



T-103
2022

Program Specification

Program Name:	Bachelor of Science in Chemistry
Program Code (as per Saudi university ranking):	053101
Qualification Level:	6
Department:	Chemistry
College:	Science
Institution:	King Khalid University
Program Specification:	New <input type="checkbox"/> updated* <input checked="" type="checkbox"/>
Last Review Date:	17/10/1444

*Attach the previous version of the Program Specification.



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A. Program Identification and General Information

1. Program's Main Location :

College of Science, Main Campus, Abha, Saudi Arabia

2. Branches Offering the Program (if any):

- College of Science, King Abdullah Road Campus (Female), Abha
- College of Science and Arts, Sarat-Abidah Campus (Female), Sarat Abidah
- College of Science and Arts, Muhail-Asir Campus (Female), Muhail Asir

3. Partnerships with other parties (if any) and the nature of each:

None

4. Professions/jobs for which students are qualified

- Teaching in various stages of pre-university education.
- Working in the industrial fields that related to chemistry.
- Working as assistant teaching staff in Saudi universities.
- Working in research centers, public and private institutions that require skills in chemistry
- Working in institutions of higher education.

5. Relevant occupational/ Professional sectors:

- Universities
- Industrial sectors (Industries related to chemistry)
- Saudi universities
- Research centers
- Institutions of higher education.

6. Major Tracks/Pathways (if any):

Major track/pathway	Credit hours (For each track)	Professions/jobs (For each track)
1. None		
2.		

7. Exit Points/Awarded Degree (if any):

exit points/awarded degree	Credit hours
1. None	
2.	
3.	

8. Total credit hours: (...180 hours....)





B. Mission, Objectives, and Program Learning Outcomes

1. Program Mission:

Preparing competitor graduates for the labor market and graduate studies as well as contributing to community service.

2. Program Objectives:

1. To prepare competitor graduates for the labor market.
2. To qualify chemists to complete graduate programs.
3. To contribute in community service and volunteer work.

3. Program Learning Outcomes*

Knowledge and Understanding

K1	To understand the basic theories and concepts of chemistry.
K2	To explore the basics of mathematics, physics and biology related to chemical science.
K3	To describe recent experimental findings, developments, and applications of chemistry in life.

Skills

S1	To demonstrate problem solving skills in chemistry.
S2	To apply good research practices in chemistry and related fields.
S3	To recognize chemicals, equipment, and their appropriate utilisation, to carry out practical experiments following safety procedures.
S4	To criticize and analyze chemical data of experimental results based on scientific literature.

Values, Autonomy, and Responsibility

V1	To demonstrate social responsibility and commitment to ethics in chemistry.
V2	To work effectively, either independently or as a team member to solve a problem.
V3	To show effective oral and written scientific communication.
V4	To retrieve relevant technical information from professional databases and search engines.

* Add a table for each track or exit Point (if any)





Curriculum

1. Curriculum Structure

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentag e
Institution Requirements	Required Elective	6	12	6.7%
College Requirements	Required Elective	8	37	20.6%
Program Requirements	Required Elective	35	131	72.7%
Capstone Course/Project				
Field Training/ Internship				
Residency year				
Others				
Total		49	180	100%

* Add a separated table for each track (if any).

2. Program Courses

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
Level 1	011ENG-6	Intensive English Program-1	Required	-	6	College
	101BIOL-6	General Biology	Required	-	6	College
	101MATH-5	Calculus - 1	Required	-	5	College
Level 2	101CMS-2	Computer Science	Required		2	College
	101CHEM-6	General Chemistry -1	Required		6	College
	111ICI-2	The Entrance to the Islamic Culture	Required		2	Institution
	201ARAB-2	Arabic Language Skills	Required		2	Institution
Level 3	101PHYS-6	Introduction in physics	Required		6	College
	110NGL-4	Scientific English for Science Students	Required	011ENG	4	College
	112ICI-2	Islamic culture-2	Required		2	Institution
Level 4	113ICI-2	Islamic culture-3	Required		2	Institution
	102CHEM-5	General chemistry-2	Required	101CHEM	5	Program
	212CHEM-6	Organic Chemistry-1	Required	-	6	Program
	232CHEM-3	Thermodynamic chemistry	Required	101CHEM	3	Program
Level 5	102CMS-3	Computation Skills-2	Required	101 CMS	2	College
	114ICI-2	Islamic culture-4	Required		2	Institution
	213CHEM-6	Organic chemistry-2	Required	212CHEM	6	Program
	222CHEM-3	Main groups elements	Required	102CHEM	3	Program
	241CHEM-3	Qualitative analysis	Required	101CHEM	3	Program
Level	202ARAB-2	Arabic editing	Required		2	Institution





Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
6	233CHEM-5	Electrochemistry	Required	232CHEM	5	Program
	242CHEM-5	Quantitative Analysis-1	Required	241CHEM	5	Program
	261CHEM-3	Quantitative Analysis-2	Required	241CHEM	3	Program
Level 7	313CHEM-3	Organic Chemistry-3	Required	213CHEM	3	Program
	323CHEM-6	Chemistry of Transition Elements	Required	222CHEM	6	Program
	335CHEM-4	Chemistry of Surfaces, Catalysis And Phase Rule	Required	232CHEM	4	Program
Level 8	314CHEM-3	Spectroscopy of Organic Compounds	Required	313CHEM	3	Program
	315CHEM-3	Industrial Products	Required	313CHEM	3	Program
	324CHEM-3	Nuclear Radiation And Chemistry	Required	222CHEM	3	Program
	341CHEM-3	Environmental Analysis	Required	242CHEM	3	Program
	362CHEM-3	Identification of Organic Compounds	Required	213CHEM	3	Program
Level 9	325CHEM-3	Solid State Chemistry	Required	102CHEM	3	Program
	336CHEM-6	Kinetics And Reaction Mechanism	Required	232CHEM	6	Program
	342CHEM-3	Instrumental Analysis-1	Required	242CHEM	3	Program
	363CHEM-3	Quantitative Organic Analysis	Required	213CHEM	3	Program
Level 10	416CHEM-3	Mechanism of Organic Reactions	Required	313CHEM	3	Program
	417CHEM-3	Heterocyclic Chemistry	Required	313CHEM	3	Program
	425CHEM-3	Inorganic And Organometallic Chemistry	Required	323CHEM	3	Program





Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
	435CHEM-5	Corrosion	Required	233CHEM	5	Program
Level 11	418CHEM-3	Organometallic Chemistry	Required	313CHEM	3	Program
	419CHEM-3	Natural Products	Required	313CHEM	3	Program
	464CHEM-3	Organic Synthesis	Required	213CHEM	3	Program
	465CHEM-3	Instrumental Analysis- 2	Required	342CHEM	3	Program
Level 12	426CHEM-3	Inorganic Reaction Mechanisms	Required	323CHEM	3	Program
	436CHEM-3	Quantum Chemistry	Required	101CHEM 101 MATH	3	Program
	450BCH-5	Biochemistry	Required	313CHEM	5	Program
	466CHEM-3	Inorganic Chemistry	Required	323CHEM	3	Program
	467CHEM-3	Physical Chemistry	Required	335CHEM	3	Program
	470CHEM-5	Research Project	Required	342CHEM 314CHEM 323CHEM 336CHEM	5	Program

* Include additional levels (for three semesters option or if needed).

** Add a table for the courses of each track (if any)

3. Course Specifications:

Insert hyperlink for all course specifications using NCAAA template (T-104)

4. Program learning Outcomes Mapping Matrix:

Align the program learning outcomes with program courses, according to the following desired levels of performance (*I = Introduced P = Practiced M = Mastered*).

Course code & No.	Program Learning Outcomes										
	Knowledge and understanding			Skills				Values, Autonomy, and Responsibility			
	K1	K2	K3	S1	S2	S3	S4	V1	V2	V3	V4
101CHEM	I			I						I	
102CHEM			I				I	I	I		
212CHEM	I			I						I	





Course code & No.	Program Learning Outcomes										
	Knowledge and understanding			Skills				Values, Autonomy, and Responsibility			
	K1	K2	K3	S1	S2	S3	S4	V1	V2	V3	V4
241CHEM		I				I					I
232CHEM		I					I				
213CHEM	I			I						I	
222CHEM			I				I		I		
233CHEM			I		I			I			I
242CHEM			P	P			P		P		P
261CHEM			P			P			P		P
313CHEM	P			P		P			P		
323CHEM	P		P			P		P	P		P
335CHEM	P		P	P		P			P		P
341CHEM		P	P	P				P		P	
362CHEM	P		P		P		P			P	
314CHEM			P								
315CHEM	P		P		P			P		P	
324CHEM		P		P				P			
325CHEM		P		P		P	P		P		P
336CHEM	P		P			P		P			P
342CHEM		P	P		P	P		P		P	
363CHEM	P					P			P		
416CHEM	M		M		M			M		M	
417CHEM				M						M	
425CHEM	M		M			M			M	M	
435CHEM	M			M			M		M		M
464CHEM		M	M		M		M		M		M
465CHEM	M		M		M			M			
470chem			M		M		M	M			M
418CHEM		M		M		M		M		M	
419CHEM	M			M		M			M		M
426CHEM	M		M		M		M		M	M	
436CHEM		M		M		M	M		M		M
450BCH	M		M			M		M		M	
466CHEM		M		M			M		M		M
467CHEM	M	M	M	M	M	M	M	M	M	M	M
101MATH		I			I			I			I
101PHYS		I		I			I		I		I
101BIOL	I		I		I			I			I
011ENG		I		I			I		I		I
201ARAB	I		I			I			I		P
202ARAB	I		I			P					P
110NGL		I		M		M			M		
101CMS			M					I		M	





Course code & No.	Program Learning Outcomes										
	Knowledge and understanding			Skills				Values, Autonomy, and Responsibility			
	K1	K2	K3	S1	S2	S3	S4	V1	V2	V3	V4
111IC1	I		I			C		I		P	
112IC2	I				I			P		P	
113IC3		I			I			M			
114ICI		I		I		M				P	

* Add a separated table for each track (if any).

