



جامعة الإمام عبد الرحمن بن فيصل
IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY

كلية علوم الحاسب وتقنية المعلومات
College of Computer Science and Information Technology

CCSIT Quality Manual

College of computer
science and information
technology

2023

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1. Introduction to College of Computer Science and IT

CCSIT at Imam Abdulrahman Bin Faisal University (IAU) is one of the largest colleges offering four undergraduate and two postgraduate academic programs. Upon its inception in 2010, CCSIT committed itself to provide students with cutting edge computing and information technology curricula through its academic departments. CCSIT understands the importance of staying current in its fields to meet the demand for highly educated professionals who will empower the socio-economic uplifting of the region. CCSIT is committed to deliver quality education, enhance academic programs, diversify college body, and serve the community.

The emphasis IAU administrators put on, and support for, making CCSIT a premier college is justifiable. Such is the case because the common factor among the top 20 universities in the world happens to be their computer science departments' top ranking. The reason is the field's products that every other major discipline needs to automate their educational system. This includes but is not limited to Statistics, Medicine, Mathematics, Computational Biology, Business and Marketing, Computational Chemistry, Physics, etc. Top-ranked universities worldwide value the role computer science plays.

Computer Science and Information Technology are fascinating disciplines that are driving scientific and technological progress, creating the tools that advance society and improve our quality of life. To meet the growing demand in the job market for accomplished computer science and information technology professionals who possess the latest scientific and technological skills, the College offers four undergraduate programs and two postgraduate programs:

- Bachelor of Science in Computer Science (CSC)
- Bachelor of Science in Computer Information Systems (CIS)
- Bachelor of Science in Cyber Security and Digital Forensics (CYS)
- Bachelor of Science in Artificial Intelligence (AI)
- Master of Science in Computer Science (MS CSC)
- Master of Science in Information Systems and Data Analytics (MISDA)

To support these degrees, a list of elective courses in advanced topics primed for students to choose from. It includes popular topics such as Data Mining & Warehousing, Modelling & Simulation, Expert Systems, Advanced Programming Languages, Ethical Hacking, Ethical Hacking and Digital Forensics, Cyber Warfare, Advanced Computer Forensics, Advanced Software Engineering, Knowledge Management & Information Retrieval, Multi-Agents, Computer Vision & Computer Graphics, Advanced Operating Systems, Mobile Application Programming, Distributed Systems, Computer Networks, AI, Data Science, and several other courses concentrating on current topics of interest.

1.1. Organizational Structure of CCSIT

CCSIT is headed by the College Dean, who reports directly to Vice President for Academic Affairs. The organizational structure for CCSIT is shown in Figure 1. Three Vice Deans assist the College Dean. These include:

- Vice Dean for Academic Affairs

- Vice Dean for Development & Community Partnership
- Vice Dean for Scientific Research and Innovation

There are four principal Departments in the College, Department of Computer Science (CSC), Department of Computer Information Systems (CIS), Department of Computer Engineering (CE), and Department of Networks and Communication (NC), which the respective department chairpersons head.

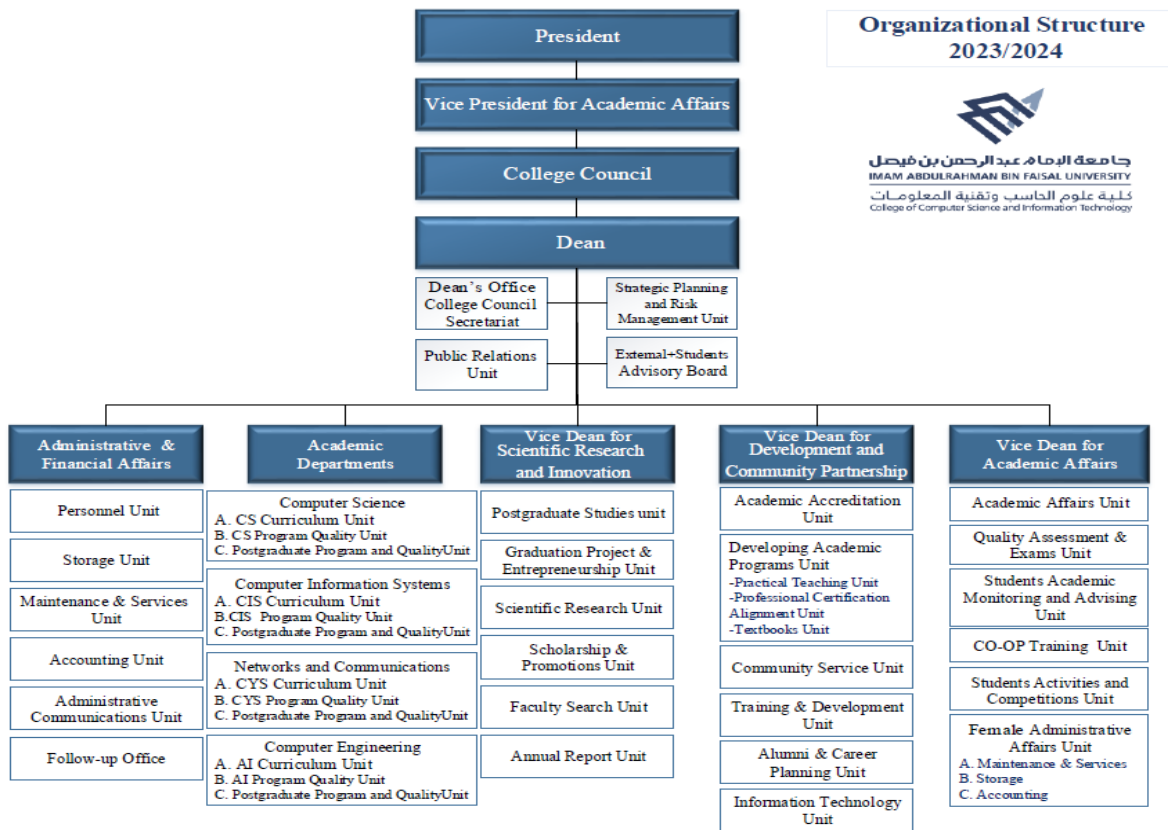


Figure 1: Organizational Structure of CCSIT

1.1.1. Computer Science Department

The Department of Computer Science (CSC) has been providing its students with a state-of-the-art computer science curriculum since its establishment in 2010. Computer Science is a fascinating field driving scientific and technological progress, creating the tools that advance society and improving our quality of life. To meet the demand in the job market for accomplished computer science professionals, the Department offers both undergraduate and postgraduate programs which are: A Bachelor of Science degree in Computer Science (CSC) and a Master of Science degree in Computer Science (CSC).

1.1.2. Computer Information Systems Department

The Department of Computer Information Systems (CIS) is committed to providing its majors with a solid foundation in research and analyses; expertise in designing systems, as well as creating and protecting databases and networks. The Bachelor of Science in Computer Information Systems is a rigorous program that prepares its graduates for not only a professional career in the business world, but its graduates are also well equipped to tackle the academic challenges of graduate study. The department also offers a Master of Science degree in Information Systems and Data Analytics (MISDA).

1.1.3. Computer Engineering Department

Next-generation information systems will facilitate flexible dialogue between people and machines using language, voice, images, and other media. In other words, it will be possible to build intelligent information systems to help humanity to think creatively rather than simply to be operated by human beings. In order to install the knowledge and technologies for developing such intelligent systems, the Computer Engineering (CE) department, through its Bachelor of Science in Artificial Intelligence (AI).

1.1.4. Network and Communication Department

The Department of Networks and Communications (NC) prepares well-qualified specialists who own research and analysis skills to deal with real threats that have the potential of derailing our daily life and compromising national and global security. The Department of Networks and Communications is proud to offer the first ABET-accredited Cyber Security and Digital Forensics (CYS) program outside the United States. The Cyber Security and Digital Forensics Program at CCSIT is intended to produce skilled professionals to understand the processes that impact information security, safeguarding information assets, collection and preservation of digital evidence, analysis of data, and identification and fixing of security vulnerabilities.

1.2. Mission, Objectives, Learning Outcomes & Strategic Plan

1.2.1. CCSIT Vision

To be a leading computing college at national, regional, and global levels.

1.2.2. CCSIT Mission

Provide quality computing education, discovery, and professional services with community engagements.

