_3) PLO (S_5)

		mmkulayb@nu.edu.sa	

Program Learning Outcome Analysis for First Semester 2021/2022 (1443/1444)

Program Learning Outcome (K_1): An ability to apply knowledge of computing and mathematics appropriate to the discipline

1. Introduction

Each course in College of Computer Science and Information Systems (CCSIS) is divided into 5 to 8 course learning outcomes (CLO). These course learning outcomes were assessed by different assessment methods e.g. Quizzes, Assignments, Labs, Mid Term exam, Final exam etc. These CLOs are mapped with ABET Student Outcomes (SO). According to the quality plan 2021-2025, formative assessments are on-going assessments, reviews, and observations in a classroom and or within an academic year or pre-determined time. We should use formative assessment to improve instructional methods and student feedback throughout the teaching and learning process. The goal of formative assessment is to monitor student learning to provide ongoing feedback that can be used by instructors to improve their teaching and by students to improve their learning.

According to the PLOs assessment plan 2021-2025, course learning outcome (CLO) achievement data was collected for Computer Science (CS) program to evaluate the PLO (K_1) in first semester 2021/2022 and evaluation results are presented in this report.

2. Assessment Plan

PLO (K_1)**:** An ability to apply knowledge of computing and mathematics appropriate to the discipline.

Semester/Year Data collected: First Semester, 2021-2022

Assessment Coordinator (Collection Agent): Dr. Anwar Ali (male campus) & Ms. Morady (female campus)

Program: Computer Science

Table C-2.1, shows the assessment plan of PLO (K_1) for computer science program. Assessment plan includes the strategies used to assess the PLO (K_1), assessment method, source of assessment and target to achieve the PLO (K_1). Because we have to do formative assessment, so courses are selected only from level 4, 5, 6 and 7 with strong relationship of course learning outcome with PLO (K_1). Moreover, curriculum mapping is also considered

during selecting the CS courses as a source of assessment. Mainly courses are selected those have curriculum mapping "P" or "A" with PLO(K_1)**.** Curriculum mapping "I" is only consider if we did not have courses as a source of assessment with curriculum mapping P or A.

Table C-2.1: PLO(K_1)assessment plan for computer science program

PLO	Strategies	Assessment Method(s)	Source of Assessment	Target for Performance	Evaluation of Results
K_1	111CSS-4, 113CSS-4, 212CSS-3, 222CSS-4, 330CSS-3, 227CSS-3, 342CSS-3, 235CSS-3, 281CSS-3, 361CSS-3, 457CSS-3, 380CSS-3, 329CSS-3	Embedded Questions	212CSS-3, 235CSS-3, 342CSS-3	70% of the students at the developing or above levels	Dr. Anwar Dr. Abdulwahab Ms. Morady

3. PLO(K_1) Assessment Results

PLO (K_1) assessment is based on following steps;

- The instructors of the corresponding courses were asked to make question based to CLO's which had has a mapping to PLO (K_1)
- The instructor submitted to the PLOs assessment group, the scanned answer scripts of the students along with students grades achieved in that particular question.
- The PLOs Assessment group aggregated, evaluated and analyzed the results
- Based on the results action are proposed, to be taken in the assessment and evaluation stages!!

3.1 Overall PLO (K_1)Assessment in Male and Female Campu

Three courses (i.e. Data Structure and Algorithms, Theory of Computation, and Software Engineering) were selected to assess the PLO (K_1). Table C-2.2 shows the overall assessment result of PLO (K_1) based on the data collected from both male and female campus. Assessment shows that 73.22% students achieved the PLO (K_1) in male campus and 24.6% students achieved in female campus. Overall achievement rate in male and female campus is 48.91% which did not achieved the target of 70%.

Table C-2.2: PLO (K1) achievement for computer science courses in male and female campus

Campus	PLO (K_1) achievement
Male Campus	73.22%
Female Campus	24.6%
Average	**48.91%**

3.2 PLO (K_1) Assessment in Male Campus

Two courses, Data Structure and Algorithms, Theory of Computation were selected as source of assessment in male campus. This section gives the assessment results of each selected course in male campus.

3.2.1 Data Structure and Algorithms, 212CSS-3

Mr. Adlan was the instructor for Data Structure and Algorithms course during the first semester of academic year 2021/2022. One question was designed by Mr. Adlan to assess the PLO (K_1) and Table C-2.3 shows the achievement results. Student's marks shows that only 71.43% students achieved the PLO.

Table C-2.3: Marks obtained by software engineering students in question No. 4

Student Number	Marks achieved by students in Question#4 out of 12	Student achievement
437102007	10.50	Yes
437103081	4.00	No
437104398	11.50	Yes
438100206	3.00	No
438100978	9.50	Yes
438100979	11.00	Yes
438100980	10.50	Yes
438100981	12.00	Yes
438100982	5.50	No
438100983	8.00	No
438100984	12.00	Yes
438100985	12.00	Yes
438100986	10.50	Yes
438100987	12.00	Yes
Percentage of Students Achievement on each Question	**71.43%**	
Average Achievement		

3.2.2 Theory of Computation, 235CSS-3

Mr. Muhammad Akram was the instructor for Theory of Computation course during the first

semester of academic year 2021/2022. One question was designed by Dr. Muhammad Akram to assess the PLO (K1) and Table C-2.4, shows the achievement results. Student's marks shows that achievement is 75%.

Table C-2.4: Marks obtained by Theory of Computation students

Student ID	Student Name	Marks achieved by students in Question#3 out of 10	Student achievement "Yes" or "No"
438103824	خالد صمعان بن محمد بني هميم	8.00	Yes
439100121	حاتم بن أحمد بن علي الجائزي	10.00	Yes
439100163	حمد بن عيظه بن صالح قحزان آل صالح	7.00	Yes
439100422	عبدالمجيد بن عبدالله بن مرزوق ال نصيب	6.00	No
Percentage of Achievement		**75%**	

3.2.3 Overall PLO (K_1) Assessment in Male Campus

Table C-2.5 shows the overall assessment of PLO (K_1) in male campus. Following is analyzed during the PLO (K_1) assessment.

- For the course 212CSS-3 the PLO (K_1) achievement was 71.43% as compared to the target benchmark of 70%.
- For the course 235CSS-3 the PLO (K_1) achievement was 75% as compared to the target benchmark of 70%.
- The overall PLO (K_1) achievement in male section is 73.22%.

Table C-2.5: Overall PLO (K1) assessment in male campus

Courses Chosen as Source of Assessment	PLO Achievement
Data Structure and Algorithm, 212CSS-3	71.43%
Theory of Computation, 235CSS-3	75%
Average Achievement of PLO (K1) in Male Campus	**73.22%**

3.3 PLO (K_1) Assessment in Female Campus

Two courses, software engineering and data structure were selected as course of assessment in female campus. This section gives the assessment results of each selected course in male campus.

3.3.1 Software Engineering, 342CSS-3

Mrs. Raniah Zaheer was the instructor for software engineering course during the first

semester of academic year 2021/2022. Tow question was designed by Mrs. Raniah Zaheer to assess the PLO (K_1) and Table C-2.6, shows the achievement results. Student's marks shows that achievement is 16.7%.

Table 6: Marks obtained by software engineering students in female campus

Student Number	Marks achieved by students		Total Marks (7)	Student achievement
	Q1(ii) / (3)	Q2(i) / (4)		
437406632	1.50	0.00	1.50	No
438301385	1.00	0.50	1.50	No
438302157	3.00	0.00	3.00	No
438405536	1.50	0.50	2.00	No
439302315	0.00	0.00	0.00	No
439302322	2.00	2.00	4.00	No
439302325	2.50	1.00	3.50	No
439302353	0.00	0.00	0.00	No
439302381	1.75	1.50	3.25	No
439303842	1.00	1.50	2.50	No
439304220	0.00	0.00	0.00	No
439304330	2.00	1.50	3.50	No
439305046	0.50	0.00	0.50	No
439305506	2.00	0.00	2.00	No
439403565	2.00	4.00	6.00	Yes
439406055	0.00	0.00	0.00	No
439406227	2.50	2.50	5.00	Yes
439406228	2.25	4.00	6.25	Yes
Percentage of Students Achievement	**16.7%**			

3.3.2 Data Structure and Algorithms , 212CSS-3

Ms. Eman was the instructor for Data Structure and Algorithms course during the first semester of academic year 2021/2022. Three questions was designed by Ms. Eman to assess the PLO (K1) and Table C-2.7, shows the achievement results. Student's marks shows that achievement is 32.5%.

Table C-2.7: Marks obtained by artificial intelligence students in female campus

Student Number	Marks achieved by students			Total (10)	Student achievement
	Q3/ (3)	Q4/ (4)	Q5/ (3)		
437302387	3.00	2.50	0.75	6.25	No
439302208	3.00	3.75	2.25	9.00	Yes
439302248	2.75	3.50	1.50	7.75	Yes
439302264	2.75	0.00	2.25	5.00	No
439302328	1.00	1.00	0.75	2.75	No
439302392	0.00	0.25	1.50	1.75	No
439302408	2.00	3.00	0.75	5.75	No
439303892	3.00	3.75	1.50	8.25	Yes
439403563	1.00	1.25	2.25	4.50	No
439405788	3.00	2.50	0.00	5.50	No
441300024	2.00	2.50	0.75	5.25	No
441300063	3.00	1.50	3.00	7.50	Yes
441300106	3.00	0.50	1.50	5.00	No
441300123	0.75	4.00	2.25	7.00	No
441300145	3.00	2.50	3.00	8.50	Yes
441300228	2.00	1.75	3.00	6.75	No
441300564	2.50	4.00	3.00	9.50	Yes
441300667	0.75	1.50	1.50	3.75	No
441300695	3.00	3.50	3.00	9.50	Yes
441300796	0.00	2.25	2.25	4.50	No
441300838	3.00	4.00	3.00	10.00	Yes
441301296	3.00	3.50	3.00	9.50	Yes
441301582	2.50	4.00	3.00	9.50	Yes
441301827	2.25	2.75	3.00	8.00	Yes
441303249	0.00	3.75	0.00	3.75	No
441303251	2.75	1.25	3.00	7.00	Yes
441303396	2.50	1.00	3.00	6.50	No
441303745	1.00	0.25	2.25	3.50	No

441304677	0.50	0.25	0.00	0.75	No
441304745	2.00	1.75	0.75	4.50	No
441305024	3.00	1.50	2.25	6.75	No
441305030	0.00	2.50	0.75	3.25	No
441305199	1.00	2.25	1.50	4.75	No
441305663	3.00	4.00	3.00	10.00	Yes
441306080	2.00	2.75	3.00	7.75	Yes
441306123	0.50	2.50	0.00	3.00	No
441307491	1.00	3.00	2.75	6.75	No
441308243	0.75	3.25	1.50	5.50	No
441308248	1.50	1.50	0.75	3.75	No
441308293	0.50	0.75	0.75	2.00	No
Percentage of Students Achievement	**32.5%**				

3.3.3 Overall PLO (k1) Assessment in Female Campus

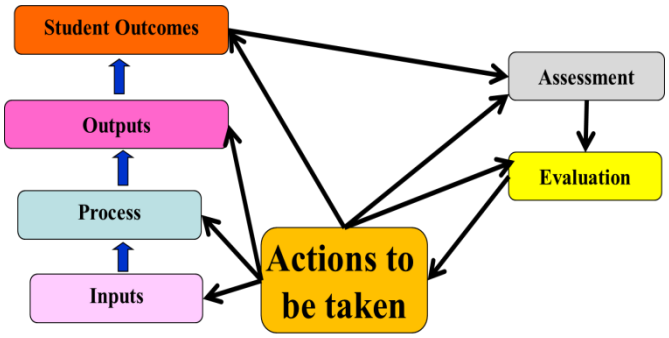
Table C-2.8 shows the overall assessment of PLO (K_1) in female campus. Following is analyzed during the PLO (K_1) assessment.

- For the course 342CSS-3 the PLO (K_1) achievement was 16.7% as compared to the target benchmark of 70%.
- For the course 212CSS-3 the PLO (K_1) achievement was 32.5% as compared to the target benchmark of 70%.
- The overall PLO (K_1) achievement in female section is 24.6%.

Table C-2.8: Overall PLO (K_1) assessment in male campus

Courses Chosen as Source of Assessment	SO Achievement
Software Engineering, 342CSS-3	16.7%
Data Structure and Algorithms, 212CSS-3	32.5%
Average Achievement of PLO (K1) in Female Campus	**24.6%**

3.3.4 Improvement Plan



Overall PLO evaluation result shows that PLO (K_1) did not achieved the benchmark of 70%. Although female students have not achieved the benchmark of 75%, the male students have achieved the PLO (K_1) in both courses. Based on the students' achievement, the assessment committee recommends following actions to improve the results;

- CLOs which are mapped with PLO (K_1) must be explained to students in first introductory lecture.
- Students should know the expectations in the assessment methods. So it is recommended giving the marking scheme (e.g. Rubric, etc.) to students before assessment methods.
- Course instructor need to explain the topics in more detail and give more practice on lectures which are related to PLO (K1).
- Regular meeting with theory instructor, lab instructor and course coordinator is very important to improve the achievement results.

