



هيئة تقويم التعليم

Education Evaluation Commission

المركز الوطني للتقويم والاعتماد الأكاديمي

National Center for Academic Accreditation and Evaluation

T4. PROGRAM SPECIFICATIONS

Chemistry Program Specification

Jazan University

College of Science

For guidance on the completion of this template, please refer to Chapter 2, of Part 2 of Handbook 2 Internal Quality Assurance Arrangement.

Program Specifications

Institution: *Jazan University* Date: 2018 (1439)

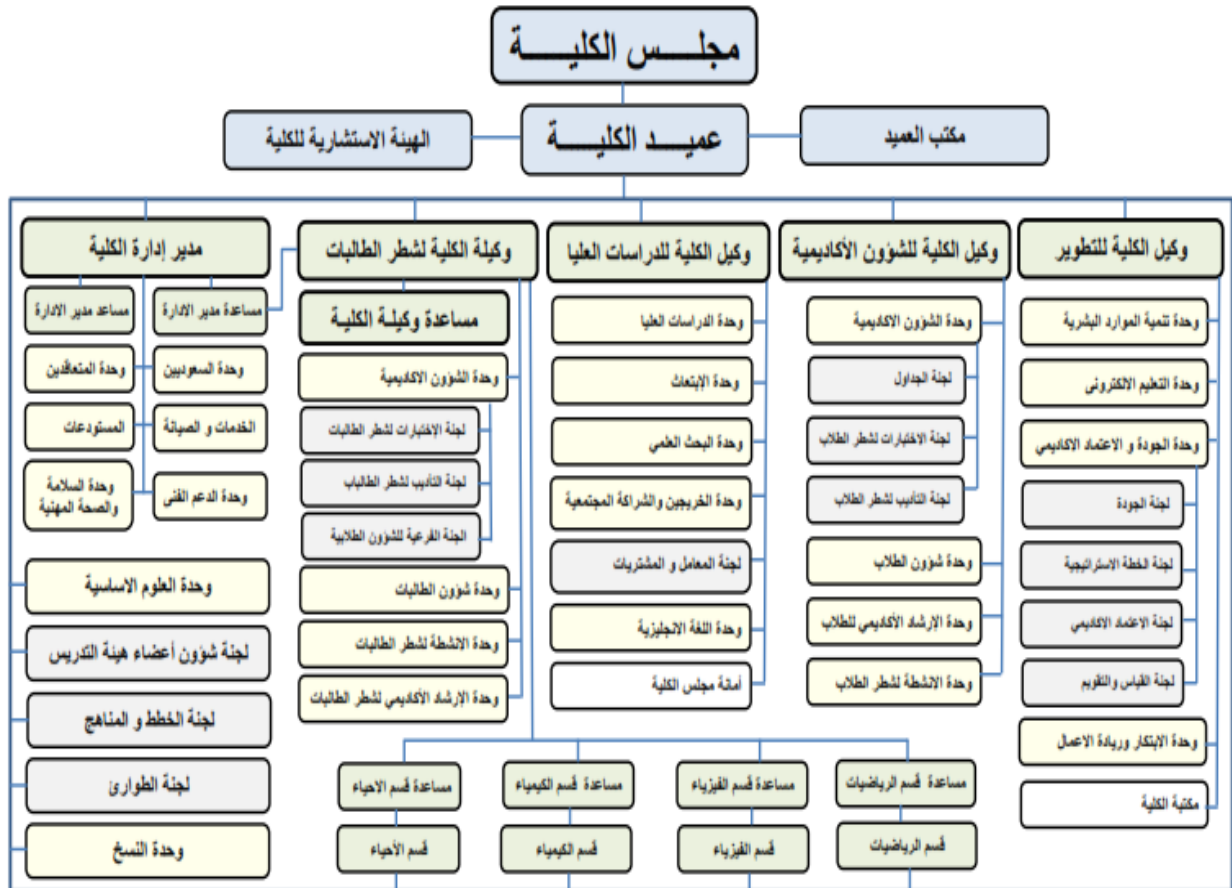
College/Department: *College of Science / Chemistry Department*

Dean/Department Head: Dean/ *Dr. Ghaleb Omar Souadi*

Department Head: *Dr. Ibrahim Radini*

Insert program and college administrative flowchart:

