KINGDOM OF SAUDI ARABIA
Ministry of Education
University of Tabuk
Faculty of Science
Department of Chemistry

المملكة العربية السعودية
وزارة التعليم
جامعة تبوك
كلية العلوم
قسم الكيمياء

Quality Management System of Chemistry

B.Sc. Program

Version 3

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Chairman of the quality committee.

Dr: Ahmed Badreldin

Head of department.

Dr: Naser Alomrani

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Declaration:

We, The Chemistry Program at Tabuk University, hereby declare our commitment to upholding the highest standards and affirm our dedication to quality assurance. We strive to deliver an exceptional program that meets the needs and expectations of our stakeholders, while continuously improving and adapting to evolving demands. We will establish and maintain robust quality assurance processes to monitor and evaluate our program's effectiveness and efficiency. Regular reviews, assessments, and audits will be conducted to ensure that our program meets or exceeds the established standards.

Definitions:

Quality: It is a measure of how well an object, product, service, or process meets or exceeds established standards, requirements, or expectations.

Academic quality: Refers to the standard of excellence in educational institutions and programs. It encompasses various aspects related to the learning experience, curriculum, teaching methods, faculty, resources, and student outcomes.

Quality assurance: is a systematic and ongoing process that institutions and organizations implement to ensure and enhance the quality, effectiveness, and standards of education and related services provided to students.

Academic standards: refer to a set of criteria and benchmarks that define the expected level of knowledge, skills, and competencies that students should attain in a specific field or discipline within the context of higher education

Quality system: Refers to a comprehensive framework and a set of documented policies, procedures, processes, and resources that a program implements to ensure and manage the quality of their academic programs, teaching, research, and related activities.

Policies: are formal statements or guidelines that define an organization's principles, rules, and procedures. They serve as a framework for decision-making, governing various aspects of an organization's operations, behaviour, and interactions.

Procedures: Are step-by-step instructions or guidelines that outline the specific actions and processes required to carry out a particular task or achieve a specific outcome within an organization.

Tasks and Activates: Tasks are typically a specific, well-defined, and focused actions that can be completed within a relatively shorter timeframe. Activity typically refers to a broader, more encompassing unit of work. It represents a larger, more complex set of actions or operations that are performed to achieve a specific objective or goal.

Forms: Refer to structured documents or templates used to collect, record, and organize information in a standardized format.

Records: Refer to any documented information, data, or evidence that is created, received, maintained, and used by an individual, organization, or system as evidence of activities.

Course: is a structured educational program or unit of study offered by an educational institution.

Determinants: Determinants refer to the factors or influences that shape the development of some program component.

Instructor: Also known as a teacher or educator, is an individual responsible for facilitating the learning process and guiding students in their educational journey.

Course coordinator: Also known as course manager, is an individual who oversees the planning, development, and overall management of a specific course or a group of related courses within an educational institution.

Program Committees: Program committees are established to facilitate collaborative decision-making, address specific program-related issues, and ensure representation from relevant stakeholders.

Faculty Members: Faculty members are responsible for delivering courses, designing curricula, and providing academic guidance to students. They contribute their expertise and knowledge to ensure high-quality teaching and learning within the program.

Program Coordinator: Program Coordinator is a person who manages, administers, and supports the academic and administrative functions of a specific degree or certificate program within a college or university. This role involves ensuring the quality and integrity of the program, supporting students and faculty, and coordinating curriculum delivery and program development.

Abbreviations:

To enhance readability and streamline the manual's content, we have included a list of commonly used abbreviations and their corresponding full forms in the following section.

UT: University of Tabuk.
FOS: Faculty of Science.
NCAAA: National Commission for Academic Accreditation and Assessment
NQF: National Qualification Framework.
AAQA: Academic Accreditation and Quality Assurance.
CES: Course Evaluation Survey
PES: Program Evaluation Survey
SES: Student Experience Survey
FSS: Faculty Satisfaction Survey
ESS: Employee satisfaction Survey
AES: Alumni Evaluation Survey.
CSS: Community Service Survey.
AES: Alumni Evaluation Survey.
SS: Supervision Survey.

AAS: Academic Advising Survey.
QES: Questionnaire for Employers' Satisfaction with the Program and its Alumni
SES: Self-evaluation Scales.
SWOT: Strength weakness opportunities and threats analysis.
SSRP: Self-evaluation Report for Programs.
KPI: Key Performance Indicators.
CR: Course Report.
APR: Annual program Report.
CLOs: Course Learning Outcomes.
PLOs: Program Leaning Outcomes.
HOD: Head of Department.
QC: Quality Committee.
FQC: Facilities and Equipment Committee.
PSPC: Program and Study Plans Committee.
HAAC: Higher Committee for Academic Accreditation

Introduction:

Purpose: This comprehensive manual serves as a guide to ensure the highest standards of quality in our program's activities, procedures, responsibilities, and reporting. By adhering to the guidelines outlined in this manual, we aim to achieve excellence, efficiency, and continuous improvement in all aspects of our program. This manual provides a clear framework and effective management for maintaining consistency, accountability, and transparency throughout the program's lifecycle.

The manual encompasses a wide range of essential components related to quality assurance. It outlines the various activities carried out within the program, including planning, implementation, monitoring, and evaluation. Additionally, it provides detailed procedures and protocols to follow to ensure the smooth execution of these activities. Clear roles, responsibilities, and accountabilities are assigned to different stakeholders involved in the program, fostering a collaborative and results-oriented approach. Moreover, the manual establishes comprehensive reporting mechanisms to track progress, identify areas for improvement, and communicate program outcomes to relevant stakeholders.

During the development of this manual, the QC prioritized adherence to the programmatic quality standards set by the National Center for Academic Accreditation and Evaluation system. The key requirements include:

1. Ensuring that the department's organizational chart and procedures align with the general policies and regulations governing Saudi universities, as well as the specific regulatory frameworks established by the University of Tabuk and the College of Education.

2. Consistency with the regulatory frameworks of the university and faculty is essential.

3. Implementing a comprehensive quality management system (planning - implementation - measurement - improvement) that encompasses all administrative and academic activities and operations of the program.

4. Actively involving stakeholders such as students, graduates, faculty members, employees, employers, and individuals with direct and indirect connections to the university in the planning and evaluation processes. Continuous feedback, observations, and viewpoints are obtained and analyzed to ensure effective interaction.

The procedural manual for the quality management system is approved by the department council. It undergoes an annual review, incorporating any necessary amendments based on new data that are relevant to quality policies and objectives. Additionally, proposals for enhancing the work system put forward by faculty members are taken into consideration. The manual is then presented to the department's management, as well as to experts and specialists in quality and academic accreditation, for thorough scrutiny and review of its components. The QC assumes responsibility for monitoring the amendments, disseminating the guide, and providing clarifications about its contents.

Scope: This manual applies to all personnel involved in the Chemistry Program, including program managers, staff members, and relevant stakeholders. It encompasses all stages of the program, from planning and implementation to evaluation and improvement.

Document Control: This manual is version-controlled and maintained by the program administration office. Any revisions or updates to the manual will be documented version 1, 2, .. ,and so on, and the latest version will be made available to all relevant personnel.

Chemistry Program Overview

The department of chemistry was established in the academic year 1429/1430 AH corresponding to 2008/2009 AD, which is the third year of the establishment of the Faculty of Science, University of Tabuk. The study is according to the credit hour system. The bachelor degree of Chemistry requires a successful completion of 135 credit hours distributed across the courses provided by the program as well as the capstone project in the final year. The distribution of 135 credit units required for the B.Sc. degree in the Chemistry Program.

The degree awarded by the program	Bachelor of Science in Chemistry
Type of study in the program	Ordinary
Study hours	Morning throughout the week, except the official holidays
Program language	English
Reasons for Establishing the Program	• There is a need to serve chemical industries, especially advanced ones within the Kingdom. • There is a need to serve the research, health, education, and all industrial sectors with a conscious graduate who is aware of advanced chemical science. • There is a need to preserve the environment inside the Kingdom. • There is a need to achieve the goals and vision of the Kingdom in: 1. Environmental sustainability. 2. Protection of resources. 3. Increasing energy efficiency. 4. Reducing carbon emissions.
Requirements for enrolling in the Program	Accumulative grade of 30% for general secondary education+ 30% for abilities+ 40% for achievement.
The study Plan	The courses are divided through eight semesters. The courses are classified into two categories- compulsory 94.10% and restricted elective (from the department courses) 5.90%.
Nature of the program	Study mode consists of courses, site training and a graduation project, offered in eight semesters, with a total number of 49 courses (135 Credit Hours). In order to award the B.Sc. degree, the GPA of the student should not be less than 2.

Mission, Goals, Learning Outcomes and Graduate Attributes

The primary focus of the Chemistry program is defined by its statement of mission. The mission addresses instruction, research and community service, also it explains the program's character, individuality and its harmony with the mission and of the Faculty of Science and University of Tabuk. The mission of the chemistry program propagates a message that resonates with students, faculty members and all stakeholders, in such a way that reflects the uniqueness of the chemistry program and provides a constant reminder to all the stakeholders of why the program is developed. The Statement of Mission of the chemistry program is as follows:

Qualifying distinguished human cadres with high-quality education in the field of Chemistry to strengthen the goals of sustainable development and meet the need of community and scientific research.

The program goals:

Gives a graduate with a high level of scientific competence and ethics of the profession committed to the process and able to compete and perform the duties assigned to them with high quality locally, regionally, and internationally and contribute to solving society's problems.
Where the program is keen:

G1. To provide a broad foundation in chemistry that stresses scientific reasoning and analytical problem solving with a molecular perspective.
G2. To provide students with the skills required to succeed in graduate school, the chemical industry, or professional school.
G3. To expose the students to a breadth of experimental techniques using modern instrumentation.
G4. To provide students with the ability to effectively communicate scientific information and research results in written and oral formats with a diverse range of audiences.
G5. To develop the student's ability to recognize ethical and professional responsibilities in scientific situations and make informed judgments, which must consider the impact of chemical processes in global, economic, environmental, and societal contexts.

The program learning outcomes:

Learning outcomes of Chemistry Program are specified clearly in the program specification using the National Qualification Framework (NQF) provides three learning domains.

Knowledge and Understanding	
K1	Explain the basic principles, concepts, and fundamental theories of the different branches of chemistry.
K2	Illustrate different spectroscopic and separation techniques of different compounds as well as the basic theories and principles of advanced techniques of all chemistry branches.
K3	Describe the procedure of scientific research in the field of chemistry and allied fields of science.
Skills	
S1	Apply theories, principles, and concepts of chemical analysis to detect and estimate organic, inorganic and organometallic compounds.
S2	Carry out practical tasks using advanced and specialized techniques, tools, instruments, and/or materials to deal with practical activities in the field of chemistry
S3	Utilize updated technologies and applications to process and analyze a variety of data and information related to chemistry.
S4	Communicate in various forms to disseminate knowledge, skills related to chemistry to specialist and non-specialist audiences.
Values	
V1	Adhere to the values and code of ethics associated with professional practices in the field of chemistry.
V2	Demonstrates specialized tasks and activities in field of chemistry practice with autonomy.
V3	Collaborate and lead teamwork to effectively perform a range of tasks with responsibility to achieve common goals in field of chemistry

The Chemistry program graduate attributes:

The Chemistry program graduate attributes are summarized in the following table:

The definition of the attributes of the program graduates	Inferred attributes
Cognitive mastery in the field of chemistry and the basic sciences related to the specialization	Academically distinguished
Knowledge of the main techniques used by chemists	
Knowledge of the basics of science related to chemistry	
Effective use of computer applications and IT tools related to chemistry	Skilled Chemist Aware of ICT
Employing computational software and data processing skills in chemical information processing and chemical data analysis	
Ability to deal with complex problems related to chemistry and to find creative solutions	Creative and innovative
Contribute to solving problems by thinking critically and making appropriate decisions	
The ability of independent learning required for continuing professional development	
Collaborate and work successfully in a team environment, and contribute positively and flexibly to team outcomes	A continuous active Responsible Leader
Effective communication, choosing the right content and the appropriate way to present it to the community	
Knowing the scientific reasons for the environmental problems and challenges facing his society	Professional Specialist
Consider waste reduction methods and apply them in practical activities, and disseminate disposal techniques that protect laboratory workers and the environment	
Awareness of environmental sustainability	Aware of environmental sustainability

The organizational structure of the Chemistry Program

Introduction:

The Chemistry Program has a well-designed organizational structure of tracking and reporting, on its operational objectives and it establishes mechanisms for academic governance and decision-making within the program, and clearly defines the roles and responsibilities of faculty members, administrators, and staff within the program, figure 1 shows the chemistry program organizational structure. The organizational structure of the chemistry program has been developed through collaboration with relevant stakeholders, including faculty members, students, alumni, and industry representatives.

The program organizational structure aligns with the overall mission and strategic goals of the University of Tabuk, and support and contributes to accomplishing its objectives.

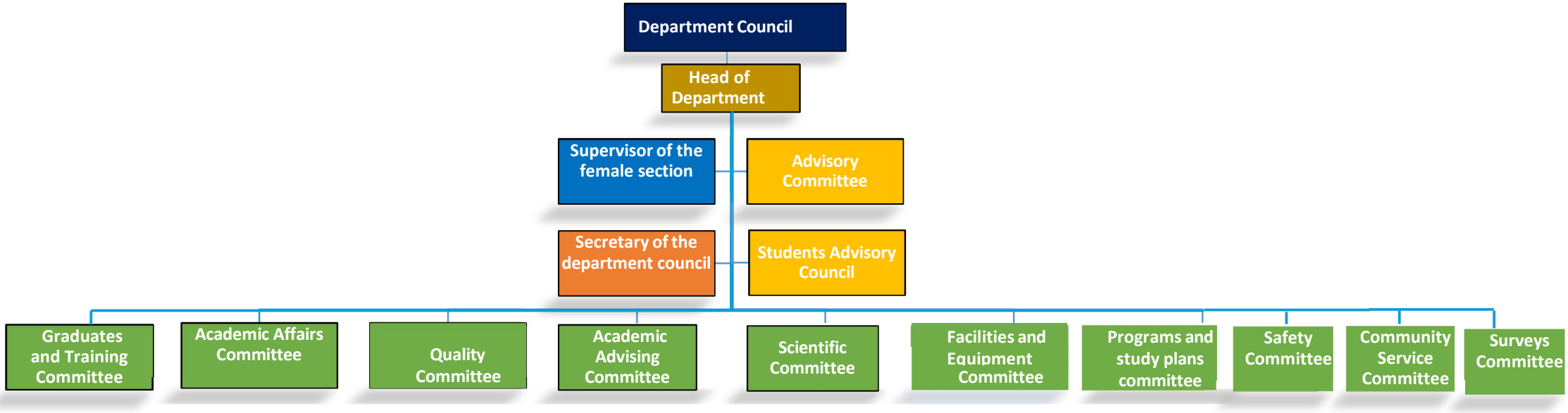
The standards followed by the chemistry program in building its organizational structure are:

1) Alignment with institutional mission and strategic goals.
2) Adherence to institutional policies.
3) Alignment with accreditation standards and quality assurance.
4) Support the Chemistry Program's mission,
5) Enhance the intended outcomes.
6) Responsive to the stakeholders needs.
7) Clarity of Roles, responsibilities and accountabilities.
8) Flexibility and adaptability to the changing needs.

The establishment of the organizational structure of the Chemistry Program went through multiple steps, that includes Identifying Program Components

and outcomes. Identify the number and qualifications and the expertise of faculty members. Consult all relevant internal and external stakeholders. Identify the support services required for the program, such as academic advising, career services, research and training support, student support services and community services. Determine the committees and councils required for program governance and decision-making. Define the purpose, composition, and responsibilities of each committee. Determine the reporting relationships within the program, through identifying the hierarchical structure, including positions such as department chairs, program coordinators, and faculty members. And finally determine who reports to whom and establish clear lines of authority and communication.

Figure 1: The Chemistry Program organizational chart



Procedure for determining the organizational structure of the Chemistry Program	
Scope	The organizational environment of the program
Goal	• Description of the administrative system for all activities in the program. • Define tasks • Defining the responsibilities • Determine authorities • Determine the procedures that lead to achieving the objectives of the program's organizational environment. • Ensuring alignment between the program's missions and activities. • Ensure the involvement of all the program members and stakeholders in work management, implementation, and decision-making.
Implementation responsibility	HOD, Supervisor of female section, quality guide preparation team.
Affiliation	The Faculty of Science organizational structure. Requirements of the standards of the NCAAA. Guide to the tasks and duties of leaders at the University of Tabuk. Guide to the organizational structure of Faculties at the University of Tabuk. Task guide for Faculties and Deanships at the University of Tabuk.
procedures	1. Preparing detailed lists of academic and administrative activities in the program. 2. Determine the organizational relationships of these activities with the program committees. 3. Defining a communication network that allows achieving coordination with the Faculty of Science organizational structure in order to facilitate the exchange of information and the implementation of action plans.

	4. Determine the follow-up mechanism through the department council. 5. Create task description cards.
Outputs	Minutes of approval of the organizational structure.

The organizational structure of the chemistry program goes through regular assessment and review in order to adapt it to the changing needs.

The Department Council	
Organizational relationship	Head of Department
Goal	Study and discuss matters that concern the work of the department, such as recommending to the faculty Council the decisions and procedures required for the progress of work.
Chairman of the Council	HOD.
Council members	Supervisor of the female section All faculty members. Secretary of the Council (designated faculty member)
References	Task guide for leadership positions in Faculties and supporting deanships at the University of Tabuk
Responsibilities	1. Propose to the Faculty Council the study plan, curricula, prescribed textbooks, and references. 2. Recommending the appointment and promotion of faculty members, lecturers, and teaching assistants. 3. Study scientific research projects, encourage faculty to conduct research, and assist in publishing their research work. 4. Distributing lectures, tutorials to faculty members and teaching assistants. 5. Proposing the necessary plans for postgraduate programs and the conditions for accepting students into them. 6. Forming permanent and temporary committees from the program's faculty members. 7. Considering any topic referred by the Dean, Faculty council, or the Faculty Vice Deans.
Council input	Committee minutes and the items referred to the council by the HOD for presentation. Minutes or correspondences that are delegated by the Dean, Faculty council, or the Faculty Vice Deans.
Outputs	Meetings minutes are submitted to the Dean or the Faculty Council.

Duties and authorities of the Program Leaders				
Job Title	**Head of Department**	**Supervisor of the female section**	**Secretary of the Council**	**Department secretary**
Organizational Relationship	Dean of the College	Department head, college dean	Head of Department	Department Director, HOD, Supervisor of female section
Job Description	The HOD is among the faculty members distinguished by scientific and administrative competencies. Appointed by a decision of the University President based on the nomination of the Dean. The appointment is for a period of one year, subject to renewal.	The supervisor of the female section is from among the distinguished faculty members with academic and administrative competencies. Appointed by decision of the University President based on the nomination of the Dean, and the HOD. The appointment is for a period of one year, subject to renewal.	The Secretary of the Council, from among the distinguished faculty members with academic and administrative competencies. Appointed by a decision of the University President based on the nomination of the Dean. The appointment for a period of one year, subject to renewal.	An employee in the Faculty administration. Assigned by the director of administration to carry out secretarial work for the HOD.
Goal	Supervise academic, financial and administrative matters in the department. Implementing the system, regulations and the decisions issued by the Higher Education Council.	Supervising academic, financial and administrative matters in the female section in coordination with the Dean and the HOD. Implement the system, regulations and the decisions issued by the Higher Education Council.	Organize and document the work of the department council, and responsible for implementing the council system.	Carry out department secretarial work

Responsibilities	**1.** Distribution of the academic load among faculty members. **2.** Assigning mentors and academics. **3.** Assign a course coordinator for each course taught in the academic program. **4.** Approval of grades. Assign cross-checker to verify the accuracy and consistency of the primary grader's assessments of the final exam. **5.** Prepare faculty members performance reports. **6.** Promote the department employees to attend training programs inside and outside the university. **7.** Assign a faculty member	**1.** Assign cross-checker to verify the accuracy and consistency of the primary grader's assessments of the final exam. **2.** Approval of grades. **3.** Distribute the academic load among faculty members. **4.** Promote the department employees to attend training programs within the university.	Vote	

	other than the one who taught the course to write the final exam questions when necessary. **The authority granted in the electronic registration portal.** 1. Supervise the progress of the educational process within the department, implementing study plans, and support the effort to develop them. 2. Foster the academic and research development within the program. 3. Supervise the achievement of quality and academic accreditation requirements. 4. Representing the department in activities and meetings related to the department's work inside and outside the			

	university in accordance with the granted authorities. 5. Coordinate the department's partnership relations with relevant authorities inside and outside the university in accordance with the granted authorities. 6. Submit reports to the dean regarding the department's progress, as well as any Scientific or behavioral violations or breaches of professional duties by any member of the department. Also, monitoring the implementation of directives issued by the dean regarding these matters. 7. Prepare a comprehensive annual report on the study academic progress, research and administrative			

	performance in the department and submit it to the Dean. 8. Carry out any additional tasks within the authority of the HOD as assigned by the Dean			
Audit and Documentation	Reports-Correspondence-Data.	Report on the study and academic progress administrative and research performance and follow up on correspondences.	Follow up on correspondences, prepare meetings minutes.	Follow up on correspondences – Prepare needs inventory reports

Job Title	Program Coordinator	Course coordinator	Academic advisor
Organizational Relationship	Head of Department	Head of Department	Head of Department
Goal	To support the academic integrity, effectiveness, and student success within a specific university program by coordinating its curriculum, administration, and faculty efforts.	To support and assist the department's Quality Committee in ensuring the management of the quality of prescribed teaching.	To support and assist the Academic Affairs and Student advising Committees in ensuring the management of the quality of teaching.
Responsibilities	➢ Maintain Academic Quality • Ensure that the program meets institutional and accreditation standards. • Keep curriculum current and aligned with industry or disciplinary trends. ➢ Support Student Success • Help ensure students progress through the program efficiently. • Address student concerns and provide guidance on academic matters. ➢ Facilitate Curriculum Delivery • Coordinate course scheduling and faculty assignments. • Ensure course offerings meet program requirements and graduation timelines. ➢ Promote Program Development • Identify areas for improvement or expansion.	-Prepare the course description file. -Support new faculty members in preparing the course report, and documenting all the components of the course file. -Follow up the progress of the educational process and the faculty members' commitment to teaching strategies and course evaluation. -Prepare the combined report for the course division. -Coordinate the meetings with course instructors to discuss issues related to course regarding quality assurance management.	-Support the students academically -Identify the student's interests and assist them in refining their skills by recommending them for various relevant programs offered by the department academic advising, as well as the faculty academic affairs committee. - Identify the problems of struggling students and support them academically by nominating them for the various programs in this regard provided by the academic

	• Lead initiatives to enhance program relevance and reputation. ➢ Serve as a Communication Hub • Act as a liaison among students, faculty, department chairs, and administrators. • Communicate program policies, deadlines, and updates effectively. ➢ Monitor and Report Program Performance • Collect and analyze data on enrollment, retention, and learning outcomes. • Prepare reports for internal reviews or accreditation bodies. ➢ Foster Faculty Collaboration • Support faculty in curriculum planning, assessment, and teaching effectiveness. • Encourage academic innovation and interdisciplinary connections.		advising, as well as the faculty academic affairs committee.
Audit and documentation	➢ Ensure accountability and transparency in program delivery. ➢ Support program reviews and accreditation cycles. ➢ Maintain consistency and institutional memory during staff or faculty transitions. ➢ Identify areas for improvement in teaching, curriculum, and student outcomes.	Prepare meeting minutes and maintain records for both struggling and gifted students.	Prepare meeting minutes and maintain records for both struggling and gifted students.