Program Learning Outcome (S_4): An ability to use current techniques, skills, and tools necessary for computing practice.

1. Introduction

Each course in College of Computer Science and Information Systems (CCSIS) is divided into 5 to 8 course learning outcomes (CLO). These course learning outcomes were assessed by different assessment methods e.g. Quizzes, Assignments, Labs, Mid Term exam, Final exam etc. These CLOs are mapped with Program Learning Outcomes (PLO). According to the PLO assessment plan 2021-2025, formative assessments are on-going assessments, reviews, and observations in a classroom and or within an academic year or pre-determined time. We should use formative assessment to improve instructional methods and student feedback throughout the teaching and learning process. The goal of formative assessment is to monitor student

learning to provide ongoing feedback that can be used by instructors to improve their teaching and by students to improve their learning.

According to the PLO assessment plan 2021-2025, course learning outcome (CLO) achievement data was collected for Computer Science (CS) program to evaluate the PLO(S4) in first semester 2021/2022 and evaluation results are presented in this report.

2. Assessment Plan

Program Learning Outcome (PLO) (S_4): An ability to use current techniques, skills, and tools necessary for computing practice.

Semester/Year Data collected: First Semester, 2021-2022

Assessment Coordinator (Collection Agent): Dr. Saeed Alahmari (male campus) & Ms. Saira Rasool (female campus)

Program: Computer Science

Table C-2.9, shows the assessment plan of PLO (S_4) for computer science program. Assessment plan includes the strategies used to assess the PLO (S_4), assessment method, source of assessment and target to achieve the PLO (S_4). Because we have to do formative assessment, so courses are selected only from level 4, 5, 6 and 7 with strong relationship of course learning outcome with PLO (S_4). Moreover, curriculum mapping is also considered during selecting the CS courses as a source of assessment. Mainly courses are selected those have curriculum mapping "P" or "M" with PLO-(S4)**.** Curriculum mapping "I" is only consider if we did not have courses as a source of assessment with curriculum mapping P or M.

Table C-2.9: Program Learning Outcome (S_4) assessment plan for computer science program

PLO	Strategies	Assessment Method(s)	Source of Assessment	Target for Performance	Evaluation of Results
S4	111CSS-4 , Programming Language-1 113CSS-4, Object Oriented Programming 212CSS-3, Data Structures and Algorithms 222CSS-4, Computer Organization & Architecture. 227CSS-3, Operating System. 235CSS-3, Theory of	Embedded Questions	222CSS-4, 457CSS-3	70% of the students at the developing or above levels	Dr. Saeed Dr. Sultan Alajmi Ms. Saira

	Computation 281CSS-3, Computer Graphics 330CSS-3, Programming Paradigm 342CSS-3, Software Engineering. 329CSS-3, Data Communication and Computer Networks 361CSS-3, Artificial Intelligence 380CSS-3, Fundamental of Database Systems 457CSS-3, Internet Technologies				

3. PLO (S_4) Assessment Results

The following steps will be determined for PLO (S_4) assessment

1. The instructors of the corresponding courses were asked to make questions based to CLO's which had has a mapping to PLO (S_4)
2. The instructor submitted to the PLOs assessment group, the scanned answer scripts of the students along with students' grades achieved in that question.
3. The PLOs Assessment group aggregated, evaluated, and analyzed the results
4. Based on the results action are proposed, to be taken in the assessment and evaluation stages!!

3.1 Overall PLO (S_4) Assessment in Male and Female Campus

Two courses (i.e. Computer Organization & Architecture and Internet Technologies) were selected to assess the PLO (S_4). Table C-2.10 shows the overall assessment result of PLO (S_4) based on the data collected from both male and female campus. Assessment shows that 61.11% students achieved the PLO (S_4) in male campus and 45.25% students achieved in female campus. Overall achievement rate in male and female campus is 53.18% which DOES NOT achieve the target of 70%.

Table C-2.10: PLO (S_4) achievement for computer science courses in male and female campus

Campus	PLO (S4) achievement
Male Campus	61.11%
Female Campus	45.25%
Average	**53.18%**

3.2 Program Learning Outcome (PLO) (S_4) Assessment in Male Campus

Two courses, Computer Organization & Architecture and Internet Technologies were selected as source of assessment in male campus. This section gives the assessment results of each selected course in male campus.

3.2.1 Computer Organization and Architecture, 222CSS-4

Dr. Sultan was the instructor for Computer Organization and Architecture course during the first semester of academic year 2021/2022. One question was designed by Dr. Sultan to assess the PLO (S4) and Table C-2.11, shows the achievement results. Students marks for question No. 4 shows that only 33.33% students achieved the PLO.

Table C-2.11: Marks obtained by computer organization and architecture students in female campus

Student Name	Marks achieved by students in Question out of 4	Student achievement
حسام انور علي الاثوري	1.00	No
يوسف علي بن جابر القشانين	4.00	Yes
عبداللطيف بن احمد بن محمد بن جازع ا	1.00	No
حسين بن عطشان بن علي بن جمهور آل	1.00	No
فيصل علي سالم الجوتر	4.00	Yes
سعود بن حسين بن علي ابوساق الفاتح صفوان احمد مرشد	3.00	Yes
الفاتح صفوان احمد مرشد	1.00	No
محمد بن حسين بن محمد الحميد الدوسري	1.00	No
يوسف علي بن حسن آل زمانان	4.00	Yes
تركي بن علي بن جارالله ال سالم اليامي	1.00	No
عصام بن علي بن عبدالرحمن آل زاهب	2.00	No
احمد بن حسين بن هادي كزمان	0.00	No
Percentage of Students Achievement on each Question	**33.33%**	

3.2.2 Internet Technology, 457CSS-3

Dr. Naif Almdawi was the instructor for Internet of Technologies course during the first semester of academic year 2021/2022. One question was designed by Dr. Naif to assess the PLO (S_4) and Table C-2.12, shows the achievement results. Student's marks shows that achievement is 88.89%.

Table C-2.12: Marks obtained by artificial intelligence students

Student Name	Marks achieved by students out of 4	Student achievement
خالد صالح مسفر الوادعي	0.00	NO
سلطان ابراهيم بن محمد حامظي	4.00	YES
محمد مبارك بن مسفر ال حواش	0.00	NO
راشد بن صالح بن مسعود بن حرقه	3.00	YES
الحسين بن هادي بن راشد آل سليم	3.00	YES
راكان بن متعب بن صالح جحيف	4.00	YES
ناصر بن محمد بن ناصر آل دغيش	4.00	YES
حسن محمد علي ال دغيس	4.00	YES
محمد بن مانع بن حسن آل مردف	4.00	YES
عبدالمجيد بن عجب بن ناصر الفوارع	4.00	YES
يعقوب بن مانع بن عبدالله الغباري	3.00	YES
محمد ابراهيم فرج آل منصور	4.00	YES
ياسين بن مانع بن علي ال مهري	4.00	YES
محمد بن هادي بن مانع آل شهي	4.00	YES
سلطان منصور بن احمد الظيريان	4.00	YES
علي بن عوض بن مهدي مقيدان	4.00	YES
سالم بن مانع بن مسفر آل زمانان	4.00	YES
باتل بن هادي بن احمد آل زمانان	4.00	YES
Percentage of Students Achievement	**88.89%**	

3.2.3 Overall PLO(S_4) Assessment in Male Campus

Table C-2.13 shows the overall assessment of PLO(S4) in male campus. Following is analyzed during the PLO (S4) assessment.

- For the course 222CSS-4 the PLO (S4) achievement was 33.33% as compared to the target benchmark of 70%.
- For the course 457CSS-3 the PLO (S4) achievement was 88.89% as compared to the target benchmark of 70%.
- The overall PLO(S4) achievement in male section is 61.11%.

Table C-2.13: Overall PLO (S4) assessment in male campus

Courses Chosen as Source of Assessment	PLO (S_4) Achievement
Computer Organization and Architecture, 222CSS-4	33.33%
Internet Technologies, 457CSS-3	88.89%
Average Achievement of PLO (S_4) in Male Campus	**61.11%**

3.3 Program Learning Outcome PLO (S4) Assessment in Female Campus

Two courses, Computer Organization & Architecture and Internet Technologies were selected as course of assessment in female campus. This section gives the assessment results of each selected course in the female campus.

3.3.1 Computer Organization and Architecture, 222CSS-4

Mrs. Saira Banu Rasool was the instructor for Computer Organization & Architecture course during the first semester of academic year 2021/2022. One question was designed by Mrs. Saira Rasool to assess the PLO (S_4) and Table C-2.14, shows the achievement results. Student's marks shows that achievement is 25%.

Table C-2.14: Marks obtained by Computer Organization & Architecture students in female campus

Student Name	Marks achieved by students out of 4	Student Achievement
Atheer Hamad Alyami	1.50	No
Leena Mohammad Mofee	0.75	No
Renad Mohammad Alyami	1.00	No
Rehal Ali AlSaloom	0.00	No
Hana AbdurRehman Alghamdi	4.00	Yes
Dalal Ahmed Hashwaan	0.00	No
Leen Abdullah Alwateed	2.50	No
Fatema Hamad AlMoshref	1.50	No
Taif Mahdi Alqannas	0.00	No
AlAnood Sultan AlKhalaf	3.75	Yes
Ahad Abdullah Alyami	0.00	No
Badriah Mohammad Shakree	2.75	No
Shahad Ahmed Madkhali	4.00	Yes

Jehan Yahya Alyami	1.75	No
Amal Turki AlShehri	0.00	No
Ibtehal Saleh AlQahas	1.50	No
Meysem Ahmed Alwadie	1.00	No
Shaza Abdullah AlQahtani	1.00	No
AlHanoof Hadi AlMahamed	0.75	No
Sarah Ali Alwadie	1.00	No
Nawal Mafreh Mashiqi	1.75	No
AlBatool Saleh AlSomaa	4.00	Yes
Sateyrah Hamad AlThafan	1.50	No
Fatema AbdurRehman Khanjef	4.00	Yes
Ghada Sulaiman Alyami	0.00	No
Shahad Hamad AlSulaiman	2.75	No
Fatema Abdullah Alyami	4.00	Yes
Haya Ali AlSaeeri	1.00	No
Wasaif Saleh Alwadie	1.75	No
Saamiya Moaid Alqarni	0.75	No
Mohalla Ali Alharthy	4.00	Yes
Mohara Ali Alharthy	3.00	Yes
Reem Mohammad AlSakkor	4.00	Yes
Rawan Ali Balharthy	1.25	No
Shahad ali hajer	1.50	No
Asayel Zaamil Alwadie	4.00	Yes
Nouf Hamad Mansoor	0.00	No
Ghaida Mahdi AlShaee	3.00	Yes
Nourah Mohammad AlFahadi	0.75	No
Areej Ahmed Majhrashi	1.00	No
Shoaa Mohammad Alhamamee	2.00	No
Somaya AbdulAziz Alwadie	4.00	Yes
Awsaaf Mohammad Alharhty	2.00	No
Abeer Muhanna AlMateeree	1.25	No

Arwa Mohammad Alharees	2.00	No
Reham Saleh Alyami	2.50	No
Fatema Ibraheem Alghamdi	1.25	No
Khadija Mohammad AlShehri	0.75	No
Percentage of Students Achievement	**25%**	

3.3.2 Internet Technology, 457CSS-3

Ms. Mozoon Mohammad was the instructor for Internet Technologies course during the first semester of academic year 2021/2022. Four questions were designed by Ms. Mozoon to assess the PLO (S4) for 8 marks and Table C-2.15, shows the achievement results. Student's marks shows that achievement is 65.5%.

Table C-2.15: Marks obtained by Internet Technologies students in female campus

Student Name	Marks achieved by students out of 8	Student achievement
Tahani Hussein	5.50	No
Batool Ali AlSaloom	7.50	Yes
Reem Taala AlQasmi	5.50	No
Taala Marjaa Alyami	1.00	No
Fatema Salem Alasgar	7.00	Yes
Jomana Ali AlMazher	5.50	No
Reem Sultan Abosaq	6.50	Yes
Rodaina Abdullah	7.00	Yes
Huda Abdullah	8.00	Yes
Fatema Hasan	8.00	Yes
Amal Masood	7.00	Yes
Amjad Mohammad	7.50	Yes
AlBatool Majeeb	7.50	Yes
Amjad Mohaimeed	7.00	Yes
Rahaf Mohsen	0.00	No
Tasneem Ali	8.00	Yes
Shahad Abdullah	8.00	Yes
Manar Magdi	5.00	No

Abeer Ali	0.50	No
Rodaina Ahmed	5.50	No
Atheer Ahmed	8.00	Yes
Dalal Yahay	6.00	Yes
Wejdan Maneh	4.50	No
Shareefa Mohammad	0.00	No
Fatema AlBariki	7.00	Yes
Afraah Saleh	7.00	Yes
Saada Ali	8.00	Yes
Amjad Abdullah	7.00	Yes
Asma Nasser	8.00	Yes
Percentage of Students Achievement	**65.5%**	

3.3.3 Overall PLO (S_4) Assessment in Female Campus

Table C-2.16 shows the overall assessment of PLO (S_4) in female campus. Following is analyzed during the PLO (S_4) assessment.