1.2.3. CCSIT Goals

Goal 1: Offer quality education in the computing domain.

Goal 2: Stimulate creative intra and inter college collaborative research.

Goal 3: Facilitate the culture of community services and advocate social integration.

Goal 4: Recruit and retain high caliber faculty and talented staff.

Goal 5: Improve college infrastructure for sustainable environments.

Goal 6: Develop and implement a robust management system.

Goal 7: Strengthen financial self-sustenance and entrepreneurship culture at the college.

Goal 8: Upgrade infrastructure and computing laboratories.

1.2.4. College Values

The college values are listed in Table 1.

Table 1: College Values

S#	Value	Definition
1	Loyalty:	To perform obligations towards my university and my community with all sincerity, dedication, and enthusiasm.
2	Excellence:	To perform the university work with all accuracy, quality, and excellence.
3	Teamwork:	To work with my colleagues as one coherent, friendly, and cooperative team to serve the university interests and achieve its goals.
4	Transparency:	The practices and procedures governing university transactions should be characterized by openness, clarity and publicity.
5	Diversity:	The college community should allow commendable difference that is in opinion and absorb diversity in origin, color, religion and gender and social and cultural backgrounds, etc.
6	Creativity:	The college community should be able to transcend traditional ideas and rules, patterns, and relations and to create new and useful meanings, ideas, forms, methods and interpretations
7	Social responsibility:	The college should be committed to achieve welfare and well-being of the surrounding community and to adopt a useful and harmless environmental model in all its activities.

1.2.5. Strategic Plan of CCSIT

CCSIT strategic plan is organized into goals, objectives, initiatives, and performance indicators. For such a challenging quest, we continue to improve in the areas of teaching & learning, community engagements, and research proliferation. As well, we continue to attract competitive students and employ endowed faculty members. The college units work in coordination and take various initiatives to achieve related KPIs and report annual data to the college along with action plan. As shown in Figure 2, each goal is supported by several objectives, while for each objective, there are several initiatives which are expected to result in measurable KPIs.

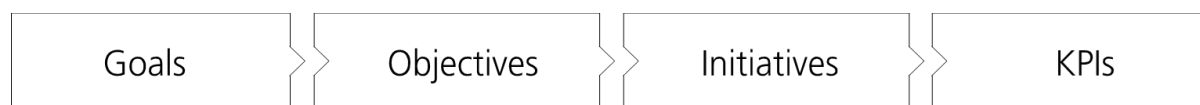


Figure 1: Breakdown of CCSIT Strategic Plan from Goals to Objectives to KPIs

A high-level sketch of CCSIT strategic plan is given in Figure 3.



Figure 3: High Level Sketch of CCSIT Strategic Plan (2021-2025)

The objectives of strategic plan are documented in Table 2.

Table 2: Objectives of CCSIT Strategic Plan

Goal 1: Offer quality education in the computing domain	
Objective 1.1:	Strengthen existing academic programs
Objective 1.2:	Initiate new academic programs in computing discipline.
Goal 2: Stimulate creative intra and inter college collaborative research	
Objective 2.1	Recruit and retain high caliber research-intensive faculty.
Objective 2.2	Increase faculty participation in collaborative research projects.
Objective 2.3	Develop new research opportunities for undergraduate and graduate students.
Goal 3: Facilitate the culture of community services and advocate social integration	
Objective 3.1:	Organize community-based learning events and/or activities.
Objective 3.2:	Strengthen the external advisory board for both college and programs.
Objective 3.3:	Create, promote, and organize the alumni-networks for expanding and enhancing their active role in the college's positive development.
Goal 4: Recruit and retain high caliber faculty and talented staff.	

Objective 4.1:	Hire prominent and competent professors at each department.
Objective 4.2:	Extend research support to faculty for quality publications.
Goal 5: Improve college infrastructure for sustainable environments	
Objective 5.1:	Provide faculty and students with sufficient information on the significance of sustainability in the built environment.
Objective 5.2:	Arrange activities to promote environmental sustainability.
Goal 6: Develop and implement a robust management system	
Objective 6.1:	Create a risk management plan for the college.
Objective 6.2:	Implement a risk management system at the college.
Goal 7: Strengthen financial self-sustenance and entrepreneurship culture at the college	
Objective 7.1:	Start paid-programs and short courses.
Objective 7.2:	Encourage the culture of entrepreneurship at the college.
Goal 8: Upgrade infrastructure and computing laboratories	
Objective 8.1:	Develop specialized research laboratories at CCSIT.
Objective 8.2:	Equip all research laboratories with necessary equipment and tools to support academic programs.

Quality Assurance Units in CCSIT

2.1 Academic Accreditation Unit

This unit is responsible for quality initiatives at the college level.

- Defining the CCSIT Accreditation plan and assessment cycles
- Constantly coordinate with the Deanship of Quality and Academic Accreditation at the University and program quality coordinators
- Suggest policies, procedures, and guidelines related to the quality at CCSIT
- Review of SSR and other ABET deliverable before submission to ABET
- Random review of course portfolios
- Conducting mock visits before accreditation visit
- Delivering empty portfolios and storing approved portfolios in archive room
- Logistic support for scheduling program advisory committee meetings
- Presenting in CCSIT advisory committee (Presentation, Minutes and Action plan formulation)
- Promote awareness of the concept of quality as well as the importance of applying the system of quality assurance and educational accreditation among the faculty and students.
- Following up with Program Quality Units to ensure completion of tasks as per schedule.

2.2 Program Quality Units

Academic Accreditation unit is working in collaboration with each Program Quality Unit of each program. Following are the expected tasks of the Program Quality Units:

- Preparing the schedule of end term presentations, end term presentation report and end term presentation action plan.
- Measuring the PEOs and SOs attainment (direct/indirect), archiving cycle data and developing closing the loop action plan
- Presenting program in program advisory committee meetings (Presentation, Minutes and Action plan formulation)
- Following up the progress on closing the loop action plan, end semester presentation action plan, program advisory committee action plan
- Preparing and archiving ABET self-study report
- Raw data and analysis result of Exit Survey
- Collecting and reviewing course portfolios in terms, of completeness and accuracy of contents.
- Coordination with Academic Accreditation Unit
- Prepare the Annual Program Report NCAAA.
- Collaborate with other committees for annual data collection

2. Quality Assurance Processes in CCSIT

Following are some of the processes used in CCSIT at college and program level:

3.1. College Level Activities

At the college level, direct quality assessment is made by the analysis of the achievement of the college objectives throughout each academic year. Indirect assessment is done with the help of the stakeholder evaluations. Various Institutional KPIs adopted from the NCAAA are also used to for assessment at the college level.

3.2. Program Level Activities

At the Program level, direct assessment is made by the analysis of achievement of the program intended learning outcomes throughout each academic year for each cohort registered within the program. Indirect assessment is done with the help of the stakeholder evaluations. Following sections will give the details about different processes used at the program level:

3.2.1. Process for Revision of Program Educational Objectives

Each program has appropriate and documented processes for assessing and evaluating the extent to which the PEOs are being achieved. The process for cyclic revision of PEO is reflected in Figure 4. Program Quality Unit (PQU) receives feedback on PEOs through indirect

assessments through alumni, faculty, and employer surveys. PQU also carefully analyses the input received from the external advisory committee members and also analyses the data of SOs. As per the procedure, the PQU assembles and puts forward all recommendations along with EAC meeting minutes to the Department Council for review and further deliberations. Once approved by the Department Council and College Council, PEOs are posted on the website and all the relevant documents are updated with revised PEOs. In case any major changes are required in the program, the Department Council prepares the dossier along with solid justification and coordinates with higher University Forums for approval. The most relevant forum in this context is the Standing Committee of Curriculum and Academic System (SCCAS), which is responsible for approving major and minor changes to various academic programs in the University. Approval from the SCCAS is needed for the following major changes:

- i. Comprehensive update of the program that requires restructuring of the entire study plan.
- ii. Addition or deletion of a main track from an academic program
- iii. Change in the program name resulting in a new study field or new professional training.
- iv. Increase or reduction in program duration.
 - v. Addition or deletion of courses that result in changes in total program credit units.
 - vi. Merging or separating some courses that leads to changes in the program content.

PEOs of the program are discussed for the feedback annually in External Advisory Committee meetings and are evaluated cycle wise through employer surveys, alumni survey, and faculty surveys.