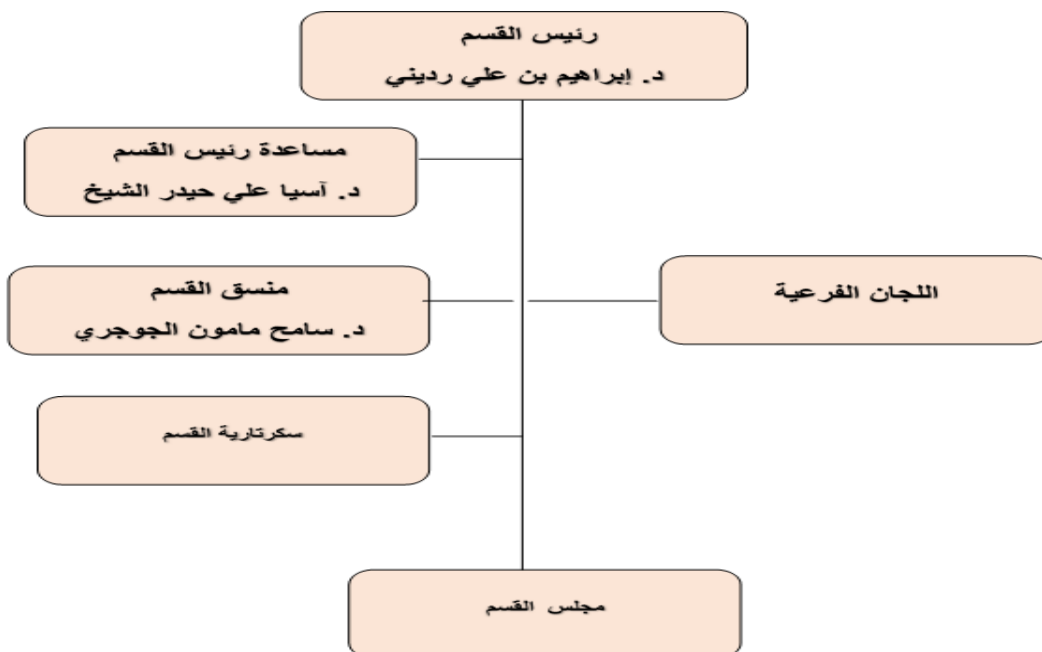
College flowchart: the chart is available in the college site, <http://colleges.jazanu.edu.sa/sci/Pages/Default.aspx>





Program flowchart :

<http://colleges.jazanu.edu.sa/sci/ChemistryDept/Pages/%D8%A7%D9%84%D9%87%D9%8A%D9%83%D9%84%D8%A7%D9%84%D8%AA%D9%86%D8%B8%D9%8A%D9%85%D9%8A.aspx>



List all branches offering this program:

Branch 1. (Main Campus)

A. Program Identification and General Information

1. Program title and code	Title: Chemistry	Code : CHEM
2. Total credit hours needed for completion of the program	130 Credit hours	
3. Award granted on completion of the program	Bachelor Degree in CHEMISTRY	(B.SC. Chemistry)
4. Major tracks/pathways or specializations within the program (eg. transportation or structural engineering within a civil engineering program or counseling or school psychology within a psychology program)	The program one track (Chemistry)	
5. Intermediate Exit Points and Awards (if any) (eg. associate degree within a bachelor degree program)	NON	

6. Professional occupations (licensed occupations, if any) for which graduates are prepared. (If there is an early exit point from the program (eg. diploma or associate degree) include professions or occupations at each exit point)

At the end of the program, students will be prepared for the following professions and occupations:

- Education sector (Ministry of Education)
- Laboratories (Research & Development laboratories).
- Industrial sector (pharmaceutical, food, mining, detergents and other chemical Industries)

7. (a) New Program

Planned starting date

(b) Continuing Program

Year of most recent major program review

2011 (1433H)

List recent major review or accreditation contracts.

Internal review via College QA Unit

8. Name of program chair or coordinator. If a program chair or coordinator has been appointed for the female section as well as the male section, include names of both.

- Dr. Sameh El-Gogary for both Boy and Girl sections (Main Campus)

9. Date of approval by the authorized body (MOE).

Campus Location	Approval By	Date
Main Campus: College of Science, Jazan University	Council of Higher Institutions قرار رقم 1426/37/13 في 1426/4/30 بجلسته 37 وتمت الموافقة الكريمة من خادم الحرمين الشريفين حفظه الله برقم 3869/م ب وتاريخ 1426/5	Date Program started 1429/1430H

B. Program Context

1. Explain why the program was established.
 - a. Summarize economic reasons, social or cultural reasons, technological developments, national policy developments or other reasons.

Social Reasons

 1. *Provide society with scientific expertise.*
 2. *Provide society with general skilled graduates to serve in occupations relevant to chemistry, petroleum, petrochemical, pharmaceutical, mining, food, detergents and other chemical industries.*
 3. *Improve local youth population chances for good job opportunity in chemistry related establishments.*

Economic Reasons

 1. *National policy to provide society with trained and skilled Saudi national manpower.*
 2. *Improve local population opportunity for quality high education*
 - b. Explain the relevance of the program to the mission and goals of the institution.
 1. *Provision of scientific knowledge in the field of Chemistry.*
 2. *Provision of highly trained and professionally excellent Saudi national man power.*
 3. *Encouraging scientific research and community service.*
 4. *Relating applied studies to chemical industries.*
 5. *Establishing scientific links with national and international scientific bodies and institutes.*

2. Relationship (if any) to other programs offered by the institution/college/department.

a. Does this program offer courses that students in other programs are required to take? Yes
No

Program offers

- 101 CHEM (Science truck), 108 PRE and 109 PRE (Health truck) for Preparatory college.
- 107 CHEM, 206 CHEM. and 106 CHEM "courses for College of Engineering.
- 203 CHEM. and 204 CHEM." courses for Biology Division College of Science.