5. Teaching and learning strategies applied to achieve program learning outcomes.

Describe teaching and learning strategies, including curricular and extra-curricular activities, to achieve the program learning outcomes in all areas.

The program offers its courses using several teachings and learning strategies, including traditional lectures, active learning activities (e.g. Problem solving, student presentations), case studies, presentations, laboratory sessions, and research projects.

E-learning has evolved as a supportive teaching method within the department of chemistry using the guidelines stipulated by the E-learning Deanship. All course materials are uploaded on the KKU E-learning platform, Blackboard. In addition, some teaching activities and assessment tasks may be conducted through Blackboard, such as assignments, quizzes, exams, etc. Blackboard also offers the 'Safe Assign' option that assesses the percentage of plagiarism in the submitted assignments. Also, the program provides opportunities for extracurricular activities to promote students' personal skills and experiences, including visits to places related to various applied fields of chemistry (eg. Shagig, AlJazira for painting, poison lab). The aim for these activities is to expose students to real experiences that may contribute to deep, meaningful learning, as well as achievement of the program learning outcomes. The following table shows the teaching strategies used to achieve learning domains.

PLOs		Teaching Methods	
Knowledge	K1	1. Classical lectures 2. Data show-based lectures 3. Demonstration using models and movies 4. Historical reviews 5. Problem solving 6. Laboratory experiments	
	K2		
	K3		
Skill	S1		1. Case study 2. Reading books 3. Heuristic 4. In class cooperative groups 5. Seminar
	S2		
	S3		
	S4		
Values	V1	1. Team Learning 2. POGIL 3. Problem Solving 4. Tutorial and personal work	
	V2		
	V3		





	V4	<ol style="list-style-type: none"> 1. Surveying literature 2. Review and Report 3. Presentation 4. Concentric
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6. Assessment Methods for program learning outcomes.

Describe assessment methods (Direct and Indirect) that can be used to measure the achievement of program learning outcomes in all areas.

The program should devise a plan for assessing Program Learning Outcomes (all learning outcomes should be assessed at least twice in the bachelor program's cycle and once in other degrees).

Program Learning Outcomes (PLOs) Assessment:

The PLO assessment process helps to determine whether the teaching and learning plans are effective. It is also used to test the students' learning of the subject matter that faculty presume to teach. All data obtained from the assessment methods help program to demonstrate whether program courses and learning activities are supporting student learning, promoting student success, and enhancing the institutional priorities consistent with the mission of KKU. A PLO assessment is periodically conducted to achieve three objectives:

- To collect data that indicates whether students are learning as effectively as possible.
- To improve the program.
- To establish outcomes and engage in a systematic process of collecting and analyzing data in order to support evidence-based changes in the curriculum and/or instruction.

Several direct and indirect methods will be used to assess the program outcomes:

- Direct assessment methods include course grade distributions, rubric of CLOs/PLOs achievement method, annual reports, retention, completion rates and Tests of National Center for Assessment (QIYAS) for teachers.

The following table shows the assessment methods used in courses to measure the achievement of students to PLOs.

PLOs		Assessment Methods
Knowledge	K1	1. Essay Questions
	K2	2. Completion exercise
	K3	3. Classical examinations 4. In class tests 5. Homework
Skill	S1	Direct observation
	S2	Multiple choice questions
	S3	3. Fast questions
	S4	4. Laboratory reports 5. Classical examination 6. Oral discussion and presentations





Values	V1	1. Problem and case study analysis 2. Short answer questions 3. Presentation and reports 4. Field work report 5. Data interpretation exercise 6. Quizzes 7. Collaborative assignments
	V2	
	V3	
	V4	

➤ Indirect assessment methods include stakeholders' feedback obtained through the student experience survey, course evaluation survey, students' evaluation of the quality of their learning experience in the program (program evaluation survey), an alumni survey and employment survey "evaluation of graduates".

Course grade distributions:

PLOs can be assessed through the course's final grades. The grade distribution analysis report is done to ensure the quality of the courses taught and the achievement of the PLOs. A course grade distribution report shows the final grades given in each course and section. It aims to evaluate students' performance on their exams during the semester, as well as provide an indication of any concerns or failure results. In addition, it reports the number of students who were denied entry and the number of students who withdrew from the course. This report is prepared at the end of each semester and discussed in the departmental meetings.

Course and Annual Program Reports:

The program and course reports were prepared using the NCAAA templates. These reports include several details regarding course issues, analysis, action plan, and priorities for improvement. These eventually lead to the identification and assessment of the courses and program quality. The annual program report represents data from enrolment management and cohort analysis. The program coordinator is responsible for the preparation of the annual program report. This report is intended to compile the course reports from each department and determine the actions requiring intervention by a higher administrative level. At the end of each semester, all the course coordinators from both campuses prepare the course reports. The reports are also included in the plans that address the identified problems.