The Department's committees:

The department Committee in a university program plays a central role in oversee the academic quality, development, and continuous improvement of the program by guiding curriculum design, reviewing academic policies, supporting assessment, and ensuring alignment with institutional goals and stakeholder needs. The committees are typically composed of faculty members, and sometimes include students, industry advisors, or administrative staff. The department committees working according to time-frame to structure and guide the planning, review, and implementation of academic activities within the program, ensuring that all committee responsibilities are completed efficiently, on schedule, and in alignment with institutional calendars and external deadlines.

The Head of Department (HOD) leads and oversees the academic department, and collaborates with these committees to ensure departmental goals and institutional policies are achieved.

Procedure for forming the department's permanent committees	
Scope	All tasks directly related to implementing, managing, and monitoring the operational plan and duties of the program.
General Goal	Ensuring the participation of the largest possible number of members in the department (even though from different branches if it found or from both male & female sectors), each according to his specialty, in managing and implementing the program's operational plan and duties.
Implementation Responsibility	HOD. Supervisor of the female section
References	Requirements of the NCAAA. Guide to the organizational structure for Faculties at the University of Tabuk.

Policies	• The program is committed to implement the general policies and regulations governing work in Saudi universities and the subsequent organizational policies and internal regulations approved by the university/Faculty. • The program is committed to the university polices regarding committees' formation. • Committees are formed according to the members' interests, inclinations and experiences. • Each faculty member belongs to a maximum of three committees. • Decision makers are not affiliated with the committees. • A chairperson and rapporteur for the committees as well as coordinators for the college's units are appointed from among the faculty members. • Responsibilities and tasks are distributed fairly between committee's members.
Procedures	The HOD forms committees at the department level through an internal circulation specifying the tasks and terms of reference of the committee's work, its members, and the duration of its work. Department committees are formed with the approval of the Department Council at the beginning of the academic year, and the Department Council has the authority to assign new tasks.
Outputs	Approved administrative decisions regarding tasks assignments.

Controlling and monitoring the committee's work	
Scope	All tasks directly related to implementing, managing, and monitoring the operational plan and duties of the program.
Goal	• Implement the department's academic and operational plans, which guarantee the achievement of the department's goals and mission. • Ensure the participation of the largest possible number of members in the department, each according to his specialty, in managing and implementing the work. • Implement corrective and preventive actions as quickly as necessary to achieve a high-quality work.

Responsibilities	Committees' chairmen.
References	Requirements of the NCAAA. Guide to the organizational structure for Faculties at the University of Tabuk.
Affiliation	Committees are affiliated with the HOD and all the tasks assigned to them regarding the faculty's operational plan.
Policies	• All program employees are committed to implementing the program's approved educational and operational plans, policies, systems, and regulations without making any amendments to them. • If there are any developments that require exceptional measures or modifications to the approved implementation plans for the program, the staff members or chairmen of the executive committees managing the program may propose modifications and provide justifications. However, they are not allowed to initiate the implementation of the modifications without obtaining the approval of the relevant authority at the department or Faculty level (according to the level of authorities outlined in the approved organizational guide of the program). • Faculty members and the executive committees are responsible for preparing and keeping files and records that document their implementation of the assigned tasks and activities in both paper and electronic forms. • All documents are stored in the department's electronic cloud.

procedures	1. Each committee receives its own operational plan initiatives, in addition to the work referred to it that is consistent with its assigned tasks 2. The committees prepare a procedural work plan for operational initiatives and for all work referred to them. 3. Responsibilities are distributed among all faculty members and a timetable is set for each action in the plan. 4. The committee's work plan is presented to the Department Council for discussion and recommendation for approval. 5. The Chairman of the Committee is responsible for managing the operational plan initiatives assigned to committee. 6. The committee's chairmen and the HOD monitor the running of operations and procedures through the department's electronic cloud. 7. Based on the achievements in the performance indicators, the chairman's of the committees carry out an annual self-evaluation regarding the implementation of the work plans. 8. To assess stakeholders satisfaction and suggestions for further improvement of the implemented initiatives, their feedback is gathered and analyzed. At the end of each academic year a comprehensive achievement report supported with evidence and improvement plans to address the aspects that need improvement, is presented to the departmental council recommending the adoption and inclusion of the improvement plans in the operational plan for the following academic year.
Outputs	Minutes of meetings. Achievement reports. Improvement & development implementation plans.

Roles and responsibilities of committee members	
Chairman of the Committee	
Organizational Relationship	HOD and the Faculty's supporting unit.
Goal	Study and discuss matters related to the committee's tasks and submit appropriate recommendations to the department council regarding decisions such as procedures required for the workflow.
Nomination	The chairman of the committee is nominated by the HOD from among the distinguished faculty members with academic and administrative competencies. The appointment is for a period of one year, subject to renewal.
References	The Program's procedural guide for quality
Responsibilities	1. Nominating coordinators for the faculty unit affiliated with the committee. 2. Propose the necessary plans to accomplish the assigned tasks and initiatives and ensure the involvement of all committee members. 3. Receive the tasks delegated to the committee by the HOD, Faculty Council or the Vice Dean, and present them to the committee members for review and action.
Inputs	Reports of the Faculty units' coordinators/minutes or correspondence that are delegated to the committee.
Outputs	Committee work plans - reports of committee activities - meetings minutes.

Committee Rapporteur	
Organizational Relationship	HOD, Chairman of the Committee
Goal	Controlling and documenting the committee's work.
Rapporteur Nomination	The Committee Rapporteur is assigned by the HOD. The assignment is for a period of one year subject to renewal.
References	The Program's procedural guide for quality
Responsibilities	Preparing the committee's agenda, preparing the minutes of the committee's meetings
Inputs	Compile the reports of unit coordinators-prepare meeting minutes-
Outputs	Committee activity reports-meeting minutes

Faculty units' coordinators	
Affiliation	The coordinators are affiliated administratively to the HOD, and technically to the associated faculty unit.
Goal	Coordinate tasks delegated by the corresponding faculty unit.
Committees' coordinators affiliated with the faculty units.	Appointed by the HOD. The appointment is for a period of one year, subject to renewal.
References	The Program's procedural guide for quality
Responsibilities	1. Assist in the development of a proposed operational plan for the assigned tasks within the college's affiliated unit. 2. Collaborate with the relevant unit to effectively execute the operational plan activities associated with the assigned tasks.
Inputs	Tasks or correspondences that are delegated by the associated faculty unit.
Outputs	Achievement reports on tasks delegated by the associated faculty unit.

The Department Permanent Committees and their Responsibilities

Advisory Committee	
Organizational Relationship	The committee is affiliated administratively to the HOD and technically to the faculty's quality unit.
Goal	Advising and counseling academic program management to expand the scope of interest to include diverse perspectives in the fields of education, scientific research, locally, regionally and globally to develop the program and study plan in accordance with the latest NCAAA standards, professional developments, and labour market requirements and stakeholders needs.
Committee Members	According to UT guide of formation and implementation of advisory committees, the advisory committee of the BSc of chemistry program is formed as follows: **A. UT Internal Members** • Vice dean of graduate studies and development (Chairman) • Head of Department of Chemistry (Vice chairman) • Program Coordinator (Secretary of Committee) • One of outstanding students **B. External Members** ➢ ***In addition to four to eight members from***: • Representatives from the government sector with qualifications and job positions that are compatible with the program. • Representative members of program employers with long professional experience.

	• One of male graduates and one female graduates.
References	University Advisory Committee Guide.
Responsibilities	1. Provide developmental suggestions regarding the operational plan, with a focus on education, scientific research, and community service, in order to achieve the 2030 national vision. 2. Offer developmental proposals concerning the program, curriculum plans, and provide recommendations for their enhancement in accordance with the latest professional standards, market demands, and evaluation of the outcomes. 3. Discuss the annual program report, including feedback surveys from beneficiaries, learning outcome measurements, training strategies, assessment methods, key performance indicators, prominent improvement opportunities, recommendations, and implementation plans mentioned in the report. 4. Discuss the alignment of the graduates' skills with the needs of various employment sectors, considering the latest developments and advancements in chemistry and its applications as well as the societal requirements. 5. Contribute to establishing relationships with employers and businesses to provide students with opportunities for voluntary work programs that enhance their work experience and potential for future employment. 6. Contribute to introducing the program, and its capabilities in the fields of education, scientific research, and community service to a variety of employers.
Inputs	Recommendations or reports presented to it by the Chairman of the Committee.
Outputs	Meetings minutes are submitted to the department council.

Students Advisory Council	
Organizational Relationship	The committee is affiliated administratively to the HOD and technically to the quality committee of the program.
Goal	Enhancing communication between students and program management in order to improve and develop the program by effective participation in review and evaluation processes of the program and contributing to a rapid response to problems facing students and the academic processes.
Committee Members	The membership of students advisory council of the BSc of chemistry program is selected as follows: **A. Program leaders** • Head of the department (Chairman) • Supervisor of Female Section (Secretary of Council) • Program Coordinator (Coordinator) • Chairman of Academic Advising Committee (Member) **B. Students** ➢ ***Ten to twelve from program students selected by the chairman of academic affairs committee of as follows***: • Two of 1st year students (one male and one female). • Two of 2nd year students (one male and one female). • Two of 3rd year students (one male and one female). • Four of 4th year students (two male and two female). • The HOD can add additional members from students as recommended by the program committees.
References	NCAAA accreditation standards

Responsibilities	1. Effective participation of the students in program review and evaluation processes. 2. Studying students' recommendations to improve the academic process and services provided to students. 3. Participating in student awareness activities to inform them of their rights and duties in accordance with university regulations. 4. Increasing student participation in extracurricular activities and community service. 5. Achieving rapid responses to problems facing students. 6. Enhancing communication with students to achieve high response rates to surveys for all aspects of the program.
Inputs	Recommendations or reports presented to it by the Chairman of the Council or the students.
Outputs	Meetings minutes are submitted to the quality committee and the department council.

Quality Committee

Table 1 presented below illustrates the diverse elements of the committee's organizational structure. It is designed to align with the organizational structure of the Deanship of Development and Quality, thereby ensuring the harmonization of the program's quality system with that of the Deanship of Development and Quality. It is important to note that all outputs generated by the committee undergo continuous monitoring and evaluation by the Deanship of Development and Quality.

Table 1. The alignment of the organizational structure of the Quality Committee with the organizational structure of the Deanship of Development and Quality

		Faculty Vice Deanship for Development and Quality			
		Supervisor of the Community Service and Professional Development Unit	**Supervisor of the Statistics and Information Unit**	**Supervisor of the strategic plan unit**	**Supervisor of the Development and Quality Unit at the Faculty**
Quality Committee	**Chairman of the Quality Committee**				
	Coordinator of the operational plan				
	Coordinator of the statistics and information				
	Community services coordinator				

Organizational relationship	The committee reports administratively to the HOD and technically to the faculty's quality unit.

Goal	Managing quality work, developing plans, formulating policies, and developing methodologies in accordance with the faculty and the university quality assurance management policies.
Committee members	Chairman of the Quality Committee Committee Rapporteur. Statistics and Information Coordinator Operational plan coordinator. Community services coordinator. Committee members.
References	Task guide for leadership positions in Faculties and supporting Deanships at the University of Tabuk. Appointment letter from the department council. The faculty and university quality guides.
Responsibilities	**Periodic tasks related to the course report:** 1. Review course reports and ensure all necessary requirements are fulfilled. 2. Review the development plan for the course as stated in the course reports and prepare the necessary recommendations. Then, submit them for presentation and approval by the department's council, ensuring that this process is completed no later than the second week of the semester following the semester in which the courses are offered. 3. Implement the action plans outlined in the quarterly course reports after approval by the department's council. **Annual tasks related to the program report:** 1. Review the annual program reports and ensure all necessary requirements are completed. 2. Review the action plans outlined in the annual program report and prepare the necessary recommendations. Then, submit them for presentation and approval by both the Department's Academic Council and the College, ensuring that this process is completed no later than the fourth week of the new academic year. 3. Implement the action plans outlined in the annual program report after approval from both the department and the faculty

	councils. **Other Responsibilities:** 1. Analyze the results of measuring learning outcomes and performance indicators and prepare reports on this. 2. Preparing the operational plan and setting improvement and development plans based on department committee minutes, course reports, program reports, performance indicators report, learning outcomes measurement results, and opinion poll results reports.
Inputs	Tasks delegated to the committee by the HOD or the department council.
Outputs	Meetings minutes are submitted to the HOD or the department council.

Scientific Committee	
Organizational Relationship	The committee reports administratively to the HOD and technically to the faculty's scientific research unit.
Goal	Foster the scientific research to develop the educational process.
Committee members	Chairman of the Scientific Committee. Committee Rapporteur. Committee members.
References	Task guide for leadership positions in Faculties and supporting Deanships at the University of Tabuk. Appointment letter from the department council.
	1. Review promotion requests from faculty members in the department according to the executive and procedural rules set by the University's Academic Council. 2. Assess the eligibility of printing and publishing books authored by faculty members in the department.

Responsibilities	3. Evaluate requests submitted by faculty members in the department to attend scientific seminars and conferences, in accordance with the executive and procedural rules set by the University's Academic Council. 4. Identify the needs for faculty members and those in similar positions, and consider applicants for departmental positions in collaboration with the QDC, while measuring performance indicators. 5. Follow up on scholarship requests for teaching assistants and lecturers. 6. Establish a database for scientific research and regularly update it. 7. Create and update a database of research groups, published research, projects, and scientific supervision by faculty members. 8. Encourage department members to engage in scientific publications in globally classified scientific journals. 9. Organize and coordinate the management of conferences, workshops, seminars, scientific and cultural events, and scientific competitions in the department, while supervising their implementation. 10. Organize mechanisms for research collaboration with relevant entities. 11. Monitor the effectiveness of scientific supervision and scholarly discussions. 12. Contribute to the preparation and implementation of the operational plan for the program in the field of scientific research and postgraduate studies. 13. Prepare a quarterly operational plan for committee. 14. Submit a regular report to the HOD on the committee's activities.
Inputs	Any tasks or correspondence delegated by the HOD or the department council
Outputs	Meetings minutes are submitted to the HOD or the department council.

Programs and Study Plans Committee	
Organizational Relationship	The committee reports administratively to the HOD and technically to the Faculty's Programs and study plans committee.
Goal	Develop, review and update the curriculum.

Committee members	Chairman of the Programs and Study Plans Committee. The committee rapporteur. Committee members.
References	University of Tabuk Graduate Studies Guide.
Responsibilities	1. Develop the curriculum for programs in the department according to the standards of the Program and Curriculum Committee at the university, and in coordination with the Faculty's Program and Curriculum Committee. 2. Review the development of course syllabi for the program. 3. Review and verify the program's description and course descriptions. 4. Review the characteristics of graduates and learning outcomes of the program. 5. Propose external reviewers, assessors, and benchmarking for the program, and utilize their feedback in program development. 6. Conduct periodic evaluation of the study plans through feedback and recommendations from faculty members, reviewers, assessors, and graduates. Provide suitable suggestions and actions in accordance with university regulations. 7. Consider requests for course equivalency based on equivalence criteria and applicable regulations at the university. Submit a report to the HOD. 8. Contribute to the preparation and implementation of the operational plan for the program, which is linked to the committee's tasks. 9. Prepare a quarterly operational plan for the committee's tasks. 10. Submit regular reports to the HOD on the committee's activities.
Inputs	Any tasks or correspondence delegated by the HOD or the department council.
Outputs	Meetings minutes are submitted to the HOD or the department council.

Academic Affairs Committee	
Organizational Relationship	The committee reports administratively to the HOD and technically to the faculty’s academic affairs committee

Goal	Support students and faculty members.
Committee members	Chairman of the Academic Affairs Committee. The committee rapporteur. Committee members, including two students from each program
References	University of Tabuk Graduate Studies Guide.
Responsibilities	1. Prepare and review the academic schedules in coordination with the Academic Affairs Committee at the Faculty. 2. Identify the department's needs for courses, the number of sections, and the expected graduating students' requirements. 3. Supervise the student registration process, as well as the add-drop procedures. 4. Setting up faculty members' schedules in coordination with the department head. 5. Oversee the examination process and handle excuses. 6. Develop the examination and invigilation schedule for each academic semester. 7. Provide relevant statistics for the preparation of the department's annual report. 8. Develop a quarterly operational plan for the committee's tasks. 9. Submit regular reports to the department council on the committee's activities.
Inputs	Any tasks or correspondence delegated by the HOD or the department council.
Outputs	Meetings minutes are submitted to the HOD or the department council.

Academic Advising Committee	
Organizational Relationship	The committee reports administratively to the HOD and technically to the faculty's alumni and training unit.
Goal	Academic support for students.
Committee members	Chairman of the Academic Advising Committee. The committee rapporteur. Coordinator of the academic advising. Committee members.
References	University of Tabuk Graduate Studies Guide.
Responsibilities	1. Supervise and monitor the performance of academic advisors and develop a plan for academic guidance at the beginning of each academic year. 2. Explain the most important instructions, regulations, and policies related to student affairs, such as academic actions (warnings, probation, enrollment, deferral, withdrawal, apologies, transfer, dismissal, honors, academic difficulties, visiting students), and familiarize students with all the rules and instructions specific to the department, faculty, and university. 3. Address academic issues raised by academic advisors and work with the department administration to resolve them. 4. Coordinate and collaborate with the Faculty's Graduates and Training Unit to enable the students to access suitable training opportunities that align with the specified learning outcomes of the course. 5. Build a database of talented and struggling students in the department and develop special programs for them. 6. Monitor student absences in the department and identify students with high absenteeism in coordination with academic advisors. 7. Represent the academic department in the Faculty's Graduates and Training Unit and participate in the preparation and 8. implementation of the operational plan related to alumni and student activities. 9. Contribute to establishing a database for graduates and regularly update it in coordination with the Faculty's Graduates and Training Unit. 10. Invite graduates to various departmental events and encourage their participation in different activities, while identifying the issues faced by department graduates in coordination with the Faculty's Alumni and Training Unit.

	8. Contribute to creating job opportunities for the program graduates by identifying relevant companies and institutions in the public and private sectors, in coordination with the Faculty's Alumni Unit. Also, contribute to preparing graduates for the job market by enhancing their skills and competencies through training programs and workshops, in coordination with relevant department committees and faculty units. 9. Prepare a plan for student activities that aligns with the operational plan initiatives and oversee its implementation in coordination with the Faculty's Alumni and Training Unit, while motivating department students to participate in various university events. 10. Work on integrating students with special needs in activities and providing appropriate support for them in coordination with specialized Faculty units. 11. Improve communication between program administration and students to serve and achieve the success of the educational process. 12. Seek feedback from program beneficiaries (students) regarding the activities offered in various fields and increase student participation in program activities by disseminating the program's mission, objectives, organizational decisions, and accomplishments among the student beneficiaries. 13. Prepare a quarterly operational plan for committee. 14. Regularly report the committee's activities to the department council.
Inputs	Any tasks or correspondence delegated by the HOD or the department council.
Outputs	Meetings minutes are submitted to the HOD or the department council.

Facilities and Equipment Committee	
Organizational Relationship	The committee reports administratively to the HOD and technically to the faculty's laboratories committee.
Goal	Support students and faculty members.
Committee members	Chairman of the Facilities and Equipment Committee. The committee rapporteur. Committee members.
References	University of Tabuk Graduate Studies Guide.
Responsibilities	1. Develop and establish developmental plans for student and research laboratories in the department. 2. Inspect incoming devices and ensure they meet the specifications before accepting them. 3. Prepare the department's annual requests for devices, and evaluate the offers for laboratory equipment. 4. Organize the maintenance and repair of laboratory devices, and technical equipment. 5. Prepare the annual and quarterly inventory report for the department's facilities and equipment. 6. Contribute to the preparation and implementation of the operational plan for the program, which is related to facilities and equipment. 7. Prepare a quarterly operational plan for the tasks and activities related to the laboratories, and present a final report on achievements and improvement recommendations based on approved templates. 8. Submit regular reports to the HOD on the committee's activities.
Inputs	Any tasks or correspondence delegated by the HOD or the department council.
Outputs	Meetings minutes are submitted to the HOD or the department council.

Safety Committee	
Organizational Relationship	The committee reports administratively to the HOD and technically to the faculty's Safety committee.
Goal	To promote and maintain a safe and healthy environment for students, faculty, staff, and visitors by identifying potential hazards, ensuring compliance with safety regulations, and fostering a culture of safety within the academic program.
Committee members	Chairman of the Safety Committee. The committee rapporteur. Committee members, including two students from each program
References	University of Tabuk Graduate Studies Guide.
Responsibilities	The committee chair is the ***program's safety officer*** and, with the assistance of committee members, is responsible for carrying out the following safety and security-related tasks: 1. Develop and implement safety policies and procedures to promote a safe work environment. 2. Conduct regular inspections of safety systems to identify potential hazards and ensure compliance with safety regulations. 3. Conduct risk assessments to identify potential safety hazards and develop mitigation strategies. 4. Prepare and submit reports on safety inspections, incidents, and safety audits to management. 5. Coordinate closely with management to address safety concerns and implement improvements. 6. Maintain accurate records of safety system inspections, incidents, training sessions, and safety meetings. 7. Conduct safety training sessions for program staff on various safety topics, including emergency procedures, proper equipment use, and safe work practices. 8. Investigate accidents and incidents to determine their causes and implement preventative measures. 9. Conduct safety system audits to evaluate the effectiveness of safety programs and ensure compliance with safety standards.

	10. Develop and implement emergency response plans and coordinate emergency drills. 11. Promote a safety culture within the program by encouraging safe work practices and recognizing program members who adhere to safety guidelines.
Inputs	Any tasks or correspondence delegated by the HOD or the department council.
Outputs	Meetings minutes are submitted to the HOD or the department council.

Surveys Committee	
Organizational Relationship	The committee reports administratively to the HOD and technically to the faculty's Surveys unit.
Goal	Collecting and analyzing questionnaires, preparing reports, and building development plans based on the questionnaire results.
Committee members	Chairman of the Survey Committee. The committee rapporteur. Committee members.
References	University of Tabuk Graduate Studies Guide.
Responsibilities	1. Preparing a timeline for launching questionnaires. 2. Collecting and analyzing questionnaires and preparing reports. 3. Preparing an awareness plan on the importance of questionnaires for all program members and employers. 4. Developing development plans based on survey results and closing the quality cycle by developing implementation plans and having them approved by the department council. 5. Participating in the preparation and implementation of the program's operational plan related to the committee's tasks.

	6. Submitting committee minutes to the department head for approval.
Inputs	Any tasks or correspondence delegated by the HOD or the department council.
Outputs	Meetings minutes are submitted to the HOD or the department council.

Community Service Committee	
Organizational Relationship	The committee reports administratively to the HOD and technically to the faculty's community unit.
Goal	Supporting faculty members and students in various services needed by the community.
Committee members	Chairman of the Community Service Committee The committee rapporteur. Committee members.
References	University of Tabuk Graduate Studies Guide.
Responsibilities	1. Preparing an annual community service plan for the program, in coordination with the department's Quality Committee and relevant units within the college, and submitting it to the relevant authorities for approval. 2. Coordinating with relevant units within the university, college, and academic departments within the college to provide various services needed by the community and achieve common interests. 3. Organizing meetings, seminars, scientific lectures, training courses, and field activities that contribute to community service and development.

	4. Encouraging and supporting scientific research that contributes to solving important issues and problems for the local community. 5. Developing and qualifying the capabilities of faculty members in the field of volunteer work and community service. 6. Establishing a central database that includes all the committee's activities in the areas of community service and volunteer work. 7. Participating in the preparation and implementation of the program's operational plan related to the committee's tasks. 8. Submitting the committee's minutes to the department head for approval.
Inputs	Any tasks or correspondence delegated by the HOD or the department council.
Outputs	Meetings minutes are submitted to the HOD or the department council.

Graduates and Training Committee	
Organizational Relationship	The committee reports administratively to the HOD and technically to graduates and training unit at the college.
Goal	Support graduates and students in trainees.
Committee members	Chairman of the Alumni and Training Committee The committee rapporteur. Committee members.
References	University of Tabuk Graduate Studies Guide.