- For the course 222CSS-4, the PLO (S_4) achievement was 25% as compared to the target benchmark of 70%.
- For the course 457CSS-3, the PLO (S_4) achievement was 65.5% as compared to the target benchmark of 70%.
- The overall PLO (S_4) achievement in female section is 45.25%.

Table C-2.16: Overall PLO (S_4) assessment in female campus

Courses Chosen as Source of Assessment	PLO (S_4) Achievement
Computer Organization & Architecture, 222CSS-4	25%
Internet Technologies, 457CSS-3	65.5%
Average Achievement of PLO (S_4) in Female Campus	**45.25%**

As we see from the results, PLO evaluation result presents that PLO (S4) achieved the benchmark of 70%. PLO assessment committee wants to improve the results by following the below actions.

- CLOs which are mapped with PLO (S4) must be explained to students in first introductory lecture.

- Students should know the expectations in the assessment methods. So, it is recommended giving the marking scheme (e.g. Rubric, etc.) to students before assessment methods.
- Course instructors need to explain the topics in more detail and give more practice on lectures which are related to PLO (S4).
- Regular meeting with theory instructor, lab instructor and course coordinator is very important to improve the achievement results.

Program Learning Outcome Analysis for Second Semester 2021/2022 (1443/1444)

Program Learning Outcome (S_1): An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.

1. Introduction

Each course in College of Computer Science and Information Systems (CCSIS) is divided into 5 to 8 course learning outcomes (CLO). These course learning outcomes were assessed by different assessment methods e.g. Quizzes, Assignments, Labs, Mid Term exam, Final exam etc. These CLOs are mapped with adopted program learning outcomes (PLO). According to the PLO assessment plan 2021-2025, formative assessments are on-going assessments, reviews, and observations in a classroom and or within an academic year or pre-determined time. We should use formative assessment to improve instructional methods and student feedback throughout the teaching and learning process. The goal of formative assessment is to monitor student learning to provide ongoing feedback that can be used by instructors to improve their teaching and by students to improve their learning.

According to the PLOs assessment plan 2021-2025, course learning outcome (CLO) achievement data was collected for Computer Science (CS) program to evaluate the PLO (S1) in second semester 2021/2022 and evaluation results are presented in this report.

2. Assessment Plan

PLO (S_1): An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

Semester/Year Data collected: Second Semester, 2021-2022

Assessment Coordinator (Collection Agent): Mr. Muhammad Akram (male campus) & Dr. Hanan Halawani (female campus)

Program: Computer Science

Table C-2.17, shows the assessment plan of PLO (S_1) for computer science program. Assessment plan includes the strategies used to assess the PLO (S_1), assessment method, source of assessment and target to achieve the PLO (S_1). Because we have to do formative assessment, so courses are selected only from level 4, 5, 6 and 7 with strong relationship of course learning outcome with PLO (S_1). Moreover, curriculum mapping is also considered during selecting the CS courses as a source of assessment. Mainly courses are selected those have curriculum mapping "P" or "A" with PLO (S_1)**.** Curriculum mapping "I" is only consider if we did not have courses as a source of assessment with curriculum mapping P or A.

Table C-2.17: PLO (S_1) assessment plan for computer science program

PLO	Strategies	Assessment Method(s)	Source of Assessment	Target for Performance	Evaluation of Results
S_1	111CSS-4, Programming Language 1 113CSS-4, Object Oriented Programming 212CSS-3, Data Structures and Algorithms 222CSS-4, Computer Organization and Architecture 330CSS-3, Programming Paradigms 227CSS-3, Operating Systems 342CSS-3, Software Engineering 235CSS-3, Theory of Computation 281CSS-3, Computer Graphics 361CSS-3, Artificial Intelligence 457CSS-3, Internet Technologies 329CSS-3, Data Communication and Computer Networks 491CSS-4,	Embedded Questions	457CSS-3 (Internet Technologies), 212CSS-3 (Data Structures and Algorithms), 329CSS-3 (Data Communication and Computer Networks)	70% of the students at the developing or above levels	PLO Assessment Group 2 Muhammad Akram Dr. Sultan Makdi Dr. Hanan Halawani Mr. Emad

	Graduation Project 1 456CSS-3, Parallel and Distributed Systems 328CSS-3, Human and Computer Interaction 474CSS-3, Algorithm Design and Analysis 492CSS-4, Graduation Project 2 345MATH-3, Operational Research				

3. PLO (S_1) Assessment Results

PLO (S_1) assessment is based on following steps;

1. The instructors of the corresponding courses were asked to make question based to CLO's which had has a mapping to PLO (S_1)
2. The instructor submitted to the PLOs assessment group, the scanned answer scripts of the students along with students grades achieved in that particular question.
3. The PLOs Assessment group aggregated, evaluated and analyzed the results
4. Based on the results action are proposed, to be taken in the assessment and evaluation stages!!

3.1 Overall PLO (S_1)Assessment in Male and Female Campus

Three courses (i.e. Data Structure and Algorithms, Internet Technologies and Data Communication and Computer Networks were selected to assess the PLO (S_1). Table C-2.18 shows the overall assessment result of PLO (S_1) based on the data collected from both male and female campus. Assessment shows that 66.67% students achieved the PLO (S_1) in male campus and 42.68% students achieved in female campus. Overall achievement rate in male and female campus is 54.68% which did not achieved the target of 70%.

Table C-2.18: PLO (S_1) achievement for computer science courses in male and female campus

Campus	PLO (S_1) Achievement
Male Campus	66.67%
Female Campus	42.68%
Average	**54.68%**

3.2 PLO (S_1) Assessment in Male Campus

Three courses, Data Structure and Algorithms, Internet Technologies and Data Communication and Computer Networks were selected as source of assessment in male campus. This section gives the assessment results of each selected course in male campus.

3.2.1 Data Structure and Algorithms, 212CSS-3

Dr. Sultan was the instructor for Data Structure and Algorithms course during the second semester of academic year 2021/2022. Course learning outcome (CLO) "Decide which type of data structures and algorithms best suits the problem they are solving" is aligned with PLO (S_1). One question was designed by Dr. Sultan aligned with above CLO to assess the PLO (S_1) and included in the final examination. Table 3 shows the achievement results. Student's marks shows that only 60% students achieved the PLO.

Table C-2.19: Marks obtained by Data Structure and Algorithms students

S. No	Student ID	Student Name	Marks achieved by students in Question#8 out of 4	Student achievement "Yes" or "No"
1	439100261	صالح بن هادي بن سالم آل قراد	0.50	No
2	439100327	ظافر بن جبران بن ظافر اليامي	2.00	No
3	441103861	علي عبيان صالح ال منصور	4.00	Yes
4	441105273	نواف محمد ماطر مدخلي	1.00	No
5	441105330	سالم حسين محمد ال سالم اليامي	1.50	No
6	441106402	محمد حمد سالم ال قراد	4.00	Yes
7	441107076	محمد بن حسام الدين بن عرفات داود	4.00	Yes
8	441107640	صالح علي صالح ال صلاح	4.00	Yes
9	441209203	مانع صالح هادي ال عقيل	4.00	Yes
10	441209480	محمد ماضي مانع زميع ال زمانان	3.00	Yes
	Percentage of Achievement		**60%**	

**PLO will be considered achieved if 70% students get 70% marks in question.*

3.2.2 Internet Technologies, 457CSS-3

Dr. Naif Almudawi was the instructor for Internet Technologies course during the second semester of academic year 2021/2022. Course learning outcome (CLO) "Evaluate a web site" is aligned with PLO (S_1). One question was designed by Dr. Naif aligned with above CLO to assess the PLO (S_1) and included in the final examination. Table C-2.20 shows the achievement results. Student's marks shows that only 60% students achieved the PLO.

Table C-2.20: Marks obtained by Internet Technologies students

S. No	Student ID	Student Name	Marks achieved by students in Question#5 out of 10	Student achievement "Yes" or "No"
1	438103824	خالد صمعان بن محمد بني هميم	7.00	Yes
2	438104494	ابراهيم مانع بن هاشل آل هاشل	6.00	No
3	439100121	حاتم بن أحمد بن علي الجائزي	7.00	Yes
4	439100160	يوسف علي بن جابر القشانين	10.00	Yes
5	439100213	عبداللطيف بن احمد بن محمد بن	10.00	Yes
6	439100291	محمد بن هباش بن علي ال سلامه	10.00	Yes
7	439100327	ظافر بن جبران بن ظافر آل سراج	5.00	No
8	439100422	عبدالمجيد بن عبدالله بن مرزوق ال	6.00	No
9	439100493	سعيد بن عبدالله بن سعيد آل زميع	10.00	Yes
10	439104994	سعود بن حسين بن علي ابوساق	3.00	No
Percentage of Achievement			**60%**	

**PLO will be considered achieved if 70% students get 70% marks in question.*

3.2.3 Data Communication and Computer Networks, 329CSS-3

Dr. Naif Almudawi was the instructor for Data Communication and Computer Networks course during the second semester of academic year 2021/2022. Two Course learning outcomes (CLO) "Analyze the Network Performance Management issues" and "Design different types of networks based on IP classes and network topologies" are aligned with PLO (S_1). One question was designed by Dr. Naif aligned with each above CLO to assess the PLO (S_1) and included in the final theory and lab examination. Table C-2.21 shows the achievement results. Student's marks shows that average achievement of the PLO is 80%.

Table C-2.21: Marks obtained by Data Communication and Computer Network students

S. No	Student ID	Student Name	Marks Achieved		Total Marks (17)	Student achievement "Yes" or "No"
			Question# 5 out of 7	Question# 1 out of 10		
1	439100121	حاتم بن أحمد بن علي	7.00	10.00	17.00	Yes
2	439100160	يوسف علي بن جابر القشانين	7.00	10.00	17.00	Yes
3	439100213	عبداللطيف بن احمد بن محمد	7.00	10.00	17.00	Yes

4	439100261	صالح بن هادي بن سالم آل	1.00	10.00	11.00	No
5	439100422	عبدالمجيد بن عبدالله بن	.00	10.00	13.00	No
Percentage of Achievement					**80%**	

**PLO will be considered achieved if 70% students get 70% marks in question.*

3.2.4 Overall PLO (S_1) Assessment in Male Campus

Table C-2.22 shows the overall assessment of PLO (S_1) in male campus. Following is analyzed during the PLO (S_1) assessment.

- For the course 212CSS-3 the PLO (S_1) achievement was 60.00% as compared to the target benchmark of 70%.
- For the course 329CSS-3, the average PLO (S_1) achievement was 80% as compared to the target benchmark of 70%.
- For the course 457CSS-3 the PLO (S_1) achievement was 60.00% as compared to the target benchmark of 70%.
- The overall PLO (S_1) achievement in male section is 66.67%.

Table C-2.22: Overall PLO (S_1) assessment in male campus

Courses Chosen as Source of Assessment	PLO Achievement
Data Structure and Algorithm (212CSS-3)	60%
Data Communication and Computer Networks (329CSS-3)	80%
Internet Technologies (457CSS-3)	60%
Average Achievement of PLO (S_1) in Male Campus	**66.67%**

3.3 PLO (S_1) Assessment in Female Campus

Three courses, Data Structure and Algorithms, Internet Technologies and Data Communication and Computer Networks were selected as source of assessment in female campus. This section gives the assessment results of each selected course in male campus.

3.3.1 Data Structure and Algorithms, 212CSS-3

Ms. Eman Altahir was the instructor for Data Structure and Algorithms course during the second semester of academic year 2021/2022 in female campus. Course learning outcome (CLO) "Decide which type of data structures and algorithms best suits the problem they are solving" is aligned with PLO (S_1). One question was designed by Ms. Eman Altahir which is aligned with above CLO to assess the PLO (S_1) and included in the final examination for

section 185 and 782. Table C-2.23 and table C-2.24 shows the achievement results. Student's marks shows that only 37.14% students achieved the PLO in section 185 and 28.57% students achieved the PLO in section 782.