D. Student Admission and Support:

1. Student Admission Requirements

There are no specific admission regulations for the current program. Instead, the program committed with the admission regulations of King Khalid University, please see the attached Admissions Guide. Department of Chemistry (DC) is committed to fair, transparent and consistent admissions practices. DC reaffirms its policy of equal opportunity for both male and female students as they are subjected to the same admission procedures and requirements. The admission of prospective chemistry program students is always carried out online via Deanship of Admission and Registration (DAR) website. Full details regarding admission requirements are updated annually by DAR and can readily be found on DAR's website. The number of admitted students is determined by DAR after conferring with DC. Generally, an applicant must be a Saudi national holding a general secondary certificate (i.e. high school) or any valid equivalent from outside KSA. Priority consideration for admission is given to fresh high school graduates whose applications must meet the minimum requirements for automatic admission which include a pre-set average qualifying score between high school diploma score and national standardized tests (i.e. general aptitude test and scholastic achievement admission test). Once





all requirements are met, applicants are informed through e-mail and mobile messages (SMS) about their admission status. Directly, students enter the program of chemistry.

2. Guidance and Orientation Programs for New Students

(Include only the exceptional needs offered to the students of the program that differ from those provided at the institutional level).

An open orientation program is organized in the first week of the first semester for guidance and advising the new students. The program includes advisory presentation from the vice dean and the academic advisor about courses registration, grades, student's service, student's rights, duties and safety issues as well. See attached Orientation for new Students A comprehensive orientation program is provided to new students at the beginning of the academic year by the academic advising and counseling unit. This orientation session is attended by the dean, department heads, and teaching staff. The goal of the orientation session is to provide comprehensive information pertaining to the campus life, academic rules and regulations, facilities, lab safety, learning resources, courses offered by individual departments, and teaching and assessment methodologies. The orientation session is also used as an opportunity to introduce faculty members teaching different courses. Orientation for female students is provided by the Assistant Dean in coordination with the academic advising and counseling unit in the female campus.

3. Student Counseling Services

(Academic, professional, psychological and social)

(Include only the exceptional needs offered to the students of the program that differ from those provided at the institutional level).

An assigned faculty academic advisor along with Academic Counseling and Guidance Unit at the college is available. They provide counseling, assessment, information, advice, personal and social development program, and referral. Regular interactions of students with instructors through e-mail, blackboard or planning for regular meetings to discuss academic issues are also available. Documents for students counseling services are attached.

4. Special Support

(Low achievers, disabled, gifted, and talented students).

Students with special needs (disabled, low achievers, gifted and talented) have special support from the academic advisor of the students. Talented students also have distinct attention and support from the Talent and Creativity Center at the university. Documents are attached.

Low achievers:

Academic Advising and Counselling Unit (AACU) in male and female sections directed most of the counseling services to underperforming students (students with a GPA < 2.5) but with different approaches. In the male section, the underperforming students were allotted to Arabic speaking faculty where regular counseling sessions are conducted and documented.

To assess the impact of counseling, AACU embargos students' grades for quizzes and midterm until they visit their respective advisors. The advisor will then send a formal request to the vice dean for academic affairs to lift students' mark embargo. In the female section, the underperforming students





were allotted to Arabic speaking advisors. The advisors met with the students and documented their visits (on paper and via academia). The AACU then compiled students' reports from the advisors and used a “design thinking” strategy to identify and resolve major problems.

At the end of each term, the academic advising and counseling unit discusses all issues and requirements of the unit with the Vice Dean of Academic Affairs and reports the dean of the with the requirements and recommendations. All recommendations are to be taken in consideration to meet the students' demands and improve their performance with systematic action plans that ensure attaining optimal results.

Talented and gifted students:

The academic advising and counseling unit also identifies talented and underperforming students and implements particular motivational programs for them. Extracurricular activities at Department of Chemistry are encouraged through students' club where ample sports, educational, and cultural activities performed. Department of Chemistry applies efficient procedures for monitoring students' progress towards fulfilling graduation requirements and provides career development programs that align with the market needs. It is worth mentioning that Department of Chemistry recently formed alumni association to establish a comprehensive database about them, involve them in department events and benefit from their views and expertise in matters concerning the curriculum and the profession. In addition, Department of chemistry acknowledged the importance of international exposure to its students. Thus, Department of chemistry in collaboration with the university administration initiated a summer training program abroad for talented students and students with a high GPA. The selected students will be going on a 6-weeks abroad training program with international universities.