Responsibilities	1. Representing the academic department in the Graduates and Training Unit at the Deanship of the College. 2. Coordinating and following up with the Graduates and Training Unit at the College to enable program students to obtain training opportunities that are appropriate for achieving the course's specific learning outcomes. 3. Coordinating with the department's training course instructors to standardize student training mechanisms. 4. Contributing to the creation of a database of graduates and updating it periodically, in coordination with the Graduates and Training Unit at the College. 5. Inviting graduates to various department events and encouraging them to participate in its various activities. Identifying the problems facing the department's graduates, in coordination with the Graduates and Training Unit at the College. 7. Contributing to creating job opportunities for graduates of the department's programs by identifying companies and institutions in the public and private sectors related to the specialization, in coordination with the Graduates Unit at the College. Contributing to preparing graduates for the labor market by enhancing their efficiency and honing their skills through a series of training programs and workshops, in coordination with relevant committees and units. 8. Improving communication between the program administration and alumni. 7. Seeking feedback from program beneficiaries regarding the program's various activities and increasing the rate of alumni participation in various program activities by disseminating the program's message, objectives, organizational decisions, and achievements among male and female graduates. 8. Holding training courses for graduates, based on labor market needs. 9. Participating in the preparation and implementation of the program's operational plan related to the committee's tasks. 10. Submitting the committee's minutes to the department head for approval.

Inputs	Any tasks or correspondence delegated by the HOD or the department council.
Outputs	Meetings minutes are submitted to the HOD or the department council.

KINGDOM OF SAUDI ARABIA
Ministry of Education
University of Tabuk
Faculty of Science
Department of Chemistry

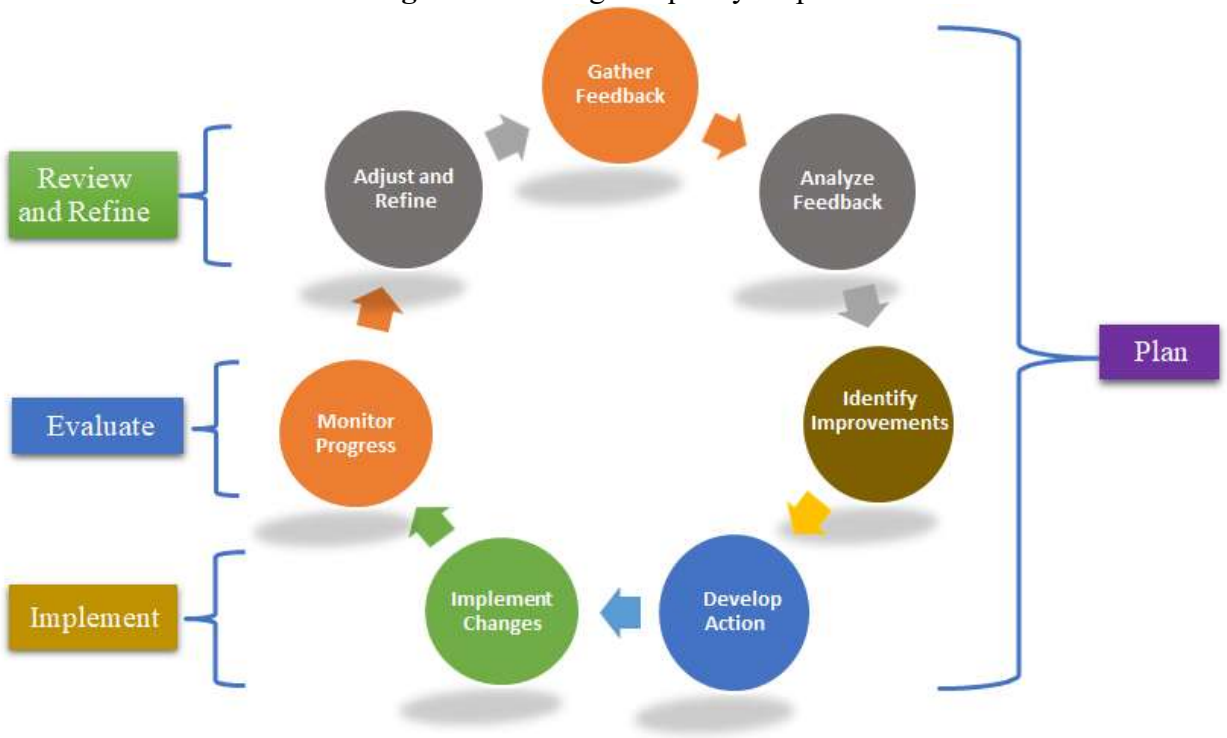
المملكة العربية السعودية
وزارة التعليم
جامعة تبوك
كلية العلوم
قسم الكيمياء

The Chemistry Program Quality Management System

Closing the quality loop

The Chemistry Program implements a comprehensive and robust quality system to ensure excellence in every aspect of the program. The Chemistry Program quality system encompasses the development of clear Program Learning Outcomes (PLOs), Course Learning Outcomes (CLOs), and Graduate Attributes that guide our curriculum design and delivery. Figure 2 shows the quality assurance cycle utilized by the Chemistry Program in order to close the quality loop regarding all its activities.

Figure 2: Closing the quality loop.



Steps for closing the quality loop

Closing the quality loop involves a series of steps aimed at addressing feedback and improving the quality of a program. Here are the steps along with a detailed explanation of each:

Step 1: Planning

1. **Gather Feedback:** The first step is to gather feedback from stakeholders such as students, faculty members, employers, and other relevant parties. This can be done through surveys, focus groups, interviews, or any other means of collecting input.
2. **Analyze Feedback:** Once the feedback is collected, it needs to be thoroughly analyzed. This involves categorizing and identifying common themes, strengths, weaknesses, and areas for improvement. The goal is to gain a comprehensive understanding of the feedback received.
3. **Identify Improvement Points:** Based on the analysis, specific improvement points should be identified. These are the areas that require attention and enhancement within the program. It could be related to curriculum, teaching methods, resources, support services, or any other aspect of the program.
4. **Develop Action Plan:** After identifying the improvement points, an action plan should be developed. This plan outlines the steps, strategies, and resources needed to address the identified areas of improvement. It should be specific, measurable, achievable, relevant, and time-bound (SMART) to ensure effective implementation.

Step 2: Implementing

5. **Implement Changes:** The next step is to implement the changes outlined in the action plan. This may involve revising the curriculum, providing additional training or support to faculty members, improving resources or facilities, or enhancing student services. The changes should be implemented systematically and monitored closely.

Step 3: Evaluating

6. **Monitor Progress:** It is essential to monitor the progress and effectiveness of the implemented changes. Regular evaluation and assessment

of the improvements help determine if they are achieving the desired outcomes. This can be done through ongoing data collection, student feedback, performance indicators, or other evaluation methods.

Step 4: Review and Refine

7. **Adjust and Refine:** Based on the monitoring and evaluation, adjustments and refinements should be made as necessary. This step involves making modifications to the implemented changes or strategies to ensure continuous improvement. It requires flexibility and a willingness to adapt based on the evolving needs of the program and its stakeholders.

By following these steps, the quality loop can be effectively closed, ensuring that feedback is acknowledged, improvements are made, and the overall quality of the program is enhanced. This iterative process promotes continuous improvement and allows the program to adapt and meet the changing needs of its stakeholders.

☑ A very important point that must be activated during continuous development processes:

Communication and Engagement: Effective communication and engagement with stakeholders throughout the process are essential. Regularly updating students, faculty members, and all relevant parties on the progress made, changes implemented, and outcomes achieved its necessary. This keeps stakeholders informed and involving them in this information enhances their sense of belonging and collaboration.

The Chemistry Program employs a variety of assessment methods to comprehensively evaluate student progress and provide timely feedback for improvement. Additionally, the Chemistry Program quality system includes a rigorous program evaluation process that allows it to continuously assess its effectiveness, make data-informed decisions, and implement enhancements to meet the evolving needs of the students as well as the industry demands. The approval of adjustments or modifications of any component in the program has to adhere to the authority matrix presented in Table 3.

Table 3: The approval levels of modifications that take place within the University of Tabuk.

Intended curriculum changes	Final Level of Approval
Program Level	
Changes including a program's mission, objectives, title, program length (total number of years/levels/ hours), program learning outcomes, program specification, study plan, and adding co-requisites or prerequisites	UT Standing committee of programs and study plans
Changes in ordering of PLOs, program KPIs, course code	UT Management of Programs and study plans
Change in the facilities, operational plan, dropping program co-requisites or pre-requisites	Faculty Council
Course Level	
Changes in the title, credit hours, length of period for teaching, timing in the program plan, update of course specification affecting >25% of CLOs, language of teaching	Standing committee of programs and study plans at UT
Course code	Management of Programs and study plans at UT.
Changes in course policies and regulations	Faculty Council
Course teaching strategies, <25% change in CLOs, textbooks, reference materials, updates in scientific knowledge in related topics, distribution of topics/weeks, methods for assessment; measurement and evaluation grading systems.	Department Council

The Chemistry Program Review Cycles:

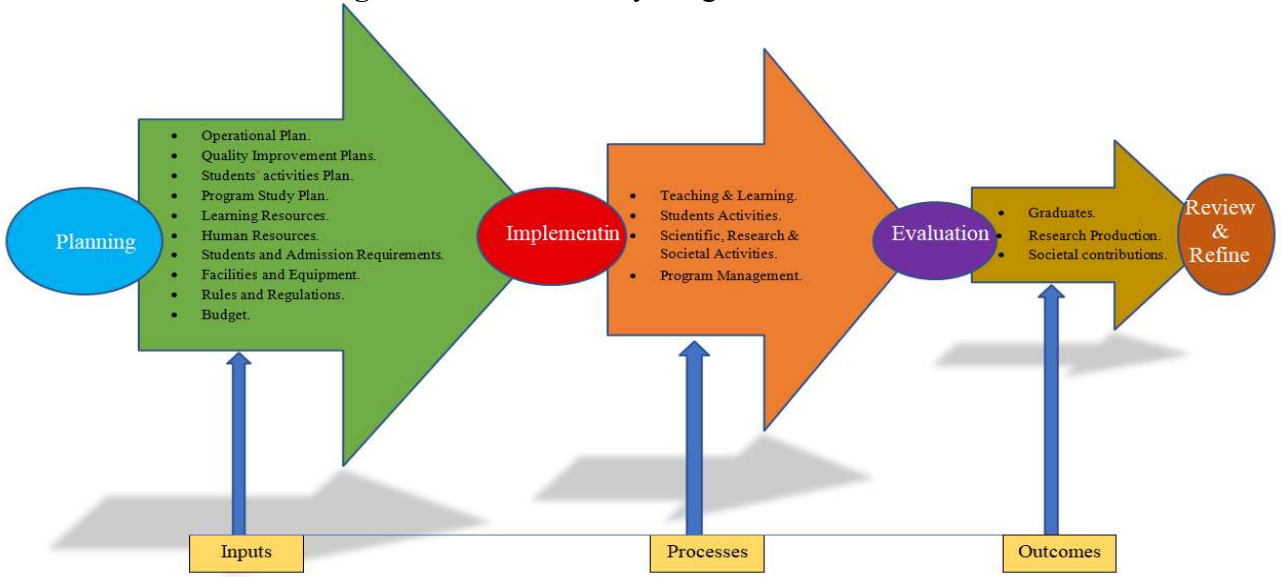
The chemistry program goes through two review cycles, an annual review cycle and a four years review cycle as shown in figure 3.

Figure 3: The Chemistry Program Review Cycles.

The Annual review Cycle

The annual program review is one of the mechanisms adopted by the Chemistry Program to ensure that the program is on continual quality progress in order to meet the highest standards of academic excellence. The annual program review starts by collecting data using the standard university templates and forms of course reports, students, graduates, faculty members and admin staff surveys as well as professional bodies' surveys. Data analysis, action plans and performance indicators are documented in the annual program report. At the end of the academic year the HOD sends the annual program report to the vice dean of development and quality which is responsible for ensuring that the report is well written and meets all quality standards recommended by the University of Tabuk and the NCAAA. Figure 4 shows a diagram of the annual review.

Figure 4: The Chemistry Program annual review chart.



Tables 4 and 5 show the quality assurance activities and time frame at the program level as well as the roles and responsibilities.

Table 4: The quality assurance procedures at the course and program levels.

Activity	End of term	Annually	Responsibility
Course evaluation survey	✓		Course coordinators
Post-Term meeting	✓		Course coordinators
Course report (CR)	✓		Course instructors + Course coordinators
Course file submission	✓		Course coordinators
Students experience survey		✓	QC
Program evaluation survey		✓	QC
Faculty members satisfaction survey		✓	QC
Employers' evaluation survey		✓	QC
Academic advising survey		✓	Academic advising committee
Operational plan report		✓	QC
Program KPI report		✓	PSPC
Annual program report (APR)		✓	QC
Annual program report revision		✓	Deanship of Development and quality
Approval of the APR		✓	Higher Standing Committee for Academic Accreditation
Approval of course reports	✓		Higher Standing Committee for Academic Accreditation
Action plan preparation & distribution		✓	QC
Action plan execution & assessment		✓	QC

Table 5: Role of faculty members, students in planning, quality assurance and decision making

Activity	Teaching staff	Employee	Students
Planning	Involved in formulation of program mission, Goals, graduate attributes, preparing program specification, preparation of course specifications. Head and members in the department council, and committees. Participate in measuring CLOs and PLOs.	Members in the advisory committee. Participate in SWOT analysis (Strategic and operational planning) Provide feedback and proposals for improvements	Students are members in Advisory committee.
Quality assurance	Feedback through, meetings, academic staff satisfaction survey. Members in the quality committee	Admin staff and technicians' satisfaction survey. Members in the accreditation committees.	Participate in the evaluation of the quality of courses and the program. Participate in developing the improvement plans through various surveys (CES, PES, AES) Academic advising survey. Program Mission and goals survey. Preparation of the SES
Decision making	HOD, Department council members Committees, course coordinators, Participate in developing the improvement plans (CR, APR, operational plan, KPIs report) Participate in reviewing and improving the study plan.	Members in the program committees. Participate in the SWOT analysis. Provide proposals for improvements.	Participate in decision making through: Academic advisory committee. Developing the annual community services and students' activities plans. Make suggestion regarding priorities of improvements.

During the comprehensive review of the Program Quality Assurance (QA) Manual, the Quality Committee defined clear timelines for updating all program documents, ensuring they always reflect the program's actual status and remain aligned with the update cycles set by the Deanship of Quality & Academic Accreditation at the University of Tabuk. The main documents and their required annual review/update timelines were identified as shown below.

Table 6: The main documents and their required annual review/update timelines.

Core Document	Scope of Update	Planned Update Cycle / Deadline	Responsible Body	Evidence of Update
Program Quality Assurance (QA) Manual	Full annual review to incorporate all improvements, KPI analyses, and external review recommendations	Annually – every August (before the start of the academic year)	Department Quality Committee	Updated QA Manual – Council Approval Minutes
Student Handbook	Update admission info, academic integrity section, course/assessment changes	Annually – every July	Program Coordinator & Student Affairs	Updated handbook posted on Department & College websites
Field Training Manual	Update training sites, supervisors' responsibilities, evaluation rubrics	Annually – every May (before summer training)	Field Training Committee	Approved updated training manual
Department Committees Formation Decisions	Re-issue and adjust membership for all academic/administrative committees	Annually – every September (start of academic year)	Head of Department & Quality Committee	Council formation decisions
Assignment of Program & Course Coordinators	Review and approve assignments of the program coordinator and course coordinators (covering male/female sections and branches with active students)	Every semester – January & August	Department Council	Council appointment decisions
Program Learning Outcomes (PLOs) Measurement Plan	Review KPIs, assessment methods, and mapping with NQF and CLOs	Annually – every June	Quality Committee & Program Coordinator	Updated PLO measurement plan and approval minutes
Program specification	Review KPIs, assessment methods, teaching strategies, and mapping with NQF and CLOs	Every year	Program and study plans committee, Quality Committee & Program	Updated Program specification and approval minutes

			Coordinator	
Couse specification	Review, assessment methods, teaching strategies and CLOs	Annually – every June	Program and study plans committee, Quality Committee & Program	Updated Couse specification and approval minutes

Every Four years the Chemistry Program conducts a comprehensive program review and deliberation, which might lead to major or minor program modification.

The Four-Years Review Cycle

The chemistry program follows procedures to manage quality assurance according to a set schedule. It starts from planning to implementation, through measuring performance and evaluating the results achieved that lead to periodic and regular review and improvement

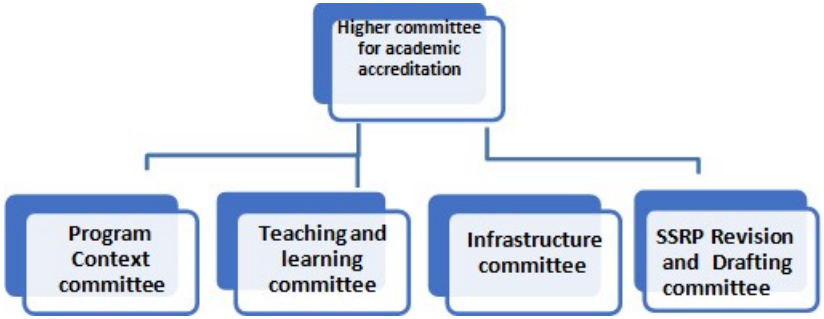
The program of chemistry follows practical steps to conduct the annual course to ensure its quality according to a specific time frame and procedures. As well as developing plans that achieve the mission and objectives of the program, implementation of operations according to the matrix of powers, and evaluate performance through the use of data and various activities that lead to the review and development of annual improvement plans to achieve the mission and objectives of the program.

The program conducts a comprehensive periodic assessment every four years after the completion of the program cycle and reports on the overall level of quality, identifying strengths and weaknesses. Plans for improvement; and follow up on their implementation. This assessment includes all aspects of the chemistry program, including the study plan, program learning outcomes, academic policies and procedures based on changes and stakeholder proposals.

The program conducts continuous quality audit and control based on the results of stakeholder surveys, operational plan reports and Advisory Committee recommendations and in accordance with the updated forms of the National Qualifications Framework (NCAAA) while adhering to the authority matrix approved by the University. In parallel with the updating of the university strategic plan every four years, the program revises its mission and goals to ensure consistency with the faculty and university mission and goals and updates its operational plan. In order to maintain the quality of the Bachelor of Chemistry program a self-evaluation of the program must be conducted every four years to ensure that it remains in compliance with the requirements for recertification. The self-evaluation process involves stepping back from the ongoing process and reviewing all areas of the program based on current developments over a specified period. The Agency for Quality and Development organizes 4 committees as shown in Figure 5 and Table 6.

Higher Committee for Academic Accreditation

Figure 5: Academic Accreditation Committees



The four committees are responsible for evaluating the accreditation of best practices and quality assurance in the six program accreditation standards developed by the National Commission on Academic Accreditation and Evaluation (NCAAA) to prepare the SSRP.

Table 6: Academic Accreditation Committees responsibilities.

	NCAAA Standard	Responsible Committee
Standard 1	Management of Program Quality Assurance	The Program Context Committee
Standard 2	Teaching and Learning	Programs and Study Plans Committee
Standard 3	Students	Academic Supervision Committee
Standard 4	Teaching Staff	
Standard 5	Learning Resources	Learning resources and facilities Committee
Standard 6	Scientific research and projects	Scientific research Committee
All standards	All standards	SSRP Revision and Drafting Committee

A- The Program Context Committee

1. Ensuring that the mission and goals of the program are consistent with the mission and goals of the faculty and university.
2. Reviewing the awareness of the beneficiaries with the program's mission and goals and the mechanisms, regulations and administrative flowchart structures within the program.
3. Monitoring the progress towards achieving program goals.
4. Reviewing the different quality processes in the program.
5. Measurement of KPIs related to the standards and formulation of the improvement plan, and follow up the implementation of the improvement plan.
6. Preparation of the necessary evidences and documents to prove the good practice.
7. Preparing the self-evaluation report for standard 1 &2.
8. Participating in preparing the program self-study report.

B- Teaching and Learning Committee

1. Preparation of the necessary evidences and documents to prove the good practice as stipulated.
2. Measurement of KPIs relates and formulations of the improvement plan, and follow up the implementation of the improvement plan.
3. Following up the teaching and assessment processes, students' achievement and graduate employability.
4. Following up on the preparation, submission and revision of the Academic Advising committee Report
5. Following up on the implementation of new faculty members preparation program
6. Following up on the preparation of the faculty member training plan and training report.
7. Following up on the preparation and approval of the annual scientific research plan and submission of the annual report in coordination with the Scientific Research Committee.
8. Checking the update of teaching staff database and follow-up on the updating of the teaching staff CVs.

9. Following up on the preparation and approval of the annual community services plan and the submission of the annual report in coordination with community working group.
10. Measurement of KPIs related to the standard and formulation of the improvement plan, and follow-up on the implementation of the improvement plan.
11. Preparation of the necessary evidences and documents to prove the implementation of the good practice as defined in the NCAAA standards.
12. Preparing the self-evaluation report.
13. Participating in preparing the program self-study report.

C- Infrastructure Committee

1. Following up on provision of the appropriate learning resources according to the national/international standards and submitting reports to faculty administration.
2. Following up on provision of appropriate facilities and equipment resources according to the national/international standards and submit reports to faculty administration.
3. Following up on compliance with safety and security precautions in the faculty facilities.
4. Measurement of KPIs related to the standard and formulation of the improvement plan, and follow up the implementation of the improvement plan.
5. Preparation of the necessary evidences and documents to prove the good practice as stipulated in the standard guide.
6. Preparing the self-evaluation report.
7. Participating in preparing the program self-study report.

D- SSRP Revision and Drafting Committee:

1. Collection of all six standards and their evidence from the other committees.
2. Revision of SSRP and successive iteration of the all standards.
3. Drafting and finalizing the SSRP.

Table 7: Time frame of program evolution.

Activity	Monthly	Beginning of the term	End of the term	Annually	Every four years
Committee's meetings	✓				
Departmental council meeting	✓				
Faculty council meeting	✓				
Pre-Term coordinators meeting		✓			
Course file		✓	✓		
Course evaluation survey			✓		
Course report		✓	✓		
Post-Term coordinators meeting			✓		

Facilities and resources assessment				✓	
Faculty training programs				✓	
Surveys				✓	
Program KPI report				✓	
Operational plan report				✓	
Stakeholder's surveys report				✓	
PLOs assessment report				✓	
Annual program report				✓	
CR and APR revision by internal reviewers				✓	
Improvement plans distribution Action plan execution Action plan report				✓	
Advisory committee meetings				✓	
Independent program review (SSRP)					✓
Review of program and course specifications, learning outcomes and study plan				✓	✓

				(Internal review for minor change)	(External review for major changes)
Review of mission, graduates' attributes and operational plan					✓
SWOT analysis report					✓
Self-evaluation scales report				✓	✓
Self-study report (SSRP)					✓
Quality assurance manual				✓	

Table 8: Program evaluation matrix.

Evaluation area	Evaluation sources/References	Evolution method	Evaluation time
Effectiveness of teaching and assessment methods	HOD, faculty, students, alumni, employers	Exam results, CR CES Post-term meeting Program leaders students meeting Interviewers Peer review	End of each term
		PLOs assessment APR HOD-students meeting PES AES FSS	Annually

		QES Meeting and interviews SES	
Learning outcomes	HOD, faculty, students, alumni, employers	CR CES Post-term meeting course coordinators students meeting APR PES AES QES FSS SES	End of each term Annually
Effectiveness of leadership	HOD, Faculty members, Admin staff	Staff performance evaluation forms. HOD, Faculty members, evaluation surveys. FSS ESS	Annually
Partnerships	HOD, Faculty members, Students, Advisory committee, QC	CR APR Operational plan Advisory committee meetings Community Service Survey	Annually
Overall quality of the program	HOD, Students, graduates, Faculty members, Admin staff, Employers, Advisory committee, independent reviewers	CR APR Operational plan report KPIs report PLOs report Stakeholders' surveys report Focused group Discussion Advisory committee meetings	Annually

Mission and Goals Development

The mission and goals of the Chemistry Program were developed to motivate the efforts of the students, faculty members and all stakeholders and provide them with a clear direction to the future state of the program.