Table C-2.23: Marks obtained by Data Structure and Algorithms students in section 185

S. No	Student ID	Student Name	Marks achieved by students in Question#5 out of 6	Student achievement "Yes" or "No"
1	439302186	رنا بنت ناصر بن مقبول ال مقبول	4.50	Yes
2	439302199	مرام بنت محمد بن سلطان ال عبيه	1.50	No
3	439302281	رزان بنت شاكر بن حسين ال مرضمه	3.75	No
4	439302307	تغريد حسين بن حاتم المكرمي	4.50	Yes
5	439302328	نوره بنت مسعود بن فرج ال جمعان	3.75	No
6	439302392	طيف بنت مهدي بن علي ال قناص	2.25	No
7	439403562	رزان بنت علي بن علي بن محمد	3.00	No
8	439403570	آمنه بنت ناصر بن محمد آل مبارك ا	3.00	No
9	439405788	منى يحي محمد محرزي	3.00	No
10	441300018	رغد بنت غازي بن فايز ال	4.50	Yes
11	441300228	الهنوف بنت هادي بن صالح بن فرج	3.00	No
12	441300433	حنان بنت محمد بن علي بن حسين	6.00	Yes
13	441300810	روان بنت علي بن أحمد بن حسين	0.75	No
14	441301105	طيبه بنت عبدالله بن احمد المصعبي	3.00	No
15	441301207	رهاد عبدالله بن رجاء الجهني	2.25	No
16	441301302	هياء بنت علي بن فهد بن صادر	3.00	No
17	441302306	عهد مبارك بن ناصر الكربي	3.75	No
18	441302886	امل بنت خالد بن علي بن محمد مبيطي	1.50	No
19	441303467	ريم بنت محمد بن سالم الصقور	6.00	Yes
20	441305030	نوره محمد ناصر آل مسفر الفهادي	5.25	Yes
21	441305037	عبير صالح بن حشاش ال بحري	3.00	No
22	441305079	جواهر بنت مفرح بن علي بن حسن	0.75	No
23	441305092	عهود مسفر بن غريب اليامي	0.00	No
24	441305238	شعاع محمد صالح الهمامي	6.00	Yes
25	441305662	جيهان عبدالله فيصل الشهري	3.00	No

26	441306119	روابي محمد علي آل هتيله	5.25	Yes
27	441307063	أسيل بنت سالم بن حمد ال شريان	4.50	Yes
28	441307477	أروى بنت محمد بن عبدالله بن مهدي	6.00	Yes
29	441308293	افراح عبدالله بن علي الخضره	2.25	No
30	441407699	ريوف مساعد حسين ال مرضمة	4.50	Yes
31	441409146	شهد عبدالله حسن الصيعري	4.50	Yes
32	441409589	افنان حسين بن علي بن هادي ال	4.50	Yes
33	442300028	طيف بنت يحي بن صالح بن حسين آل	3.75	No
34	442303088	ليان بنت علي بن حمد بن محمد	1.50	No
35	442408822	دلال بنت عبدالله بن يحي آل زمانان	1.50	No
Percentage of Achievement			**37.14%**	

**PLO will be considered achieved if 70% students get 70% marks in question.*

Table C-2.24: Marks obtained by Data Structure and Algorithms students in section 782

S. No	Student ID	Student Name	Marks achieved by students in Question#5 out of 6	Student achievement "Yes" or "No"
1	439302309	أسماء بنت عيظه بن سرور الصيعري	3.00	No
2	439302339	يسرى محمد عبدالله ال حيدر	3.00	No
3	439302385	فاطمه بنت حمد بن محمد بن علي	0.75	No
4	439403574	عهد بنت عبد الله بن مسفر اليامي	2.25	No
5	439403576	شوق بنت بن راشد بن سعيد بن مبارك	4.50	Yes
6	439406212	سمر محمد علي شراحيلي	3.75	No
7	441300097	نجوى بنت علي بن محمد آل فايد	4.50	Yes
8	441300796	ستيرة بنت حمد بن عبدالله بن صالح	4.50	Yes
9	441300894	غادة بنت سليمان بن سلمان ال فرحان	0.75	No
10	441300915	طيف بنت ناصر بن سعد علي هادي	3.75	No
11	441300951	شهد بنت حمد بن محمد بن مانع	3.75	No
12	441301519	مروى بنت مزيد بن محمد الصقور	2.25	No
13	441302034	طيف بنت ظافر ابن مفرح آل خرصان	3.00	No
14	441303068	مريم بنت جابر بن حسن بن مسفر	3.00	No
15	441303249	انوار بنت عبدالرحمن بن سعيد بن سالم	3.00	No
16	441304318	اصايل زامل عبدالهادي الخرصاني	1.50	No

17	441304958	جمانه بنت سلطان بن علي ال حابس	1.50	No
18	441305324	هدى بنت مسعود بن صنقوربن مبارك	3.75	No
19	441305631	شموخ بنت محمد بن عبدالله بن علي	3.00	No
20	441307543	فاطمه ابراهيم علي الغانمي	1.50	No
21	441307581	البتول بنت حمد بن صالح كرحان	6.00	Yes
22	441308248	بشاير بنت ناصر بن محمد ال مبارك	1.50	No
23	441308288	اماني مهدي بن محمد الزبادين	5.25	Yes
24	441308335	موضي محمد عبدالهادي الزقلي	4.50	Yes
25	441308349	أثير عساف حسين ال عباس	4.50	Yes
26	441402083	صفيه بنت سلمان بن احمد بن صالح	3.00	No
27	441409023	روان حسين محمد ال سعد	2.25	No
28	441409041	ريم مانع زايد ال زمانان	3.00	No
29	441409092	هديل صالح عبدالله حسين ال حسنه	1.50	No
30	441409454	رهف عبدالله رجاء عياد العروي	4.50	Yes
31	441409575	أمجاد بنت علي بن مهدي آل غانم	4.50	Yes
32	441409601	رانيا حسين بن محمد آل سعد	3.00	No
33	442307398	نجلاء بنت سعيد بن صالح اليامي	2.25	No
34	442307417	ساره بنت سالم بن محمد المحامض	2.25	No
35	442307418	غدي بنت مبروك بن مرزوق ال	5.25	Yes
Percentage of Achievement			**28.57%**	

**PLO will be considered achieved if 70% students get 70% marks in question.*

3.3.2 Internet Technologies, 457CSS-3

Ms. Mzoon Kulayb was the instructor for Internet Technologies course during the second semester of academic year 2021/2022 in female campus. Course learning outcome (CLO) "Evaluate a web site" is aligned with PLO (S1). One question was designed by Ms Mzoon which is aligned with above CLO to assess the PLO (S1) and included in the final examination. Table C-2.25 shows the achievement results. Student's marks shows that only 60% students achieved the PLO.

Table C-2.25: Marks obtained by Internet Technologies students

S. No	Student ID	Student Name	Marks achieved by students in Question#5 out of 10	Student achievement "Yes" or "No"
1	437406632	ندى ناصر علي شبيلي	1.00	No
2	438301898	فتون محمد بن يحيى صله	9.00	Yes
3	439302208	لينا محمد بن علي آل موفي	10.00	Yes
4	439302264	رحال بنت علي بن محمد السلوم	4.00	No
5	439302324	رغد حسن احمد الفيفي	10.00	Yes
6	439302328	نوره بنت مسعود بن فرج ال جمعان	2.00	No
7	439302381	لين بنت عبدالله بن عليان آل وتيد	10.00	Yes
8	439302392	طيف بنت مهدي بن علي ال قناص	8.50	Yes
9	439304240	شريفه محمد غريب آل راكه	7.50	Yes
10	439305506	البندري محمد بن سعد اليامي	4.00	No
11	441300024	شهد بنت احمد بن علي بن احمدبن	10.00	Yes
12	441300123	ميسم بنت أحمد بن علي بن حسن آل	4.00	No
13	441300564	ساره بنت علي بن صالح بن مسفر آل	5.00	No
14	441303251	مهلا بنت علي بن احمد بن مبارك	10.00	Yes
15	441303396	مهره علي مبارك الحارثي	10.00	Yes
Percentage of Achievement			**60%**	

**PLO will be considered achieved if 70% students get 70% marks in question.*

3.3.3 Data Communication and Computer Networks, 329CSS-3

Dr. Aisha Mashraqi was the instructor for Data Communication and Computer Networks course during the second semester of academic year 2021/2022. Two Course learning outcomes (CLO) "Analyze the Network Performance Management issues" and "Design different types of networks based on IP classes and network topologies" are aligned with PLO (S1). One question was designed by Dr. Aisha aligned with each above CLO to assess the PLO (S1) and included in the final theory and lab examination. Table C-2.26 shows the achievement results. Student's marks shows that average achievement of the PLO is 45%.

Table C-2.26: Marks obtained by Data Communication and Computer Network students

S. No	Student Name	Marks Achieved		Total Marks (6)	Student achievement "Yes" or "No"
		Question#7 out of 2	Question# 9 out of 4		
1	بتول علي بن محمد السلوم	1.00	2.00	3.00	No
2	مزنه منصور بن حسن ال مستنير	0.00	2.00	2.00	No
3	جمان علي محمد آل مزهر	0.50	2.00	2.50	No
4	ردينا عبدالله سفر الغامدي	1.00	3.50	4.50	Yes
5	ال عباس امل بنت مسعود	0.50	4.00	4.50	Yes
6	رهف محسن ال مخلص	0.00	0.50	0.50	No
7	شهد عبد الله آل صمع	1.50	2.00	3.50	No
8	عائشة فارس اليامي	0.50	2.00	2.50	No
9	سعادة علي الحطاب	1.00	4.00	5.00	Yes
10	أمجاد عبد الاله مثنى	0.50	4.00	4.50	Yes
11	أسماء ناصر الغارم	2.00	4.00	6.00	Yes
12	فتون محمد صله	1.20	3.00	4.20	Yes
13	تالا مرجع اليامي	0.00	2.00	2.00	No
14	وجنة حمد ال مطيف	0.25	2.00	2.25	No
15	تسنيم علي عبدلي	0.00	2.00	2.00	No
16	لين عبد الله أل وتيد	0.50	2.00	2.50	No
17	رنا حسين سنان	1.75	4.00	5.75	Yes
18	فاطمة محمد البريكي	1.00	4.00	5.00	Yes
19	أفراح صالح الوادعي	0.00	2.00	2.00	No
20	البندري محمد اليامي	1.00	3.20	4.20	Yes
Percentage of Achievement			**45%**		

**PLO will be considered achieved if 70% students get 70% marks in question.*

3.3.4 Overall PLO (S_1) Assessment in Female Campus

Table C-2.27 shows the overall assessment of PLO (S1) in male campus. Following is analyzed during the PLO (S1) assessment.

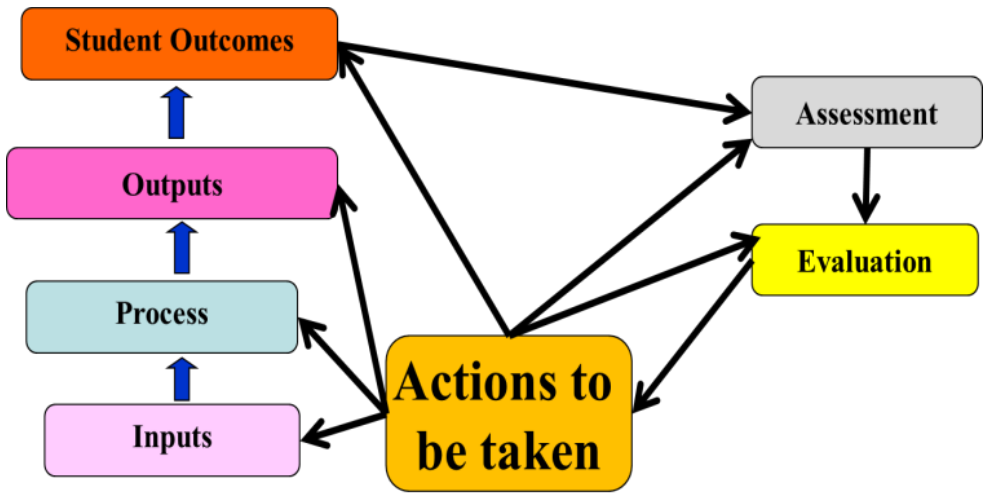
- For the course 212CSS-3 the PLO (S1) achievement was 37.14 in section 185 and 28.57% in section 782 as compared to the target benchmark of 70%.
- For the course 329CSS-3, the average PLO (S1) achievement was 45% as compared to the target benchmark of 70%.
- For the course 457CSS-3 the PLO (S1) achievement was 60.00% as compared to the target benchmark of 70%.

- The overall PLO (S1) achievement in male section is 42.68%.