E. Faculty and Administrative Staff:

1. Needed Teaching and Administrative Staff

Academic Rank	General	Specialty		Special Requirements / Skills (if any)	Required Numbers		
			Specific		M	F	T
Professor	Chemistry	1	Organic		2	2	4
		1	Inorganic				
		1	Analytical				
		1	Physical				
Associate Professor	Chemistry	3	Organic		4	5	9
		2	Inorganic				
		2	Analytical				
		2	Physical				
Assistant Professor	Chemistry	4	Organic		6	6	12
		4	Inorganic				
		2	Analytical				
		2	Physical				
Lecturer	Chemistry	2	Organic		4	4	8
		2	Inorganic				
		2	Analytical				
		2	Physical				
Teaching Assistant	Chemistry	2	Organic		4	4	8
		2	Inorganic				
		2	Analytical				
		2	Physical				
Technicians and Laboratory Assistant	Chemistry				8	12	20





Administrative and Supportive Staff	Administrative	1	Program instructor		3	2	5
		1	Head of Chemistry Department				
		1	Assistant Head of Chemistry Department				
		1	Officer for Male Section				
		1	Officer for Female Section				
Others (specify)							

F. Learning Resources, Facilities, and Equipment:

1. Learning Resources

Learning resources required by the Program (textbooks, references, and e-learning resources and web-based resources, etc.)

The head of the department assigns committee for the plan and curriculum. One of the tasks of this committee is to update learning resources, facilities and equipment, and follow-up the availability of these resources to students. In this issue, the following processes are regularly practiced:

- Updating and assigning textbooks and references are approved in the departmental council.
- The Deanship of Library Affairs commits to supply hard-copies and soft-copies of learning resources after requesting by the Head of the Department.
- Materials of software programs for learning resources are supplied to academic programs by the Deanship of Information Technology after requesting by the Head of the Department.

Saudi Digital Library (SDL):

KKU maintains an active subscription to Saudi Digital Library and make it available to students inside and outside the department using a proxy system. The access to databases on Digital Saudi Library web is available 24/7 to students and faculty members. The Deanship of Library Affairs (DOLA) provides access to Saudi Digital Library website [<http://lib.kku.edu.sa/guidance.html>] through the main KKU library website. This includes access to different scientific websites and search engines such as Doab directory of open access books, and E-book central. The SDL contains more than 310,000 E-books, 100,000 periodicals, 184 electronic databases, 5 million theses. Annually, the DOLA requests all colleges within the university to provide them with the college's requirements from SDL.

E-learning services:

The E-learning services offered by the Deanship of E-learning in order to promote an effective communication between faculties and students including Blackboard system. TAZAMON, and KKUx.





It has been made mandatory in all the courses of the program that the faculties have to upload all their teaching material, tests, assignments, quizzes and all announcements through Blackboard system.

Software packages:

KKU provides several software packages for students and faculty free of charge. This aims to improve the efficiency and effectiveness of teaching and learning experience in KKU. The free software packages include Office®, some statistical and antivirus software. In addition, the College of science on both the campuses has sufficient number of classrooms, laboratories, conference rooms, faculty and administration rooms etc. that are equipped with all the necessary facilities.

2. Facilities and Equipment

(Library, laboratories, classrooms, etc.)

The committee of equipment and technical affairs at the department is responsible to follow the requirements of equipment in laboratories.

Classrooms:

The classrooms in the both the campuses comprise of computers, white boards, podium, with comfortable chairs and projectors. The computers are of Dell Core i5 model and the projectors that are used are of Optoma DLP Texas model. The classrooms are air conditioned, well ventilated that is suitable to create a good environment for learning. The provided teaching and learning facilities cover the teaching strategy of each learning outcome. For some of the courses, lectures are delivered through virtual classrooms using the blackboard.

Laboratory:

The department has seven student Labs for teaching practical course in chemistry branches in male section and nine Labs. in female section. Each Lab. has staff member as 20 supervisor and one technician beside the course instructor. The student labs contain the necessary learning tools; glass wears, chemicals and instruments. The safety tools are provided as well; Lab. coat, safety glasses, gloves and face mask.

Research Labs:

Chemistry department contain nine research Labs; Physical chemistry research lab., chromatography research lab., catalysis lab. , spectroscopic analysis lab., two organic chemistry lab., inorganic chemistry lab., graduation research lab, NMR lab., ICP-Ms lab.

Each research lab. has responsible staff member and technician. The research labs are provided with core instruments necessary for chemistry research.

3. Procedures to ensure a healthy and safe learning environment

(According to the nature of the program)

The committee of safety and occupational health affairs at the department is responsible to maintain a healthy and safe environment for faculty, staff, and students and provides security system and guards to secure the facilities. In addition, fire evacuation policy and fire drills are available in all laboratories with first aid kits. The department provides a safe and healthy environment, the department has safety signs, emergency exit signs and laboratory safety manuals. The laboratory is an essential part of the successful teaching and learning for all courses that have practical sessions in the labs. The teaching quality in the laboratories is one of our priorities, since wet laboratories need special instructions and a unique teaching style. To ensure that the department' laboratories have good teaching environments,



all laboratories are well equipped with personal protective equipment such as masks, safety goggles, safety gloves, etc. A fire evacuation policy and first aid kits are also available in all laboratories.

G. Program Quality Assurance:

1. Program Quality Assurance System

Provide a link to quality assurance manual.