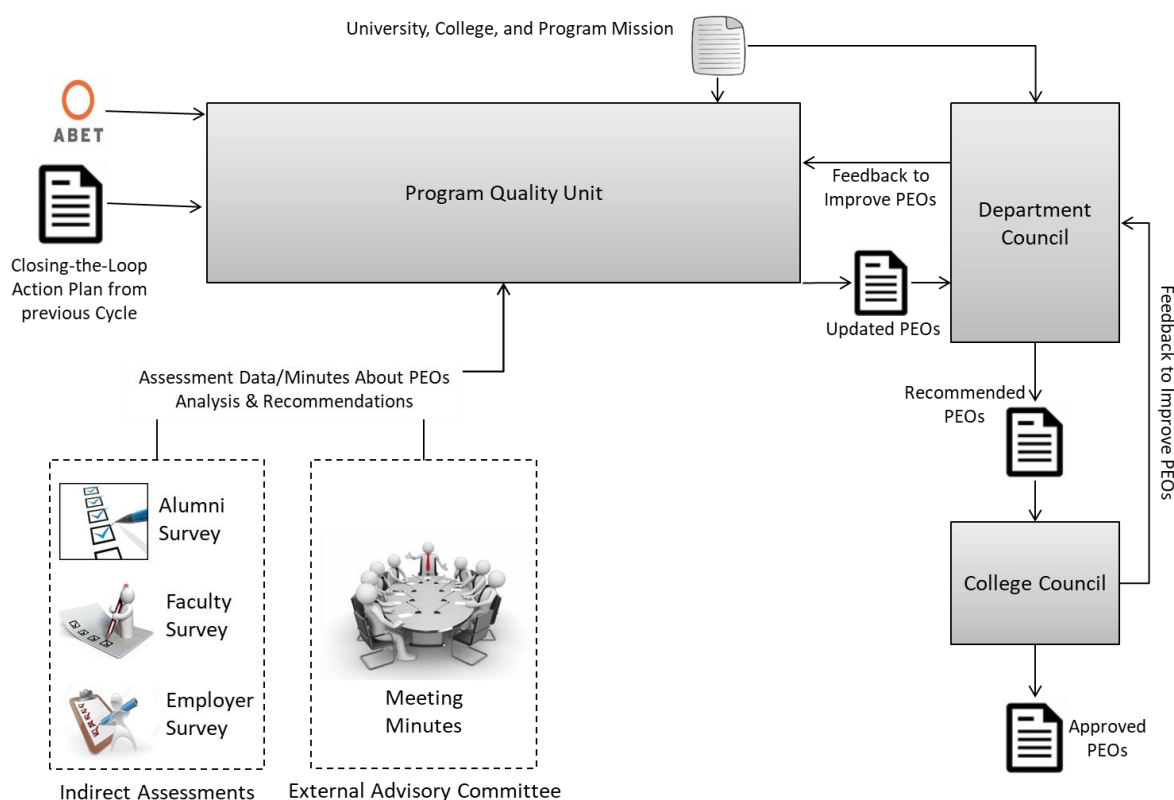


Figure 4: Process for Revision of PEOs

3.2.2. Process for the Revision of Student Outcomes

The revision of Student Outcomes is driven from six sources:

1. **Approved PEOs:** The approved Program Educational Objectives of the program.
2. **ABET Guidelines on SOs:** Guidelines and sample Student Outcomes provided by ABET.
3. **Closing-the-Loop Action Plan (from previous cycle):** This document—prepared at the completion of every Student Outcomes evaluation cycle—consists of actions/suggestions/recommendations to improve Student Outcomes attainment. This plan can address shortcomings and suggest improvements to:
 - a. Program Educational Objectives
 - b. Student Outcomes
 - c. Performance Indicators and corresponding rubrics
 - d. Curriculum
 - e. Educational practices and strategies
 - f. Processes for attainment of Student Outcomes and Course Learning Outcomes
 - g. Processes for revision of Program Educational Objectives and Student Outcomes

- h. Process for Curriculum revision
 - i. Other College/Department/Program related processes and practices
4. **Indirect Assessments:** This consists of feedback collected through surveys from various stakeholders including alumni, faculty members, and graduating students.
 5. **Direct Assessments:** This consists of data collected through curriculum assessments.
 6. **External Advisory Committee:** The program has an external advisory committee that includes experts from industry and academia. One agenda item in this meeting is to provide recommendations and suggestions—recorded as meeting minutes—to improve various aspects of the program.

Data originating from the six sources is analysed critically by the Program Quality Unit. The Program Quality Unit is then responsible for producing “Updated SOs” by consulting recommendations and analysing the data provided. Later the “Updated SOs” are forwarded to the Department Council for recommendations and finally the College Council for approval. The Department Council and the College Council might provide feedback to make further modifications to “Updated SOs” and eventually approved SOs are obtained, as shown in Figure 5.

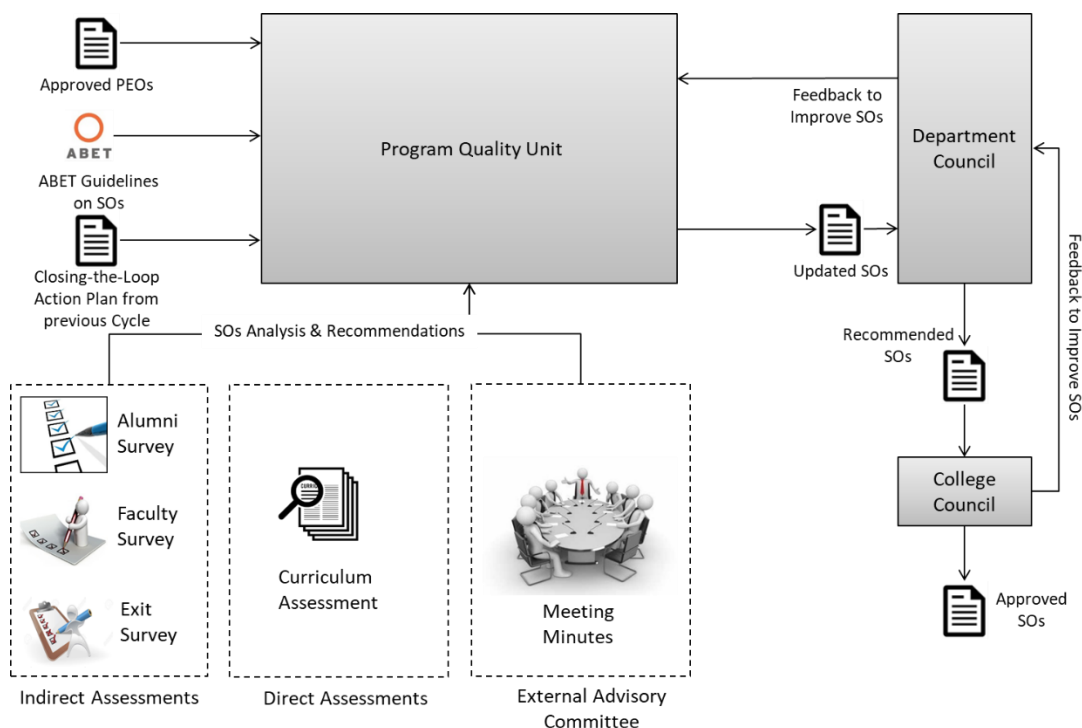


Figure 5: Process for Revision of SOs

The program constituencies for SOs feedback are Course Analysis, Alumni Survey, Exit Survey and External Advisory Committee. In addition to the feedback obtained from these sources, PQU is also responsible for analysing the input received from SO attainment for

each cycle. At the end of each cycle, PQU presents evaluation results and shares the experience with the Department Council for devising appropriate action plans related to program level improvements. Based on the recommendations, the Department Council initiates the process for the approval of SCCAS. As stated earlier, the SCCAS is responsible for approving major and minor changes to various academic programs in the University. Major changes include the following:

- i. Comprehensive update of the program that requires restructuring of the entire study plan.
- ii. Addition or deletion of a main track from an academic program
- iii. Change in the program name resulting in a new study field or new professional training.
- iv. Increase or reduction in program duration.
- v. Addition or deletion of courses that result in changes in total program credit units.
- vi. Merging or separating some courses that leads to changes in the program content.