The mission statements and goals clearly provide a view of why the Chemistry Program exists, where it wants to be and they create a target for the operational planning of the program. In developing its mission and goals the Chemistry Program followed a systematic procedure that ensures consideration of key factors and stakeholders' inputs. The Chemistry Program mission and goals are widely circulated among internal and external stakeholder to provide them with a clear direction to the future state of the program. The mission and goals are periodically reviewed allowing them to evolve in response to changing needs and advancements in the field of Chemistry. In the following the details of the details of the development procedure is presented.

Determinants The factors shape the articulation of the program mission and goals.	**Alignment with the UT's mission:** • Align the program mission and goals with the overall vision, mission, and values of the UT. • Consider the strategic priorities, objectives, and core principles of the UT. • Ensure that the program mission and goals contribute to the UT's broader goals and strategic plans. **Compliance with the Accreditation Standards:** • Compliance with the requirements and standards set by the NQF ensures program quality, standards, and recognition. **Needs Assessment and Analysis:** • Identify and analyze the specific needs, problems, or challenges that the program seeks to address.

	Target Population: • Define the target population or beneficiaries of the program. • Consider their characteristics, demographics, socio-economic status, and specific needs or concerns. • Tailor the program mission and goals to effectively address the identified needs of the target population. **Stakeholder Input and Engagement:** • Engage relevant stakeholders throughout the program planning process. • Seek input, feedback, and perspectives from stakeholders, including program staff, beneficiaries, community members, partners, and experts. **External Factors and Context:** • Assess the external factors and contextual influences that may impact the program. • Consider political, economic, social, technological, and environmental factors that shape the program's operating environment. • Adapt the program mission and goals to respond to the opportunities and challenges presented by the external context. **Resources:** • Consider the availability and allocation of resources to support the program's implementation. • Assess the financial, human, material, and technical resources required to achieve the program goals. • Align the program mission and goals with the resource capacity. **Legal and Ethical Considerations:**

	• Comply with applicable laws, regulations, ethical and Islamic standards in shaping the program mission and goals. **Research and Evidence:** • Review existing research, studies, and evidence related to the program's focus area. • Incorporate relevant findings and lessons learned from research and evidence into the program mission and goals. **Collaboration and Partnerships:** • Identify potential partners and collaborators who can contribute to the program's mission and goals. • Consider partnerships with community organizations, government agencies, non-profit organizations, academic institutions, and private sector entities. **Evaluation and Learning:** • Plan for ongoing monitoring, evaluation, and learning throughout the program's lifecycle. • Incorporate evaluation findings, lessons learned, and feedback from stakeholders to refine and adjust the program mission and goals. • Continuously assess the program's effectiveness, impact, and relevance to ensure continuous improvement.
Specifications guidelines for developing clear and well-articulated mission and goals statements.	**Clarity and Conciseness:** • Ensure that the mission and goals are clearly articulated in a concise and easily understandable manner. • Use simple and straightforward language to avoid ambiguity or confusion. **Specificity and Measurability:**

	• Make the mission and goals specific and measurable to provide clear direction and enable effective tracking of progress. • Clearly define the expected outcomes, targets, or metrics associated with each goal. **Alignment with UT's Values and Vision:** • Ensure that the program mission and goals align with the overall values, vision, and strategic direction of the UT. **Relevance and Significance:** • Ensure that the mission and goals are relevant to the program's purpose, target population, and the identified needs or problems. **Achievability and Realism:** • Set mission and goals that are achievable within the program's scope, available resources, and timeframe. **Time-bound:** • Define a specific timeframe or deadline for achieving the goals to provide a sense of urgency and focus. • Break down long-term goals into shorter-term objectives or milestones to track progress effectively. **Stakeholder Involvement:** • Involve relevant stakeholders, such as program staff, beneficiaries, partners, and funders, in the process of articulating the mission and goals. • Seek input and feedback from stakeholders to ensure that their perspectives and needs are considered.

	Inspiring and Motivating: • Craft a mission statement and goals that inspire and motivate program stakeholders by conveying a sense of purpose, impact, and value. • Use language that evokes enthusiasm, commitment, and a shared sense of responsibility. **Flexibility and Adaptability:** • Allow for flexibility and adaptability in the mission and goals to accommodate changes in the program's context, emerging opportunities, or evolving needs. • Ensure that the goals can be revised or adjusted if required, while maintaining alignment with the program's overall purpose.
Responsibilities	HAAC
Development and Approval	Department council. HAAC.
Procedure	1. **Assign tasks:** The higher academic accreditation committee (HAAC) oversees the entire process and ensures collaboration and representation from different stakeholders. 2. **Conduct internal and external Analysis:** The HAAC conducts the following analysis. a. **SWOT Analysis:** thorough analysis of the internal strengths, weaknesses, opportunities, and threats (SWOT) of the academic program. b. **Market Analysis:** Analyze the market relevant to the program. Identify trends, emerging needs, and potential opportunities. Assess the competitive landscape and benchmark against similar programs to identify unique selling propositions and differentiation factors.

	c. **Stakeholder Analysis:** The mission and goals working group conducts a workshop with stake holders (Students, Alumni, Employers, Faculty members, Administrative staff) to understand their needs, expectations, and aspirations related to the program, and to gather their inputs and insights. 3. **Draft Mission Statement:** Based on the information gathered and analysis conducted, HAAC drafts a preliminary mission statement and program goals. The mission and goals working ensures alignment with the UT's mission and strategic priorities. Also, the mission statement should capture the program's unique contributions and aspirations. 4. **Seek Feedback and Revision:** The HAAC share the draft mission statement and goals with stakeholders, seeking their feedback, suggestions, and revisions. 5. **Refine and Finalize:** Based on the feedback the HAAC revise and refine the mission statement to ensure it accurately represents the program's identity, purpose, and values. Ensure that the mission comply with specifications outlines previously. 6. **Develop program Goals:** a. After finalizing the mission statement, the HAAC identifies the specific goals that the chemistry program intends to achieve in alignment with its mission. a. Ensure that the goals are measurable, achievable, relevant, and time-bound (SMART). b. Consider the chemistry program's unique strengths, student needs, and evolving industry expectations. 7. **Seek Feedback and Revision:** The HAAC share the draft program goals with faculty, staff, and other relevant stakeholders for feedback and suggestions to refine the program goals.

	8. **Refine and Finalize Program Goals:** Based on the feedback received, the HAAC revise and refine the program goals to ensure they align with the program's mission, address student needs, and reflect current trends in the relevant field. The HAAC submits the finalized mission and goals to the HOD. 9. **Approval from Relevant Authorities:** The HAAC presents the finalized mission statement and goals to the departmental council for approval. After the approved by the departmental council, the mission statement and goals go through the approval process according to the authority matric shown in table 1. At any stage of approval suggestions for further refinement of the mission and goals are carried by the HAAC. 10. **Communicate Approved Mission and Goals:** The HAAC share the approved mission statement and program goals with all relevant stakeholders, including faculty, students, staff, and external accrediting bodies. Ensure that everyone involved in the program is aware of the approved mission and goals and their significance for program direction and decision-making.
Notes	The Program Mission and Goals are revised every four years.
Outputs	1. Meeting minutes with Stakeholders (Advisory committee meeting, Faculty members meeting, Administrative staff meeting). 2. Feedback reports. 3. SWOT analysis (Internal and external Analysis report). 4. Approval of mission and goals from the relevant authorities.
Appendices	1. The UT strategic plan governance guide. 2. UT strategic plan. 3. FOS strategic plan. 4. Matrix of Authority of study plans and academic programs.

Graduate Attributes development and modification

Graduate attribute statements typically describe the specific skills, knowledge, and qualities that students are expected to possess upon completion of their studies. The Chemistry Program graduate attributes are approved, publicly disclosed, and the program has a mechanism in place to gather feedback from stakeholders. Their perspectives can provide valuable insights into the effectiveness of the program and the attributes it fosters.

Determinants Are the factors that shape the development of the desired graduate attributes.	**1. Program and Institutional Mission and Goals:** • **Mission:** Aligning the graduate attributes with the broader mission and vision of the program or institution. • **Program goals:** Reflecting the specific goals and objectives set by the program to develop well-rounded graduates with the desired attributes. **2. Stakeholder Expectations and Input:** • **Employer expectations:** Considering the needs and expectations of employers and industry stakeholders to ensure that the graduate attributes align with the demands of the job market. • **Alumni feedback:** Gathering feedback from program graduates to understand the strengths and areas for improvement in the development of graduate attributes. • **Professional organizations**: Aligning the graduate attributes with the expectations and requirements set by relevant professional bodies. **3. Educational Standards and Guidelines:** • **National standards:** Adhering to educational standards or guidelines established by NQF. • **Professional standards:** Aligning the graduate attributes with professional standards or competency frameworks relevant to the field of study or profession. **4. Societal Perspectives:**

	• **Social responsibility:** Including attributes that foster ethical behavior, social awareness, and a commitment to making a positive impact on society. **5. Discipline-specific Factors:** • **Field-specific knowledge and skills:** Identifying the specific attributes that are essential within the discipline or field of study. • **Critical thinking and problem-solving:** Including attributes that promote analytical thinking, problem-solving abilities, and the ability to apply knowledge in practical situations. • **Research and innovation:** Incorporating attributes that encourage research skills, creativity, and the ability to contribute to new knowledge or innovation in the field. **6. Personal and Professional Development:** • **Lifelong learning:** Including attributes that promote a commitment to continuous learning, adaptability, and the ability to acquire new knowledge and skills throughout one's career. • **Communication and collaboration:** Incorporating attributes that foster effective communication, teamwork, and the ability to work collaboratively with others. • **Leadership and management:** Including attributes that develop leadership skills, strategic thinking, and the ability to manage projects or teams. **7. Assessment and Evaluation:** • **Assessment methods:** Considering the appropriate assessment methods and strategies to measure the development of graduate attributes effectively. • **Alignment with assessment criteria:** Ensuring that the graduate attributes align with the assessment criteria and rubrics used to evaluate student performance. • **Feedback and improvement:** Incorporating opportunities for feedback and continuous improvement of the graduate attributes based on assessment results and stakeholder feedback.

Specifications Guidelines for articulating graduate attributes that are clear and effective.	**1. Clarity and Specificity:** • **Clear language:** Use clear and concise language to articulate graduate attributes, avoiding ambiguity. • **Specificity:** Clearly define each attribute and provide a clear description of what it entails, including the knowledge, skills, or qualities that encompass the attribute. • **Action-oriented:** Use action verbs to describe observable behaviors or actions that demonstrate the attribute. **2. Comprehensive Coverage:** • **Holistic approach:** Ensure that the graduate attributes cover a broad range of areas, including academic knowledge, technical skills, personal qualities, and professional competencies. • **Core attributes:** Identify the essential attributes that all graduates should possess, regardless of their specialization or field of study. • **Disciplinary-specific attributes:** Include attributes that are specific to the discipline or field of study, reflecting the unique requirements and expectations of that area. **3. Measurability and Assessment:** • **Measurable outcomes:** Ensure that the attributes are observable, measurable, and assessable, allowing for the evaluation of student attainment. • **Assessment methods:** Consider appropriate assessment methods and strategies that align with each attribute, providing opportunities for students to demonstrate their development.
Responsibilities	Programs and study plans committee (PSPC).
Development & Approval	Vice deanship of development and quality Faculty council Department council. Programs and study plans committee (PSPC). QC Faculty members.

	Advisory committee. Administrative staff. Stakeholders.
Procedure	**1. Assign tasks:** The PSPC is responsible of overseeing the entire process for developing, modifying and approving the graduate attributes, and ensure collaboration and representation from different perspectives. **2. Collect Data:** The PSPC review the following: • The program mission, goals and PLOs • The UT graduate attributes. • The previous graduate attributes. • The NQF requirements for the relevant level. • The UT manual for programs and study plans. • Benchmark national and international programs. • The new development in Chemistry and its applications. **3. Draft the Graduates Attributes:** Based on the data collected in the previous step, the PSPC formulates the Chemistry Program first draft of the graduate attributes. **4. Share with the department council:** To ensure that the graduate attributes align with their expectations and requirements for graduates, the PSPC present the graduates attributes at the department council seeking their input and feedback to ensure their support. Based on the feedback from faculty members the PSPC revise and refine the graduates' attributes. **5. Seek Stakeholder Feedback and Revision:**

	The PSPC share the revised draft of the graduates' attributes with the Advisory committee and stakeholders, seeking their feedback and suggestions. Based on the feedback from the Advisory committee members and stakeholders the PSPC revise and refine the study plan. 6. **Obtain Approval:** The final draft of the study plan will then be submitted to the department council and to the faculty council for approval. 7. **Communicate Approved Study Plan:** The approved graduate attributes publicized to all stakeholders, and included in the program specification as well as the departmental handbooks and website.
Reports	Approved Chemistry Program graduate attributes. Feedback reports from stakeholders. Meeting minutes and reports of the PSPC. Meeting mites on (Advisory committee, Departmental council, Faculty council)
Appendices	1. The NQF requirements. 2. The UT guide for programs and study plans. 3. The UT authority matrix for programs and study plans approval.

Program Learning Outcomes development and modification

Program learning outcomes statements are broad statements that describe the knowledge, skills, and values that students are expected to acquire upon completion of a program of study. These statements provide an overview of the overarching goals and outcomes of the program.

Determinants The factors that influence the development and formulation of the Program learning outcomes.	**1. Program Mission and Goals:** • **Mission statement:** Aligning the program learning outcomes with the overall mission and purpose of the program. • **Program goals:** Reflecting the specific goals and objectives set by the program, which may include knowledge acquisition, skill development, or professional competencies. **2. Professional Standards and Accreditation:** • **Accreditation requirements:** Ensuring that the program learning outcomes meet the standards and requirements set by accrediting bodies or regulatory agencies. • **Professional standards:** Aligning the learning outcomes with the standards and competencies established by relevant professional organizations or industry stakeholders. **3. Stakeholder Input and Expectations:** • **Employer expectations:** Considering the needs and expectations of employers and industry stakeholders to ensure that the program learning outcomes align with the demands of the job market. • **Alumni feedback:** Gathering feedback from program graduates to understand the strengths and areas for improvement in the program's learning outcomes. • **Student input:** Incorporating student perspectives and input to address their needs, interests, and career aspirations. **4. Discipline-specific Factors:**

- **Body of knowledge:** Reflecting the essential knowledge base and core concepts of the discipline or field of study.
- **Skills and competencies:** Identifying the specific skills and competencies that students should develop throughout the program, such as critical thinking, problem-solving abilities, or research skills.
- **Ethical considerations:** Incorporating ethical principles and considerations relevant to the discipline or field.

5. **Educational Trends and Best Practices:**
   - **Educational research and evidence:** Considering current research and evidence-based practices in teaching and learning to shape the program learning outcomes.
   - **Pedagogical approaches:** Incorporating effective pedagogical approaches and instructional strategies that align with the program's goals and learning outcomes.
6. **Program Context and Resources:**
   - **Program structure and sequencing:** Ensuring that the learning outcomes are sequenced and structured in a logical progression throughout the program, building upon foundational knowledge and skills.
   - **Faculty expertise:** Considering the expertise and qualifications of faculty members to ensure that the learning outcomes are achievable and aligned with their areas of expertise.
   - **Available resources:** Taking into account the resources, facilities, and technologies available to support the achievement of the program learning outcomes.
7. **Continuous Improvement and Evaluation:**
   - **Assessment and evaluation considerations:** Establishing an ongoing assessment and evaluation process to monitor and measure student achievement of the learning outcomes.
   - **Feedback and program review:** Incorporating feedback from faculty, students, and external
   - Stakeholders to continuously review and improve the program learning outcomes.
   - **Alignment with program assessment:** Ensuring that the learning outcomes align with the assessment methods, criteria, and rubrics used to evaluate student performance.

Specifications: The guidelines for crafting clear, concise, and measurable Program learning outcomes.	**1. Clarity and Specificity:** • **Clear language:** Use clear and concise language to articulate program learning outcomes, avoiding ambiguous or vague terms. • **Specificity:** Ensure that each learning outcome is specific and measurable, describing the intended knowledge, skills, or competencies that students should acquire by the end of the program. • **Action verbs:** Use action verbs to describe observable and measurable behaviors or actions that students should be able to demonstrate. **2. Cognitive Levels:** • **Cognitive levels:** Consider the cognitive levels set by the NQF, to ensure a balanced and progressive set of learning outcomes that encompass a range of cognitive skills. • **Higher-order thinking:** Include learning outcomes that require higher-order thinking skills, such as critical thinking, analysis, synthesis, and evaluation. **3. Measurability:** • **Measurable outcomes:** Ensure that the learning outcomes are observable and measurable, allowing for assessment and evaluation of student achievement.
Responsibilities	The programs and study plans committee (PSPC).
Development& Approval	Department council. PSPC. The advisory committee.
Inputs	Chemistry Program Mission, goals and graduate attributes. UT graduate attributes. National qualification framework standards.
Procedure	**Assign responsibilities:** The Programs and Study Plans Committee (PSPC) is responsible of overseeing the entire process

	for developing, modifying and approving the PLOs, and ensure collaboration and representation from different perspectives. **Collect Data:** The PSPC review the following: • The program mission, goals. • The previous PLOs. • The NQF requirements for the relevant level. • Benchmark national and international programs. • The UT manual for programs and study plans. • The new development in Chemistry and its applications. **Conduct Needs Assessment:** The Programs and study plans committee conduct a thorough needs assessment to: • Identify the knowledge, skills, and competencies required for success in the program's field or discipline • Review industry trends, professional standards, labour market demands and peer programs. **Draft the PLOs:** Based on the conducted review and needs assessment, the PSPC articulate the first draft of the PLOs that are aligned with the learning activities, teaching strategies, and assessment methods. **Share with the department council:** To ensure that the PLOs aligns with program mission, goals, the NQF requirements as well as stakeholders' expectations, the PSPC present the graduates attributes at the department council seeking their input and feedback to ensure their support. Based on the feedback from faculty members the PSPC revise and refine the PLOs. **Seek Stakeholder Feedback and Revision:**

	The PSPC share the revised draft of the PLOs with the advisory committee and stakeholders, seeking their feedback and suggestions. Based on the feedback from the advisory committee members and stakeholders the PSPC revise and refine the PLOs. **Seek FOS Feedback and Revision:** The HOD submits the revised draft of the PLOs to the faculty's programs and study plans committee, seeking their feedback and suggestions. Based on the feedback from the faculty's programs and study plans committee the PSPC revise and refine the PLOs. The revised draft will then be submitted to the FOS council, seeking their feedback and suggestions. Based on the feedback from faculty council the PSPC revise and refine the PLOs. **Seek UT Feedback and Revision:** The revised draft of the study plan will then be submitted through UT's Bena electronic gate to the UT's deanship of academic affairs. The study plan will go through internal review by the deanship of academic affairs as well as an external reviewer. Based on the feedback from the deanship of academic affairs and the external reviewer the PSPC revise and refine the PLOs. **Obtain Approval:** The final draft of the PLOs will then be approved by the department and faulty councils and submitted to the deanship of academic affairs for approval. **Communicate Approved PLOs:** The approved PLOs is publicized to all stakeholders, and included in the program specification as well as the departmental handbooks and website.
Reports	Approved Chemistry Program PLOs. Meeting minutes and reports of the Programs and study plans committee. Feedback reports from stakeholders. Meeting mites on (Advisory committee, Departmental council, Faculty council)
Appendices	1. The Chemistry Program mission, goals and study plan. 2. The NQF requirements. 3. The UT authority matrix for programs and study plans approval.

Program Study Plan development and modification

The Chemistry Program has a detailed study plan showing the courses, their classification, their sequence, the number of accredited hours, their pre/corequisites, the classification of courses; required, elective and university/ college/department requirement. The study plan ensures the balance between the general and specialty requirements, and between theoretical and skill aspects; and it takes into account the sequencing and integration of the courses. The program study plan considers the adequate requirements in accordance with international practices and similar programs.

Determinants These factors are essential to develop study plans that align with academic requirements, meet industry standards, cater to student needs, and provide a comprehensive and relevant educational experience.	**1. Academic Requirements:** • **Accreditation and regulatory standards:** Ensuring compliance with accreditation requirements and NQF regulations. • **Curriculum guidelines:** Adhering to established guidelines or frameworks set by UT. • **Credit hours and course sequencing:** Adhering to the total credit hours required for the program set by the NQF. • **Curriculum structure:** Choose a course sequencing that ensures logical and progressive learning experience. **2. Program Goals and Objectives:** • Defining the overarching goals and objectives of the program. • Aligning the study plan with the program's mission and intended learning outcomes. • Balancing the breadth and depth of knowledge in the chosen field of study. **3. Industry or Professional Standards:** • Considering the expectations and requirements of relevant professions. • Incorporating competencies and skills necessary for successful employment in the field. • Staying updated with emerging trends and technological advancements in the field of Chemistry. **4. Prerequisites and Core Courses:**

	• Identifying prerequisite courses or knowledge required for advanced courses. • Designating core courses that provide foundational knowledge and skills within the discipline. • Ensuring a logical sequencing of courses to build upon previously acquired knowledge. **5. Electives and Specializations:** • Offering a range of elective courses that allow students to customize their study plan. • Providing specialized tracks or concentrations within the program to cater to specific interests or career paths. • Balancing breadth and depth by offering a variety of elective options. **6. Faculty Expertise and Resources:** • Leveraging the expertise and research interests of faculty members to design and offer relevant courses. • Considering the availability of faculty resources and ensuring adequate coverage of essential subject areas. • Facilitating faculty development and keeping them updated with advancements in the field. **7. Student Needs and Feedback:** • Considering the interests and aspirations of prospective students. • Gathering feedback from current students regarding their preferences and areas of interest. • Incorporating mechanisms for student input and ongoing evaluation of the study plan. **8. Institutional Resources and Constraints:** • Considering the availability of facilities, equipment, and infrastructure necessary for delivering the program. • Addressing any resource constraints, such as faculty availability, budget limitations, or scheduling challenges. • Balancing the program requirements with the overall institutional capacity.

	9. External Stakeholder Input: • Incorporating feedback and input from external stakeholders, such as industry professionals, alumni, or advisory boards. • Engaging employers or professional associations to identify skill gaps and ensure program relevance. • Building partnerships and collaborations to provide opportunities for internships, practicums, or industry projects. **10. Ongoing Evaluation and Continuous Improvement:** • Implementing mechanisms for regular evaluation and assessment of the study plan's effectiveness. • Analysing student performance data and feedback to identify areas for improvement. • Staying abreast of changes in the field and updating the study plan accordingly.
Responsibilities	Programs and study plans committee (PSPC).
Development & Approval	Department council. Programs and study plans committee Advisory committee Academic staff members
Inputs	Program mission and goals. Program and course learning outcomes. Benchmark program. The national framework for studying qualification.
Procedure	**1. Assign tasks:** The Programs and Study Plans Committee (PSPC) is responsible of overseeing the entire process for developing, modifying, follow up on the approval the study plan, and ensure collaboration and representation from different stakeholders.

	2. Needs Assessment and Goal Setting: The Programs and study plans committee conduct a thorough needs assessment in order to: • Identify the purpose of the study plan and the target audience. • Conduct a needs assessment by analysing factors such as program requirements, industry trends, student interests, and feedback. • Set clear goals and objectives for the study plan, aligning them with the program's mission and intended learning outcomes. **3. Curriculum Design and Course Selection:** In designing the curriculum and identifying courses the Programs and study plans committee perform the following: 1. Review and analyse of the program's curriculum guidelines, accreditation requirements, and regulatory standards. 2. Determine the core courses, prerequisites, and elective options based on the program's objectives and the needs of the students. 3. Consider the logical sequencing of courses, ensuring a progressive development of knowledge and skills. 4. Explore opportunities for specialization or concentration areas within the study plan. **4. Draft the operational plan:** Based on the conducted review and needs assessment, the Programs and study plans committee articulate the first draft of the Study plan.