If yes, what has been done to make sure those courses meet the needs of students in the other programs?

Program QA Committee is in continuous touch with Preparatory college, Biology Division College of Science and College of Engineering in terms of course specifications, course reports, Student questionnaires, assessment, feedback and improvement

b. Does the program require students to take courses taught by other departments? Yes
No

Chemistry Program is linked to Physics, and Mathematics Programs in the College of Science via courses from these programs taught for Chemistry Program Students.

If yes, what has been done to make sure those courses in other departments meet the needs of students in this program?

Program QA Committee is in continuous touch with these programs in terms of course specifications, course reports, and improvement.

3. Do students who are likely to be enrolled in the program have any special needs or characteristics? (eg. Part time evening students, physical and academic disabilities, limited IT or language skills).

Yes No

4. What modifications or services are you providing for special needs applicants?

(Not applicable)

C. Mission, Goals and Objectives

1. Program Mission Statement (insert).			
<p><i>Mission</i></p> <p>The department of Chemistry Faculty of Science at Jazan University seeks to develop highly qualified chemists and carry out outstanding scientific research that contributes effectively to the overall development of society by providing a quality educational and research environment that develops knowledge and skills and respects the ethics of education and scientific research</p>			
2. List Program Goals (eg. long term, broad based initiatives for the program, if any)			
<p><u>Program Goals are</u></p> <ul style="list-style-type: none"> To provide students with a broad foundation knowledge of the main areas of chemistry: organic, inorganic, analytical, and physical. Students should possess critical thinking and problem-solving abilities. To provide students with the skills required to perform and understand chemical research. To provide students with the skills required to describe, both in writing and orally, chemical processes and procedures. To provide students with the skills required to succeed in a chemical work or related field. 			
3. List major objectives of the program within to help achieve the mission. For each measurable objective describe the measurable performance indicators to be followed and list the major strategies taken to achieve the objectives.			
Goal	Measurable Objectives Our student will be	Measurable Performance Indicators	Major Strategies
1- To provide students with a broad foundation knowledge of the main areas of chemistry: organic, inorganic, analytical, and physical.	1. Provided with the basic knowledge in the field of Chemistry to successfully apply them in their chosen endeavor.	<ul style="list-style-type: none"> - Student : Faculty Ratio - Student : Class Ratio - Student : Lab Ratio - Student : Textbook Ratio - Student : Computer Ratio 	- Acquiring up-to-date equipments and teaching resources for student benefit.
2- Students should possess critical thinking and problem-solving abilities.	2 . provided with knowledge and skills essential to chemical processes, including design, analysis, synthesis, fabrication and experimental techniques.	<ul style="list-style-type: none"> - Faculty/Staff credentials - Faculty/Staff training - Number of training programs /conferences/ workshops per year 	<ul style="list-style-type: none"> - Attracting high quality Faculty and Staff. - Improving Faculty/Staff skills by continuous training and professional development.



3- To provide students with the skills required to perform and understand chemical research	3. Conduced Chemical studies on environmental and industrial fields in the Kingdom.	-List of highly sited journals approved by Program - Number of publications per year - Number of publications per Faculty	- Setting up Advanced research laboratories. - Adopting cutting-edge technology.
4- To provide students with the skills required to describe, both in writing and orally, chemical processes and procedures.	4. Encouraged applied research for national development plans.	- Number of applied publications / projects per year	Encouraging applied research work for the benefit of society.
5- To provide students with the skills required to succeed in a chemical work or related field.	5. Encouraging engagement with society and community service.	- Number of community services / consultancy / projects per year - Number of community establishments engaged with program	- Establishing links with local society to identify problems and offer solutions.

D. Program Structure and Organization

1. Program Description: List the core and elective program courses offered each semester from Prep Year to graduation using the below Curriculum Study Plan Table (A separate table is required for each branch IF a given branch offers a different study plan).

A program or department manual should be available for students or other stakeholders and a copy of the information relating to this program should be attached to the program specification. This information should include required and elective courses, credit hour requirements and department/college and institution requirements, and details of courses to be taken in each year or semester.



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Education Evaluation Commission

Curriculum Study Plan Table

Program Manual is available for students/stakeholders and a copy is attached with this form.