3.2.3. Process for the Attainment of Student Outcomes

Direct and Indirect assessment data is collected by the PQU that is responsible for evaluating and analysing this data to quantify the attainment of SOs. Most importantly PQU communicates analysis to the Department and Course Coordinators to develop actions to improve the attainment of SOs in the next cycle—these actions are penned down in the “Closing-the-Loop Action Plan”. This plan along with “Direct/Indirect Assessment Data & SOs Attainment Results” are passed to the Department Council for review and approval. The Department Council approves the plan to issue “Approved-Closing-the-Loop Action Plan”. Alternatively, the Department Council might provide feedback to further improve the “Closing-the-Loop Action Plan”.

The “Closing-the-Loop Action Plan”—prepared at the completion of every SOs evaluation cycle—consists of concrete actions to improve SOs attainment. This plan can address shortcomings and suggest improvements related to 1) PEOs, 2) SOs, 3) PIs and corresponding rubrics, 4) Curriculum, 5) Educational practices and strategies, 6) Processes for attainment of SOs and Course Learning Outcomes, 7) Process for Curriculum revision, and 8) Other College/Department/Program related processes and practices.

As shown in the Figure 6, data for evaluating the attainment of SOs is gathered from direct and indirect assessments. An important criterion is that all SOs must be evaluated on the completion of a cycle. The results of these evaluations are systematically utilized as input for the continuous improvement of the program. PQU submits the recommendation to the Department for continuous improvement and the Department revises the PIs and corresponding rubrics as required. For any minor change in the curriculum the Department obtains approval of SCCAS before implementing it in the curriculum next cycle.

The minor changes include some or all of the following examples:

- i. Addition or deletion of one course without changing total program credit units.

- ii. Addition or deletion of one or more elective courses.
- iii. Change in course credit units without changing total program credit units.
- iv. Transfer of a course from one level to another.
- v. Change in the course symbols and/or number.
- vi. Merging or separating two courses without changes in content.
- vii. Change in contact hours for lectures, laboratory, and practical sessions.
- viii. Addition or elimination or prerequisite courses.
- ix. Rewriting program and/or course specifications.

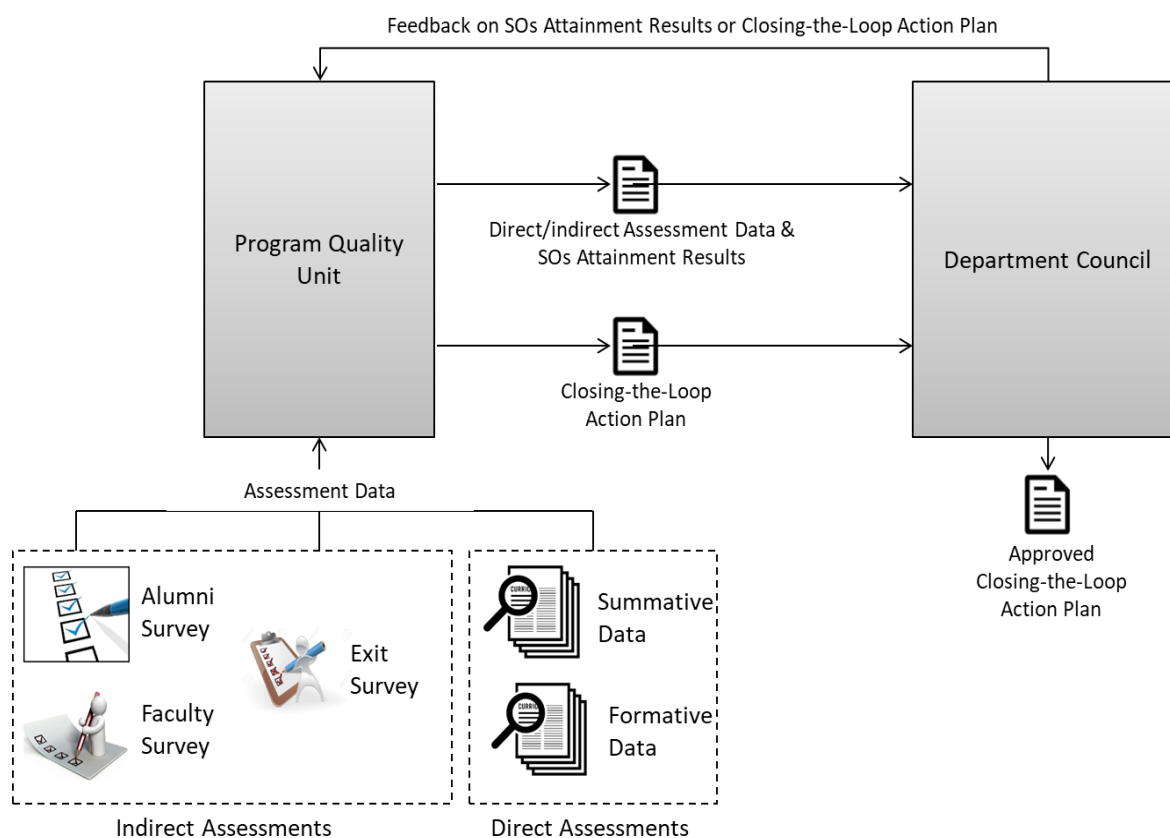


Figure 2: Process for Attainment of SOs

SOs are evaluated through a range of direct and indirect assessments, including:

- i. **Summative Data (Direct):** This type of assessment is done based on selected courses assessments (5th year courses).
- ii. **Formative Data (Direct):** This type of assessment is done based on selected courses assessments (4th year courses).
- iii. **Alumni Survey (Indirect):** A survey for alumni of the College to provide feedback on PEOs and comment on attainment of SOs. This survey is conducted as per cycle.

- iv. **Exit Survey (Indirect):** A survey for graduating students to comment on attainment of SOs in the program.
- v. **Faculty Survey (Indirect):** A survey for faculty members that allows them to provide feedback on PEOs and comment on the attainment of SOs in the context of graduating students. This survey is conducted as per cycle.

3.3. Course Level Processes

Following are some of the processes at the course level:

3.3.1. Process to Review Course Portfolios

To improve the quality of portfolios, a comprehensive process has been designed to review course portfolios each term. Figure 7 highlights the course portfolio review process and once the portfolio is verified per check list. At the end of each term, the course coordinator is responsible for submitting the “Course Portfolio” to the Program Quality Unit. According to the Portfolio Checklist, the Program Quality Unit reviews the submitted Course Portfolios. Once accepted, the Academic Accreditation Unit archives the Course Portfolios with them. The unit itself decides the internal operations of the Program Quality Unit.

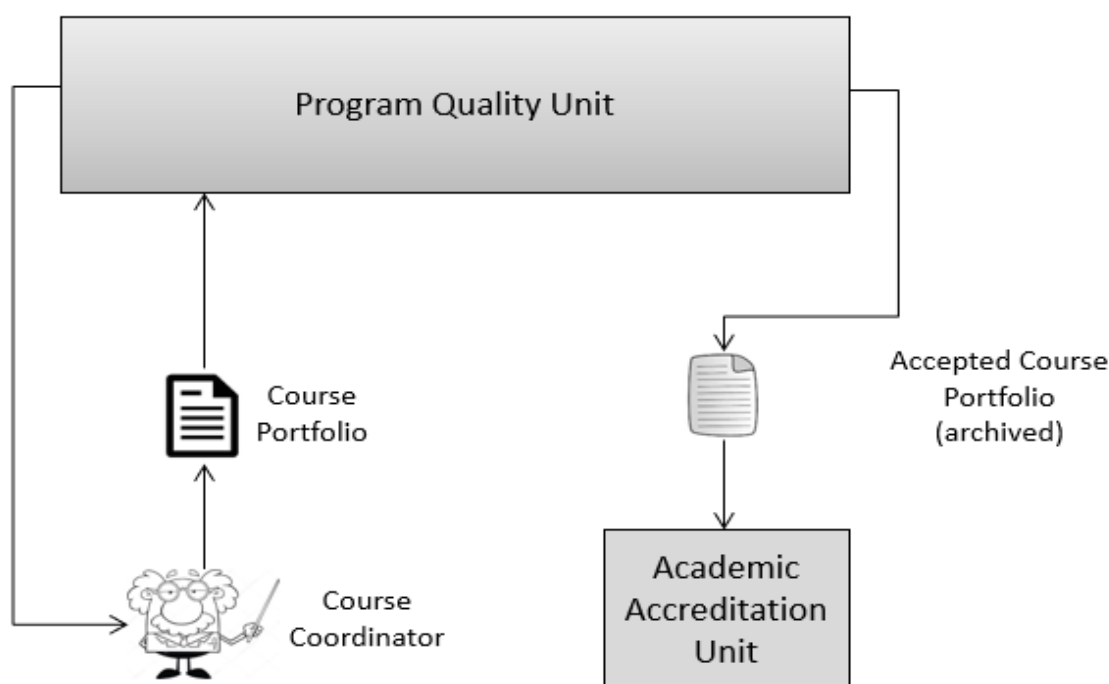


Figure 3: Review Course Portfolio

3.3.2. Process of Executing End of Term Presentations

In addition to the portfolio, each course coordinator and the teaching team present the course summary (challenges faced, etc.). As per Figure 8, in the conclusion of each term, each course

coordinator is required to conduct an End of Term presentation about his/her course. The program Quality Unit schedules the End of Term presentations. This presentation details the overview of grading, performance of students, Course Learning