	5. **Share with the department council:** To ensure that the study plan is comprehensive, actionable, and aligned with the program's objectives, the PSPC present the study at the department council seeking their input and feedback to ensure their support. Based on the feedback from faculty members the PSPC revise and refine the study plan. 6. **Seek Stakeholder Feedback and Revision:** The PSPC share the revised draft of the study plan with the Advisory committee and stakeholders, seeking their feedback and suggestions. Based on the feedback from the Advisory committee members the PSPC revise and refine the study plan for the second time. 7. **Seek FOS Feedback and Revision:** The HOD submits the revised draft of the study plan to the FOS's Programs and study plans committee, seeking their feedback and suggestions. Based on the feedback from the FOS's Programs and study plans committee the PSPC revise and refine the study plan. The final revised draft will then be submitted to the FOS council, seeking their feedback and suggestions. Based on the feedback from faculty council the PSPC revise and refine the study plan. 8. **Seek UT Feedback and Revision:** The final draft of the study plan will then be submitted through UT's electronic gate to the UT's deanship of academic affairs. The study plan will then go through internal review by the deanship of academic affairs as well as an external reviewer. Based on the feedback from the deanship of academic affairs and the external reviewer the PSPC revise and refine the study plan. 9. **Obtain Approval:** The final draft of the study plan will then be submitted to the deanship of academic affairs for approval.

	10. Communicate Approved Study Plan: The approved study plan is publicized to all stakeholders, and included in the program specification as well as the departmental handbooks and website.
Reports	• Program study plan. • Team's meeting minutes. • Department council meeting minutes. • Faculty council meeting minutes.
Appendices	• National qualification framework. • University program and plan guide. • The UT Matrix of authority for study plans development.

Course Learning outcomes development and modification

Course learning outcome statements provide a clear indication of the knowledge, skills, and values that students are expected to acquire or demonstrate by the end of the course. They serve as a guide for instructors and students, setting the expectations and providing a framework for learning and assessment.

Determinants: The factors that influence the development and formulation of the CLOs.	1. **Alignment with the PLOs and the course objectives**: • **Accreditation requirements:** Ensure that the CLOs are directly connected and serve the PLOs. • **Mission and vision:** Ensure that the CLOs directly contribute to the attainment of the overall course objectives. **2. Subject or Discipline-specific Factors:** • **Body of knowledge:** Reflecting the essential knowledge base and core concepts of the subject or discipline. • **Skills and competencies:** Identifying the specific skills and competencies that students should develop in the course, such as analytical skills, problem-solving abilities, or practical application of knowledge. • **Ethical considerations:** Incorporating ethical principles and considerations relevant to the subject or discipline. **3. Stakeholder Expectations and Input:** • **Industry or professional expectations:** Considering the expectations and requirements of employers, professional organizations, or industry stakeholders to ensure that the learning outcomes align with the needs of the field. • **Alumni feedback:** Gathering feedback from former students or alumni to understand how the course can better prepare students for their future careers or further education.

	• **Student input:** Incorporating student perspectives and input to ensure that the learning outcomes address their needs, interests, and aspirations. **4. Educational Standards and Guidelines:** • **National or regional standards:** Adhering to educational standards or guidelines established by government bodies or educational authorities. • **Professional standards:** Aligning the learning outcomes with professional standards or competency frameworks relevant to the subject or discipline. • **Best practices:** Considering established best practices and research-based evidence in teaching and learning when developing the learning outcomes. **5. Program or Course Context:** • **Prerequisite knowledge and skills:** Considering the prior knowledge and skills that students are expected to have before enrolling in the course. • **Course progression:** Aligning the learning outcomes with the overall progression and structure of the course, building on previous courses or preparing students for subsequent courses. • **Course modality:** Considering the mode of delivery (e.g., face-to-face, online, hybrid) and any specific considerations related to the course format. **6. Assessment and Evaluation:** • **Assessment methods:** Considering the appropriate assessment methods and strategies to measure student achievement of the learning outcomes effectively. • **Alignment with assessment criteria:** Ensuring that the learning outcomes align with the assessment criteria and rubrics used to evaluate student performance. • **Feedback and improvement:** Incorporating opportunities for feedback and continuous improvement of the learning outcomes based on assessment results and student feedback.
Specifications:	

The guidelines for crafting clear, concise, and measurable CLOs.	**1. Cognitive Levels:** • **Cognitive levels:** Consider the cognitive levels set by the NQF to ensure a balanced and progressive set of learning outcomes that encompass a range of cognitive skills. • **Higher-order thinking:** Include learning outcomes that require higher-order thinking skills, such as critical thinking, analysis, synthesis, and evaluation. **2. Clarity and Specificity:** • **Clear language:** Use clear and concise language to articulate course learning outcomes, avoiding ambiguous or vague terms. • **Specificity:** Ensure that each learning outcome is specific and measurable, describing the intended knowledge, skills, or competencies that students should acquire by the end of the course. • **Action verbs:** Use action verbs to describe observable and measurable behaviours or actions that students should be able to demonstrate. **3. Measurability and Assessment:** • **Measurable outcomes:** Ensure that the learning outcomes are observable and measurable, allowing for assessment and evaluation of student achievement. • **Assessment methods:** Consider the appropriate assessment methods and strategies that align with each learning outcome, providing opportunities for students to demonstrate their attainment of the outcomes.
Responsibilities	Programs and study plans committee (PSPC). Course coordinators.
Development & Approval	Department council. Programs and study plans committee (PSPC). Advisory committee. Faculty members.

Inputs	• Chemistry Program mission, goals, graduate attributes and PLOs. • Chemistry Program study plan. • National qualification framework standards.
Procedure	**1. Assign tasks:** The PSPC hold a workshop to train faculty members in writing CLOs. **2. Collect Data and Review:** The course coordinators review the following: • The program mission, goals, PLOs and graduate attributes, • The NQF requirement for the relevant level. • The curriculum framework. • The program's target audience, such as students' backgrounds, prior knowledge, and intended career paths. • Benchmark national and international programs. • The UT manual for programs and study plans. • The new development in Chemistry and its applications. **3. Conduct Needs Assessment:** The course coordinators conduct a thorough needs assessment to identify the knowledge, skills, and competencies required for success in the program's field or discipline, and review industry trends, professional standards, labour market demands and peer programs. **4. Draft the CLOs:** Based on the conducted review and needs assessment, the course coordinators articulate the first draft of the CLOs that are aligned with the learning activities, teaching strategies, and assessment methods, and submit them to the programs and study plans committee for review. Feedback from the SPSC is carried out by the course coordinators. **5. Seek Stakeholder Feedback and Revision:** The PSPC share the revised draft of the PLOs together with the

	matrices of alignment of the CLOs with the PLOs as well as the teaching strategies and assessment methods, with the advisory committee and stakeholders, seeking their feedback and suggestions. Based on the feedback from the advisory committee members and stakeholders the course coordinators revise and refine the CLOs. 6. **Share with the department council:** The PSPC present the revised CLOs and the alignment matrices at the department council seeking their input and feedback to ensure their support. Based on the feedback from faculty members the course coordinators revise and refine the CLOs. 7. **Obtain Approval:** The revised CLOs and the alignment matrices will then be submitted to the department and faculty councils for approval, and then to the UT's standing committee for programs and study plans for final approval. Audit report from the UT's standing committee for programs and study plans will be submitted to the program for further refinement. At any stage of the approval process, course coordinators are responsible of carrying out the recommended adjustments. The final draft of the CLOs and the alignment matrices will be submitted to the UT's standing committee for programs and study plans final approval. 8. **Communicate Approved PLOs:** The approved CLOs is publicized to all stakeholders, and included in the course's specifications, and all relevant guides.
Reports	• Approved Chemistry Program CLOs. • Meeting minutes and reports of the Programs and study plans committee. • Feedback reports from stakeholders. • Meeting mites on (Advisory committee, Departmental council, Faculty council).
Appendices	• The Chemistry Program mission, goals and study plan. • The NQF requirements. • The UT authority matrix for programs and study plans approval.

Course Specification development and modification

Description	Descriptive information about the course and learning outcomes
Goals	Assist in the development, supervision, and assessment of course effectiveness.
Implementation Responsibility	Course coordinators.
Follow up Responsibility	PSPC.
References	Program Specification Program study plan Procedural guide for programs and study plans
Determinants	Commitment to fulfill all the terms of the description prepared by the NCAAA and what is stated in the procedural guide for programs and plans at the university.
Inputs	• The program's mission and objective • Learning outcomes and graduates' attributes. • Program specification. • Study plan of the program • A detailed plan for the program showing the academic courses, their classification and sequence, the number of approved and actual academic hours, their previous and accompanying requirements, the distribution of the courses according to the practice (compulsory, optional, free) and their division (university, faculty, department). • A detailed plan for each course that includes the general description of the course, the language of instruction, objectives, learning strategies, evaluation methods, and learning resources.

	• A matrix linking course learning outcomes to program learning outcomes • Internal and external changes that affects the program. • Opinion surveys, annual program reports, program reports, and coursework. • Benchmarking • Procedural guide to quality. • Procedural guide for programs and study plans. • Authority matrix.
Procedures	1. The PSPC is accountable for establishing a well-defined implementation timeline and ensuring the collection and upload of all relevant input documents to the department's electronic cloud. This facilitates the dissemination of information to all stakeholders involved in specifying requirements. 2. The PSPC organizes a training workshop aimed at providing clarity on how to complete the NCAAA course specification forms. 3. The course coordinators, appointed by the department council, carefully assess the inputs and develop a comprehensive description for the assigned course coordination. 4. The course coordinators complete the NCAAA course specification forms, with the option to modify or enhance the specifications. 5. If the necessary modifications to the specifications are not significant, they are presented to the department council for approval, following the program modification authority matrix. 6. If the modifications involve course changes or the addition of a new course, they are presented to the advisory committee for their input. 7. The course descriptions are revised based on the feedback received and then presented again to the department council. 8. Subsequently, the descriptions are submitted to the faculty's programs and plans committee for review. 9. The course specifications are adjusted based on the feedback provided by the Faculty's Programs and Plans

	Committee. 10. Once approved by the committee, the course specifications will be submitted to the faculty council for final approval. 11. After that, the course specifications will be forwarded to the University Vice Deanship for Academic Affairs. 12. The Vice Deanship for Academic Affairs reviews the course specifications and submits them to an external reviewer for further refinement. 13. Feedbacks from the Vice Deanship for Academic Affairs are shared with the Chemistry Program to carry put the recommended modifications. 14. The course coordinators revise the course specifications in accordance with the provided feedbacks. 15. The revised course specifications are then approved by the department council. 16. Subsequently, they are submitted to the faculty council for approval. 17. Finally, the course specifications are submitted to the Vice Dean for Academic Affairs at the university to complete the necessary approval procedures. This process includes incorporating the modified study plan and integrating it into the admission and registration system.
Outputs	Approved course specifications Minutes of approval of the specifications from the relevant councils and authorities.

Students Assessments procedure

Determinants: The factors that influence the quality and effectiveness of student assessments.	**1. Alignment with Learning Objectives and Standards:** • **Curriculum alignment:** Ensuring that assessments measure the intended learning outcomes outlined in the curriculum. • **Standard alignment:** Aligning assessments with external standards or benchmarks relevant to the subject or discipline. • **Depth and breadth of coverage:** Assessing a wide range of knowledge, skills, and competencies outlined in the curriculum. **2. Validity and Reliability:** • **Content validity:** Ensuring that the assessment measures what it intends to measure. • **Construct validity:** Assessing the underlying construct or concept being evaluated. • **Criterion-related validity:** Establishing a relationship between the assessment and an external criterion. • **Inter-rater reliability:** Consistency of assessment results when scored by different evaluators. • **Test-retest reliability:** Consistency of assessment results when administered to the same students at different times. **3. Clarity and Transparency:** • **Clear assessment instructions:** Providing explicit directions to students on how to complete the assessment. • **Transparent assessment criteria:** Clearly articulating the standards and expectations for student performance. • **Rubrics and scoring guides:** Providing detailed guidelines for evaluating and scoring student work. • **Consistent grading practices:** Ensuring consistent application of assessment criteria across different evaluators.

	4. Fairness and Equity: • **Bias reduction:** Minimizing potential bias in assessment content, language, and administration. • **Accommodations:** Providing appropriate accommodations for students with disabilities or special needs. • **Cultural sensitivity:** Ensuring assessments are sensitive to diverse cultural backgrounds and experiences. • **Accessibility:** Ensuring that assessments are accessible to all students, including those with physical or sensory disabilities. **5. Authenticity and Relevance:** • **Authentic tasks:** Designing assessments that reflect real-world applications and contexts. • **Relevance to student experiences:** Ensuring assessments are meaningful and relatable to students' lives and interests. • **Transferability of skills:** Assessing students' ability to apply their knowledge and skills in different contexts. **6. Ethical Considerations:** • **Privacy and confidentiality:** Protecting students' personal information and ensuring the confidentiality of assessment results. • **Ethical administration:** Conducting assessments in a fair and unbiased manner, adhering to ethical guidelines. **7. Feedback and Revision:** • **Timely feedback:** Providing prompt feedback to students to support their learning and improvement. • **Constructive feedback:** Offering specific, actionable, and supportive feedback that highlights strengths and areas for improvement. • **Opportunities for revision:** Allowing students to review their work based on feedback and make

	necessary revisions. • **Self-assessment and reflection:** Encouraging students to reflect on their performance and assess their own learning.
Specifications: These guidelines provide a framework for creating comprehensive and effective student assessments.	**1. Assessment Task Description:** • **Clear instructions:** Provide detailed and explicit instructions on what students are expected to do for the assessment task. • **Task format:** Specify the format of the assessment task, such as essay, multiple-choice questions, project, presentation, or performance-based task. • **Resource requirements:** Identify any specific resources, materials, or references students may need to complete the task. • **Time constraints:** Specify the time limit or deadline for completing the assessment task. **2. Assessment Criteria and Rubrics:** • **Criteria for evaluation:** Clearly define the criteria for assessing student performance, such as content knowledge, critical thinking, creativity, or presentation skills. • **Rubrics:** Provide a detailed rubric that breaks down the assessment criteria into specific levels or descriptors, indicating the expectations for each level of performance. **3. Scoring and Grading Guidelines:** • **Scoring system:** Specify the scoring system or scale to be used for evaluating student responses (e.g., 0-100, letter grades, or performance levels). • **Grading standards:** Define the standards for each grade or performance level, including the specific criteria or benchmarks for achieving each level. • **Consistency:** Provide guidelines to ensure consistent scoring and grading across different evaluators or multiple sections of the same assessment. **4. Accommodations and Special Considerations:** • **Accommodations for diverse learners:** Specify any accommodations or modifications that should be

	provided to students with disabilities or special needs to ensure a fair and equitable assessment. • **Language considerations:** Clarify any language accommodations for students who are English language learners or have language proficiency challenges. • **Special circumstances:** Outline any special circumstances or considerations that may affect the administration or scoring of the assessment (e.g., extended time, alternative format). **5. Ethical Considerations:** • **Academic integrity:** Include guidelines regarding academic honesty, plagiarism, and proper citation practices in the assessment task. • **Confidentiality:** Ensure guidelines for maintaining the confidentiality of student assessments and results. • **Fairness:** Address any potential biases or sources of unfairness in the assessment task or scoring process and provide guidelines to mitigate them.
Responsibilities	Course coordinators. Program coordinator Measurement and Evaluation coordinator QC.
Procedure	1. Before the exam the academic affairs committee sends the exam blueprint which is validated from the Measurement and Evaluation Coordinator to the course coordinators. 2. Course coordinators hold a meeting with the course instructors to determine the format of the exam, duration, number of questions, weightage, and any specific rules or policies to be followed during the exam, and select appropriate exam questions that align with the exam blueprint, course content, and learning objectives as well as level of difficulty, cognitive skills to be assessed. The course coordinators submit the exam questions with the model answers to the academic affairs committee. 3. The academic affairs committee hold meeting with course coordinators, and review exams to ensure clarity, accuracy, and alignment with the course content and objectives, adherence to the policy of questions

	distribution over learning domains, and the adherence to the blueprint of the exam. Course coordinators share the academic affairs committee feedback with the course instructors. 4. After the primary grader completes grading the exams, a sample of graded exams will be crossed checked by the course coordinator or a faculty member who taught the same course before. The cross-checker verifies the accuracy and consistency of the primary grader's assessments. The primary grader and cross-checker engage in discussion and collaboration to address any discrepancies or disagreements. If necessary, they seek input from the course coordinator or subject matter experts. After discussion and consensus, the primary grader and cross-checker finalize the grades. 5. The finalized students' grades are entered in the e-register system. The HOD revise the entered data for approval. 6. The final results are approved by the vice dean and the grades are released to the students on their UT student's accounts. 7. Student is allowed to submit a formal request for a grading revision to the chairman of academic affairs committee. The chairman of academic affairs committee assigns a designated independent reviewer, to assess the complaint objectively. If necessary, the designated person consults with the original grader or instructor to discuss the grading decision. 8. The student request and the reviewer report are communicated to the HOD. If the complaint is valid and HOD contact the primary grader to adjusting the grade on the e-register accordingly. If the original grading decision was appropriate, a detailed explanation is provided to the student, addressing their concerns. 9. After the exams the examinations committee identify areas for improvement in the exam design, content, or administration, and make necessary adjustments for future exams or courses. 10. Course coordinators and instructors are responsible of preparing course reports and submit it together with samples of students work to the QC. 11. The CLOs are measured by the course coordinator using an excel sheet designed by the measurement and evaluation coordinator where each CLOs is aligned with its relevant PLOs and hence the aligned PLOs can be measured accordingly.

	12. The QC follows up the preparation of course reports and all related evidences of students work with instructors and course coordinators. 13. Based on the course reports, the QC prepare a list of recommendations and action plans for further improvements. 14. The final draft of course reports together with the list of recommendations and action plans for improvements are submitted to the HOD. 15. The QC presents the final draft of course reports, the recommendations and action plans to the departmental council for discussion and approval. From there the course report follow the cycle presented in figure4 .
Reports	Samples of students work. Course reports. Exams model answers. Exam Schedule. Students' attendance of exams sheet. Course coordinators and instructors' meetings minutes. Academic affairs committee meeting minutes and reports. QC meeting minutes and reports. Sample of students complains (if any) Sample of cross-checkers reports. Department council meeting for course reports and action plans approvals.

Program learning outcomes assessment

Determinants	
These factors enhance the measurement of program learning outcomes, leading to more accurate and meaningful assessment results. .	**1. Curriculum and Instruction:** • Curriculum design and learning objectives • Alignment of learning outcomes with instructional materials • Teaching methods and strategies used to promote learning **2. Assessment and Evaluation:** • Selection of appropriate assessment methods • Development of clear rubrics and scoring criteria • Use of valid and reliable assessment tools • Consistency in assessment practices **3. Faculty and Staff:** • Faculty expertise and training in assessment practices • Collaboration among faculty members for assessment alignment • Support and resources provided for professional development **4. Learning Environment:** • Classroom dynamics and student engagement • Availability of resources and support services • Inclusion of authentic and meaningful learning experiences **5. Student Factors:** • Student motivation and engagement

	• Prior knowledge and skills • Individual learning styles and abilities **6. Institutional Support:** • Institutional commitment to assessment practices • Allocation of resources for assessment efforts • Policies and guidelines supporting assessment activities • Data collection and analysis systems **7. Data Collection and Analysis:** • Efficient data collection processes • Use of appropriate data management systems • Sound data analysis techniques • Regular feedback loops for improvement **8. Stakeholder Engagement:** • Involvement of various stakeholders (e.g., faculty, students, employers, accrediting bodies) in the measurement process. • Incorporation of feedback from stakeholders in assessment practices **9. Continuous Improvement:** • Culture of assessment and continuous improvement • Use of assessment results for program enhancement • Regular review and revision of learning outcomes and assessment method
Responsibilities	Course coordinators & instructors. PSPC.
Procedure	• The PSPC is responsible for the whole process of measuring and reporting on the PLOs.

	• Chemistry Program PLOs are measured annually directly through measuring the achievement of the related CLOs in the courses in which mastery level (M) is achieved, as identified in the PLOs-courses mapping matrix. • Chemistry Program PLOs are measured annually indirectly using stakeholder surveys (Program evaluation survey, Graduates evaluation survey and Employers evaluation survey). • The CLOs are measured by the course coordinator using an excel sheet designed by the measurement and evaluation coordinator where each CLOs is aligned with its relevant PLOs and hence the aligned PLOs can be measured accordingly. • The actual value of PLO measurement is defined as a sum of 40% of the indirect result and 60% of the direct result. PLOs achievement is presented as percentage in the PLOs annual report. • The PLO achievement is benchmarked internally with the previous year achievement, and the satisfactory performance and improvement is compared to the stated target benchmark for the year before.
Reports	CLOs excel sheet of measurements. PLOs annual report. Stakeholders' surveys and report.

Program learning outcomes assessment cycle and plan

The program relies on both direct and indirect methods to measure the program learning outcomes. The direct assessment is based on the results of written exams conducted by students, as well as the use of rubrics to evaluate student activities. On the other hand, the indirect assessment relies on surveys conducted with students, graduates, and employers. Additionally, measurement indicators are determined, and target values are set for each outcome based on the measurement results from previous year.

Target Benchmarks and Performance Levels

Performance indicators are important tools for evaluating course / program quality and monitoring its performance, in the program we use the following indicators

- Targeted performance level: Refers to the percentage of students who have achieved the expected level of performance or the desired result. The target performance level is set based on goals and objectives of the program and it is determined by the department council, taking into consideration of its previous year performance.
- Actual performance: Refers to the current level of performance obtained through direct and indirect assessment tools
- Internal Benchmark: Refers to the previous year performance
- External benchmark: Refers to a benchmark from similar programs offered in other Saudi Universities (If possible)
- New target performance level: If the actual performance is better than the previous year, it is recommended to increase the target (New target) based on the opinion of the teaching staff and stakeholders. On the contrary, if the actual performance is lower than the target set for the given academic year, the current year's target will be retained as a new target for the next academic year.

Closing the Loop

The final step in the PLOs assessment plan is to develop proposals for appropriate improvement plans to improve students learning and also guide the program to make the right decisions regarding:

a. Revising the teaching and learning strategies and their alignment with the PLOs.
b. Revising the courses assessments methods and their alignment with the PLOs.
c. Revising the PLOs assessment method and tools.
d. Revising the Program curriculum (after finishing the program cycle).

These decisions will then be considered in the program development plan and presented in the annual program report. Priorities for improvements will then be decided on and followed up through the action plans in order to close the quality loop. Figure 6 shows the Chemistry Program PLOs assessment cycle, While Table 9 presents the PLOs assessment plan.

Figure 6: The four years PLOs assessment cycle.