The college has responsibilities for internal quality assurance, standards and enhancement procedures. These procedures are designed to meet the expectations of the Education Training Evaluation Commission as well as other national frameworks, benchmarks, and statutory obligations. The Quality and Academic Development Unit helps to support departments in fulfilling their responsibilities within both the college's quality assurance framework and the broader national and international context. Departments are encouraged to contact The Quality and Academic Development Unit Team for advice and support. Quality Assurance brochure is attached.

Link of quality assurance manual of KKU

2. Procedures to Monitor Quality of Courses Taught by other Departments

The quality of courses and the undergraduate program is monitored, assured, and subject to review and improvement through a continuous improvement cycle based on the cycle shown above. The following points address the details:

- a. Individual faculty members & coordinators and the group/team as a whole review annually by the curriculum committee and within the divisions of the department the program.
- b. Curriculum subcommittees and departmental committees are formed to look into the recommendations of various divisions and to make a final proposal
- c. The revised program is discussed in the College Board before approval.
- d. One course coordinators is assigned by the head of department and is responsible for monitoring the course quality formal meeting of course organizers and student representatives
- e. Course improvement committee meets regularly to revise the course content and methods of teaching & assessment
- f. Course coordinator prepares the course report by the end of each semester containing student's achievement, and action plan for course improvement.
- g. Program coordinator prepares annual program report at the end of academic year, including all branches where program is offered.

Annual program report discussed in departmental board, and action plan to improvement program will be suggested.

(1) Plan: Course coordinator plan delivery, activities, and assessments of the course.

Involvement: Course coordinator + Director of undergraduate program (2) Implement: Course coordinator implement plan for course delivery.

Involvement: Course coordinator

(3) Monitor: Director of undergraduate program monitor course delivery and conduct all relevant tasks.

Involvement: Director of undergraduate program

(4) Review: Course coordinator, director of undergraduate program, and students review the delivery of the course.

Involvement: Course coordinator + Director of undergraduate program + Students

(5) Improve: Director of undergraduate program prepares a plan for improvement according to step 4, and communicate the plan to quality assurance committee then to department chair and follow it up.

Involvement: Director of undergraduate program + Quality assurance committee +

Department chair

(6) Approve: Plan for improvement developed in step 5 must be approved by Committee





of Academic Planning and Curriculum, Program Advisory Board, and Department Council. Once approved it will go back to course coordinator and director of undergraduate program for planning and implementation.

Involvement: Committee of academic planning and curriculum, Program advisory board, and Department council.

The department levels

The department of chemistry is committed to providing the highest quality teaching and learning by closely monitoring their academic courses through internal department committees. The purpose of these committees is to ensure the quality of course materials, of the teaching and learning processes, of student support and assessments, and of faculty members. Committees include the educational services committee, quality and development committee, scheduling and examination committee, graduate committee, and academic advising and counseling committee.

Academic policies and procedures:

Several policies have been established to ensure program quality, such as the examination policy and its related committees. Regulations regarding exams, exam oversight, student attendance, alternative exams, exam re-correction, exam preparation, and conduct and correction procedures, have all been established in the program and monitored by the head of department. In addition, KKU has established a Guide for Student Rights and Responsibilities to ensure a fair and consistent process of student management. This guide provides a clear code of conduct with related sanctions to be imposed in the incidence of misconduct or violations.

Moreover, attendance and absenteeism rules are explained clearly to the students at the "new students' orientation" program and then reinforced at the beginning of each semester. Furthermore, a student's excuses are studied and processed through the Excuses committee in the department.

KKU has a policy for any form of cheating during any form of exam. If cheating occurs in an exam, a written report on the incident will be submitted to the college disciplinary committee for further evaluation. KKU policy also encourages good student-faculty relationships. The program is committed to providing full access to all necessary resources for all students, including those with disabilities.

Course-level monitoring procedures:

1. Course syllabus 24 At the beginning of each semester, each course coordinator uploads the course syllabus to Blackboard. This syllabus should include a short course description, course learning outcomes (CLOs), teaching strategies, assessment methods, resources, list of topics (theory and practical), time for each section, campus location where the course is taught, proposed exam time, instructions, required reference books, instructor's office hours, contact information and course policies

2. Course Report (CR):

The NCAA templates are used to prepare the course reports (CR). These reports provide information on the different scales of achievement of course learning outcomes. Course reports are submitted to the quality committee within the department. All course reports, SPSS grade analysis, assessment master blueprint and exam item analysis. The improvement priorities and recommendations are further discussed with the quality assurance (QA) committee members of department. Then, they are discussed at the department meeting, resulting in recommendations and proposals for improvement. If there is any needed action, the faculty member must propose an action





plan in his/her course report (recommendation section) and this plan must be implemented during the next semester.

Program-level monitoring procedure:

A. The Annual Program Report (APR):

The APR is prepared by the Quality Committee within the department. This report highlights achievements, issues and future action plans. A number of recommendations are typically adopted in the department to improve the quality of the program. These involve revising courses scientific contents, advising and counseling plans, educational services, research, faculty development, and student statistics.