Table C-2.27: Overall PLO (S1) assessment in female campus

Courses Chosen as Source of Assessment	PLO Achievement
Data Structure and Algorithm, 212CSS-3 (Section: 185)	37.14%
Data Structure and Algorithm, 212CSS-3 (Section: 782)	28.57%
Data Communication and Computer Networks, 329CSS-3	45.00%
Internet Technologies, 457CSS-3	60.00%
Average Achievement of PLO (S_1) in Female Campus	**42.68%**

3.3.5 Improvement Plan



Overall PLO evaluation result shows that PLO (S_1) did not achieved the benchmark of 70% in male and female campus. Based on the students' achievement, the assessment committee recommends following actions to improve the results;

- CLOs which are mapped with PLO (S_1) must be explained to students in first introductory lecture.
- It is required to give more tutorial on how creates a good web site issues according to predefined standards.
- It is required to give more asymptotic notation examples in data structure course.
- More tutorial on how analyze the network performance management issues is required.
- Students should know the expectations in the assessment methods. So it is recommended giving the marking scheme (e.g. Rubric.) to students before assessment

methods.

- Course instructor need to explain the topics in more detail and give more practice on lectures which are related to PLO (S_1).
- Regular meeting with theory instructor, lab instructor and course coordinator is very important to improve the achievement results.
- PLO assessment group is forced to send frequent reminders to receive the results from course instructors. It is required for course instructor to cooperate with PLO assessment committee by submitting the results on time.

Program Learning Outcome (V_2): An ability to communicate effectively with a range of audiences

1. Introduction

Each course in College of Computer Science and Information Systems (CCSIS) is divided into 5 to 8 course learning outcomes (CLO). These course learning outcomes were assessed by different assessment methods e.g. Quizzes, Assignments, Labs, Mid Term exam, Final exam etc. These CLOs are mapped with adopted program learning outcomes (PLO). According to the PLO assessment plan 2021-2025, formative assessments are on-going assessments, reviews, and observations in a classroom and or within an academic year or pre-determined time. We should use formative assessment to improve instructional methods and student feedback throughout the teaching and learning process. The goal of formative assessment is to monitor student learning to provide ongoing feedback that can be used by instructors to improve their teaching and by students to improve their learning.

According to the PLOs assessment plan 2021-2025, course learning outcome (CLO) achievement data was collected for Computer Science (CS) program to evaluate the PLO (V_2) in second semester 2021/2022 and evaluation results are presented in this report.

2. Assessment Plan

PLO (V_2): An ability to communicate effectively with a range of audiences

Semester/Year Data collected: Second Semester, 2021-2022

Assessment Coordinator (Collection Agent): Mr. Muhammad Akram (male campus) & Dr. Hanan Halawani (female campus)

Program: Computer Science

Table C-2.28, shows the assessment plan of PLO (V_2) for computer science program. Assessment plan includes the strategies used to assess the PLO (V_2), assessment method, source of assessment and target to achieve the PLO (V_2). Because we have to do formative assessment, so courses are selected only from level 4, 5, 6 and 7 with strong relationship of course learning outcome with PLO (V_2). Moreover, curriculum mapping is also considered during selecting the CS courses as a source of assessment. Mainly courses are selected those have curriculum mapping "P" or "A" with PLO (V_2)**.** Curriculum mapping "I" is only consider if we did not have courses as a source of assessment with curriculum mapping P or A.

Table C-2.28: PLO (V_2) assessment plan for computer science program

PLO	Strategies	Assessment Method(s)	Source of Assessment	Target for Performance	Evaluation of Results
S_1	113CSS-4, Object Oriented Programming 222CSS-4, Computer Organization and Architecture 330CSS-3, Programming Paradigms 342CSS-3, Software Engineering 235CSS-3, Theory of Computation 281CSS-3, Computer Graphics 361CSS-3, Artificial Intelligence 457CSS-3, Internet Technologies 491CSS-4, Graduation Project 1 328CSS-3, Human and Computer Interaction 440CSS-3, Social, Ethical, and Professional Issues 492CSS-4, Graduation Project 2	Embedded Questions	113CSS-4, Object Oriented Programming 342CSS-3, Software Engineering 361CSS-3, Artificial Intelligence	70% of the students at the developing or above levels	PLO Assessment Group 2 Muhammad Akram Dr. Sultan Makdi Dr. Hanan Halawani Mr. Emad

3. PLO (V_2) Assessment Results

PLO (V_2) assessment is based on following steps;

1. The instructors of the corresponding courses were asked to make question based to CLO's which had has a mapping to PLO (V_2)
2. The instructor submitted to the PLOs assessment group, the scanned answer scripts of the

students along with students grades achieved in that particular question.

3. The PLOs Assessment group aggregated, evaluated and analyzed the results
4. Based on the results action are proposed, to be taken in the assessment and evaluation stages!!

3.1 Overall PLO (V_2) Assessment in Male and Female Campus

Three courses (i.e. Object Oriented Programming, Software Engineering and Artificial Intelligence) were selected to assess the PLO (V_2). Table C-2.29 shows the overall assessment result of PLO (V_2) based on the data collected from both male and female campus. Assessment shows that 79.16% students achieved the PLO (V2) in male campus and 100% students achieved in female campus. Overall achievement rate in male and female campus is 89.58% which achieved the target of 70%.

Table C-2.29: PLO (V_2) achievement for computer science courses in male and female campus

Campus	PLO (V_2) Achievement
Male Campus	79.16%
Female Campus	100%
Average	**89.58%**

3.2 PLO (V_2) Assessment in Male Campus

Three courses, Object Oriented Programming, Software Engineering and Artificial Intelligence were selected as source of assessment in male campus. This section gives the assessment results of each selected course in male campus.

3.2.1 Object Oriented Programming, 113CSS-4

Dr. Jarallah Alqahtani was the instructor for Object Oriented Programming course during the second semester of academic year 2021/2022. Course learning outcome (CLO) "Write object oriented programs with collaboration and team work in mind" is aligned with PLO (V_2). One question was designed by Dr. Jarallah aligned with above CLO to assess the PLO (V_2) and included in the final examination. Total marks for question was 5, it means if any student get minimum 70% (i.e. 3.50 marks) out of 5 then PLO will be considered achieved. Table C-2.30 shows the achievement results. Student's marks shows that only 100% students achieved the PLO.

Table C-2.30: Marks obtained by Object Oriented Programming students

S. No	Student ID	Student Name	Marks achieved by students in Question#1 out of 5	Student achievement "Yes" or "No"
1	439100171	طارق مهدي	4.00	Yes
2	439100261	صالح بن هادي	5.00	Yes
3	439206249	علي محمد	5.00	Yes
4	441100177	علي بن حسن	5.00	Yes
5	441105071	محمد بن هادي	5.00	Yes
6	441106058	عيد مهدي	5.00	Yes
7	441107640	صالح علي	4.50	Yes
8	441206677	محمد عباس	5.00	Yes
9	441209446	تركي مكرم	4.50	Yes
10	442100438	تركي بن عبدالله	4.50	Yes
11	442101717	محمد بن احمد	5.00	Yes
12	442102203	سلمان حسين	5.00	Yes
13	442102254	احمد عبدالله	5.00	Yes
14	442102934	محمد مساعد	5.00	Yes
15	442103430	نايف عبدالرحمن	5.00	Yes
16	442103994	ناصر بن محمد	5.00	Yes
17	442104229	حسين محمد	4.50	Yes
18	442104758	نواف مطر	4.00	Yes
19	442105347	محمد صالح	5.00	Yes
20	442105371	محمد بن حمد	5.00	Yes
21	442106243	محمد بن حسين	5.00	Yes
22	442107120	ياسين بن خرصان	4.00	Yes
Percentage of Achievement			**100%**	

**PLO will be considered achieved if 70% students get 70% marks in question.*

3.2.2 Software Engineering, 342CSS-3

Dr. Abdullah Khanfor was the instructor for Software Engineering course during the second semester of academic year 2021/2022. Course learning outcome (CLO) "Implement the concept of software project management and perform software testing" is aligned with PLO (V_2). One question was designed by Dr. Abdullah aligned with above CLO to assess the PLO (V_2) and included in the final examination. Total marks for question was 10, it means if any student get minimum 70% (i.e. 7 marks) out of 10 then PLO will be considered achieved. Table C-2.31

shows the achievement results. Student's marks shows that only 58.33% students achieved the PLO.

Table C-2.31: Marks obtained by Software Engineering students

S. No	Student ID	Student Name	Marks achieved by students in Question#4 out of 10	Student achievement "Yes" or "No"
1	437206108	البراء احمد محمد المصباحي	7.13	Yes
2	439100213	عبداللطيف بن احمد بن محمد بن جازع	9.00	Yes
3	439100291	محمد بن هباش بن علي ال سلامه	6.25	No
4	439100375	حسين بن عطشان بن علي بن جمهور	4.50	No
5	439100520	فيصل علي سالم الجوتر	5.88	No
6	439104994	سعود بن حسين بن علي ابوساق	10.00	Yes
7	439206300	الفاتح صفوان احمد مرشد	9.00	Yes
8	441100552	محمد بن حسين بن محمد الحميد	7.63	Yes
9	441102583	يوسف علي بن حسن آل زمانان	4.88	No
10	441105456	تركي بن علي بن جارالله ال سالم	7.00	Yes
11	441107392	احمد بن حسين بن هادي كزمان	4.88	No
12	441108066	حسام انور علي الاثوري	7.88	Yes
Percentage of Achievement			**58.33%**	

**PLO will be considered achieved if 70% students get 70% marks in question.*

3.2.3 Artificial Intelligence, 361CSS-3

Dr. Anwar Esmail was the instructor for Artificial Intelligence course during the second semester of academic year 2021/2022. Course learning outcomes (CLO) "Implement the learning of this course in terms of a course project based on AI techniques" is aligned with PLO (V_2). Dr. Anwar assessed the PLO (V_2) by giving project to the students. PLO assessment group sent many reminders but we did not receive project marks from him.

3.2.4 Overall PLO (V_2) Assessment in Male Campus

Table C-2.32 shows the overall assessment of PLO (V_2) in male campus. Following is analyzed during the PLO (V_2) assessment.

- For the course 113CSS-3 the PLO (V_2) achievement was 100% as compared to the target benchmark of 70%.
- For the course 342CSS-3, the PLO (V_2) achievement was 58.33% as compared to the

target benchmark of 70% which shows PLO not achieved.

- For the course 361CSS-3 the PLO (V_2) results not received.
- The overall PLO (V_2) achievement in male section is 79.165%.

Table C-2.32: Overall PLO (V_2) assessment in male campus

Courses Chosen as Source of Assessment	PLO Achievement
Object Oriented Programming (113CSS-4)	**100%**
342CSS-3, Software Engineering (342CSS-3)	**58.33%**
361CSS-3, Artificial Intelligence (361CSS-3)	**Result not received**
Average Achievement of PLO (V_2) in Male Campus	**79.165%**

3.3 PLO (V_2) Assessment in Female Campus

Three courses, Object Oriented Programming, Software Engineering and Artificial Intelligence were selected as source of assessment in female campus. This section gives the assessment results of each selected course in female campus.

3.3.1 Object Oriented Programming, 113CSS-4

Ms. Sumaiya was the instructor for Object Oriented Programming course during the second semester of academic year 2021/2022 in female campus. Course learning outcome (CLO) "Write object oriented programs with collaboration and team work in mind" is aligned with PLO (V_2). One question was designed by Ms. Sumaiya aligned with above CLO to assess the PLO (V_2) and included in the final examination. PLO assessment group sent many reminders but did not receive results from her.

3.3.2 Software Engineering, 342CSS-3

Ms. Raniah Zaheer was the instructor for Software Engineering course during the second semester of academic year 2021/2022 in female campus. Course learning outcome (CLO) "Implement the concept of software project management and perform software testing" is aligned with PLO (V_2). One question was designed by Ms. Raniah aligned with above CLO to assess the PLO (V_2) and included in the final examination. Total marks for question was 10, it means if any student get minimum 70% (i.e. 7 marks) out of 10 then PLO will be considered achieved. Table C-2.33 shows the achievement results. Student's marks shows that only 100% students achieved the PLO.