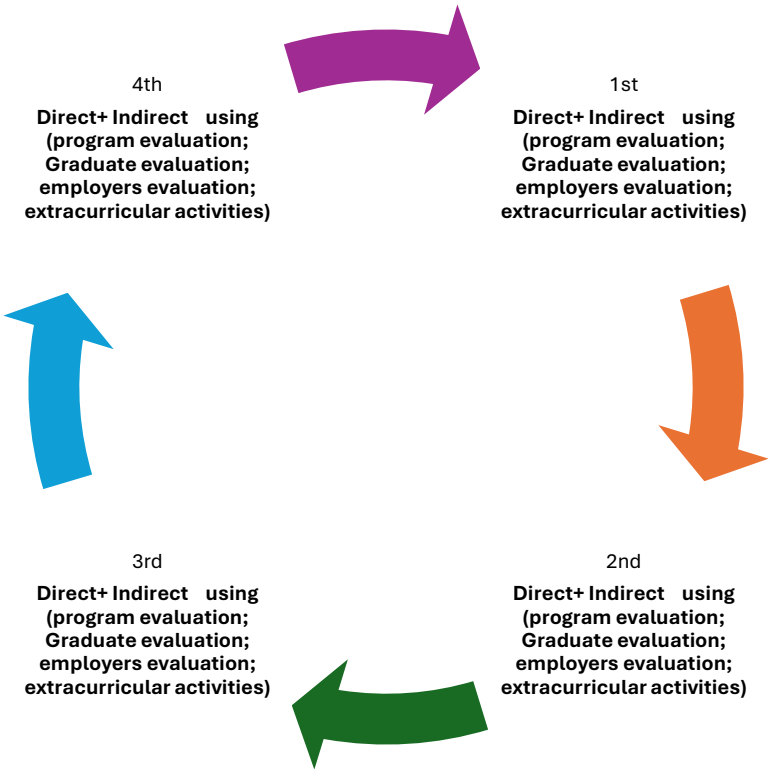


Table 9: The PLOs assessment plan.

PLOs		Direct Assessment	Indirect Assessment	Target Benchmark	Responsibility	Time of assessment
Knowledge						
K1	Explain the basic principles, concepts, and fundamental theories of the different branches of chemistry.	CHEM 390, CHEM 343, CHEM 433, CHEM 422, CHEM 423, CHEM 490 : (Research project)	Program evaluation, Graduate Evaluation, Employers evaluation	% of students score more than achieved target	For Courses: Lecturers For the Research project: Supervisor + Evaluation team For the Surveys: Performance Indicators and Surveys Committee	Indirect: Every year (Graduate Evaluation, Employers evaluation, Program evaluation) Direct: Every semester
K2	Illustrate different spectroscopic and separation techniques of different compounds as well as the basic theories and principles of advanced techniques of all chemistry branches.	CHEM 422, CHEM 423, CHEM 490	Program evaluation, Graduate Evaluation, Employers evaluation	% of students score more than achieved target	For Courses: Lecturers For the Research project: Supervisor + Evaluation team For the Surveys: Performance Indicators and Surveys Committee	Indirect: Every year (Graduate Evaluation, Employers evaluation, Program evaluation) Direct: Every semester
K3	Describe the procedure of scientific research in the field of chemistry and allied fields of science.	CHEM 390, CHEM 343, CHEM 433, CHEM 490 : (Research project)	Program evaluation, Graduate Evaluation, Employers evaluation	% of students score more than achieved target	For Courses: Lecturers For the Research project: Supervisor + Evaluation team For the Surveys: Performance Indicators and Surveys Committee	Indirect: Every year (Graduate Evaluation, Employers evaluation, Program evaluation) Direct: Every semester
Skills						

S1	Apply theories, principles, and concepts of chemical analysis to detect and estimate organic, inorganic and organometallic compounds.	CHEM 390, CHEM 343, CHEM 433, CHEM 422, CHEM 490(:Research project)	Program evaluation, Graduate Evaluation, Employers evaluation	% of students score more than achieved target	For Courses: Lecturers For the Research project: Supervisor + Evaluation team For the Surveys: Performance Indicators and Surveys Committee	Indirect: Every year (Graduate Evaluation, Employers evaluation, Program evaluation) Direct: Every semester
S2	Carry out practical tasks using advanced and specialized techniques, tools, instruments, and/or materials to deal with practical activities in the field of chemistry	CHEM 390, CHEM 343, CHEM 433, CHEM 422, CHEM 423,	Program evaluation, Graduate Evaluation, Employers evaluation	% of students score more than achieved target	For Courses: Lecturers For the Research project: Supervisor + Evaluation team For the Surveys: Performance Indicators and Surveys Committee	Indirect: Every year (Graduate Evaluation, Employers evaluation, Program evaluation) Direct: Every semester
S3	Utilize updated technologies and applications to process and analyze a variety of data and information related to chemistry.	CHEM 433, CHEM 423, CHEM 490 : (Research project)	Program evaluation, Graduate Evaluation, Employers evaluation	% of students score more than achieved target	For Courses: Lecturers For the Research project: Supervisor + Evaluation team For the Surveys: Performance Indicators and Surveys Committee	Indirect: Every year (Graduate Evaluation, Employers evaluation, Program evaluation) Direct: Every semester
S4	Communicate in various forms to disseminate knowledge, skills related to chemistry to specialist and	CHEM 390, CHEM 343, CHEM 433, CHEM 423,	Program evaluation, Graduate Evaluation, Employers evaluation	% of students score more than achieved target	For Courses: Lecturers For the Research project: Supervisor + Evaluation team For the Surveys:	Indirect: Every year (Graduate Evaluation, Employers evaluation, Program

	non-specialist audiences.				Performance Indicators and Surveys Committee	evaluation) Direct: Every semester
Values						
V1	Adhere to the values and code of ethics associated with professional practices in the field of chemistry.	CHEM 390, CHEM 433, CHEM 423, CHEM 490 : (Research project)	Program evaluation, Graduate Evaluation, Employers evaluation, Extracurricular activities	% of students score more than achieved target	For Courses: Lecturers For the Research project: Supervisor + Evaluation team For the Surveys: Performance Indicators and Surveys Committee	Indirect: Every year (Graduate Evaluation, Employers evaluation, Program evaluation) Direct: Every semester
V2	Demonstrates specialized tasks and activities in field of chemistry practice with autonomy.	CHEM 390, CHEM 343, CHEM 433, CHEM 422, CHEM 423,	Program evaluation, Graduate Evaluation, Employers evaluation Extracurricular activities	% of students score more than achieved target	For Courses: Lecturers For the Research project: Supervisor + Evaluation team For the Surveys: Performance Indicators and Surveys Committee	Indirect: Every year (Graduate Evaluation, Employers evaluation, Program evaluation) Direct: Every semester
V3	Collaborate and lead teamwork to effectively perform a range of tasks with responsibility to achieve common goals in field of chemistry	CHEM 390, CHEM 343, CHEM 422, CHEM 490 : (Research project)	Program evaluation, Graduate Evaluation, Employers evaluation Extracurricular activities	% of students score more than achieved target	For Courses: Lecturers For the Research project: Supervisor + Evaluation team For the Surveys: Performance Indicators and Surveys Committee	Indirect: Every year (Graduate Evaluation, Employers evaluation, Program evaluation) Direct: Every semester

Graduate attributes measurement plan

The determinants of measuring the graduate attributes:

- Link the graduate attributes to the PLOs.
- Measure the PLOs.
- Use the prescribed tools to carry out the graduate attributes measurements.

Table 10: The alignment between the program graduate attributes and learning outcomes.

		The Chemistry Program graduate attributes					
		G1	G2	G3	G4	G5	G6
Program learning outcomes	K1	■					
	K2	■					
	K3	■	■				
	S1		■				
	S2		■				
	S3		■				
	S4						
	V1					■	
	V2			■			■
	V3				■		

The chemistry program adopts both direct and indirect methods to assess graduate attributes. The direct method is linked to measuring program learning outcomes, while the indirect method involves gathering feedback from stakeholders. Figure 10 shows the connection between the program graduate attributes and learning outcomes.

The Direct Method: This method relies on measuring graduate attributes based on program learning outcomes. By utilizing a matrix that connects attributes to outcomes, each attribute can be measured as follows:

Measurement of G1= (measurement of K1+Measurment of K2+ Measurement of K3)/3

The Indirect Method: This method relies on gathering opinions from stakeholders, including prospective students, graduates, and employers. By linking survey questions to graduate attributes, each attribute can be measured by calculating the average of all survey questions related to that specific attribute, using the same approach as in the direct method for calculating attributes. The Quality Committee, in collaboration with the Academic Guidance Committee, distributes surveys to graduates and employers to gather their opinions.

Key performance indicators and benchmarking

KPIs are specific forms of evidences used by the chemistry to provide evidence and assess the performance of the program. The utilization of KPIs is one of the most important prominent practices that contribute to data driven decision-making and follow-up processes that foster the program continual development efforts. The NCAAA has identified eleven KPIs 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 program measures the KPIs with benchmarking using appropriate tools, such as (Surveys, Statistical data, etc.). Selection of KPIs is based on:

1. The eleven NCAAA Program KPIs
2. Chemistry Program KPI.

A report is prepared annually describing and analysing the results of each indicator with precise and objective identification of strengths and aspects that need improvement. For each KPI, an acceptable target level to be achieved is set based on the program strategic goals, the comparative data of the internal and external benchmarking. Here are some important terminologies regarding the KPIs.

Actual KPI: Refers to the finding determined when the KPI is measured or calculated. It represents the actual reality of the present situation.

Internal KPI: Refer to benchmarks that are based on information from inside the program or institution. Trend data is an example of internal benchmark.

External KPI: Refer to benchmarks from similar programs that are outside the institution, it refers to other institutions (national or international).

Targeted KPI: Refers to the anticipated performance level or desired outcome for a KPI. Is determined according to the KPIs measurements of the internal and external benchmarking. Hence, it is the new target KPI of the former academic year.

New target KPI: Is determined in consideration of the actual benchmark.

KPI Analysis: Refers to a comparison and contrast of the benchmarks to determine strengths and recommendations for improvement.

Procedures for determining external benchmark	
Description	Information, data, and indicators in the field of the educational and research process for corresponding programs
Goal	Support planning and guide decision making
Implementation responsibility	Quality Committee
Responsibility for follow-up	HOD.
References	Procedural guide for benchmarking and independent opinion at the university The mission and objectives of the faculty and the university, The practical applications and employment opportunities of the program specialization. Agreements, partnerships and memorandums of cooperation.
Determinants	Involve all beneficiaries in drafting the message.
Inputs	Guide to benchmarking and independent opinion at the university
Procedures	1. The department committees determine data needs in the field of the chemistry and research process for debate programs for comparison. 2. The QDC prepares a proposal for benchmarking and explains the reasons for its selection. 3. The QDC reviews existing agreements, partnerships and cooperation memorandums and utilize this data to identify a suitable program for benchmarking. 4. The council considers, discusses and approves the proposals of the QC. 5. The HOD, together with the Dean communicates with the external benchmark providers.

	6. The designated external benchmark providers are required to supply the benchmark data along with the corresponding information. Subsequently, the benchmark data will be utilized to compile the benchmarking report. 7. Reports are presented to the department council to take the necessary decisions for developments and improvements.
Outputs	Benchmarking report.

Benchmarking the Chemistry Program offers numerous benefits and holds great importance in ensuring its continuous improvement and quality enhancement. Benchmarking also allows for a systematic comparison of the program's performance, practices, and outcomes against established standards, best practices, or similar programs in other institutions. This process provides valuable insights into areas of strength and areas that require improvement, paving the way for informed decision-making and targeted interventions. Figure 5 shows the KPIs assessment cycle.

Sources of data:

- The chemistry program operational plan reports.
- Reports on stakeholder surveys
- Program evaluation survey (PES).
- Courses evaluation surveys (CES).
- Student experience survey (SES).
- Faculty Satisfaction Survey (FSS)
- Employee Satisfaction Survey (ESS).
- Questionnaire for Employers' Satisfaction with the Program and its Alumni (QES).
- Community Service Survey (CSS).

- Alumni Evaluation Survey (AES).
- Supervision Survey (SS).
- Academic Advising Survey (AAS).
- Stakeholder satisfaction with learning resources report.
- Official students' records obtained for the university secured internal system (e- register).
- Chemistry program records from the vice deanship for postgraduate and research.
- Scopus and ISI databases.

Figure 7: KPIs annual assessment cycle.

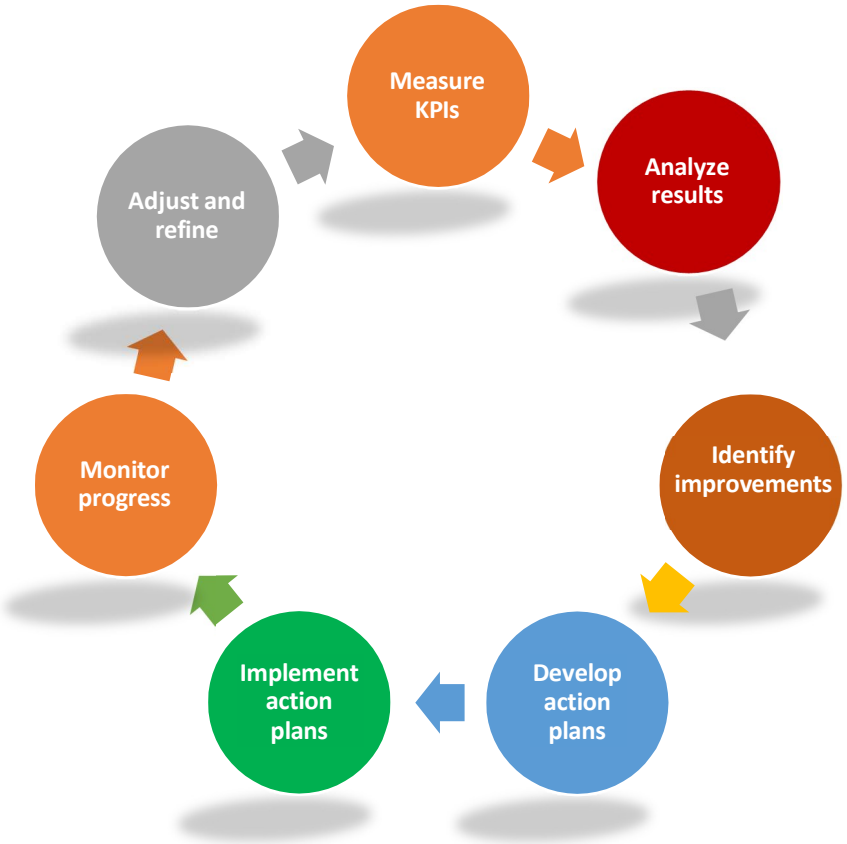


Table 11: NCAAA & Program KPIs, Objectives, and Method of Measuring Indicators and the Target.

Code	Indicator	Goal	Time for measurement	Data Measurement Provider	Measurement Responsibility	Measurement Tools
KPI-P-01	Students' Evaluation of quality of learning experience in the program	Measuring the educational quality of the program	Annually at the end of academic year	QC	QC	Program Evaluation Survey
KPI-P-02	Students' evaluation of the quality of the courses	Measuring the educational quality of the program	Annually at the end of academic year	Course Coordinator	QC	Course Evaluation Survey
KPI-P-03	Completion rate	Measuring the educational quality of the program	Annually at the end of academic year	Academic Affairs Committee	QC	Statistical data and analysis
KPI-P-04	First-year students retention rate	Measuring the educational quality of the program	Annually at the end of academic year	Academic Affairs Committee	QC	Statistical data and analysis
KPI-P05	Students' performance in	NA				

	The professional and/or national examination					
KPI-P-06	Graduates' employability and enrolment in postgraduate programs	Measuring the quality of graduates characteristics, and the extent of employers' satisfaction, and the labor market's need for them	Annually at the end of academic year	Academic Advising Committee	QC	Statistical data and analysis
KPI-P-07	Employers' evaluation of the program graduate proficiency	Measuring the quality of graduates characteristics and employers' satisfaction with them	Annually each academic year	Academic Advising Committee	QC	Questionnaire for Employers' Satisfaction with the Program and Its Alumni
KPI-P-08	Ratio of students to teaching staff	Measuring the quality of education elements	Annually at the end of academic year	Academic Affairs Committee	QC	Statistical data and analysis
KPI-P-09	Percentage of publications of faculty members	Measuring the quality of the axis of scientific research	Annually at the end of academic year	Scientific Committee	Scientific Committee	Statistical data and analysis
KPI-P-10	Rate of published	Measuring the quality of the axis of	Annually at the end of academic year	Scientific Committee	Scientific Committee	Statistical data and analysis

	research per faculty member	scientific research				
KPI-P-11	Citations rate in refereed journals per faculty member	Measuring the quality of the axis of scientific research	Annually at the end of academic year	Scientific Committee	Scientific Committee	Statistical data and analysis

The target of the KPI is determined based on the future plan for faculty strategic plan, internal and external benchmarking.

Procedure for preparing the performance assessment report:	
Description	performance assessments report
Goal	Analyze performance assessments results.
Implementation Responsibility	QC.
follow-up Responsibility	QC.
References	The program procedure guide for quality.
Determinants	Involve all beneficiaries in drafting the message.
Inputs	Outcomes measurements reports. Surveys reports. KPIs report.
procedures	1. The QC is responsible for developing and updating an action plan for performance measurement within a defined timeframe, taking into account the deadlines for periodic evaluation reports. 2. The QC is responsible for reviewing the results of the annual program report and monitoring the effectiveness of the implementation of the improvement plan linked to the priorities for enhancing previous performance measurement reports. 3. The QC is also responsible for monitoring the implementation of measurement processes, collecting results, and prioritizing improvement actions from the relevant entities. 4. The QC holds discussions with the committees' chairmen to identify improvement priorities based on the aggregated results.

	5. The QC is responsible for presenting the report results to the department council, stakeholders, and the advisory committee. 6. The Quality Committee takes into account the feedback received from various surveyed entities. 7. The report is forwarded to the department council for approval, incorporating the improvement priorities mentioned in it and utilizing them to enhance performance.
Outputs	Performance assessment report. Minutes of the department council meeting for the approval of the performance assessment report. QC meeting minutes.

Measuring the program's goals

Measuring program goals allows for the evaluation of program effectiveness and provides valuable feedback for continuous improvement. Data and evidences gathered during the measurement process are crucial to support decision making, where data-driven decision making ensures that program improvements are based on objective information rather than assumptions. Also measuring program goals helps identify areas where students may need additional support or where curriculum adjustments may be necessary.

The Chemistry program regularly monitors and evaluates progress towards the goals. Use KPIs to assess whether the desired outcomes are being achieved. Take the necessary actions to enhance the performance based on the assessment results and benchmarks.

Determinants The factors shape the influence the measurement of the program goals.	**1. Goal Clarity and Specificity:** • **Clearly defined metrics:** Establish clear and specific metrics or indicators that align with each program goal, allowing for objective measurement. • **Operational definitions:** Provide operational definitions for each metric, ensuring consistent interpretation and application during the measurement process. • **Timeframe:** Determine the appropriate timeframe for measuring goal attainment, considering short-term and long-term targets. **Compliance with the Accreditation Standards:** • **National standards:** Compliance with the NQF standards often involves the use specific indicators, assessment methods, and reporting frameworks, to ensure a high quality measurement process and outcomes.

	2. Data Collection Methods and Tools: • **Quantitative measures:** Identify quantitative data collection methods, such as surveys, assessments, or institutional records, to capture numerical data related to the program goals. • **Qualitative measures:** Incorporate qualitative data collection methods, such as interviews, focus groups, or reflective essays, to gather in-depth insights and perspectives on goal attainment. • **Valid and reliable tools:** Select valid and reliable measurement tools or instruments that align with the specific metrics and goals being assessed. **3. Data Analysis and Interpretation:** • **Data processing:** Develop a systematic process for collecting, organizing, and analysing the data collected for each program goal. • **Data interpretation:** Apply appropriate statistical or qualitative analysis techniques to interpret the collected data and derive meaningful insights regarding goal attainment. • **Benchmarking:** Compare program data against relevant benchmarks or established standards to provide context for interpreting the results. **4. Stakeholder Engagement:** • **Stakeholder involvement:** Engage relevant stakeholders, such as students, faculty, alumni, employers, in the measurement process to gather diverse perspectives and ensure the validity and relevance of the data.

	• **Communication and feedback:** Establish mechanisms for communicating measurement results to stakeholders and seeking their feedback and input on the findings. • **Collaborative data analysis:** Foster collaboration among stakeholders in analysing and interpreting the measurement data, facilitating a shared understanding of program goals and their measurement. **5. Continuous Improvement and Action Planning:** • **Assessment of progress:** Regularly assess and track progress towards program goals to identify areas of success and areas for improvement. • **Actionable insights:** Use the measurement results to generate actionable insights and recommendations for program improvement or refinement. • **Action planning:** Develop action plans based on the measurement findings, outlining specific steps to be taken to address identified gaps or enhance performance in relation to the program goals. **6. Ethical Considerations:** • **Data privacy and confidentiality:** Adhere to ethical standards and regulations regarding data privacy and confidentiality, ensuring that data collected for measurement purposes is handled securely and responsibly. • **Informed consent:** Obtain informed consent from participants involved in data collection, ensuring their understanding of the purpose, procedures, and potential uses of the data. • **Transparent reporting:** Maintain transparency in reporting measurement results, providing clear explanations of the methods, findings, and limitations of the measurement process.

Quantitative Metrics Quantitative metrics provide objective data that can be measured numerically.	**Completion rate:** The proportion of undergraduate students who completed the program in minimum time in each cohort. **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. **Graduates' employability and enrolment in postgraduate programs:** Percentage of graduates from the program who within a year of graduation were: • Employed within 12 months, • Enrolled in postgraduate programs during the first year of their graduation to the total number of graduates in the same year. **Ratio of students to teaching staff:** Ratio of the total number of students to the total number of full-time and full-time equivalent teaching staff in the program **Percentage of publications of faculty members:** Percentage of full-time faculty members who published at least one research paper during the year to total faculty members in the program. **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).

	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).
Qualitative assessment Qualitative assessments provide subjective insights and feedback from various stakeholders.	**Students' Evaluation of Quality of learning experience in the Program:** Average of the overall rating of final year students of the quality of learning experience in the program, satisfaction with the various services offered by the program (restaurants, transport, sports facilities, academic, vocational, psychological guidance...), student satisfaction with the adequacy and diversity of learning sources (references, periodicals, information databases... etc.) on a five-point scale in an annual survey. **Students' evaluation of the quality of the courses:** Average of students' overall rating for the quality of courses on a five-point scale in an annual survey. **Employers' evaluation of the program graduate's proficiency:** Average of the overall rating of employers for the proficiency of the program graduates on a five-point scale in an annual survey.
Responsibilities	QC.
Development & Approval	Department council. Faculty council. UT strategic planning unit. Vice dean of development and quality. All committees. Advisory committee. Administrative staff. Students, Alumni and Employers.

Procedure	**Plan Development:** The QC will oversee the entire process for measuring program goals, and the development of the program goals measurement plan. The QC measures the achievements in the Chemistry Program goals through the achievements of the program's operational plan. Where the Chemistry Program's operational plan includes specific KPIs and target benchmarks that are connected to the program goals. **Monitor Progress:** The QC Continuously monitor the progress of the operational plan against the established timelines and KPIs to track the implementation of the action plans, and hence provide a systematic way to measure the program goals. **Evaluate Results:** The QC assess the results and outcomes of the implemented action plans, compare the actual results against the established targets or benchmarks. This analysis helps assess whether the program is on track to achieve its goals and identifies areas that require improvement or further attention. **Report on the Outcomes:** The QC report on the progress made toward achieving the program goals and submits the report to the HOD. **Seek Feedback:** The report will then be presented at the department council for discussion. Based on the feedback, strategies, action plans, and resource allocation may be modified to address any identified issue or make necessary improvements for the succeeding year improvement cycle. **Final Approval of the Achievement Report:** The final report will then be submitted to the vice dean of development and quality, and then to the department and faculty councils for final approval.
Note	The previous year actual values are taken as an internal benchmark.
Reports	Report on measurement of program goals and improvement plans. Meeting mites on (QC, Departmental council, Faculty council)
Appendices	1. UT 2nd strategic plan. 2. FOS 2nd strategic plan. 3. Department of Chemistry Operational Plan. UT benchmarking procedural guide.