B. Laboratory safety monitoring mechanism

The laboratory is an essential part of the successful teaching and learning for all courses that have practical sessions in the labs. The teaching quality in the laboratories is one of our priorities, since wet laboratories need special instructions and a unique teaching style. To ensure that the program laboratories have good teaching environments, all laboratories are well equipped with personal protective equipment such as masks, safety goggles, safety gloves, etc. A fire evacuation policy and first aid kits are also available in all laboratories.

C. Key Performance Indicators (KPIs):

Several key performance indicators (KPIs) are approved by the program and measured according its time frame to monitor the program and offer feedback from stakeholders (students, advisory board, alumni, and employers).

3. Procedures Used to Ensure the Consistency between Main Campus and Branches (including male and female sections).

The coordinator of program is responsible to ensure that the courses content achieve PLOs. Program coordinator revise course specification and annually course reports.

The course report includes the student's results for both male and female sections and their statistics, the teaching strategies, assignment methods were explained. The annual program report includes the both male and female sections Many measures and arrangements are in place to ensure consistency between male and female sections regarding teaching/learning activities, extracurricular activities, facilities and resources, examinations and quality measures.

The male and female students and faculties are on different campuses (Alfaraa and female campus King Abdullah Road, respectively) and provided with adequate the requirement facilities of program.

The program at female campus is administered by supervisor of department. she maintains a close association with the head of department at the main campus to warrant appropriate development and to provide a statement of performance of the female students in the program.

The registration and enrollment of students at different levels is cooperatively achieved by registrars from the male and female sections. A clear protocol is available for effective communication between the Alfaraa and female campus; female faculty and staff attended meetings of department council in an audio conference room. In addition, advanced and reliable technological tools are also used to facilitate communication. The lectures and labs on both campuses are taught in a uniform manner. Female and some male teaching staff are exclusively teaching the female students. The faculty on both campuses is teaching the same courses, planning and developing their respective course materials and requirements together. This ensures that the same topics are taught in both sections. Both campuses' faculties contribute equally in writing the examination questions, while the head of





department and supervisor of female department ensure the appropriateness and suitability of the exams for each course and responsible for ensuring that the teaching, training and assessment methods are similar in both sections, according to regulations. Thus, it is mandatory for both the male and female teaching staff to communicate regularly by using advanced communication tools. This enhances the maximum level of coordination between the sections with respect to the development of courses and programs. The planning, implementation and progress of the program and courses are similar on both the campuses, according to the report provided by the NCAAA template. Male and female faculties (coordinators for the same courses) use the Blackboard platform to inform students about the upcoming course tasks and duties and to post the student marks.

Members of each committee in the department are recruited from both the male and female faculty members to monitor both campuses and the students. This provides equal opportunities to participate in all the activities at the department. Procedures applied to ensure the consistency between male and female sections:

- The same course contents, teaching strategies and assessment methods.
- Identical time tables for both sections.
- Simultaneous examinations in both sections.
- Separate course reports for each section to ensure evaluation of course quality for both sections and combined one.
- Analysis of program indicators stressing any differences between male and female sections.
- Program statistical data stressed male and female results and combined one.
- learning resources and facilities are almost at the same level in both sections including the average number of students enrolled per class, teaching aids, laboratories, internet coverage, library and extracurricular activities
- Male and female students result in examinations are reflected in separate course reports and combined one to explore any differences in courses completion rate, grade distributions and trend over time in either sections as well as the combined one.
- Other course evaluations including achievement of courses and program learning outcomes, courses and program evaluation surveys and course reporting, all these evaluations expressed the female and male as well as combined results with supposed improvements based on evaluations, and consequently a separate course portfolio for both male and female sections as well as a combined one for each course are there.
- Courses and program evaluations and types of surveys are conducted for both sections simultaneously using the same methods, analysis, interpretations and improvement actions.
- Male and female students' representatives are involved in relevant committees.

Results and analysis of program KPIs are usually done for both sections and for combined one based on the availability of data with suggested section wise improvement when required

4. Assessment Plan for Program Learning Outcomes (PLOs),

	Assessment methods			
	Direct PLOs assessment	Indirect PLOs assessment		
PLOs	Selected courses (Mastered level)	Alumni	employers	Senior students (level 7 &8)
Data collections	Examination committee	Survey of alumni satisfaction	Survey of employer's satisfaction about graduate of program	Survey of student satisfaction
Data processing	Quality committee through the following tasks; Data presentation Discovering weaknesses Suggesting improvements Formulation of annual Program Report			





	(APR). Final improvement plans Broadcast of the action plans Follow up of Implementation Reporting of results in next APR
Time	End of academic year
Expected recommend action and Improvement plan	Curriculum; contents, teaching strategies, student assessment, courses sequencing or learning resources PLOs assessment methods; Further data. Data source, analysis PLOs constructions; Others; training, recruitment

5. Program Evaluation Matrix

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
Effectiveness of teaching	<ul style="list-style-type: none"> •Departmental plan and curriculum committee • Students • Graduates •Independent advisors 	Questionnaire Reports	End of academic year
Effectiveness of assessment	Departmental plan and curriculum committee • Independent advisors	Reports	End of academic year
Course contents	Departmental plan and curriculum committee • Independent advisors • Graduates	Reports Questionnaire	End of academic year
Learning resources	<ul style="list-style-type: none"> • Departmental plan and curriculum committee •Independent reviewers • Stakeholders 	Reports	End of academic year Beginning of semesters
leadership	Independent reviewers • Stakeholders	Reports	End of academic year

Evaluation Areas/Aspects (e.g., leadership, effectiveness of teaching & assessment, learning resources, services, partnerships, etc.)