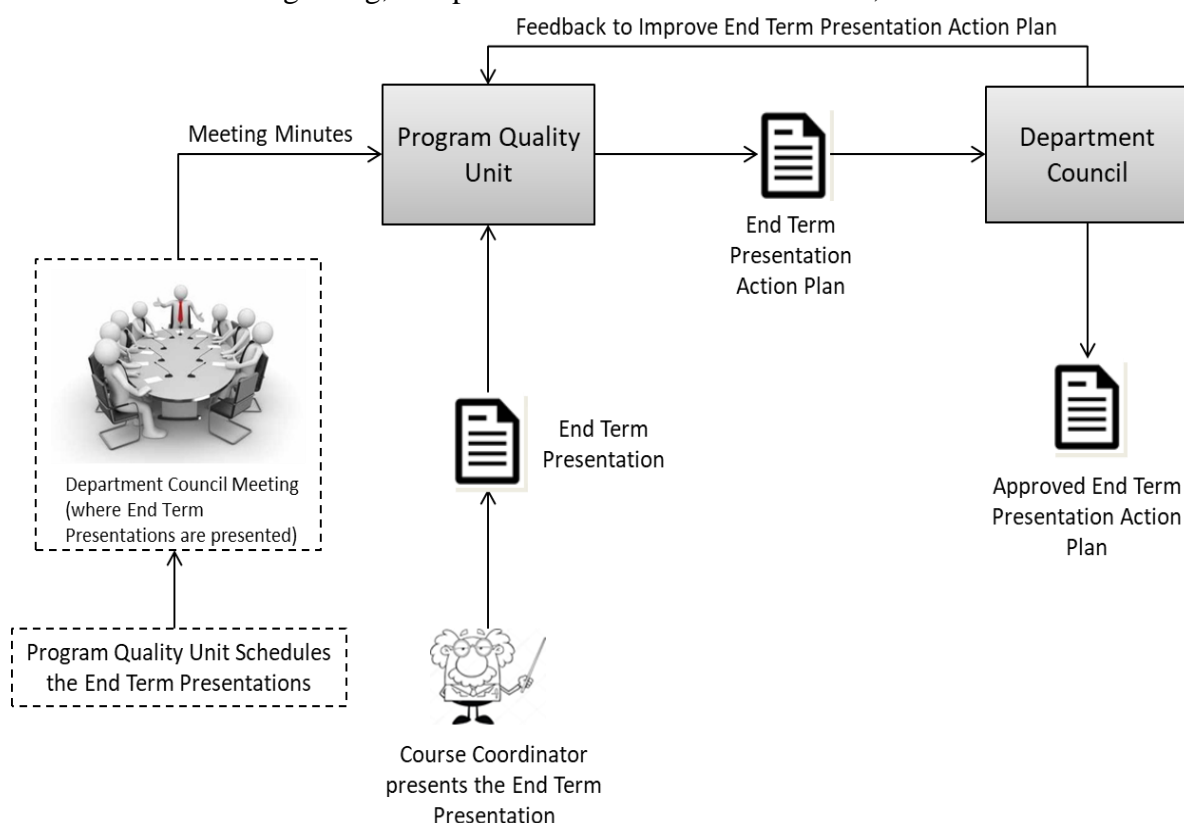


Figure 8: Process of Executing End of Term Presentations

Outcomes attainment, and/or summative data/formative data analysis (if cycle is running) and/or closing the loop action execution (if closing the loop is in action). Most importantly, this presentation also discusses the issues and challenges faced during the execution of the course. Course Coordinators are required to include recommendations to future course instructors, Department, and/or College to improve delivery and performance of students in the course. These recommendations might also include updating the curriculum of the presented course or any related course in the curriculum. At the end of this activity—conducted in Department Council meetings—the Program Quality Unit through its hierarchy gathers presentations for all courses and consults the relevant Department Council meeting minutes to develop the “End of Term Presentation Action Plan”. The reason for reviewing and seeking assistance from meeting minutes is to recall and take appropriate steps to address the discussion that takes place during the presentation in the Department Council meeting. The “End of Term Presentation Action Plan” can address shortcomings and suggest improvements to:

1. Curriculum
2. Educational practices and strategies

3. College/Department/Program related processes and practices

Later the “End of Term Presentation Action Plan” is forwarded to the Department Council that reviews and issues “Approved End of Term Presentation Action Plan”. The Department Council might return the action plan for improvements back to the Program Quality Unit.

3.3.3. Process for Continuous Syllabus Improvement and Curriculum Update

Program Quality Unit compiles all recommendations together in the “Course-Level Recommendations from Course Coordinators” document, which is forwarded to the Curriculum Unit. For any update in the courses, a process is followed which is depicted in Figure 9. Based on this process, the course instructor submits the change request and coordinate with relevant offices as per need. All course level changes are endorsed by the curriculum unit so that the change does not conflict with other course in the program. Program Quality Unit compiles all recommendations together in the “Course-Level Recommendations from Course Coordinators” document, which is forwarded to the Department that in turn forwards these recommendations to the Curriculum Unit.

The focus of the continuous improvement cycle at this (course) level is the evaluation and attainment of Course Learning Outcomes. As mentioned earlier, at the end of the term, each Course Coordinator assesses the attainment of Course Learning Outcomes for the course. In addition, the Course Coordinator is responsible for writing/assembling recommendations and presents the course synopsis in the “End of Term Presentation” session in front of Department Council. The Program Quality Unit compiles “End of Term Presentation Action Plan” and all recommendations and forwards it to the next offering Course Coordinator.

The action plan prepared at the completion of every term—consists of actions/suggestions/recommendations to improve Course Learning Outcomes attainment. This plan can address shortcomings and suggest improvements to:

1. Course Learning Outcomes
2. Course Description
3. Textbook and/or references
4. Brief List of Topics
5. Weekly schedule of the course
6. Grading (assessment strategies)
7. Performance Indicators and corresponding rubrics
8. Pre-requisite or related courses
9. Program curriculum
10. Educational practices and strategies
11. Other College/Department/Program related processes and practices

Once it has been decided to update one or more courses, the Course Coordinator submits the corresponding “Course Change Request” to the Department Curriculum Unit. The “Course Change Request” is a document that records modifications to the existing course specifications that are maintained by the department. The Program Curriculum Unit—utilizing its internal hierarchy (Quality Assessment and Exams Unit, other Program Quality Units and Other Program Curriculum Units for shared courses)—reviews and forwards the “Recommended Course Change Request” to the Department Council that in turn sends it to the College Council. The Curriculum Unit and the Department can possibly send back the course change request for further improvements by providing feedback.