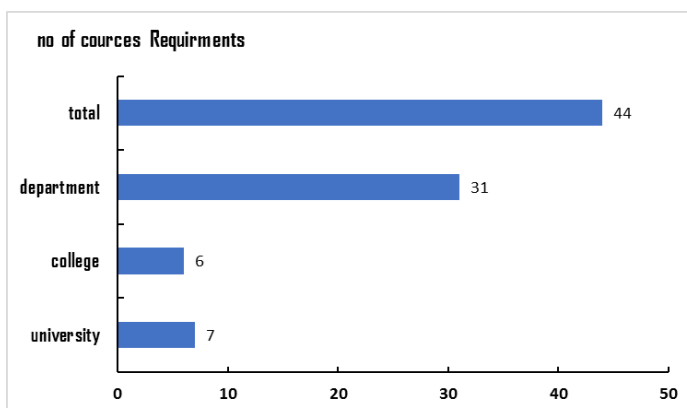
Curriculum Study Plan Table

Year	Course Code	Course Title	Required or Elective	Credit Hours			Pre-request Courses	University, College or Department
				L	P	T		
First year								
Level 1	101ISLM	Islamic Culture 1	R	2	0	2		Col. Humanities
	105ENGL	English Language	R	12	3	6		ELTC
	101BIO	General Biology	R	3	2	4		College of science
	101MATH	General Mathematics	R	3	0	3		College of science
	101COMP	Introduction Computer Sci.	R	2	2	3		Coll. Comp. & IT
level 2	102ISLM	Islamic Culture 2	R	2	0	2		Col. Humanities
	101ARAB	Linguistic Skills	R	2	0	2		Col. Humanities
	101PHYS	General Physics	R	3	2	4		College of science
	101CHEM	General Chemistry	R	3	2	4		College of science
	106ENGL	Scientific English	R	3	0	3	105ENGL	ELTC
Second year								
level 3	102ARAB	Arabic Editing	R	2	0	2		Col. Humanities
	103 ISLM	Islamic culture 3	R	2	0	2		Col. Humanities
	201MATH	Calculus	R	3	0	3		Mathematics
	231CHEM	Aliphatic organic Chemistry	R	2	2	3		Chemistry
	211CHEM	Volumetric Analytical Chemistry	R	2	2	3		Chemistry
	201CHEM	General and physical Chemistry	R	3	2	4	101CHEM	Chemistry
level 4	104ISLM	Islamic Culture 4	R	2	0	2		Col. Humanities
	202MATH	Differential Equations	R	3	0	3	201MATH	Mathematics
	212CHEM	Chemistry of Gravimetric Analysis	R	2	2	3		Chemistry
	221CHEM	Chemistry of Main Groups	R	3	2	4		Chemistry
	232CHEM	Aromatic Organic Chemistry	R	2	2	3	231CHEM	Chemistry
	241CHEM	Thermodynamics	R	2	2	3		Chemistry

Third year								
level 5	313CHEM	Chromatographic Analysis	R	2	2	3		Chemistry
	322CHEM	Chemistry of Transition Elements	R	3	2	4	221CHEM	Chemistry
	333CHEM	Heterocyclic Organic Chemistry	R	2	2	3		Chemistry
	342CHEM	Kinetic Chemistry	R	2	2	3		Chemistry
	343CHEM	Surface Chemistry & Catalysis	R	3	0	3		Chemistry
level 6	314CHEM	Electrochemical analysis methods	R	2	2	3		Chemistry
	323CHEM	Co-ordination Chemistry	R	2	2	3	322CHEM	Chemistry
	334CHEM	Spectroscopy of Organic Compounds	R	2	0	2		Chemistry
	335CHEM	Organic Reaction Mechanisms	R	2	2	3		Chemistry
	344CHEM	Electrochemistry	R	2	2	3		Chemistry
Fourth year								
level 7	436CHEM	Chemistry of Natural Products	R	2	2	3		Chemistry
	437CHEM	Stereochemistry	R	2	0	2		Chemistry
	445CHEM	Solution Chemistry	R	2	2	3		Chemistry
	446CHEM	Polymer Chemistry	R	2	0	2		Chemistry
	447CHEM	Quantum Chemistry	R	3	0	3	202MATH	Chemistry
	491CHEM	Graduation Project	R	1	2	2	Dep. Approval	Chemistry
level 8	415CHEM	Methods of Instrumental analysis	R			4	314CHEM	Chemistry
	424CHEM	Lanthanides & Actinides	R			3	323CHEM	Chemistry
	425CHEM	Group Theory	R			2		Chemistry
	438CHEM	Organic applied chemistry	R			3		Chemistry
	439CHEM	Principles of Biochemistry	R			3		Chemistry
	448CHEM	Photochemistry	R			2		Chemistry

The student must achieve (130) credit units as illustrated in the following table of the study plan:

requirements	no of courses	credit h
university	7	15
college	6	24
department	31	91
total	44	130



University Requirements

<i>Course Code</i>	<i>Course Title</i>	<i>Credit</i>	<i>Contact Hours</i>		<i>Pre-requisite</i>
		<i>Hours</i>	<i>Lec.</i>	<i>Prac.</i>	
101 ARAB	Arab Language skills	2	2	--	--
102 ARAB	Arabic Writing	2	2	--	--
101 ISLM	Islamic culture 1	2	2	--	--
102 ISLM	Islamic culture 2	2	2	--	--
103 ISLM	Islamic culture 3	2	2	--	--
104 ISLM	Islamic culture 4	2	2	--	--
101COMP	Introduction to Computer	3	2	2	--
<i>Total</i>		15	14	2	

College Requirements:

<i>Course Code</i>	<i>Course Title</i>	<i>Credit</i>	<i>Contact Hours</i>		<i>Pre-requisite</i>
		<i>Hours</i>	<i>Lec.</i>	<i>Prac.</i>	
101 MATH	General Mathematics	3	3	--	--
101BIO	General Biology	4	3	2	--
101 CHEM	General Chemistry	4	3	2	--
101PHYS	General Physics	4	3	2	--
105 ENGL	English Language	6	12	3	--
106 ENGL	Scientific English Language	3	3	--	--
<i>Total</i>		24	27	9	

Department Requirements

Course Code	Course Title	Credit Hours	Contact Hours		Pre-requisite
			Lec.	Prac.	
201 CHEM	General and Physical Chemistry	4	3	2	--
211 CHEM	Volumetric Analytical Chemistry	3	2	2	--
212 CHEM	Chemistry of Gravimetric Analysis	3	2	2	--
313 CHEM	Chromatographic Analysis	3	2	2	--
314 CHEM	Electrochemical analysis methods	3	2	2	--
415 CHEM	Methods of Instrumental analysis	4	3	2	Chem 314
221 CHEM	Chemistry of Main Groups	4	3	2	--
322 CHEM	Chemistry of Transition Elements	4	3	2	Chem 221
323 CHEM	Co-ordination Chemistry	3	2	2	Chem 322
424 CHEM	Lanthanides & Actinides	3	2	2	Chem 323
425 CHEM	Group Theory	2	2	--	--
231 CHEM	Aliphatic organic Chemistry	3	2	2	--
232 CHEM	Aromatic Organic Chemistry	3	2	2	Chem 231
333 CHEM	Heterocyclic Organic Chemistry	3	2	2	--
334 CHEM	Spectroscopy of Organic Compounds	2	2	--	--
335 CHEM	Organic Reaction Mechanisms	3	2	2	--
436 CHEM	Chemistry of Natural Products	3	2	2	--
437 CHEM	Stereochemistry	2	2	--	--
438 CHEM	Organic applied chemistry	3	2	2	
439 CHEM	Principles of Biochemistry	3	2	2	--
241 CHEM	Thermodynamics	3	2	2	--
342 CHEM	Kinetic Chemistry	3	2	2	--
343 CHEM	Surface Chemistry & Catalysis	3	3	--	--
344 CHEM	Electrochemistry	3	2	2	--
445 CHEM	Solution Chemistry	3	2	2	--
446 CHEM	Polymer Chemistry	2	2	--	--
447 CHEM	Quantum Chemistry	3	3	--	Math 202
448 CHEM	Photochemistry	2	2	--	--
491 CHEM	Graduation Project	2	1	2	Department Approval
201MATH	Calculus	3	3	--	--
202 MATH	Differential Equations	3	3	--	Math 201
Total		91	69	44	X

2. Required Field Experience Component (if any) (e.g. internship, cooperative program, work experience)

Summary of practical, clinical or internship component required in the program. Note: see Field Experience Specification	<i>Not applicable.</i>
a. Brief description of field experience activity	<i>Not applicable.</i>
b. At what stage or stages in the program does the field experience occur? (e.g. year, semester)	<i>Not applicable.</i>
c. Time allocation and scheduling arrangement. (e.g. 3 days per week for 4 weeks, full time for one semester)	<i>Not applicable.</i>
d. Number of credit hours (if any)	<i>Not applicable.</i>

3. Project or Research Requirements (if any)

Summary of any project or thesis requirement in the program. (Other than projects or assignments within individual courses) (A copy of the requirements for the project should be attached.)	
a. Brief description	<ul style="list-style-type: none"> ▪ <i>Course Name: Graduation Project</i> ▪ <i>Code: 491CHEM</i> ▪ <i>Credit Hours : 2 (1T + 2P)</i> ▪ <i>Year /Level : (Year 4/ Level 7)</i> ▪ <i>Prerequisite: Department approval</i> ▪ <i>Course Objectives: Training to conduct literature search, experimental design, lab work.</i> ▪ <i>Course Contents: Determined by Faculty supervising the project.</i> ▪ <i>Practical: Field/Laboratory experimental design and work.</i> ▪ <i>Assessment: Exams: Oral exam, Viva interview</i> • <i>Practical: Depends on topic of research project</i> • <i>Evaluation: Supervisor evaluation 50% and Final (Thesis/Viva) 50%</i> ▪ <i>Teaching Methods: Lectures, Practical, field trips, multimedia, web-based learning</i>
b. List the major intended learning outcomes of the project or research task.	<p><i>On satisfying the requirements of this course, students will have the knowledge and skills to</i></p> <ul style="list-style-type: none"> ▪ <i>Engage in systematic discovery and critical review of appropriate and relevant information sources about certain topic</i> ▪ <i>Demonstrate relevant theory and concepts, relate the chosen topic to appropriate methodologies and evidence, and draw appropriate conclusions</i> ▪ <i>Develop some understanding of the professional and safety responsibilities residing in working with chemical systems</i> ▪ <i>work independently and in as a member of team work</i> ▪ <i>Communicate research concepts and contexts clearly and effectively both in writing and orally</i>
c. At what stage or stages in the program is the project or research undertaken? (eg. level)	<i>Year 4 / Level 7</i>
d. Number of credit hours (if any)	<i>2H (1T+2P)</i>