Program specification development and modification

Determinants	
These factors ensure a systematic and well-structured development process for the Program Specification.	**1. Planning and Analysis:** • Identify the need for a new program or the revision of an existing program. • Conduct a thorough analysis of the target audience, industry demands, and stakeholder expectations. • Define the scope, goals, and objectives of the program specification development process. • Establish a project team or committee responsible for overseeing the development process. **2. Research and Benchmarking:** • Gather information on similar programs offered by other institutions or organizations. • Conduct industry research to identify emerging trends, best practices, and skill requirements. • Review relevant accreditation standards, regulatory guidelines, and educational frameworks. **3. Stakeholder Engagement:** • Engage with key stakeholders, including faculty members, industry professionals, students, and employers. • Seek input and feedback on program goals, learning outcomes, curriculum design, and assessment methods. • Incorporate stakeholder perspectives to ensure relevance, alignment, and buy-in. **4. Program Design and Development:** • Define the program structure, including the components, courses, and credit distribution. • Develop a curriculum framework that outlines the sequencing and progression of courses. • Clearly articulate the program's learning outcomes and competencies. • Design course descriptions, including learning activities, instructional methods, and assessment strategies. **5. Iterative Review and Feedback:**

	• Share the draft program specification with the project team, stakeholders, and subject matter experts for review. • Gather feedback and suggestions for improvement. • Revise and refine the program specification based on the feedback received. • Conduct multiple iterations of review and revision to enhance the quality of the program specification. **6. Alignment and Compliance:** • Ensure the program specification aligns with the institutional mission, and strategic goals. • Verify compliance with NQF standards, and peer programs benchmarks. **7. Approval and Documentation:** • Submit the finalized program specification for internal revision and approval processes. • Follow the institution's guidelines and procedures for program approval and documentation. • Prepare the necessary documentation, using the institution's provided forms. **8. Implementation and Communication:** • Communicate the approved program specification to relevant stakeholders, including faculty, staff, and students. • Provide training or orientation sessions to faculty members and staff involved in delivering the program. • Ensure that the program specification is effectively integrated into the institution's systems, processes, and communication channels. **9. Evaluation and Continuous Improvement:** • Establish a plan for ongoing program evaluation and continuous improvement. • Monitor the program's effectiveness in achieving its goals and objectives. • Collect and analyse data on student performance, feedback, and program outcomes. • Use evaluation results to inform future revisions and enhancements to the program specification.

Responsibilities	Programs and study plans committee (PSPC).
Inputs	• Mission and objectives of the program • The program study plan showing the courses, their classification, their sequence, credit hours, pre/corequisites, the classification (required, elective), (university, college, department) • Course specifications and a detailed plan for each course that includes the general description of the course, the language of instruction, objectives, teaching strategies, assessment methods and learning resources • Internal and external changes. • Reports of Stakeholders surveys, APRs, and course reports. • Reference comparison. • Matrix linking course learning outcomes with PLOs. • Procedural guide for studying programs and plans.
Procedure	1. The PSPC is responsible for preparing the specified documents as inputs to this procedure. 2. A work plan is developed by the PSPC and approved by the HOD. The plan specifies role assignments, templates, and the timeline for implementation. 3. The PSPC completes the program specification using the NCAAA forms. Modifications of the program specification must adhere to the university authority matrix. 4. The PSPC presents and discusses the program specification in the department council. 5. The feedback received from the council is addressed and revised by the PSPC. 6. The revised program specification is then presented to the advisory committee.

	7. Feedback from the advisory committee is addressed and revised. 8. The revised program specification is then presented to the department council. 9. The program specification is then submitted to the programs and study plan committee at the faculty for review. 10. The revised program specification is modified based on the committee's feedback. 11. The revised program specification is the submitted to the faculty council for approval. 12. In case of substantial modifications to the program specification, it will be submitted to the university's academic affairs agency. 13. Feedback is provided and sent to external reviewer. 14. The feedback is sent to the program for further refinement. 15. The program specification is modified on the light of the received feedback. The final program specification is then approved by the department council, followed by the approval of the faculty council. 16. The program specification is then submitted to the university's academic affairs agency to complete the endorsement procedures, including updating the modified curriculum and ensuring its inclusion in the admission and registration system.
Reports	• Approved program specification

	• Meeting minutes of programs and study plans committee • Meeting minutes of advisory committee • Meeting minutes of faculty council
Appendices	• National qualification framework. • NCAAA Form for program specification • University program and plan guide. • The UT Matrix of authority for study plans development.

Course report preparation and approval procedure

The Chemistry Program ensures the quality of teaching through:

- Verifying the effectiveness of the teaching strategies used to achieve the CLOs and take the necessary measures according to the established procedures.
- Identifying the administrative difficulties that the academic staff members faced during the course.
- Standing on the results and estimates of students and studying the variation in the distribution of grades between the different divisions and the factors that affected them, and identifying priorities for improvement.
- Verifying the extent to which the quality loop is closed at the level of the course by following up on the percentage of completion of the proposed improvement plan for the previous year
- Develop an improvement plan appropriate to the recommendations reached, by the end of preparing the course report

The academic staff member should:

- Adhere to what is stated in the course specification.
- Follow the course improvement plan.
- Be committed to measuring the extent to which the CLOs are achieved, according to the blueprint and matrix prepared by the department.

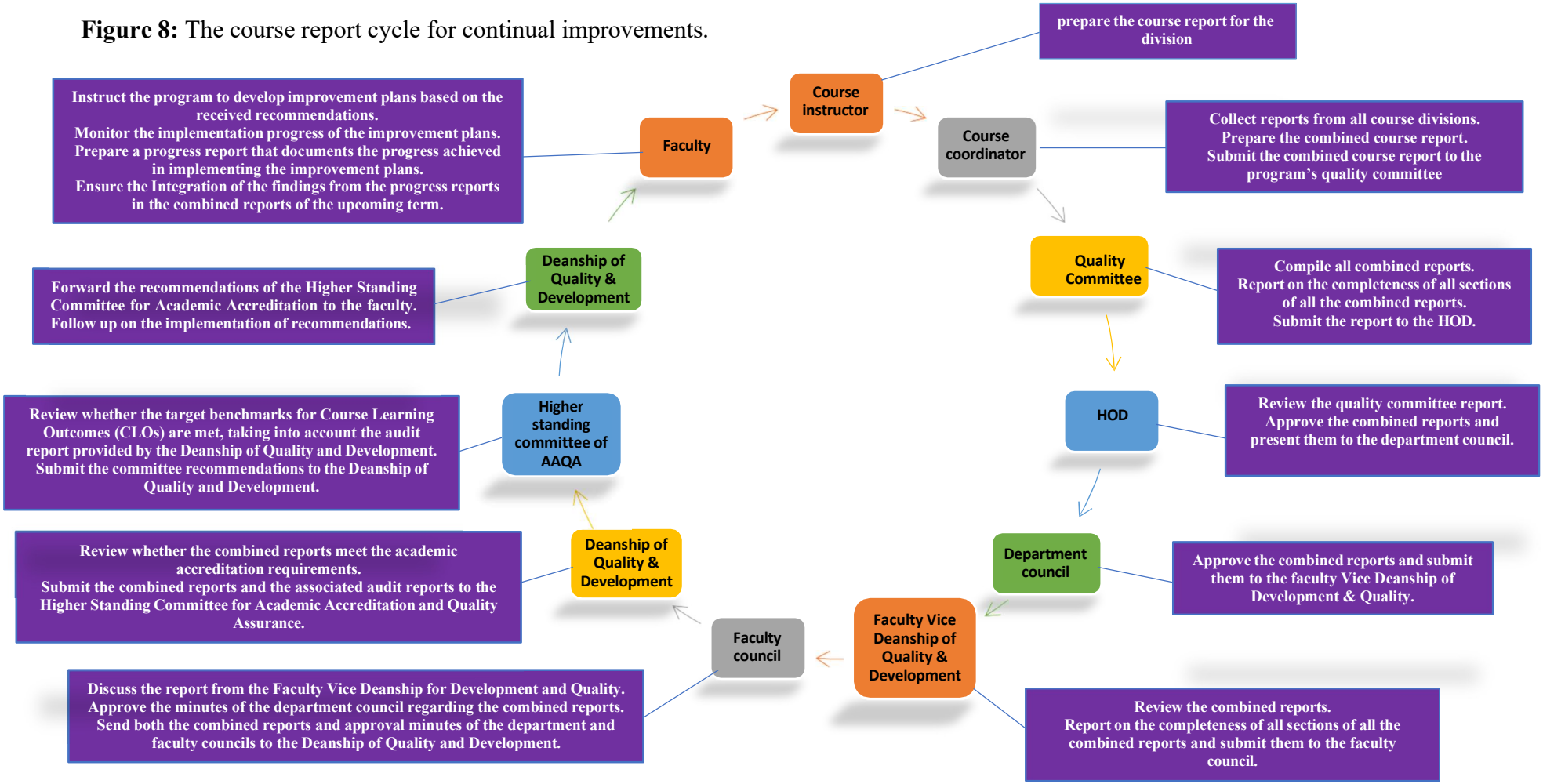
Determinants These factors ensure that course reports become valuable tools for evaluating, improving, and ensuring the effectiveness of educational courses.	**Ensuring Accuracy and Objectivity:** By considering these factors, the course report can be prepared in a manner that is accurate, objective, and fair. **Enhancing Quality Assurance:**

	By evaluating various aspects such as course content, teaching methods, assessments, and student feedback, the report highlights areas of strength and identifies areas that need improvement. This feedback is crucial for course instructors and administrators to make informed decisions about instructional strategies, curriculum development, and resource allocation. **Informing Curriculum Development:** By provide feedback on the alignment of learning outcomes with instructional strategies, helping in the refinement and enhancement of the curriculum. This information is vital for ensuring that the course remains up to date, meets the needs of the learners, and aligns with industry standards or academic requirements. **Guiding Instructional Design:** The course reports inform instructional designers and educators about the effectiveness of their teaching approaches and helps in identifying areas where modifications or enhancements may be needed. **Promoting Continuous Improvement:** The identification of strengths and weaknesses enables instructors and administrators to implement targeted interventions, refine teaching practices, and allocate resources more effectively. **Enhancing Student Engagement and Satisfaction:** The course reports identify areas where students may need additional support, clarity, or engagement. This information can be used to enhance student engagement, satisfaction, and overall learning outcomes. **Meeting Accreditation and Evaluation Requirements:**

	The course reports can provide evidence of compliance with quality assurance measures, accreditation guidelines, and institutional policies. This is particularly important for educational institutions seeking accreditation or undergoing periodic evaluations.
Responsibilities	QC. Course coordinators and instructors.
Development & Approval	Department council. QC. Course coordinators and instructors.
Inputs	Course specification Course reports of the previous year Students' list (e-register) CLOs blueprint and measurement report. Students' results. Grade distribution. Course meeting minutes. Peer-Peer review reports Sample of teaching methods
Procedure	1. The instructors measure CLOs of their sections (using the provided excel sheet). 2. The instructors complete all the NCAAA course report sections which include, analysis of grade distribution, report on the previous year, improvement plan. 3. The course coordinator holes a meeting with the instructors to team discusses the student's results and the extent to which the CLOs are achieved, the students' and staff feedback and the appropriate improvement plan for the proposed recommendations. 4. The course coordinator collects the course report for all the sections and prepares a single combined report.

	The combined reports are submitted to the QC. 5. The QC review the reports and communicate their insight and feed back to the course coordinators. 6. Based on the QC feedback the course coordinators carry out the proposed adjustments, and submit the finalized combined report to the QC. The QC submits the combined reports to the HOD. 7. The HOD presents the combined reports together with the improvement plans to the departmental council for review and discussion. 8. The faculty vice deanship of development and quality review the combined reports. The QC communicate the insight and feedback of the vice deanship of development and quality to the course coordinators. 9. The QC submits the revised combined reports together with the improvement plans to the department council for approval. 10. The faculty council discusses and approves the combined reports in addition to the post course meeting minutes of the department. The combined reports and approval minutes of the department and faculty councils are then submitted to the Deanship of Quality. 11. The faculty vice deanship of development and quality review whether the combined reports meet the academic accreditation requirements, and submit the combined reports and the associated audit reports to the Higher Standing Committee for Academic Accreditation and Quality Assurance. and from there the course report follows the cycle shown in figure 8.
Reports	• Program study plan. • Course coordinators minutes. • QC meeting minutes. • Department council meeting minutes. • Faculty council meeting minutes.
Appendices	• National qualification framework. • University program and plan guide. • The UT Matrix of authority for study plans development

Figure 8: The course report cycle for continual improvements.



Evaluation and Reporting

The course coordinators, report to the QDC. At the end of each term a departmental meeting is held to discuss issues related to the courses such as, teaching strategies, students result, Learning outcomes, action plans for improvement, as well as feedback from students and stakeholders. Figure 3 shows the time plan for preparing course reports, and approval of improvements plans, while Table 2 below shows the course report preparation cycle.

Table 12: The course report preparation process.

No	Action	Responsibility	Time
1	Prepare course report for each section	Course instructor	16th week of every term
2	Prepare the combined course report for all course sections	Course coordinator	1st week of the succeeding term in which the course will be delivered
3	Ensure the submission of all combined course reports	QC	1st week of the succeeding term in which the course will be delivered
4	Review all combined course reports and prepare recommendations	QC	2nd week of the succeeding term in which the course will be delivered
5	Approve action plans for improvements presented in course reports.	Department council	3rd week of every term

Monitoring the quality of teaching

As the university acquires an appropriate space on Google Drive for each faculty member, in addition to providing all information security conditions, the program provide the coordinators with link specified for his/her course file to upload all required evidences that ensures the quality of teaching and assessments.

The electronic storage is a quality work in the program since it is an easy and practical way to save and archive the quality work in the program on a regular basis. It facilitates access to all documents related to quality files by all members of the program. It also helps to monitor the extent of academic staff members' commitment to the quality requirements of the course and:

- Ensure consistent results.
- Prevent errors and reduce costs.
- Ensure processes are identified and controlled.

Table 12 shows the plan followed by the Chemistry Program in preparing and documenting the course file.

Procedures:

1. All the requirements of the course file are uploaded by the coordinator in the derive of the department.
2. The electronic storage is available to all teaching staff members in the department to view and benefit from it.
3. Each academic staff member shall raise the requirements according to the distribution of tasks by the coordinator.
4. The quality committee prepares a report on the extent to which the requirements are met and submits it to the course coordinator to complete the necessary.

Table 13: The course file preparation and documentation plan.

NO	Requirements	The Content	Notes	Timing of submitting content for Documentation	Responsibility
1	**Curriculum Vitae (CV)**	Updated CV	Is updated periodically and uploaded to the teaching staff member's website and handed over to the course coordinator to put it in the teaching staff file on the Google drive.	The first week of the semester	Instructors
2	**Course specification**	Approved course specification according to the NCAAA form	The specification is reviewed periodically according to the improvement plans of the preceding term's course report and after approval by the department council	The first week of the semester	Course Coordinator

3	**Time table**	Filled out according to the university form	The time table is sent to the staff and students and uploaded on the system.	The first week of the term	Academic affairs committee
Documenting the Students Results					
1	Reveal the results of the course signed by the program coordinator	The transcript is an official document that is downloaded from the academic system portal after monitoring, reviewing, and approving grades	It must contain the signature of the program coordinator	At the end of the term	HOD
2	Statistical Analysis of Results	The form contains statistical equations and graphs that help analyse test results		At the end of the term	Course coordinators
Documenting Student Assessment Activities and Methods					
3	Samples of students' tests for each section were selected according to performance (highest, average and lowest score)	Corrected samples of students' exam for each section distributed according to performance (highest, average and lowest score)	Selected according to performance, highest, medium, and lowest score	After release of exam results to the students	Instructors
Documenting the Evaluation of the Quality of the Course					
4	Course evaluation survey.	Students feedback about the course	Include the opinion of the students,	At the end of	Instructors

		delivery and their suggestions for improvements.	instructors, program leaders in the course report.	the course.	
Course reports					
5	Course Report	Course overview, course syllabus, learning resources, teaching strategies and assessments, students' performance and feedback, recommendations for improvements.		With the start of the course and finalized by the end of the course	Instructors + Course coordinators
Close the loop of quality report					
1	Course improvement recommendation	Recommendations for improvements.		End of the course	Instructors + Course coordinators
2	Achievement of course improvement plans report	Assembling of course improvement plans included		End of the semester	QC

Mechanism for Identifying Gaps in Learning Resources

This mechanism aims to systematically identify gaps in learning resources, generating clear operational outputs that include: a periodic report highlighting deficiencies in learning resources and the improvement plans implemented along with their effectiveness, a beneficiaries' satisfaction matrix reflecting the impact of improvements on the quality of the learning process, and the application of completed actions within the quality loop as a practical reference and mechanism for future review and enhancement of learning resources.

Procedures for determining Gaps in Learning Resources	
Description	Systematic process to identify gaps in learning resources collect data, analyze gaps, design and implement improvement plans, monitor outcomes, continuous improvement cycles
Goal	Ensure adequacy, relevance, accessibility, and quality of learning resources
Implementation responsibility	Program and study plan Committee Program coordinator
Responsibility for follow-up	HOD
References	Academic Standards, International Best Practices, Labor Market Requirements
Determinants	Availability, Currency, Accessibility, Alignment with Learning Outcomes
Inputs	Any tasks or correspondence delegated by the HOD or the department council. Stakeholders Surveys, Interviews.
Procedures	**Steps of the Mechanism** 1. **Defining Evaluation Indicators** o Availability of learning resources (references, databases, laboratories, electronic platforms). o Currency of resources and their relevance to course content. o Accessibility and ease of use. o Alignment with course requirements and labor market needs. 2. **Data Collection from Stakeholders**

	○ **Faculty Members:** Surveys and interviews to assess adequacy and quality of resources supporting the courses. ○ **Students:** Questionnaires to measure satisfaction with resource efficiency and diversity. ○ **Alumni:** Surveys to evaluate how effectively the resources provided the skills and knowledge required in the labor market. ○ **Other Beneficiaries (employers, external partners):** Needs assessment to identify gaps between available resources and requirements. 3. **Gap Analysis** ○ Compare the current status of learning resources with: ▪ Accredited academic standards. ▪ International best practices. ▪ Labor market requirements. ○ Identify deficiencies such as limited up-to-date resources, weak technological infrastructure, or insufficient training for resource utilization.
Outputs	Minutes of approval of the mechanism structure by Program and study plan Committee. Meetings minutes are submitted to the quality committee and the department council.

Operational plan development

The Chemistry Program operational plan defines the targets that need to be achieved in order to for the program execute its mission and goals. They plan uses performance indicators to gauge the success of the chemistry program in achieving its goals.

Determinants The factors shape the development of the program operational plan.	**Program Goals and Objectives:** • **Clearly defined goals:** Establish clear and specific program goals that articulate the desired outcomes and impact. • **Measurable objectives:** Develop measurable objectives that outline the specific targets to be achieved within the program's timeframe. **Stakeholder Engagement and Collaboration:** • **Stakeholder identification:** Identify and engage relevant stakeholders, including program staff, students and employers. • **Collaboration and input:** Foster collaboration among stakeholders to ensure diverse perspectives and expertise are considered in the development of the operational plan. • **Stakeholder roles and responsibilities:** Define the roles and responsibilities of each stakeholder in implementing and supporting the program. **Resource Assessment and Allocation:** • **Resource identification:** Identify the necessary resources, including funding, personnel, facilities, equipment, and technology, required to implement the program. • **Resource availability:** Assess the availability and accessibility of resources, considering potential limitations or constraints.

	• **Resource allocation:** Allocate resources effectively, considering the priorities, needs, and feasibility of different program components and activities. **Program Activities and Timeline:** • **Activity planning:** Determine the specific activities and tasks required to achieve the program goals and objectives. • **Activity sequencing:** Establish a logical sequence and order of activities, ensuring dependencies and prerequisites are considered. • **Timeline development:** Develop a realistic timeline that outlines the start and end dates, milestones, and key deliverables for each activity. **Monitoring and Evaluation Framework:** • **Performance indicators:** Define relevant and measurable indicators to track progress, monitor program implementation, and assess outcomes. • **Data collection and analysis:** Determine the methods, tools, and frequency of data collection to monitor program activities and evaluate their effectiveness. • **Evaluation criteria:** Establish evaluation criteria and standards to assess the success and impact of the program. **Communication and Reporting:** • **Communication plan:** Develop a communication plan that outlines how information will be shared among stakeholders, both internally and externally. • **Reporting mechanisms:** Establish reporting formats and channels to provide regular updates on program progress, achievements, challenges, and lessons learned. • **Stakeholder engagement in communication:** Engage stakeholders in the communication and reporting process, ensuring transparency and accountability.

	Continuous Improvement and Adaptation: **Learning and feedback loops:** Incorporate mechanisms for capturing feedback, lessons learned, and insights from program implementation to inform ongoing improvements. **Flexibility and adaptability:** Build flexibility into the operational plan to accommodate changing circumstances, emerging needs, and evolving program priorities. **Iterative planning:** Continuously review and update the operational plan based on feedback, evaluation results, and the dynamic nature of the program.
Specifications These specifications help ensure the operational plan is comprehensive, actionable, and aligned with the program's goals and objectives.	**1. Program Analysis and Planning:** • **Conduct a needs assessment:** Identify the target population and assess their needs and requirements that the program aims to address. • **Review existing data and research:** Gather and analyse relevant data, and reports. • **Define program goals and objectives:** Clearly articulate the desired outcomes and impact the program aims to achieve. • **Conduct a SWOT analysis:** Assess the program's strengths, weaknesses, opportunities, and threats to inform the planning process. • **Establish program priorities:** Determine the key areas of focus and the order of importance for program activities. **2. Stakeholder Engagement and Collaboration.** **3. Resource Assessment and Allocation.**

	4. Activity Planning and Sequencing. **5. Performance Monitoring and Evaluation:** **6. Communication and Reporting.** **7. Continuous Improvement and Adaptation.**
Responsibilities	QC.
Development and Approval team	Department council. QC.
Procedure	**1. Assign tasks:** The QC is responsible of overseeing the entire process for developing and approving the operational plan, and ensure collaboration and representation from different perspectives as well as monitor the progress of the program in achieving its target goals. **2. Review Program Data and Assessment Results:** The QC conducts a comprehensive review of the program data, including: • Program Mission and Goals. • College Strategic Plan. • Improvement Priorities identified in previous Operational Plan Progress Reports. • Improvement Plans associated with improvement priorities from various committees within the department. • Improvement Plans and Improvement Priorities mentioned in the Annual Report and Course Reports. • Improvement Priorities derived from Performance Indicators Reports and Benchmarking. • Opinion Surveys Reports. • Alumni Characteristics and Learning Outcomes Reports.

	• Improvement Priorities mentioned in Self-Evaluation Standards and Self-Study Report. 3. **Identify Areas for Improvement:** Based on the review of program data and assessment results, the QC analyse the data to identify areas that require improvement and potential areas for growth. This could include curriculum enhancements, faculty development, student support services, assessment practices, or any other relevant aspect. 4. **Set Improvement Objectives and Strategies:** • What do we want to achieve? The QC establish clear and measurable improvement objectives for each identified area, and ensure that the objectives are aligned with the program's goals. • How will we achieve our objectives? The QC determine the strategies and approaches to address each improvement objective. 5. **Share the Improvement Objectives and Strategies:** The QC communicates the improvement objectives and strategies to the relevant committees. 6. **Define Action Steps and Timelines:** Each committee is responsible of: • Breaking down each improvement strategy into actionable steps or tasks. • Define specific timelines for implementing each action step to ensure progress and accountability. • Assign responsibilities to individuals or teams for each action step or task to ensure accountability and effective implementation. • Ensure that the allocated resources align with the identified objectives and strategies. • Identify performance indicators and targets. 7. **Draft the operational plan:** The QC combine improvement plans from all committees in the operational plan format.