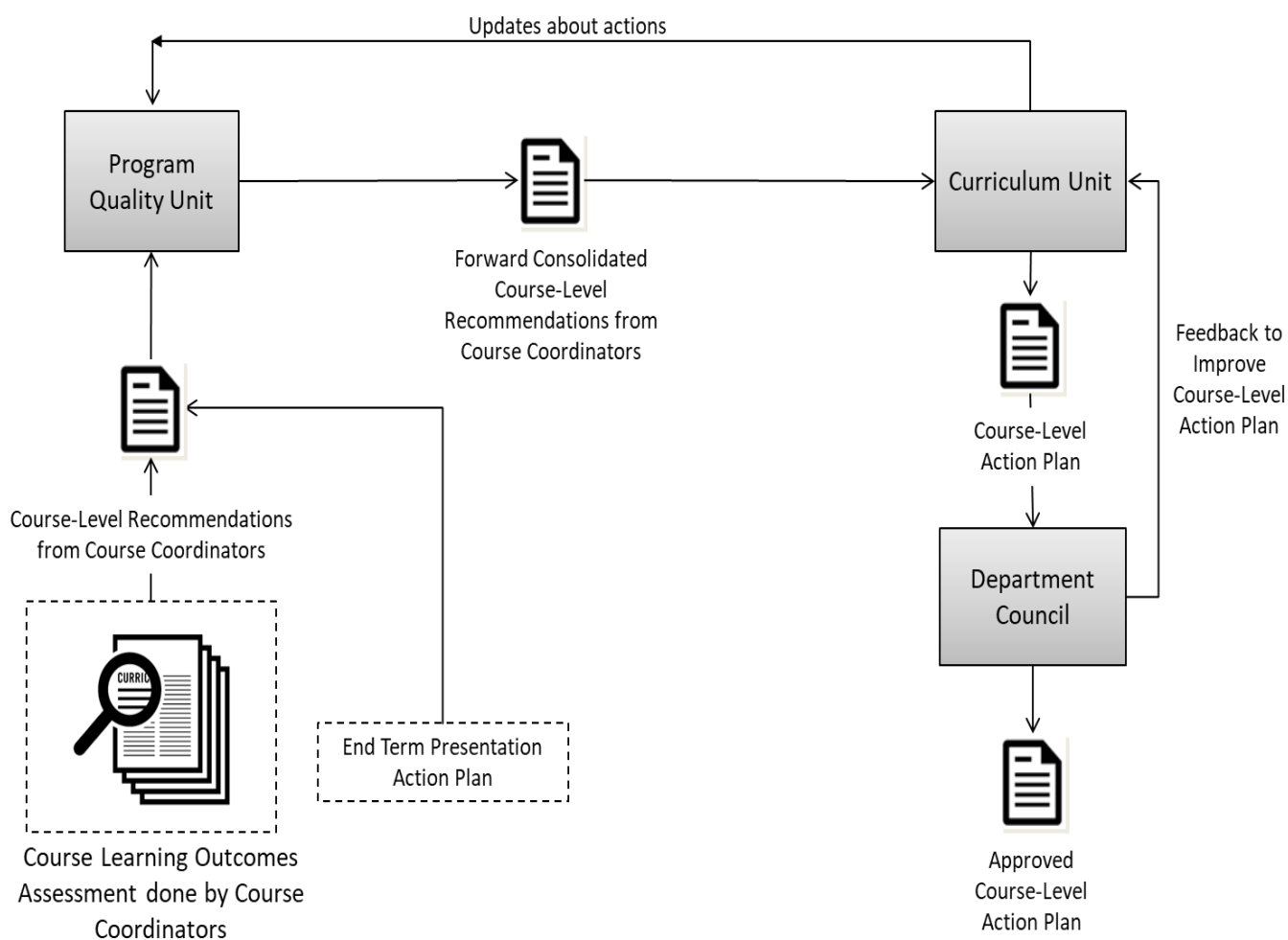


Figure 4: Process for Continuous Syllabus Improvement

At the College Council there are two possibilities. The first possibility is that the course change request—categorized as continuous change—is approved by the College Council. The second possibility is that the course change request—categorized as minor/major change—is sent to the Standing Committee of Curriculum and Academic System (SCCAS) that in turn is responsible for approving the course change request. As shown in Figure 10,

4. Key Performance Indicators

Performance indicators are important tools for assessing the quality of Academic Programs and monitoring their performance. They contribute to continuous development processes and decision-making support.

The National Center for Academic Accreditation and Evaluation has identified 17 key performance indicators at the program level. All of which are in line with the evolving program accreditation standards. These indicators are the minimum to be periodically measured, and the academic program can use additional performance indicators if it believes they are necessary to ensure the quality of the program.

It is expected that the academic program measures the key performance indicators with benchmarking using the appropriate tools, such as (Surveys, Statistical data, etc.) according to the nature and objective of each indicator, as well as determining the following levels for each indicator:

- Actual performance
- Targeted performance level
- Internal reference (Internal benchmark)
- External reference (External benchmark)
- New target performance level

A report describing and analysing the results of each indicator (including performance changes and comparisons according to sites and gender) is expected with a precise and objective identification of strengths and aspects that need improvement.

4.1. Institute Level KPIs

Standard	Code	Key Performance Indicators	Description
-1- Mission, Vision and Strategic Planning	KPI-I- 01	Percentage of achieved indicators of the institution strategic plan objectives	Percentage of performance indicators of the strategic plan objectives of the institution that achieved the targeted annual level to the total number of indicators targeted for these objectives in the same year
-2- Governance, Leadership, and Management	KPI-I- 02	Proportion of accredited programs	Proportion of programs with valid accreditation from approved accrediting bodies to the total number of programs in the institution
	KPI-I- 03	Students' evaluation of quality of learning experience in the programs	Average of overall rating of final year students for the quality of learning experience in the programs on a five-point scale in an annual survey

-3- Teaching and Learning	KPI-I-04	First-year students retention rate	Percentage of first-year undergraduate students who continue at the institution the next year to the total number of first-year students in the same year
	KPI-I-05	Graduates' employability and enrolment in postgraduate programs	Percentage of graduates from undergraduate programs who within a year of graduation were: a. employed b. enrolled in postgraduate programs during the first year of their graduation to the total number of graduates in the same year
	KPI-I-06	Graduation rate for Undergraduate Students in the specified period	Percentage of undergraduate students who completed the programs during the specified period in each cohort
	KPI-I-07	Satisfaction of beneficiaries with learning resources	Average of beneficiaries' satisfaction rate with learning resources on a five- point scale in an annual survey in terms of: a. Their adequacy and diversity (references, journals, databases... etc.) b. The support services provided for their utilization.
	KPI-I-08	Employers' evaluation of the institution graduates proficiency	Average of overall rating of employers for the proficiency of the institution graduates on a five-point scale in an annual survey
-4- Students	KPI-I-09	Annual expenditure rate per student	Average of annual operating expenditure per student (total operating expenditure - other than accommodation and student allowances - to the total number of students)
	KPI-I-10	Students' satisfaction with the offered services	Average of students' satisfaction rate with the various services offered by the institution (restaurants, transport, sports facilities, academic advising, ...) on a five-point scale in an annual survey

-5- Faculty and Staff	KPI-I-11	Ratio of students to teaching staff	Ratio of the total number of students to the total number of full-time or full-time equivalent teaching staff - for the institution as a whole and for each program separately
	KPI-I-12	Proportion of faculty members with doctoral qualifications	Percentage of faculty members with verified doctoral qualifications to the total number of teaching staff at the level of: <ul style="list-style-type: none"> a. Institution b. Each branch
	KPI-I-13	Proportion of teaching staff leaving the institution	Percentage of teaching staff leaving the institution annually for reasons other than age retirement to the total number of teaching staff.
-6- Institutional Resources	KPI-I-14	Percentage of self-income of the institution	Percentage of self-income of the institution to the total income of the institution
	KPI-I-15	Satisfaction of beneficiaries with technical services	Average of beneficiaries' satisfaction rate with technical services... on a five-point scale in an annual survey in terms of: <ul style="list-style-type: none"> a. Suitability. b. Safety and confidentiality. c. Availability and ease of access. d. Maintenance and support services.
-7- Scientific Research and Innovation	KPI-I-16	Percentage of publications of faculty members	Percentage of full-time faculty members who published at least one research during the year to total faculty members in the institution
	KPI-I-17	Rate of published research per faculty member	The average number of refereed and/or published research per each faculty member during the year (total number of refereed and/or published research to the total number of full-time or equivalent faculty members during the year)