<p>e. Description of academic advising and support mechanisms provided for students to complete the project.</p> <p><i>Faculty supervising graduation project helps student(s) design and execute project and fulfill its field activities (if applicable). Faculty is also responsible for overlooking and steering research in project. Students work directly under supervision of faculty member, individually or within a group.</i></p>
<p>f. Description of assessment procedures (including mechanism for verification of standards)</p> <ul style="list-style-type: none"> ▪ <i>Midterm assessment of student achievement by supervising Faculty.</i> ▪ <i>End of term assessment of project by supervising Faculty.</i> ▪ <i>End of term assessment of project by viva conducted by selected senior faculty in Program.</i> ▪ <i>Verification of standard by benchmarking course design with similar institutions</i>

4. Learning Outcomes in Domains of Learning, Assessment Methods and Teaching Strategy

Program Learning Outcomes, Assessment Methods, and Teaching Strategy work together and are aligned. They are joined together as one, coherent, unity that collectively articulate a consistent agreement between student learning and teaching.

The *National Qualification Framework* (NQF) provides five learning domains. Learning outcomes are required in the first four domains and some programs may also require the Psychomotor Domain.

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable learning outcomes required in each of the learning domains. **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each program learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process.

	<i>NQF Learning Domains and Program Learning Outcomes</i>	<i>Teaching Strategies</i>	<i>Assessment Methods</i>	<i>How to assess</i>
1.0	Knowledge By the end of the Program the students will be able to:			
1.1	demonstrate a broad, knowledge in the chemical sciences including general chemistry, organic chemistry, analytical chemistry, biochemistry, inorganic chemistry and physical chemistry	Lecture Open discussion in class Open discussion in Lab Lab work Web-based work	Objective Test items that require students to recall or recognize information: MCQ Short answer Q Oral exam Fill-in the Blank Labeling diagrams	<ul style="list-style-type: none"> • Accuracy – correct vs number of errors • Item Analysis (at the class level, are there items that had higher error rates?) • Did some items result in the same errors?)
1.2	Describe the essential facts, principles and theories across the principal areas of chemistry, i.e. general chemistry, organic chemistry, analytical chemistry, biochemistry, inorganic chemistry and physical chemistry.	Lecture Open discussion in class Open discussion in Lab. Lab work Web-based work	Short answer Q Oral exam	<ul style="list-style-type: none"> • Accuracy – correct vs number of errors • Item Analysis (at the class level, are there items that had higher error rates?) • Did some items result in the same errors?)

	<i>NQF Learning Domains and Program Learning Outcomes</i>	<i>Teaching Strategies</i>	<i>Assessment Methods</i>	<i>How to assess</i>
2.0	Cognitive Skills By the end of the Program the students will be able to:			
2.1	Demonstrate the knowledge and skills required to solve problems in the synthesis, measurement, and modeling of chemical systems.	Lectures, Lab work web-based work Graduation Project	Papers , oral/written exam questions, problems, class discussions, concept maps, homework assignments that require (oral or written). Practical exam, Summarizing readings, films, speeches, etc. <ul style="list-style-type: none"> • Comparing and/or contrasting two or more theories, events, processes, etc. • Classifying or categorizing cases, elements, events, etc., using established criteria • Paraphrasing documents or speeches • Finding or identifying examples or illustrations of a concept, principle 	Scoring or performance rubrics that identify critical components of the work and discriminates between differing levels of proficiency in addressing the components
2.2	design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.	Lectures, Lab work web-based work Graduation Project	Practical exam Report rubric Graduation Viva Presentation	Scoring or performance rubrics that identify critical components of the work and discriminates between differing levels of proficiency in addressing the components

	<i>NQF Learning Domains and Program Learning Outcomes</i>	<i>Teaching Strategies</i>	<i>Assessment Methods</i>	<i>How to assess</i>
3.0	Interpersonal Skills & Responsibility By the end of the Program the students will be able to:			
3.1	know and follow proper procedures and regulations for safe handling, use, and disposal of chemicals	Group work Lab work	<ul style="list-style-type: none"> • MCQ in safety • Oral exam 	<ul style="list-style-type: none"> • Accuracy – correct vs number of errors • Item Analysis (at the class level, are there items that had higher error rates?) • Did some items result in the same errors?)
3.2	demonstrate proficiency in writing and speaking about chemistry topics in a clear and concise manner to both chemists and non-chemists according to professional standards.	Group work Lab work	Presentation/Report rubric Assessment research	Scoring or performance rubrics that identify critical components of the work and discriminates between differing levels of proficiency in addressing the components