	8. **Seek Feedback and Revision:** To ensure that the Operational plan is comprehensive, actionable, and aligned with the program's objectives, the QC present the Operational at the department council seeking their input and feedback to ensure their support. 9. **Refine and Finalize:** Based on the feedback from faculty members the QC revise and refine the operational plan. The HOD submits the revised operational plan to the vice dean for development and quality for further review. Any suggestion from the vice dean for development and quality will be discussed and carried out by the QC. 10. **Obtain Approval from Relevant Authorities:** The final draft of the operational plan will be submitted to the faculty council for approval. 11. **Communicate Approved Operational Plan:** The communication of the approved operational plan helps ensure that stakeholders are well-informed, aligned, and actively involved in the program's implementation of the operational plan.
Reports	Action plans of committees. Operational plan. Reports on the progress of in executing the action plans. Meeting mites on (OPC, Advisory committee, Departmental council, Faculty council, Committees)
Appendices	5. The UT strategic plan governance guide. 6. UT strategic plan. 7. FOS strategic plan. 8. Tasks and duties of councils, committees.

Professional development procedures

The Chemistry Program in collaboration with the deanship for development and quality provide the necessary training to the teaching staff on learning and teaching strategies and assessment methods identified in the program and course specifications, along with the effective use of modern and advanced technology; and their use is monitored. The teaching staff and employee of the program have the appropriate orientation and technical training and support for the effective use of resources and means of learning. Teaching staff participate in professional and academic development programs in accordance with a plan that meets their needs and contributes to the development of their performance. The program management is committed to developing and improving professional skills and capabilities of the supportive technical and administrative staff to keep up with modern developments.

Determinants: These factors are essential for improving faculty member's professional growth.	**1. Pedagogical Skills and Teaching Strategies:** • Mastery of effective teaching methods and instructional strategies. • Familiarity with diverse pedagogical approaches and learning theories. • Ability to engage students, promotes active learning, and foster critical thinking. • Competence in creating and delivering engaging and well-structured lessons. **2. Subject Matter Expertise:** • Depth of knowledge and expertise in their respective disciplines. • Awareness of current research and developments in their fields. • Ability to convey complex concepts and theories in a clear and understandable manner. • Proficiency in staying updated with advancements and emerging trends in their subject areas. **3. Technology Integration:** • Proficiency in using educational technology tools and platforms. • Familiarity with digital resources and online learning environments.

	• Ability to integrate technology effectively into teaching and learning activities. • Competence in leveraging technology for assessment, communication, and collaboration. **4. Assessment and Evaluation:** • Understanding of various assessment methods and strategies. • Knowledge of designing valid and reliable assessments. • Ability to analyse and interpret assessment data to inform instruction. • Competence in providing constructive feedback to students and using assessment for continuous improvement. **5. Inclusive Teaching and Diversity:** • Recognition of diversity and inclusivity in the classroom. • Knowledge of strategies to create an inclusive learning environment. • Ability to address the diverse needs of students, including those with disabilities or from different cultural backgrounds. • Competence in fostering a supportive and respectful classroom climate. **6. Professional Development and Scholarship:** • Commitment to ongoing professional development and growth. • Engagement in scholarly activities, such as research, publications, and conference presentations. • Aptitude for integrating research and evidence-based practices into teaching. • Proficiency in staying informed about the latest developments and best practices in higher education. **7. Communication and Interpersonal Skills:** • Effective communication skills, both verbal and written. • Ability to engage and connect with students, colleagues, and other stakeholders. • Competence in facilitating discussions, promoting active participation, and managing classroom dynamics.

	• Proficiency in providing feedback and constructive criticism to students. **8. Collaboration and Teamwork:** • Ability to collaborate effectively with colleagues and engage in team-based projects. • Aptitude for interdisciplinary collaboration and integration of multiple perspectives. • Competence in working collaboratively with other faculty members and staff to enhance teaching and learning experiences. • Proficiency in fostering a positive and supportive learning community. **9. Institutional Policies and Requirements:** • Understanding of institutional policies, procedures, and guidelines related to teaching and professional development. • Awareness of accreditation requirements and standards. • Compliance with institutional expectations and standards for teaching quality. • Proficiency in aligning teaching practices with institutional goals and objectives.
Responsibilities	Course coordinators & instructors. The scientific committee.
Procedure	1. The scientific committee establishes a specific timeframe aligned with the designated official schedules, as communicated by higher authorities, to identify the training needs of the faculty members. 2. The scientific committee provides all faculty members with an official form to submit their training needs. 3. The scientific committee determines the training needs of the committee members based on their assigned tasks. 4. The scientific committee also examines all training requirements outlined in the improvement plans and consolidates them in a training needs assessment report.

	5. The scientific committee forwards the training needs report, through the HOD, to the vice deanship of development and quality at the faculty. The deanship of development and quality forward the needs report to the Development and Quality Deanship, which is responsible for delivering training programs to enhance faculty member's skills. 6. After the official announcement of the training programs by the Development and Quality Deanship at the university, the scientific committee directs and encourages all faculty members to attend, particularly those who need performance improvement, if the training programs are open to all members. In case the slots are limited, the committee coordinates with the HOD to nominate faculty members based on their tasks or performance improvement needs.
Reports	A letter to the deanship for development and quality with various training needs of the faculty staff members.
Appendices	Controls and standards of training at Tabuk university.

Safety, emergency evacuation and maintenance procedures

Determinants	
These factors ensure a robust framework for safety, emergency evacuation and maintenance.	**1. Building Design and Construction:** • **Structural integrity:** Ensure that buildings are constructed with robust materials and techniques to withstand various hazards. • **Adequate exits and evacuation routes:** Design buildings with sufficient exits and clearly marked evacuation routes, ensuring that occupants can easily and safely evacuate in case of an emergency. • **Emergency lighting and signage:** Install emergency lighting systems and clear signage to guide occupants during evacuations, especially in low-light or smoky conditions. **2. Safety Systems and Equipment:** • **Fire detection and suppression systems:** Install and maintain fire alarms, smoke detectors, throughout the building to detect and suppress fires effectively. • **Emergency communication systems:** Implement emergency communication systems to broadcast alerts and instructions to occupants during emergencies. • **Emergency power and backup systems:** Ensure the availability of backup power systems, such as generators or uninterruptible power supplies, to support essential safety systems during power outages or emergencies. • **Security systems:** Install appropriate security systems, including surveillance cameras, access control systems, and alarms, to deter and detect security threats. **3. Safety Policies and Procedures:** • **Emergency response plan:** Develop a comprehensive emergency response plan that outlines procedures for different types of emergencies, including evacuation protocols, communication channels, and roles and responsibilities of personnel. • **Training and drills:** Conduct regular training sessions and evacuation drills to familiarize occupants with emergency procedures, evacuation routes, and the proper use of safety equipment.

	• **Safety education programs:** Provide educational materials, resources, and training sessions to educate occupants about safety procedures, evacuation routes, and the importance of reporting safety concerns. • **Maintenance and inspections:** Establish regular maintenance schedules and inspections for safety systems and equipment to ensure their proper functioning and compliance with regulations. • **Reporting mechanisms:** Implement a clear and accessible reporting system for safety concerns and incidents, encouraging occupants to report potential hazards or issues promptly.
Responsibility	Facilities and equipment's committee FQC.
	The FQC is responsible for: 1. Engage with authorities at UT for periodic inspections and certifications to ensure that the program's facilities meet the required safety standards and comply with local building codes and regulations. 2. Ensure that buildings and facilities are accessible to individuals with disabilities, including the presence of ramps, elevators, handrails, and accessible restrooms. 3. Develop and maintain an emergency response plan that outlines procedures and protocols for various emergencies, such as fires, natural disasters, medical emergencies, or security threats. 4. Clearly mark evacuation routes, exits, and emergency assembly points throughout the facility. Ensure that exits are unobstructed and easily accessible. 5. Communicating emergency alerts and instructions to all occupants of the chemistry building. 7. Maintain an updated list of emergency contacts, including local emergency services, security personnel, and relevant program staff members. 8. Establish regular maintenance schedules based on the specific needs of equipment or systems. 9. Maintain detailed records of maintenance activities, including dates, tasks performed, parts replaced, and any issues or observations. 10. Clearly communicate the available channels for reporting maintenance issues, such as a designated maintenance hotline, email address, or online reporting system.

	11. Establish a follow-up mechanism to provide feedback and updates to individuals who have reported maintenance issues, keeping them informed of the progress and resolution. 12. Encourage feedback from individuals who have reported maintenance issues to evaluate the effectiveness of the maintenance process and identify areas for improvement.
Procedures	1. The FQC holds yearly training sessions and drills to educate faculty members on emergency procedures, evacuation routes, and the proper use of emergency equipment. Practice scenarios for different types of emergencies. Also the FQC 2. The QC conducts an annual survey among students and faculty on effectiveness of safety regulations and procedures followed by the Chemistry Program, seeking feedback, suggestions for improvements. A feedback report is prepared by the QC and submitted to the FQC. 3. The FQC review the feedback report and revise the safety regulations and procedures accordingly. 4. The FQC presents its annual report and safety plan for the upcoming year to the Department council for discussion and approval. 5. The FQC communicate any updates in the safety regulations, procedures or contact numbers to all stakeholders.
Records	• FQC annual safety reports. • Department council meeting minutes.
Appendices	• NCAAA forms for SSRP. • UT Procedural guide for programs and study plans development.

The annual program report reparation and approval procedure

The Annual Program Report is a comprehensive document that provides a detailed overview of the academic program's performance and progress over the course of a year. It serves as a valuable tool for program evaluation, accountability, and planning. The report includes information on student enrollment, curriculum updates, faculty contributions, assessment results, student outcomes, program strengths and challenges. It highlights achievements, identifies areas for improvement, and outlines strategies for enhancing the program's quality and effectiveness. The Annual Program Report plays a crucial role in informing decision-making processes, facilitating accreditation reviews, and fostering continuous improvement in the academic program.

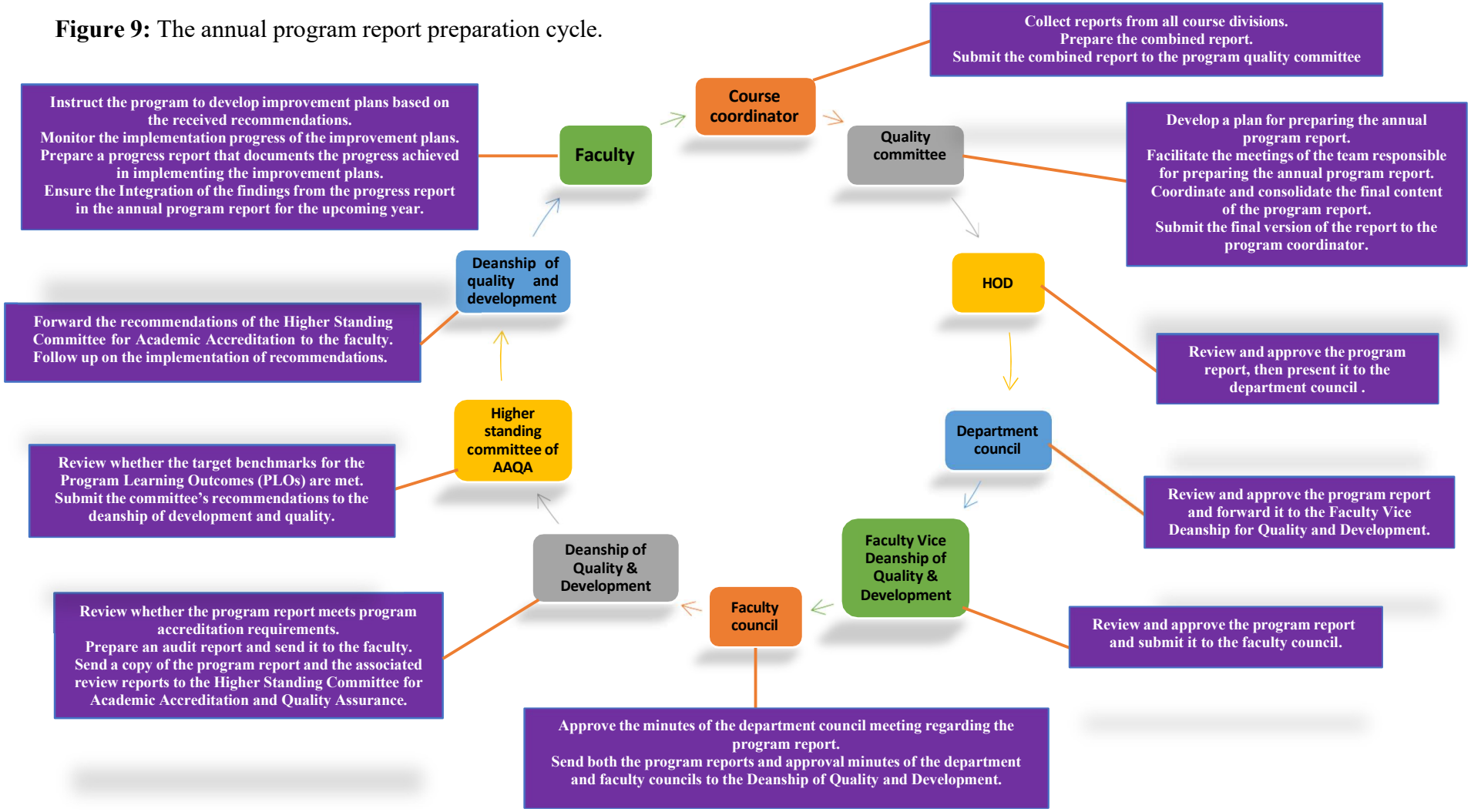
Determinants These factors ensure a comprehensive overview of the program performance.	**Program Performance:** 1. **Student Achievement:** Assess the academic performance, learning outcomes, and success rates of students in the program. 2. **Program Effectiveness:** Evaluate the effectiveness of the curriculum, instructional methods, and assessment strategies employed in the program. **Stakeholder Engagement:** 1. **Student and Alumni Feedback:** Gather feedback from students and alumni regarding their satisfaction with the program, curriculum, faculty, and support services. 2. **Faculty and Staff and Employers Involvement:** Assess faculty, employers and staff engagement, professional development opportunities, and their feedback on program improvements.

	Facilities and Infrastructure: Evaluate the adequacy and suitability of facilities, equipment, and technology to support the program's needs. **Continuous Improvement:** Assessment and Evaluation: Examine the assessment methods used to measure student learning outcomes and program effectiveness, along with the evaluation processes employed. **Program Review and Benchmarking:** Compare the program's performance against internal and external benchmarks, industry standards, and best practices. **Action Plans and Implementation:** Outline the action plans derived from the program's assessment and evaluation, and track the progress made in implementing those plans.
Inputs	• Program specifications. • Courses reports. • Measurement of PLOs. • Stakeholders' surveys. • KPIs performance indicators.
Responsibility and approval	Department council. QC.
Inputs	• Program specifications. • Courses reports.

	• Measurement of PLOs. • Stakeholders' surveys. • KPIs performance indicators. • Operational plan report.
Procedures	1. **Assign tasks:** The QC is responsible for gathering relevant information writing and reviewing the draft report, checking for accuracy, coherence, and clarity of information and ensures that the report reflects an objective evaluation of the program's effectiveness 2. **Data collection and Review:** QC gather all relevant program data and reports from all the committees, and review the program assessment reports. 3. **Draft the APR:** Based on the gathered information and the conducted review the QC articulate the first draft of the APR. 4. **Share with the department council:** To ensure that the APR reflects an objective evaluation of the program's effectiveness, the QC present the APR at the department council seeking their input and feedback and approval. 5. **Review and Refine:** Based on the feedback from faculty members the QC revise and refine the APR. 6. **Obtain FOS Approval:** The HOD submits the revised APR to the faculty vice deanship for development and quality for further review and refinement. The faculty vice deanship for development and quality submits the final revised APR to the faculty council seeking their approval.

	7. **Obtain UT Approval:** The APR together with the approval minutes of the department and faculty councils are then submitted to the Deanship of Quality and Development. The deanship of development and quality revises the APR and ensures its fulfillment for the requirement of program accreditation and submits it to the higher standing committee of academic accreditation and quality assurance for final approval. The APR follows the cycle shown in figure 9.
Appendices	• NCAAA program report template. • The UT Matrix of authority for study plans development.

Figure 9: The annual program report preparation cycle.



The four-years periodic evaluation

The program conducts a periodic, comprehensive evaluation every four years and prepares reports about the overall level of quality, with the identification of points of strength and weakness, plans for improvement, and follows up its implementation.

Purpose	By analysing the outcomes assessment and stakeholder feedback and engagement, the Chemistry Program can gain a comprehensive understanding of the program's effectiveness, identify areas for enhancement, and make data-driven decisions to improve the program's quality and relevance over the next four-year period.
Responsibility	QC and AAC.
Inputs	• Program mission and goals. • National trends according to the requirements of sustainable development in the kingdom. • Statistical reports on students results. • Annual program report and courses reports. • The results of implementing the operational plan for program at the end of each academic year and measuring the extent of deviation from its objectives. • Stakeholders' surveys. • Academic expert's reviewer.
Procedures	1. The vice dean of development and quality forms four committees headed and directed by the "Higher Committee for Academic Accreditation" and develops a proposal for an action plan with the approval of the faculty council.

	2. The work plan contains all the procedures and requirements for preparing comprehensive evaluation reports (environmental analysis report, self-evaluation scale and self-study report) responsibilities timelines for implementation and required resources are also specified. 3. Higher Committee for Academic Accreditation (AAC) is formed to implement the plan with participation of faculty members and according to their academic and administrative experiences and preferences. 4. The proposal of the work plan is discussed, the procedures are approved, and the organizational structure of the committees is discussed within the vice deanship of development and quality. 5. The formed committees meet periodically to determine the tasks assigned to them. 6. Each committee submit a periodic achievement report to the "Higher committee for academic accreditation", containing the progress in achievement, as well as difficulties and obstacles. 7. The "Higher committee for academic accreditation" is responsible for following up the proper implementation of the work plan approved by the faculty council, coordinating meeting, providing the needs of the various committees and overcoming obstacles. 8. The "Higher committee for academic accreditation" compiles and arranges the final report of the various comprehensive evaluation reports of the program which stand on the priorities for improvement.

	9. The report is presented for independent opinion in accordance with the policies and procedures of the university, which sets out strengths and aspects of improvement. 10. The independent opinion is discussed within the academic accreditation committees and recommendations are discussed to respond or reject them with appropriate justifications. 11. Recommendations and improvement plans are presented to faculty council for discussion to take their views. 12. The plans are adjusted in light of the comments received. 13. The plans are submitted to the faculty council for approval. 14. The improvement plans are included in the operational plan for the program and linked to the objectives
Records	Approved evaluation reports, minutes of faculty council. Committees meeting minutes approved improvement plans and updated operational plan.
Appendices	• NCAAA forms for SSRP. • UT Procedural guide for programs and study plans development.

Stakeholders Surveys

Stakeholder surveys play a crucial role in assessing and improving the chemistry program. Stakeholder surveys offer numerous benefits and hold significant importance for the chemistry program. These include:

1. **Comprehensive Feedback:** Surveys allow stakeholders, such as students, faculty, staff, and other relevant parties, to provide their perspectives, experiences, and opinions on the chemistry program. This comprehensive feedback helps institutions understand the strengths and weaknesses of the program from multiple viewpoints.

2. **Program Evaluation:** Stakeholder surveys serve as a tool for program evaluation by collecting quantitative and qualitative data. Institutions can use this data to assess the effectiveness of the chemistry program, measure progress towards goals, and identify areas for improvement.

3. **Continuous Improvement:** The feedback gathered from stakeholders through surveys helps identify areas that require improvement. Institutions can use this information to make data-informed decisions and implement changes to enhance the chemistry program continuously.

4. **Stakeholder Engagement:** Conducting surveys demonstrates an institution's commitment to stakeholder engagement. It shows that the institution values the opinions and experiences of stakeholders and actively seeks their input and involvement in shaping the chemistry program.

5. **Enhanced Satisfaction:** Surveys enable institutions to gauge stakeholder satisfaction levels with the chemistry program. By addressing concerns and making improvements based on feedback, institutions can enhance stakeholder satisfaction and create a positive educational environment.

6. **Strategic Decision-making:** The data obtained from stakeholder surveys can inform strategic decision-making processes. Institutions can use this data to allocate resources effectively, prioritize areas of improvement, and make informed decisions that align with stakeholder needs and expectations.

7. **Accreditation and Recognition:** Stakeholder surveys provide evidence of stakeholder engagement, program assessment, and continuous improvement efforts. This can be valuable for accreditation purposes and external recognition, showcasing the institution's commitment to delivering a high-quality chemistry program.

The basics of surveys design:

There are a number of general principles that should be followed if stakeholder surveys are to be as useful as possible:

1. It must be made clear to respondents that all survey responses are anonymous.
2. Formulate questions to revolve around objectives
3. Some open-ended questions should be included to permit respondents to comment on additional matters of concern.
4. Distribute in similar ways and at similar times and comparisons made between comparable institutions.
5. The validity of responses depends on having a reasonable response rate. Normally at least 50% is essential.
6. To encourage stakeholder’s participation, actions taken in response to stakeholder’s feedback are made available on the department website.

Response Scale:

It is recommended that each item in the surveys be responded to using a five-point scale. The recommended scale is:

1. Strongly agree (5).
2. Agree (4).
3. Neutral (or undecided) (3).
4. Disagree (2).
5. Strongly disagree (1).

In all the questioners the target response rate should not be less than50% of the sample.

The surveys used by the Chemistry Program:

Table 14 shows the surveys used by the Chemistry Program to assess stakeholders' satisfactions and the plan for conducting them.

Table 14: Stakeholders' Survey Plan.

NO	Survey	Area of Evaluation	Target group	Distribution Responsibility	Distribution Timing	The Uses of the Survey
1	Course Evaluation Survey	Course quality	Students	Course instructors	Three weeks before the final exam in every term.	KPI-P-02 Average student overall rating of course quality on five- point scales Preparation of the course report Provide evidences for program accreditation standards. Development of the annual improvement plan.
2	Student Experience Survey	The student's academic life in the educational institution, including the basic components of the program in which the student is registered	Students who have passed half of the program's duration	QC	Five weeks before the final exam in every term.	KPI-P-01 Students' Evaluation of Quality of learning experience in the Program Provide evidences for program accreditation standards. Development of the annual improvement

						plan.
3	Program Evaluation Survey	Final year students' satisfaction with program, services, facilities, and program management	Final year students of the program	QC	Three weeks before the final exam in every term.	KPI-P-01 Students' evaluation of the quality of learning experiences in the program Provide evidences for program accreditation standards. Development of the annual improvement plan.
4	Academic Advising Survey	Students' satisfaction with the academic advising service and academic advisor	All Students	Academic advising Committee	Three weeks after the beginning of every term	Provide evidences for program accreditation standards.
5	Supervision Survey	Students' satisfaction with the research supervision	Final year students of the program	QC	End of each academic year	KPI-P-01 Students' Evaluation of Quality of learning experience in the Program. Provide evidences for program accreditation standards. Development of the annual improvement

						plan
6	Alumni Evaluation Survey	Alumni satisfaction with the program	Alumni	QC	End of each academic year	Students' evaluation of the quality of learning experiences in the program Provide evidences for program accreditation standards.
7	Faculty Satisfaction Survey	Academic staff members' satisfaction with Program, management, Organization environment, Quality management, educational process, Program mission, PLOs, Facilities and services, Scientific research Community service	Academic staff members'	QC	End of each academic year	Provide evidences for program accreditation standards. Development of the annual improvement plan.
8	Employee Satisfaction Survey	Employees' satisfaction with program	Employees	QC	End of each academic year	Provide evidences for program accreditation standards. Development of the annual improvement plan.

9	Questionnaire for Employers' Satisfaction with the Program and Its Alumni	Employers' Satisfaction with the Program and its alumni	Employers	QC	End of each academic year	KPI-P-07 Employers' assessment of the competency of program graduates. Provide evidences for program accreditation standards. Development of the annual improvement plan.
10	Community Service Survey	Community satisfaction about the services provided by the program.	Community representatives	QC	End of each academic year	Provide evidences for program accreditation standards. Development of the annual improvement plan.