	KPI-I-18	Citations rate in refereed journals per faculty member	The average number of citations in refereed journals from published research per faculty member in the institution (total number of citations in refereed journals from published research for full-time or equivalent faculty members to the total research published)
	KPI-I-19	Number of patents, innovations, and awards of excellence	Number of: a. Patents and innovations b. Awards of excellence obtained by the institution's staff annually
	KPI-I-20	Proportion of the budget dedicated to research	Proportion of the budget dedicated to research to the total budget of the institution
	KPI-I-21	Proportion of external funding for research	Proportion of research external funding to the total budget of research during year
-8- Community Partnership	KPI-I-22	Satisfaction of beneficiaries with the community services	Average of beneficiaries' satisfaction rate with the community services provided by the institution on a five-point scale in an annual survey
	KPI-I-23	Rate of community programs and initiatives	Average community programs and initiatives provided by each academic program during the year (total number of community programs and initiatives provided to total number of academic programs)

4.2. Program Level KPIs

Program Key Performance Indicators Standard	Code	Key Performance Indicators	Description
-1- Mission and Goals	KPI-P-01	Percentage of achieved indicators of the program operational plan objectives	Percentage of performance indicators of the operational plan objectives of the program that achieved the targeted annual level to the total number of indicators

			targeted for these objectives in the same year
-3- Teaching and Learning	KPI-P-02	Students' Evaluation of quality of learning experience in the program	Average of overall rating of final year students for the quality of learning experience in the program on a five-point scale in an annual survey
	KPI-P-03	Students' evaluation of the quality of the courses	Average students overall rating for the quality of courses on a five-point scale in an annual survey
	KPI-P-04	Completion rate	Proportion of undergraduate students who completed the program in minimum time in each cohort
	KPI-P-05	First-year students retention rate	Percentage of first-year undergraduate students who continue at the program the next year to the total number of first-year students in the same year

	KPI-P-06	Students' performance in the professional and/or national examinations	Percentage of students or graduates who were successful in the professional and / or national examinations, or their score average and median (if any)
	KPI-P-07	Graduates' employability and enrolment in postgraduate programs	Percentage of graduates from the program who within a year of graduation were: a. employed b. enrolled in postgraduate programs during the first year of their graduation to the total number of graduates in the same year
	KPI-P-08	Average number of students in the class	Average number of students per class (in each teaching session/activity: lecture, small group, tutorial, laboratory or clinical session)
	KPI-P-09	Employers' evaluation of the program graduates proficiency	Average of overall rating of employers for the proficiency of the program graduates on a five-point scale in an annual survey

<p>-4- Students</p>	<p>KPI-P-10</p>	<p>Students' satisfaction with the offered services</p>	<p>Average of students' satisfaction rate with the various services offered by the program (restaurants, transportation, sports facilities, academic advising, ...) on a five-point scale in an annual survey</p>
<p>-5- Teaching Staff</p>	<p>KPI-P-11</p>	<p>Ratio of students to teaching staff</p>	<p>Ratio of the total number of students to the total number of full-time and full-time equivalent teaching staff in the program</p>
	<p>KPI-P-12</p>	<p>Percentage of teaching staff distribution</p>	<p>Percentage of teaching staff distribution based on: a. Gender b. Branches c. Academic Ranking</p>
	<p>KPI-P-13</p>	<p>Proportion of teaching staff leaving the program</p>	<p>Proportion of teaching staff leaving the program annually for reasons other than age retirement to the total number of teaching staff.</p>
	<p>KPI-P-14</p>	<p>Percentage of publications of faculty members</p>	<p>Percentage of full-time faculty members who published at least one research during the year to total faculty members in the program</p>

	KPI-P-15	Rate of published research per faculty member	The average number of refereed and/or published research per each faculty member during the year (total number of refereed and/or published research to the total number of full-time or equivalent faculty members during the year)
	KPI-P-16	Citations rate in refereed journals per faculty member	The average number of citations in refereed journals from published research per faculty member in the program (total number of citations in refereed journals from published research for full-time or equivalent faculty members to the total research published(
-6- Learning Resources, Facilities, and Equipment	KPI-P-17	Satisfaction of beneficiaries with the learning resources	Average of beneficiaries' satisfaction rate with the adequacy and diversity of learning resources (references, journals, databases... etc.) on a five-point scale in an annual survey.

4.3. KPI Driving Methodology

In this section the numerator and denominator of each KPI are documented.

No	KPI	Indicator	Numerator	Denominator	Output
			Data	Data	
1	KPI-P-01	Percentage of achieved indicators of the program operational plan objectives	Number of performance indicators achieved the target in the Program Operational plan objectives during the academic year	Total number of indicators targeted for these Program Operational plan objectives in the same year	Percentage
2	KPI-P-02	Students' evaluation of quality of learning experience in the programs	Sum of the scores given by the student respondents to the survey (PES) [Data Source: Question number 22 in the UDquest excel sheet data of PES (Overall item)]	Number of students filled the survey (PES)	Mean

3	KPI-P-03	Students' evaluation of the quality of the courses	Sum of the scores given by the student respondents to the survey (CES) [Data Source: Question number 15 in the UDquest excel sheet data, overall item of CES]	Number of students filled the survey (CES)	Mean
4	KPI-P-04	Program Complete rate for Students in the specified period	Number of students who successfully completed the programs in minimum time as stipulated in the study plan [curricular structure]. (i.e. it is related to a specific batch of the students (i.e. Cohort) who successfully graduated in each academic year)	Total Number of students admitted in the program 4 or 5 years before (i.e. it is related to a specific batch of the students (Cohort) who started the program 4 or 5 years before)	Percentage
5	KPI-P-05	First-year students retention rate	Number of students continuing their studies at the end of first year of the undergraduate Program	Total Number. of students enrolled in first year of the undergraduate Program	Percentage
6	KPI-P-06	Students' performance in the professional and/or national examinations	Number of students or graduates who were successful in the professional and / or national examinations in each academic year	Total number of students or graduates who appeared in the professional and / or national examinations in the same academic year	Percentage
7	KPI-P-07	Graduates' employability and enrolment in postgraduate programs	Number of graduates from undergraduate programs who within a year of graduation were: a. employed b. enrolled in postgraduate programs during the first year of their graduation.	Total number of students graduated in the same year	Percentage
8	KPI-P-08	Average number of students in the class	Number of students per class (in each teaching session/activity: lecture, small group, tutorial, laboratory or clinical session) in the program during the specified academic year	Total number of Classes in the same academic year	Ratio
9	KPI-P-09	Employers' evaluation of the Program graduate's proficiency	Sum of the scores given by the Employers who responded to the survey (ESS) (Part 2 questions & mean score of Q. No 8 to 22)	Number of Stakeholder expected to fill the survey (ESS)	Percentage

10	KPI-P-10	Students' satisfaction with the services offered	Sum of the scores given by the final year students who responded to the survey (PES) [Q.No. 13 (UDquest excel sheet)-For Extracurricular activities; Q. No 1 & 2 of PES-For Academic Advising]	Number of final year students expected to fill the survey (PES)	Mean
11	KPI-P-11	Ratio of students to teaching staff	Number of students enrolled in the academic program during the academic year	Number of teaching staff teaching the same academic program during the same academic year	Ratio
12	KPI-P-12	Percentage of teaching staff distribution	Number of male or female teaching staff teaching the program (provide number separately)	Total number of teaching staff in the program	Ratio (or percentage)
			Number of teaching staff teaching the program in different branches, if applicable (provide number separately for each branch)	Total number of teaching staff in the program offered in each branch (if applicable)	Ratio (or percentage)
			Number of teaching staff teaching the program (i.e. provide number according to various academic rank separately)	Total number of teaching staff in the program	Percentage (give separately for each rank)
13	KPI-P-13	Proportion of teaching staff leaving the Program	No of teaching staff left the Program in the past year for reasons other than age retirement	Number of teaching staff in the program during that specific academic year	Proportion
14	KPI-P-14	Percentage of faculty members with at least one publication	Number of full-time faculty members who published at least one research during the year	Total No of full-time members of faculty members employed in the same year	Percentage
15	KPI-P-15	Rate of published research per faculty member	Total number of refereed and/or published research by fulltime or equivalent faculty members during the year	Total number of fulltime or equivalent faculty members working in the Program during the same academic year	Ratio
16	KPI-P-16	Citations rate in refereed journals per faculty member	Total number of citations in refereed journals from published research for full-time or equivalent faculty members in each Gregorian year	Total number of published researches from full-time or equivalent faculty members in each Gregorian year	Ratio

17	KPI-P-17	Satisfaction of beneficiaries with learning resources	<u>Satisfaction with the quality & extent availability of Learning Resources</u> Sum of the scores given by the Stakeholder who responded to the survey (LUSS) [Q.No 34 of LUSS UDquest excel sheet]	Number of Stakeholder filled the survey (LUSS)	Mean
			<u>Satisfaction with the Diversity of Learning Resources</u> Sum of the scores given by the Stakeholder who responded to the survey (LUSS) (Q. No 12, 13, 15, 16 in LUSS UDquest excel sheet).	Number of Stakeholder filled the survey (LUSS)	Mean

5. Recommendations for ABET Accreditation Processes at CCSIT

In this section we propose recommendations for ABET data collection process for academic programs in CCSIT.