Table C-2.33: Marks obtained by Software Engineering students

S. No	Student ID	Student Name	Marks achieved by students in Question#1 out of 10	Student achievement "Yes" or "No"
1	437406632	Nada Nasser	8.75	Yes
2	439302248	Renad Mohammad	8.00	Yes
3	439302308	Rahaf Mohsin	10.00	Yes
4	439302324	Raghad Hassan	8.50	Yes
5	439302348	Manar Mohammad	10.00	Yes
6	439302353	Abeer Ali	9.25	Yes
7	439303892	Alanood Sultan	9.25	Yes
8	441300024	Shahd Ahmed	10.00	Yes
9	441300063	Jehan Yahya	10.00	Yes
10	441300106	Amal Turki	9.00	Yes
11	441300123	Maisam Ahmad	10.00	Yes
12	441300838	Fatima Abdul Rahman	10.00	Yes
13	441301296	Fatima Abdullah	10.00	Yes
14	441301827	Samyah Moaid	9.00	Yes
15	441303251	Mahla Ali	8.75	Yes
16	441303396	Mahrah Ali	8.25	Yes
17	441304677	Nouf Hamad	8.00	Yes
18	441305024	Lama Mahdi	8.00	Yes
19	441306080	Awsaf Mohamamd	8.75	Yes
20	441307491	Reham Saleh	7.75	Yes
21	437302387	Atheer Hamad	8.00	Yes
22	439302264	Rehal Ali	9.50	Yes
23	439302339	Yusra Mohamamd	7.00	Yes
24	439302385	Fatima Hamad	8.75	Yes
25	439302408	Bashair Hadi	8.00	Yes
26	439304220	Wejdan Mana	8.50	Yes
27	439406055	Nourah Saber	9.00	Yes
28	441300145	Shatha Abdullah	7.50	Yes

29	441300564	Sara Ali	8.75	Yes
30	441300667	Nawal Mofereh	7.50	Yes
31	441300695	AlBatool Salah	10.00	Yes
32	441300951	Shahad Hamad	9.25	Yes
33	441301582	Wasaif Saleh	8.00	Yes
34	441303467	Reem Mohammad	10.00	Yes
35	441304318	Asayl Zamel	7.50	Yes
36	441304745	Ghada Mahdi	8.00	Yes
37	441305199	Areej Ahmad	7.75	Yes
38	441305663	Sumaya AbdulAziz	10.00	Yes
39	441307477	Arwa Mohammad	9.25	Yes
40	441409092	Hadeel Saleh	8.50	Yes
Percentage of Achievement			**100%**	

**PLO will be considered achieved if 70% students get 70% marks in question.*

3.3.3 Artificial Intelligence, 361CSS-3

Ms. Bashaer AL Mansour was the instructor for Artificial Intelligence course during the second semester of academic year 2021/2022 in female campus. Course learning outcomes (CLO) "Implement the learning of this course in terms of a course project based on AI techniques" is aligned with PLO (V_2). One question was designed by Ms. Bashaer aligned with above CLO to assess the PLO (V_2) and included in the final examination. PLO assessment group sent many reminders but did not receive results from her.

3.3.4 Overall PLO (V_2) Assessment in Female Campus

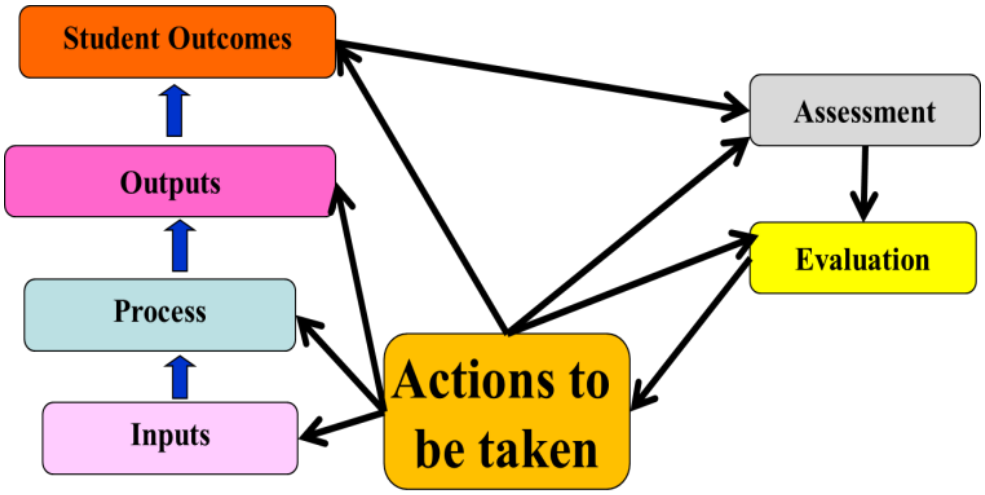
Table C-2.34 shows the overall assessment of PLO (V_2) in male campus. Following is analyzed during the PLO (V_2) assessment.

- For the course 113CSS-3 the PLO (V_2) achievement was 100% as compared to the target benchmark of 70%.
- For the course 342CSS-3, the PLO (V_2) results not received.
- For the course 361CSS-3 the PLO (V_2) results not received.
- The overall PLO (V_2) achievement in female section is 100%.

Table C-2.34: Overall PLO (V_2) assessment in female campus

Courses Chosen as Source of Assessment	PLO Achievement
Object Oriented Programming (113CSS-4)	**100%**
342CSS-3, Software Engineering (342CSS-3)	**Result not received**
361CSS-3, Artificial Intelligence (361CSS-3)	**Result not received**
Average Achievement of PLO (V_2) in Male Campus	**100%**

3.4 Improvement Plan



Overall PLO evaluation result shows that PLO (V_2) achieved the benchmark of 70% in male and female campus. Based on the students' achievement, the assessment committee recommends following actions to improve the results;

- PLO assessment group is forced to send frequent reminders to receive the results from course instructors. After many reminders, still results are not received from course instructors. It is required for course instructor to cooperate with PLO assessment committee by submitting the results on time.
- CLOs which are mapped with PLO (V_2) must be explained to students in first introductory lecture.
- It is required to give more tutorial and lab related to implement the concept of software project management and perform software testing.
- Course instructor need to explain the topics in more detail and give more practice on lectures which are related to PLO (V_2).
- Regular meeting with theory instructor, lab instructor and course coordinator is very

important to improve the achievement results.

Strengths :

1. PLO (V_2) achieved in male and female, i.e. target achievement level of PLO (V_2) was 70% but the actual achievement in the male and female campus is 79.16% and 100% respectively.
2. PLO (K_1) achieved in male campus, i.e. target achievement level of PLO (K_1) was 70% but actual achievement in male campus is 73.22%.
3. For the course 457CSS-3 the PLO (S4) achievement is 88.89% as compared to the target benchmark of 70%.
4. For the course 113CSS-3 the PLO (V2) achievement in male and female campus is 100% as compared to the target benchmark of 70%

Areas for Improvement:

1. Some faculty members delayed in the submission of their grade sheet. As a result, the assessment was late. Hence, the grade sheet must be submitted on time.
2. Some course achieved a targeted level of percentage. Those courses that are not achieved, the instructor may focus on shortcomings of the course and provide improvement plan and this will be a great effort from the instructor's point of view.
3. CLOs which are mapped with PLO (S4) must be explained to students in first introductory lecture.
4. It is required to review the mapping of course learning outcomes with student outcome.
5. Students should know the expectations in the assessment methods. So it is recommended giving the marking scheme (e.g. Rubric, etc.) to students before assessment methods.
6. Regular meeting with theory instructor, lab instructor and course coordinator is very important to improve the achievement results.

Priorities for Improvement:

1. PLO assessment group is forced to send frequent reminders to receive the results from course instructors. After many reminders, still results are not received from course instructors. It is required for course instructor to cooperate with PLO assessment committee by submitting the results on time.

2. Course instructors needs to concentrate more on the course learning allign with PLO (K1) and PLO (S4).
3. It is required to give more tutorial on how creates a good web site issues according to predefined standards.
4. It is required to give more asymptotic notation examples in data structure course.
5. More tutorial on how analyze the network performance management issues is required.
6. It is required to give more tutorial and lab related to implement the concept of software project management and perform software testing.
7. Course instructor need to explain the topics in more detail and give more practice on lectures which are related to PLO (V2)

D. Summary of Course Reports

1. Teaching of Planned Courses / Units

List the courses / units that were planned and not taught during the academic year, indicating the reasons and compensating actions.

Course	Units/Topics	Reasons	Compensating Actions
111CSS-4	N/A	N/A	N/A
113 CSS-4	N/ A	N/A	N/A
212CSS-3	N/A	N/A	N/A
222CSS-4	Integer arithmetic & CPU Performance	Lack of time as the final exams were preponed two weeks before the actual time frame due to the royal decree	N/A
227 CSS-3	N/A	N/A	N/A
235 CSS-3	N/A	N/A	N/A
281 CSS-3	2D & 3-D Viewing	Lack of time as the final Exams were preponed 2 weeks before the actual time frame due to the royal decree.	N/A
328 CSS-3	N/A	N/A	N/A
329 CSS-3	N/A	N/A	N/A
330 CSS-3	N/A	N/A	N/A
342 CSS-3	N/A	N/A	N/A

2. Courses with Variations

List courses with marked variations in results that are stated in the course reports, including: (completion rate, grade distribution, student results, etc.), and giving reasons for these variations and actions taken for improvement.

Course Name &Code	variation	Reasons for variation	Actions taken
111CSS-4	N/A	N/A	N/A
113CSS-4	N/A	N/A	N/A
212CSS-4	N/A	N/A	N/A
222CSS-4	N/A	N/A	N/A
227CSS_3	N/A	N/A	N/A
235CSS_3	N/A	N/A	N/A
281CSS_3	N/A	N/A	N/A
328CSS_3	N/A	N/A	N/A
329CSS_3	N/A	N/A	N/A
330CSS_3	N/A	N/A	N/A
342CSS_3	N/A	N/A	N/A
345CSS_3	N/A	N/A	N/A
361CSS_3	N/A	N/A	N/A
380CSS_3	N/A	N/A	N/A
429CSS-3	N/A	N/A	N/A
440CSS_3	N/A	N/A	N/A
456CSS_3	N/A	N/A	N/A
457CSS_3	N/A	N/A	N/A
474CSS_3	N/A	N/A	N/A
491CSS-4	N/A	N/A	N/A

3. Result Analysis of Course Reports

(including strengths, Areas for Improvement:, and priorities for improvement)

Strengths :

1. Everything presented in the course was useful (texts, summaries, references)
2. Students are satisfied with all aspects of the course
3. Whatever Student learned in this course is important and will benefit the students in the future
4. Students were happy with the teaching strategies.
5. They are satisfied with the course syllabus as well as instructor.
6. The resources needed for this course were available whenever needed
7. This course helped the student to improve their ability to think and solve problems instead of saving information
8. This course helped the student to improve the ability to communicate effectively

Areas for Improvement:

1. Devote more time for creating interactive applications
2. Devote more time in solving problems and applying algorithms

Priorities for Improvement:
1. Arrange more tutorial 2. Encouraging student participation 3. Independent assignments 4. Conduct more tutorial to classify as how to creates good web site and solve the issues

E. Program Activities

1. Student Counseling and Support

Activities Implemented	Brief Description*
Male Section	
Introduction to IT certificates (basic concepts) - Online n	This activity was taken online for 3 hours and the participants were students of the college and others.
Introduction to Artificial Intelligence	In this activity, there were 5 hours and 340 participants from students who participated from different sectors of the college provided by Deanship of Community Service and Continuing Education in Najran University.
Synopsis of Cyber security tools	This seminar was participated in by students of the college and other students from the university who were interested in this activity.
Flute/Dart programming language	In this activity, there are about 30 students who have joined.
University Library support	This activity supports the university library to implement a new software system
How to build a Project	In this activity, 26 students have joined it
Artificial Intelligence in Medicine	650 Physician, Clinician, Radiologists, Pathologists, Serologist, Histologists, medical students, and Surgeons for 2 hours.
How to Design and Analyse a Project as a System Analyst	This activity is presented to 39 students from different sectors in the university for 2 hours.
Introduction to Cloud Computing and Data Science	This activity was presented to 300 students in the Cyber security Club, College of Computer Science and Information in Najran University by zoom
Security and privacy dimensions in multi access edge computing for using Internet of things	In this activity, 150 students have joined the College of Computer Science and Information system in Najran University by zoom
The_need_of_Cybersecurity_for_AI_application_development_and_end	30 students have participated in this activity through zoom
Machine Learning and Deep Learning	In this activity, 26 students joined and took 60hours throughout the 2nd semester.
ملتقى الابتكار الاول	9 hours was taken to complete this activity.

A Graduation Project Supervisor for a scientific poster (1st winners award) in title: “University Volunteering Platform” The first technical innovations forum managed by College of Computer Sincere and Information Systems in Najran University, 2022	More than 200 students participated.
Comment on Student Counseling and Support **	
By the end of each activity or event, a questionnaire is distributed to evaluate performance.	