	<i>NQF Learning Domains and Program Learning Outcomes</i>	<i>Teaching Strategies</i>	<i>Assessment Methods</i>	<i>How to assess</i>
4.0	Communication, Information Technology, Numerical By the end of the Program the students will be able to:			
4.1	clearly communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.	Group work Lab work	Assignment assessment	Scoring or performance rubrics that identify critical components of the work and discriminates between differing levels of proficiency in addressing the components
4.2	demonstrate effectively in collaborative environments work on a larger project within professional ethical standards.	PPT Presentations Group discussion	Presentation Rubric Communication Rubric	Scoring or performance rubrics that identify critical components of the work and discriminates between differing levels of proficiency in addressing the components
4.3	demonstrate the utilization of their lab equipments to conduct highly professional research works in different fields of chemistry	Lab Work Research Project	Graduation Viva Presentation/Report rubric	Scoring or performance rubrics that identify critical components of the work and discriminates between differing levels of proficiency in addressing the components

Program Learning Outcomes Mapping Matrix

Identify on the table below the courses that are required to achieve the program learning outcomes. Insert the program learning outcomes, according to the level of instruction, from the above table below and indicate the courses and levels that are required to teach each one; use your program's course numbers across the top and the following level scale.

		Level		Level 1					Level 2						
		Course Code		101ISLM	105ENGL	101BIO	101MATH	101COMP	102ISLM	101ARAB	101PHYS	101CHEM	106ENGL		
Program ILO															
1. Knowledge: By the end of the Program the students will be able to:	1.1	demonstrate a broad, knowledge in the chemical sciences including general chemistry, organic chemistry, analytical chemistry, biochemistry, inorganic chemistry and physical chemistry.												I	
	1.2	Describe the essential facts, principles and theories across the principal areas of chemistry, i.e. general chemistry, organic chemistry, analytical chemistry, biochemistry, inorganic chemistry and physical chemistry.												I	
2. Cognitive Skills : By the end of the Program the students will be able to:	2.1	Demonstrate the knowledge and skills required to solve problems in the synthesis, measurement, and modeling of chemical systems.												I	
	2.2	design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.												I	
3. Interpersonal Skills & Responsibility: By the end of the Program the students will be able to:	3.1	know and follow proper procedures and regulations for safe handling, use, and disposal of chemicals												I	
	3.2	demonstrate proficiency in writing and speaking about chemistry topics in a clear and concise manner to both chemists and non-chemists according to professional standards.													
4. Communication, Information Technology, Numerical: By the end of the Program the students will be able to:	4.1	clearly communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.													
	4.2	demonstrate effectively in collaborative environments work on a larger project within professional ethical standards.													
	4.3	demonstrate the utilization of their lab equipments to conduct highly professional research works in different fields of chemistry													

Level		Level 3						Level 4				
		102ARAB	103 ISLM	201MATH	231CHEM	211CHEM	201CHEM	104ISLM	202MATH	212CHEM	221CHEM	232CHEM
Course Code												
Program ILO												
1. Knowledge: By the end of the Program the students will be able to:	1.1	demonstrate a broad knowledge in the chemical sciences including general chemistry, organic chemistry, analytical chemistry, biochemistry, inorganic chemistry and physical chemistry.										
	1.2	Describe the essential facts, principles and theories across the principal areas of chemistry, i.e. general chemistry, organic chemistry, analytical chemistry, biochemistry, inorganic chemistry and physical chemistry.										
2. Cognitive Skills : By the end of the Program the students will be able to:	2.1	Demonstrate the knowledge and skills required to solve problems in the synthesis, measurement, and modeling of chemical systems.										
	2.2	design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.										
3. Interpersonal Skills & Responsibility: By the end of the Program the students will be able to:	3.1	know and follow proper procedures and regulations for safe handling, use, and disposal of chemicals										
	3.2	demonstrate proficiency in writing and speaking about chemistry topics in a clear and concise manner to both chemists and non-chemists according to professional standards.										
4. Communication, Information Technology, Numerical: By the end of the Program the students will be able to:	4.1	clearly communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.										
	4.2	demonstrate effectively in collaborative environments work on a larger project within professional ethical standards.										
	4.3	demonstrate the utilization of their lab equipments to conduct highly professional research works in different fields of chemistry										



		Level	Level 5					level 6				
		Course Code	313CHEM	322CHEM	333CHEM	342CHEM	343CHEM	314CHEM	323CHEM	334CHEM	335CHEM	344CHEM
		Program ILO										
1. Knowledge: By the end of the Program the students will be able to:	1.1	demonstrate a broad, knowledge in the chemical sciences including general chemistry, organic chemistry, analytical chemistry, biochemistry, inorganic chemistry and physical chemistry.	P	P	P	P	P	P	P	P	P	P
	1.2	Describe the essential facts, principles and theories across the principal areas of chemistry, i.e. general chemistry, organic chemistry, analytical chemistry, biochemistry, inorganic chemistry and physical chemistry.	P	P	P	P	P	P	P	P	P	P
2. Cognitive Skills : By the end of the Program the students will be able to:	2.1	Demonstrate the knowledge and skills required to solve problems in the synthesis, measurement, and modeling of chemical systems.	P	P	P	P	P	P	P	P	P	P
	2.2	design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.	P	P	I	P		P	P		P	P
3. Interpersonal Skills & Responsibility: By the end of the Program the students will be able to:	3.1	know and follow proper procedures and regulations for safe handling, use, and disposal of chemicals	I	I	I	I		P	P		P	P
	3.2	demonstrate proficiency in writing and speaking about chemistry topics in a clear and concise manner to both chemists and non-chemists according to professional standards.	I	I	I	I	I	P	P	P	P	P
4. Communication, Information Technology, Numerical: By the end of the Program the students will be able to:	4.1	clearly communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.	I	I	I	I	I	P	P	P	P	P
	4.2	demonstrate effectively in collaborative environments work on a larger project within professional ethical standards.										
	4.3	demonstrate the utilization of their lab equipments to conduct highly professional research works in different fields of chemistry										