5.1. Program Mapping

The following recommendations are suggested for preparing program mapping of an academic program.

1. There should be a unified program mapping used for ABET as well as NCAAA forms. This mapping should be approved by department board.
2. CLOs of each course in program catalog need to have a PI mapping mentioned in front of each CLO as shown in example (SO:5; PI:5.1) and this mapping needs to be consistent with NCAAA course specification, where CLOs are mapped to PLOs.
3. The rubrics of all performance indicators should be approved by department board along with the approval of program mapping.

5.2. Assessment Plan

The following recommendations are suggested for preparing an assessment plan for an academic program.

1. There should not be any course selected for assessment from common years.
2. The COOP should not be selected for formative/summative assessment.
3. While identifying courses for assessment plan 4th year courses should be used for formative assessments only and 5th year courses should be used for summative assessments.

4. For each PI, PQUs need to identify 3 courses for assessments, 1 should be used for formative assessment and 2 should be used for summative assessments.
5. The count of total number of courses used for data collection is based on discretion of PQUs. Selection of courses from where the data should be collected in one assessment cycle should be based on the relevance of the course to the PI requirements, rather than ease in data collection. In each cycle, PQU should change the assessed courses wherever possible to balance the load among course instructors. There is a tradeoff between reliability of data and the effort required to collect data. Selecting all PIs data from few courses results in less effort but may compromise the quality of data, therefore department board should ensure that there is a reasonable number of courses identified for data collection in one cycle.
6. Instructors need to ensure that the assessment questions aimed for measuring ABET SOs/PIs are in line with the rigor required in rubrics. The instructors of any course selected for PI data collection needs to specify one assessment (a dedicated question in final exam, few exceptions would be there such as oral presentations, group work) from which the data needs to be collected. The questions in these assessments should strictly follow the rubrics designed for PIs. PQUs should ask from each instructor at the start of the semester that which two course assessment will be used.
7. The assessment plan should be approved from the department in the first week of term when the assessment cycle will start. This will ensure that the instructors of all identified know before the commencement of classes that their course will be used for ABET data collection.

5.3. Attainment of Student Outcomes

Attainment of SOs is collected using summative data, formative data, alumni, faculty and exit surveys.

1. There should be a dedicated comprehensive question targeting to the measuring PI in exam as per defined rubric. Teacher alone should not be allowed to fill summative form. Instructors should bring assessments to program quality unit and quality unit members need to collaborate with instructor team in filling the summative form.
2. In case of formative data, form should be filled based on discussion with quality unit and in this case associated evidence of assessments may not be stored by PQUs.
3. All surveys should have relevant questions relating to PIs or PEO, depending upon whether they are used to measure PEOs, SOs or both. No unit can update the survey forms without the prior approval of relevant PQUs.
4. PQUs need to collaborate during the first term of academic year with relevant committees [Employer Survey (COOP Unit), Faculty Survey (Faculty Search Unit), Alumni Survey (Alumni Unit), Exit Survey (PQU)] to ensure that the survey forms have the respective questions. PQUs should approve the surveys during first term.

5. Exit, alumni, and faculty surveys should be run before the midterm of term 2, whereas employer survey should run during summer term along with COOP.

5.4. Attainment of Program Educational Objectives

Attainment of PEOs needs to be collected using employers, alumni, and faculty surveys.

5.5. Presentation of Attainment Results

While documenting the attainment results, each program needs to consider the following points as well.

1. For each PEO, analysis need to be carried out separately based on Employer, Faculty and alumni survey attainment.
2. Secondly, all data needs to be aggregated at PEO level. It should be noted that such average value is for calculation purposes, while preparing the program improvement plan, program need not to rely only on this value, PQU units need to dig down at each survey and take into consideration feedback given in surveys.

5.6. Reviewing of Portfolios

1. The PQU of owner program of a course is responsible for the reviewing of the course portfolio of a course irrespective of which students attended that course. In case a course is offered to more than one program then there is no need to prepare multiple portfolios, only NCAAA course report, report on attainment of course learning outcomes, reflections and formative/summative data should be prepared separately for each program.
2. It is recommended to set 3 milestones for portfolios in week 1, week 9 and week 17 for partial completion. Each PQU can set its internal deadlines and may consider little flexibility keeping in view the situation of each course, e.g. if a course is offered for first time, then maybe all lecture slides are not ready at the start but at least this will be applicable in majority of courses.
3. At the end of each milestone PQU chair needs to give the report to their department chair about the status of portfolios. This will ensure that you will not have major problems at the end of semester.
4. During week 1, each PQU chair should share continuous improvement comments (from end of term action plan of previous term and from closing the loop action plan [if applicable]).

5.6.1. Guidelines for Portfolio Review by PQU

1. There is no missing documents as per checklist.
2. Content is structured as per checklist.
3. Printed documents are properly stapled.
4. The CVs are as per university template for consistency.

5. Do not use plastic sheets for papers inside portfolio.
6. Student names/IDs are masked/removed in student samples.
7. CLOs are consistent across whole portfolio (course specification, course report, attainment data sheet, exam blueprint etc.)
8. The content is double side prints. In case of lecture slides print 6 slides per page.
9. Scanned documents are readable. Normally mobile pictures are not readable.
10. Student samples must be highlighted using highlighters with consistent labels (Excellent, Average, Needs Improvement)
11. CLO attainment should be out of 100 marks (including participation, groupwork etc.)
12. Recommendations for continuous improvement should be clear and meaningful.
13. CLO attainment sheet should be included with accurate data.
14. There is no unnecessary content in the portfolio such as change request forms.
15. Formative and summative data forms should be only for those courses in case the assessment cycle is running, and course is selected for assessment in the assessment plan.
16. In case a course is offered in more than one programs, it should have a separate NCAAA course report, Reports of attainment of course outcomes, data sheet, reflections, formative/summative form (if applicable), based on separate performance of students of each program.

5.6.2. Recommended Course Portfolio Milestone

Content		Week1	Week9	Week 17
	Front Page with details			
1	Faculty member CV	X		
2	Course Specifications (Signed)	X		
3	Course Report (signed)			X
4	Field Experience Specification (signed) (If applicable)			
5	Field Experience Report (signed) (If applicable)			
6	Evidence of Teaching process and feedback			
6.1	Course Related Material			
6.1.a	Teaching Materials (PPT/PDF)	X		
6.1.b	Handout/lab manuals	X		
6.1.c	Any updates about the course from journals, internet, etc.			
6.2	Assessment and Extent of Student Learning			
6.2.a	Quiz		X (Partial)	X (Complete)

6.2.b	Quiz Answer Key+Samples		X (Partial)	X (Complete)
6.2.c	Midterm Exam/Jury Paper		X	
6.2.d	Midterm Exam Answer Key (if relevant)		X	
6.2.e	Final Exam/Jury Paper			X
6.2.f	Final Exam Answer Key (if relevant)			X
6.2.g	Assignments+ Samples		X (Partial)	X (Complete)
6.2.h	Projects		X (Partial)	X (Complete)
6.2.i	Other [Weekly Syllabus, Exam Blueprint, Evaluation Breakdown]	X		
6.3	Reports of Students Evaluation for teaching Effectiveness results			
6.3.a	Report of the formal surveys' results (CES, SSLS, etc.)			*Leave blank, can be filled at the time of visit
6.3.b	Report of the informal surveys' results (on LOs, group discussion, etc.			*NA
7	Reports of Attainment of Course Outcomes for every semester + Attainment Sheet			X
8	Reflections (What is done and what needs to be improved?)			X

5.7 Orientation of New Faculty

It is recommended to make new faculty aware with these quality processes at program level an orientation session is organized at the start of each semester.

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