* including action time, number of participants, results and any other statistics.
** including performance evaluation on these activities

2. Professional Development Activities for Faculty and Other Staff

Activities Implemented	Brief Description*
Data Privacy in the Digital Era	This workshop takes place
Computer Applications-Microsoft Office	The seminar occurred on 19/11/2020 at 7 pm via Zoom. The number of beneficiaries was 289.
Orientation to new Faculty members about Course file and exam moderation system	Two newly Female Faculty at CCSIS.
NCAAA Key Performance Indicators (KPI)	The seminar occurred for Faculty members of College of Computer Science & Information Systems and other colleges of Najran University
Faculty members of College of Computer Science & Information Systems and other colleges of Najran University	The seminar occurred on 02/12/2020 at 7 pm via Zoom. The number of beneficiaries was 44
Introduction to Data Governance	This seminar was for 2 hours and was taken through a virtual platform.
Introduction to LaTeX	This seminar was for 4 hours through zoom.
An assigned academic reviewer in the NCAAA review panel to participate in the Quality Assessment Project for Private Universities and Colleges	This seminar was for 1 month through zoom for faculties and members.
يوم البحث العلمي الاول	5 hours for faculties and members.

How to Apply for a special issue for impact factor journals	Faculty members participated in this activity for 3 hours.
Presenting a course entitled "Quality Standards in E-Learning" in cooperation with the College of Science and Arts in Sharurah, November 2021	2 hours for this activity and more than 85 faculties participated.
Academic Advising Workshop	This seminar was presented by the deanship of E-Learning on 26/01/2021 at 10:00 am.
Comment on Professional Development Activities for Faculty and Other Staff **	
The Computer Science department has two campuses (male and female) with 16 Academic staff who participated in 36 professional development activities. There were over 10000 beneficiaries in these activities inside and outside the university.	

* including action time, number of participants, results and any other statistics.
** including performance evaluation on these activities

3. Research and Innovation

Activities Implemented	Brief Description*
Motivate faculty to conduct research by the formulation of research groups.	Six research groups have been approved by the dean. Research Groups
Encouraging faculty members to participate in seminars and lectures in advanced topic of research.	Every Ph.D. holder in the department provided a seminar upon graduation about their research work. Researchers in the department share their research work through seminars and research poster day.
Collaborate with international institutions.	The department contributed to the international collaboration with the University of Sindh in Pakistan to produce 15 research papers.
Collaborate with NU research centers (SERC)	The department contributed to the research day event organized by the deanship of scientific research and SERC with a total of 6 scientific posters.
Collaborate with researchers in Najran University and other Saudi Universities.	Faculty members in the department have contributed to the research by publishing joint papers with other colleges at Najran University such as the college of applied medicine and the college of education.
Encouraging the research partnership among faculty members belongs to different departments in college.	Faculty members in the department have contributed to the research by publishing joint papers with other departments in the college.

Apply for research projects and grants inside and outside the university.	Faculty members in the department applied every year to the projects grants provided by the deanship of scientific research. The department has a total of 9 accepted projects in the 10th phase and a total of 11 accepted projects in the 11th phase with an increase of 3 projects from last year.

Comment on Research and Innovation **

- Total Publications for CS department: (2020) 27 (2021) 60 (2022) 30
- Total Citations for CS department: (2020) 300 (2021) 476 (2022) 176

Rate of Publication per faculty members for the year 21 and 22 is 2.72 paper per faculty member.

- Rate of Citation per paper for the year 21 and 22 is 7.24 citation per paper.

* including action time, number of participants, results and any other statistics.
** including performance evaluation on these activities

4. Community Partnership

Activities Implemented	Brief Description*
Mining Online Patients' Reviews for Drugs Safety Signal Detection: A case study of Anti-epileptic Drugs	A joint talk at Computer Science and Information Systems Seminars for a week in Najran University, (2020). The number of beneficiaries was 50 from CSIS members.
Operating Systems Security course	Deliver an Operating Systems Security course for Cyber security Higher Diploma students. This course was organized by the deanship of community service and continuing education at Najran University, 2020. The number of beneficiaries was 17.
Cyber security course	A voluntary public workshop on Cyber security three-hour course in a Saudi company called Amaleed Academy specializing in providing scientific and technical classes for young students. This workshop occurred on 23rd September 2020 (the Saudi National Day). The number of beneficiaries was 50 Students from High School.
Research skills: Preparing the research proposal for Scientific and Medical Disciplines	Program for preparing TAs and lecturers for graduate and postgraduate studies, supported by the Vice Presidency for Graduate Studies and Scientific Research at the Department of Scholarships and Training, Najran University, 2020. The number of beneficiaries was 100
A talk: Studying Abroad in the UK and USA	Program for preparing TAs and lecturers for graduate and postgraduate studies, supported by the Vice Presidency for Graduate Studies and Scientific Research at the Department of Scholarships and Training, Najran University, 2020. The number of beneficiaries was 100
How Cyber security affects our Daily life Activities	The cyber security club at the College of Computer Science and Information presented this seminar in 2020. The number of beneficiaries was 300
Digital skills for teachers in education	This workshop is a one-week intensive workshop (+15 hours). This workshop was organized by the deanship of community service and continuing education at Najran University, 2020. The number of beneficiaries was 150 teachers from general education

A joint talk in the orientation week for CSIS new faculty members	A joint talk at Computer Science and Information Systems Seminars in Najran University, (2020). The number of beneficiaries was five from CSIS members.
A joint talk at Computer Science and Information Systems Seminars for a week in Najran University	A joint talk at Computer Science and Information Systems for a week (2020). The number of beneficiaries was 50 from CSIS members.
Cryptography course	Deliver a cryptography course for Cyber security Higher Diploma students. This course was organized by the deanship of community service and continuing education at Najran University, 2020. The number of beneficiaries was 17.
How to manage references using Mandalay	This workshop was to help the graduation project CS students for managing references in final project reports. The number of beneficiaries was 15 (female campus), 2020
Google App	This workshop was on Google App for students from administration college. The number of beneficiaries was 37 (female campus),2020
Internet of Thing	This workshop was on the importance of the Internet of Things for CSIS students. The number of beneficiaries was 8 (female campus), 2020
Virtual and augmented reality, a glimpse into the future	This workshop was organized by Saudi Mobile Show 2020. The number of beneficiaries was 200.
Design Thinking	This workshop was on Design Thinking. The Entrepreneurship Unit at Najran University organized this workshop, 2020. The number of beneficiaries was 100.
Preparation program for admission in North America Universities	Program for preparing TAs and lecturers for graduate and postgraduate studies, supported by the Vice Presidency for Graduate Studies and Scientific Research at the Department of Scholarships and Training, Najran University, 2020. The number of beneficiaries was 100
Preparation program for living in North America	Program for preparing TAs and lecturers for graduate and postgraduate studies, supported by the Vice Presidency for Graduate Studies and Scientific Research at the Department of Scholarships and Training, Najran University, 2020. The number of beneficiaries was 100
Training program how to use Microsoft Teams	This training program was organized by the deanship of community service and continuing education at Najran University, 2020. The number of beneficiaries was 4600
Digital Forensics workshop	The cyber security club at the College of Computer Science and Information presented this workshop in 2020. The number of beneficiaries was 300
Cyber security Training	This training program was organized by the deanship of community service and continuing education at Najran University, 2020. The number of beneficiaries was 50
Cloud Storage	This workshop was on the importance of Cloud Storage for students from languages and translation college. The number of beneficiaries was 39 (female campus), 2020
Knowledge is only by	This workshop was on TAs and Lecturers in Najran University

learning	(female campus), 2020
Social Engineering Workshop	The cyber security club at the College of Computer Science and Information presented this workshop in 2020. The number of beneficiaries was 300
Network security course	Deliver a Network security course for cyber security Higher Diploma students. This course was organized by the deanship of community service and continuing education at Najran University, 2020. The number of beneficiaries was 17.
Cyber security in Education (Theory and Applications)	The cyber security club at the College of Computer Science and Information presented this workshop in 2020. The number of beneficiaries was 300

Comment on Community Partnership **

The departments of Computer Science has two campuses (male and female) with 9 Academic staff who participated in 25 community services activities. There were over 7000 participants to these activities inside and outside the university. The highest percentage of Academic staff who worked together in community services was in providing seminars for all university of Najran students.

* including action time, number of participants, results and any other statistics.
** including performance evaluation on these activities

5. Analysis of Program Activities

(including strengths, Areas for Improvement:, and priorities for improvement)

Strengths :

The course's materials, including the texts, summaries, and references, were all helpful. All facets of the course are viewed favorably by the students. Everything the student acquired in this course is significant and will help them in the future. The instructional methods met with the approval of the students. Both the instructor and the course syllabus are acceptable to them. When needed, the materials for this course were readily available. Instead of just storing facts, this course helped the student develop their capacity to think critically and solve problems.

Areas for Improvement:

Spend more effort developing interactive software. Devote more time in solving problems and using methods.

Priorities for Improvement:

- Plan further tutorials
- promoting student involvement
- separate assignments

- More instruction should be provided on how to build a good website and resolve problem

F. Program Evaluation

1. Evaluation of Courses

Course Code	Course Title	Student Evaluation (Yes-No)	Other Evaluations (specify)	Developmental Recommendations
111CSS-4	Programming Language 1	Yes	N/A	
113CSS-4	Object Oriented Programming	No	N/A	
111ISL-2,	Introduction to Islamic Culture			
104PHIS-4	Fundamental of Physics			
106MATH-3	Introduction to Integration			
152MATH-3	Discrete Mathematics			
112ISL-2	Islamic Culture 2			
105PHIS-4	Advanced Physics			
113ISL-2	Islamic Culture 3			
101BIOL-4	General Biology			
114ISL-2	Islamic Culture 4			
212CSS-3	Data Structures	Yes	N/A	Arrange more tutorial Encouraging student participation
222CSS-4	Computer Organization & Architecture	Yes	N/A	Encouraging student to learn related resources from internet. Devote more time in latest computer science technology with modern architecture
235CSS-3	Theory of Computation	Yes	N/A	*Most of the students strongly agree or agree with course delivery and assessment methods. But still I think it is needed to improve the student's critical thinking during tutorial session by solving more questions related to DFA and NFA homework.

Course Code	Course Title	Student Evaluation (Yes-No)	Other Evaluations (specify)	Developmental Recommendations
281CSS-3	Computer Graphics	Yes	N/A	The course can be more improved if the students attend all classes and do all home works and assignments on times
227CSS-3	Operating Systems	Yes	N/A	Most of the students are strongly agree or agree with course delivery and assessment methods. But still I think it is needed to improve the student's critical thinking during lab session by giving more lab related tasks during lab time or as lab homework. Also students need more time to work to make Gantt chart and calculate the average waiting time, response time and turnaround time.
330CSS-3	Programming Paradigms	Yes	N/A	
342CSS-3	Software Engineering	No		
361CSS-3	Artificial Intelligence	Yes	N/A	
380CSS-3	Fundamental of Database Systems	No	N/A	
329CSS-3	Data Communication and Computer Networks	Yes	N/A	
328CSS-3	Human and Computer Interaction	Yes	N/A	
345MATH-3	Operational Research	No		
440 CSS-3	Social Ethical & Professional Issues	Yes	N/A	
456CSS-3	Parallel and Distributed Systems	Yes	N/A	Assign more tasks Provide more concrete examples Motivating students to learn the course. Encouraging students to participate in group discussions and seminars.
457CSS-3	Internet Technologies	No	N/A	

Course Code	Course Title	Student Evaluation (Yes-No)	Other Evaluations (specify)	Developmental Recommendations
474CSS-3	Algorithm Design and Analysis	Yes	N/A	
429CSS-3	Computer Security	No	N/A	

2. Students Evaluation of Program Quality

Evaluation Date : April 2022 | **Number of Participants:** 8

Students Feedback

When the exit survey was conducted successfully, we get the following conclusion

Criteria	Overall Students Satisfaction Male	Overall Students Satisfaction Female
Supportive Services	73.1%	66.67%
Supportive Learning Resources	54.6%	52.78%
Assessment of Learning	89.7%	58.34%
Learning outcomes	78.3%	79.80%

The overall satisfaction rate in male campus is approximately 73.92% and in female campus is 64.40%.

The overall satisfaction rate is approximately 69.16%.

Strengths:

- Students are very much satisfied with learning process of the CS program, and they find the program is very beneficial for them.

Weakness:

- Analysis shows that students in male and female campus are not very happy with supportive learning resources.
- Assessment of learning also needs to improve in female campus.

Program Response

Areas for Improvement::

• Increase Adequate equipment for the non-class activities	
Suggestions for improvement: • Supportive learning resources should be improved.	