Evaluation Sources (students, graduates, alumni, faculty, program leaders, administrative staff, employers, independent reviewers, and others.)

Evaluation Methods (e.g., Surveys, interviews, visits, etc.)

Evaluation Time (e.g., beginning of semesters, end of the academic year, etc.)

6. Program KPIs*

The period to achieve the target (-----) year(s).

No.	KPIs Code	KPIs	Targeted Level	Measurement Methods	Measurement Time
1	KPI-P-01	Percentage of achieved indicators of the program operational plan	4.5 out of 5 (90%)	Analysis	End Year
2	KPI-P-02	Students' Evaluation of	4.5 out of 5 (90%)	Survey analysis	End Year





No.	KPIs Code	KPIs	Targeted Level	Measurement Methods	Measurement Time
		quality of learning experience in the program.			
3	KPI-P-03	Students' evaluation of the quality of the courses.	4.5 out of 5 (90%)	Survey analysis	End Year
4	KPI-P-04	Completion rate.	4.5 out of 5 (90%)	Cohort analysis	End Year
5	KPI-P-05	First-year student's retention rate	5 out of 5 (100%)	Cohort analysis	End Year
6	KPI-P-06	Students' performance in the professional and/or national examinations	4.5 out of 5 (90%)	Exam results analysis	End Year
7	KPI-P-07	Graduates' employability and enrolment in postgraduate programs	4.5 out of 5 (90%)	Survey analysis	End Year
8	KPI-P-08	Average number of students in the class	4.5 out of 5 (90%)	Students in each teaching class	End Year
9	KPI-P-09	Employers' evaluation of the program graduates proficiency	4.5 out of 5 (90%)	Survey analysis	End Year
10	KPI-P-10	Students' satisfaction with the offered services	4.5 out of 5 (90%)	Survey analysis	End Year
11	KPI-P-11	Ratio of students to teaching staff	4 out of 5 (80%)	Prog. Staff and enrolled students	End Year
12	KPI-P-12	percentage of teaching staff distribution	4 out of 5 (80%)	Prog. Staff degree analysis	End Year
13	KPI-P-13	Proportion of teaching staff leaving the program	4 out of 5 (80%)	No. of leaving staff	End Year
14	KPI-P-14	Percentage of publications of faculty members	5 out of 5 (100%)	KKU publication data , Scopus	End Year



No.	KPIs Code	KPIs	Targeted Level	Measurement Methods	Measurement Time
15	KPI-P-15	Rate of published research per faculty member	4.5 out of 5 (90%)	Total publications relative to staff	End Year
16	KPI-P-16	Citations rate in refereed journals per faculty member	4 out of 5 (80%)	Scopus citations for prog. staff	End Year
17	KPI-P-17	Satisfaction of beneficiaries with the learning resources	4 out of 5 (80%)	Survey analysis	End Year

*including KPIs required by NCAAA

Additional KPIs

No.	KPIs Code	KPIs	Targeted Level	Measurement Methods	Measurement Time
1	KPI-P-11-1	Percentage of students participated in community activities per semester	61 %	number of students participated in community activities per semester	End Year
2	KPI-P-11-2	Number of faculty members participated in community service per year	10	number of faculty members participated in community service per year	End Year
3	KPI-P-11-3	Satisfaction rate of the community beneficiaries based on surveys	5 out of 5	surveys	End Year
4	KPI-P-11-4	Number of field Trips	2	number of field trips	End Year
5	KPI-P-11-5	Percent of student achievement in problem solving skill	65%	Students results	End Year
6	KPI-P-11-6	Percentage of student success in practical courses with at least C+	65%	Students results	End Year
7	KPI-P-11-7	Percentage of teaching staff	70	number of training course that	End Year





No.	KPIs Code	KPIs	Targeted Level	Measurement Methods	Measurement Time
		participating in training courses		participate by teaching staff	
8	KPI-P-11-8	Percentage of student success in Research project	100%	Students results	End Year
9	KPI-P-11-9	Student scores of case study	90%	Students results	End Year
10	KPI-P-11-10	Student scores of seminars and reports	100%	Students results	End Year

H. Specification Approval Data:

COUNCIL / COMMITTEE	Plan and curriculum committee Academic Development and Quality committee Department Council
REFERENCE NO.	21\1444
DATE	26-10-1444