* Attach report on the students evaluation of program quality

3. Other Evaluations

(e.g. Evaluations by independent reviewer, program advisory committee, and stakeholders (e.g., faculty members, alumni, and employers)

Evaluation method : Survey	**Date:** - First semester and second 2021- 2022	**Number of Participants :**14

Summary of Evaluator Review	**Program Response**

Achievement Criteria	Overall Achievement in Percentage
Contribute significantly to community development as a part of a team or individually with accountable, legal, ethical and responsible practice	71.4
Facilities (Classrooms, labs, Hardware, Software, Sport Facilities, Restaurants, Transportation) available were satisfying	57.8%
I recommend this program to other students, relatives, and friends	64.3
The quality of teaching was satisfying	50%
The advising and mentoring was adequate	71.4
Graduation project and lab courses for CS program	57.2%
Continue learning, research, and professional development	78.5

Strengths:

- The alumni are satisfied with the advising and mentoring was adequate
- The alumni are satisfied with contribute significantly to community development as a part of a team or individually with accountable, legal, ethical and responsible practice

Points for Improvements:: • Paying more attention to the practical side and	

paying attention to professional certificates to qualify in the labor market in the last year of university • Students are required to take co-operative	
Suggestions for improvement • The suggestions from alumni the curriculum of the CS program should be updated by adding modern courses like data science, machine learning and cyber security • Activating the role of students and encouraging them to hold seminars and scientific research in the fields of computers • Adding courses to prepare students for professional certificates, and adding field training in the year of graduation to prepare them for the work environment • Field training before graduation • Add web and mobile application development materials as well as network materials • Python language course • Cooperative Training.	

* Attach independent reviewer's report and stakeholders' survey reports (if any)

4. Key Performance Indicators (KPIs)

List the results of the program key performance indicators (including the key performance indicators required by the National Center for Academic Accreditation and evaluation)

No	KPI	Target Benchmark	Actual Value	Internal Benchmark	Analysis	New Target Benchmark
KPI-P-01	Percentage of achieved indicators of the program operational plan objectives	**90%**	**98.87%**	**90.12%**	KPI target achieved	**90%**
KPI-P-02	Students' Evaluation of quality of learning experience in the program	**80%** ≈ (4.00 on a 5 point scale)	**69.88%** ≈ (3.50 on a 5 point scale)	**83%** ≈ (4.15 on a 5 point scale)	KPI target not achieved	**80%** ≈ (4.00 on a 5 point scale)
KPI-P-03	Students' evaluation of the quality of the courses	**85%** ≈ (4.25 on a 5 point scale)	**84.5%** ≈ **85%** (4.25 on a 5 point scale)	**82.2%** ≈ (4.11 on a 5 point scale)	KPI target achieved	**85%** ≈ (4.25 on a 5 point scale)
KPI-P-04	Completion Rate	**75%**	**66.65%**	**63.4%**	KPI target not achieved	**75%**
KPI-P-05	First-year students retention rate	**90%**	**63%**	**85.7%**	KPI target not achieved	**90%**
KPI-P-07	Graduates' employability and enrolment in postgraduate programs	**a) 30%** **b) 10%**	**a)** % of employability = 21% **b)** % of enrolment in PG programs= 0%	**a)** % of employability = 17% **b)** % of enrolment in PG programs= 3%	KPI target not achieved	**a) 30%** **b) 10%**

KPI-P-08	Average number of students in the class	**20 students**	**25**	**17**	KPI target achieved	**22 Students**
KPI-P-09	Employers' evaluation of the program graduate's proficiency	**85%**	**88%**	**87%**	KPI target achieved	**90%**
KPI-P-10	Students' satisfaction with the offered services	**85% ≈** (4.25 on a 5 point scale)	**62.67% ≈** (3.15 on a 5 point scale**)**	**67.79% ≈** (4.25 on a 5 point scale)	KPI target not achieved	**85% ≈** (4.25 on a 5 point scale)
KPI-P-11	Ratio of students to teaching staff	**1 : 20** (teaching staff: students)	**1 : 12**	**1 : 16**	KPI target achieved	**1 : 20**
KPI-P-12	Percentage of teaching staff distribution	**70%** (PhD Holders -70% and Non-PhD Holders-30%)	**51.35%**	**38%**	KPI target achieved in male but not achieved in female	**70%**
KPI-P-13	Proportion of teaching staff leaving the program	**≤ 10%**	**8%**	**6%**	KPI target achieved	**≤ 10%**
KPI-P-14	Percentage of publications of faculty members	**≥ 50%**	**55%**	**32%**	KPI target achieved	**≥ 60%**
KPI-P-15	Rate of published research per faculty member	**2 : 1** (No. of published research: No. of faculty member)	**1.05 : 1**	**0.24 : 1**	KPI target not achieved	**2: 1**
KPI-P-16	Citations rate in refereed journals per faculty member	**6 : 1** (No. of citation: faculty member)	**5.56 : 1** (No. of citation: faculty member)	**1.6 : 1**	KPI target not achieved	**6 : 1**
KPI-P-17	Satisfaction of beneficiaries with the learning resources	**70% ≈** (3.50 on a 5 point scale)	**65.42%** (on 5-point scale)	**55.89% ≈** (2.79 on a 5 point scale)	KPI target not achieved	**70% ≈** (3.50 on a 5 point scale)
KPI-P-I-1	Proportion of full-time teaching and other staff actively engaged in community service activities	(1 : 1) *One community service activity from one full-time teaching and other staff in the Department of Computer Science	**(2 : 1)**	**1:1**	KPI target achieved	**(2 : 1)**

Comments on the Program KPIs and Benchmarks results :

The CS Program adopted 16 KPIs that are applicable out of 17 KPIs as stated by NCAAA. The CS program has also adopted 1 additional KPI related to the community service that falls under standard 2. Hence the CS Program has 17 KPIs to evaluate its performance.

The table above shows that out of 17 KPIs adopted by CS Program, there are 5 KPIs whose

target benchmark is achieved. Four KPI reports are not prepared and thus making the overall achievement of the KPI by the program to 38.46%.

Strengths:

- Achievement percentage shows that 100% of unit's operational plan achieved the target benchmark of 85%.
- Overall achievement of CS department operational plan 2021/2022 is improved as compared with the last year 2020/2021.
- The students were satisfied with the quality of learning experience in the program.
- students were comfortable and satisfied with the various services offered by the program especially (transportation, academic advising) provided to them throughout their association with the program. Moreover, it can be seen that the comprehensive orientation program set by the advising unit for prospective students is highly met the students' satisfaction for both male and female sections since the current target benchmark of 75% is achieved.
- Most of the faculty members are involved in the research and community service activities.

Weakness:

- The students' satisfaction level is less in terms of supportive learning resources and other program services.
- The graduates' employability rate and the enrolment rate in the postgraduate programs is very less.
- The completion rate of the students who enter the program and complete the program in minimum time is less.
- Though the CS program do provide the career counseling to the students, sometimes the advising is less than expected when the semester started.
- An overview of the career is discussed by instructors with students in person. Therefore, a career counseling as an activity is not part of the academic advising unit
- The students do not approach the advisor sometimes.
- The students are not comfortable and satisfied with the services of restaurant and sport facilities. These two services are out of the program control.
- Academic advising unit needs to pay more effort in terms of guiding students and this would not be real unless all academic advisors collaboration.
- The college has to work on provide rest areas for students between their classes, and it is prominent to raise request to the higher administration to work on that.

- No coffee shops in males' building.
- Students are complaining about shortness of well-prepared labs on both campus.

Priorities for improvement:

- Activate the cooperation among male and female teaching staff in the research activit share the experience among them, since male teaching staff have more experience female in research.
- University should have encouragement criteria for teaching staff involved in the research.
- Encourage and Support teaching staff to attend scientific conferences within or outside Saudi Arabia.
- Improve the supportive learning resources and other program services such as awareness of student council.
- The program will look into steps on how to improve academic advising for better through motivate advisees to visit advisors regularly. Furthermore, to contact advising unit to design a system to monitor of how many meetings, visits, and requests are performed by advisors. Additionally, to ask advisors to contact their advisees by email, mobile phone or any other means to ensure that advisees are aware of important of academic advising.
- The program should ask instructors to discuss the career opportunities of each CS courses. This practice will be implemented on the first week of a given CS courses to ensure that students can get career advising and motivation for each course.
- The program will look into steps on how to improve restaurant for better by write to management to provide alternative options of restaurants, coffee machines, and places for break between classes.
- The program should discuss the sports facilities with students activity unit and ask the unit to provide suitable places for sport facilities like tennis table to let students enjoy the extensive range of sporting and leisure facilities to meet the students' needs and expectations, and support student clubs in a range of ways.
- Arrange career days and inviting national and multinational companies so that students get benefitted for their future career
- Identifying the difficulties by conducting meetings and seminars with the students in each level. Finding the reasons of students' failing, dropping and withdrawing of their courses by meeting, seminars, and academic advising.

- Increase the percentage of Professors and Associate Professors by recruiting them. Encourage and support teaching staff to complete their higher studies.
- Encourage the faculty members to publish more research papers. Support teaching staff to attend scientific conferences.

5. Analysis of Program Evaluation

(including strengths, Areas for Improvement:, and priorities for improvement)

Strengths :

- The alumni are satisfied with the advising and mentoring was adequate
- The alumni are satisfied with contribute significantly to community development as a part of a team or individually with accountable, legal, ethical and responsible practice
- The employees are satisfied with the theoretical and academic preparation of employee.
- The students are satisfied with the academic and professional advising received from the faculty members.
- Students are very much satisfied with learning process of the CS program, and they find the program is very beneficial for them.

Areas for Improvement:

- Activate the cooperation among male and female teaching staff in the research activities to share the experience among them, since male teaching staff have more experience than female in research.
- Arrange career days and inviting national and multinational companies so that students get benefitted for their future career
- Implement a field training to achieve the learning outcomes of the field training course.

Priorities for Improvement:

- Encourage and Support teaching staff to attend scientific conferences within or outside Saudi Arabia.
- Improve the supportive learning resources and other program services such as awareness of student council.
- The program will look into steps on how to improve academic advising for better through motivate advisees to visit advisors regularly. Furthermore, to contact advising

unit to design a system to monitor of how many meetings, visits, and requests are performed by advisors. Additionally, to ask advisors to contact their advisees by email, mobile phone or any other means to ensure that advisees are aware of important of academic advising.

- The rate of distributing the survey/questionnaire and collecting the responses from the stakeholders should be between 90-100 %.
- Link between previous and next semester course reports to implement the recommendation.
- Seminars and workshops should be conducted in order to motivate the students to continue the learning process even after graduation.
- Activating the role of students and encouraging them to hold seminars and scientific research in the fields of computers.

G. Difficulties and Challenges Faced Program Management

Difficulties and Challenges	Implications on the Program	Actions Taken
Weak coordination and communication between departments and college deanship	Affect the performance of the faculty members and programs' KPIs achievements	raising the issue at the college level
roles overlapping and task redundancy between units at department and college level	Affect program's KPIs achievements	raising the issue at the department and college level
About seven faculty members have roles at the university level	Affect thier contributions in the department	raising the issue at the college level
In female section, the number of students exceeds department capacity	Heavy teaching loads on the faculty members	raising the issue at the college level
Labs resources are not technically updated. They need to be upgraded	Affect teaching of practical courses	raising the issue at the college level
Classroom projectors are not technically ready, they need to be maintained	Affects teaching of practical courses	raising the issue at the college level
Weak participation and lack of response from faculty members in quality works	Delay in task submission	raising the issue at the department level
Low level utilization of e-learning system	Affect student academic performance	raising the issue at the college level
Low support of research activities from the college	Affects Program contribution in research related KPIs	raising the issue at the college level
Weak coordination and communication between departments and college deanship	Affect the performance of the faculty members and programs' KPIs achievements	raising the issue at the college level

*Internal and external difficulties and challenges

H. Program Improvement Plan

No.	Priorities for Improvement	Actions	Action Responsibility	Date		Achievement Indicators	Target Benchmark
				Start	End		
1	Revision of Department and College units n terms of roles and responsibilities		HOD & Vice Dean Academic Affairs	Next academic year	Next academic year	Revised Documents of Departmental Units	70% KPI Achievemnt
2	To develop a mechanism to keep a balance among such faculty member tasks		HOD	Next academic year	Next academic year	Assessment of faculty perfor mance based on mechanism	Above 70%
3	To discuss and develop a plan to overcome the shortage of faculty and resources		HOD	Next academic year	Next academic year	Implementati on of plan	Above 70%
4	To contact IT department for Lab up gradation and Classroom Management		HOD	Next academic year	Next academic year	Student and Faculty Satisfaction about the resources	Above 70%
5	Conducting seminars about the awareness of importance of quality tasks		HOD	Next academic yea	Next academic year	Assessment of Faculty by HOD in terms of qualiity	Above 70%
6	Trainings/worksh ops for faculty about E-Learning System usage & importance		HOD	Next academic year	Next academic year	Student Online Survey	Above 70%

Next academic yea	Next academic year		HOD			Research related KPIs	Above 70%

I. Report Approving Authority

Council / Committee	
Reference No.	
Date	

J. Attachments :

- **A separate cohort analysis report for male and female sections and for each branch**
- **A report on the program learning outcomes assessment results for male and female sections and for each branch (if any)**
- **A report on the students evaluation of program quality**
- **Independent reviewer's report and other survey reports (if any)**