Level		level 7						level 8						
Course Code		436CHEM	437CHEM	445CHEM	446CHEM	447CHEM	491CHEM	415CHEM	424CHEM	425CHEM	438CHEM	439CHEM	448CHEM	
Program ILO														
1. Knowledge: By the end of the Program the students will be able to:	1.1	demonstrate a broad, knowledge in the chemical sciences including general chemistry, organic chemistry, analytical chemistry, biochemistry, inorganic chemistry and physical chemistry.	A	A	A	A	A	A	A	A*	A	A	A	A
	1.2	Describe the essential facts, principles and theories across the principal areas of chemistry, i.e. general chemistry, organic chemistry, analytical chemistry, biochemistry, inorganic chemistry and physical chemistry.	A	A	A	A	A	A	A	A	A*	A	A	A
2. Cognitive Skills : By the end of the Program the students will be able to:	2.1	Demonstrate the knowledge and skills required to solve problems in the synthesis, measurement, and modeling of chemical systems.	A	A	A	A	A	A	A	A	A	A	A	A*
	2.2	design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.	A		P			A	A	P		A*	A	
3. Interpersonal Skills & Responsibility: By the end of the Program the students will be able to:	3.1	know and follow proper procedures and regulations for safe handling, use, and disposal of chemicals	P		P			P	P	P		A	A*	
	3.2	demonstrate proficiency in writing and speaking about chemistry topics in a clear and concise manner to both chemists and non-chemists according to professional standards.	P	P	P	P	P	A*	PA	A	A	A	A	A
4. Communication, Information Technology, Numerical: By the end of the Program the students will be able to:	4.1	clearly communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.	A	A	P	A	A	A*	P	A	A	A	A	A
	4.2	demonstrate effectively in collaborative environments work on a larger project within professional ethical standards.	P	I	P	I	I	A*	P	A	P	A	A	P
	4.3	demonstrate the utilization of their lab equipments to conduct highly professional research works in different fields of chemistry	P		P			A*	P	A		A	A	

Note:

Please also refer to attached study conducted by College QA Unit

Levels: **I** = Introduction **P** = Proficient **A** = Advanced **A*** = measure of LO

5. Admission Requirements for the program

Attach handbook or bulletin description of admission requirements including any course or experience prerequisites.
Secondary School Certificate

6. Attendance and Completion Requirements

Attach handbook or bulletin description of requirements for:

- Attendance.
- Progression from year to year.
- Program completion or graduation requirements.

E. Regulations for Student Assessment and Verification of Standards

What processes will be used for verifying standards of achievement (eg., verify grading samples of tests or assignments? *Independent assessment by faculty from another institution*) (Processes may vary for different courses or domains of learning.)

- At the beginning of the course, the instructor will detail the methods used to evaluate student progress and the criteria for assigning a course grade. The methods may include one or more of the following tools: examinations, quizzes, homework assignments, laboratory write-ups, research papers, small group problem solving of questions arising from application of course concepts and concerns to actual experience, oral presentations, or maintenance of a personal lab manual.....
- Grades and competency will be determined according to student ability to demonstrate knowledge of specific chemistry topics and complete work by assigned deadlines; participate and complete reports of assigned laboratory experiments; and an evaluation of the skills will be done by feedback, focus group and survey
- The verification of the results will be achieved by checked the grade, exam and test results by another instructor and head of department. And the QA committee compare the results with other courses in the same levels to obtain the courses with grade shifts

F Student Administration and Support

1. Student Academic Counseling

Describe arrangements for academic counseling and advising for students, including both scheduling of faculty office hours and advising on program planning, subject selection and career planning (which might be available at college level).

Student Academic Counselling Committee is in charge of student counselling.

Each Faculty is assigned a group of students for counselling.

Faculty will be available for student counselling at specific office hours during on daily basis.

Faculty should make a file for each student in his counselling group where student contact information, a copy of student timetable, a copy of student academic record are kept and updated every semester.

2. Student Appeals

Attach regulations for student appeals on academic matters, including processes for consideration of those appeals.

G. Learning Resources, Facilities and Equipment

1a. What processes are followed by faculty and teaching staff for planning and acquisition of textbooks, reference and other resource material including electronic and web-based resources?



- *A copy of learning resources for each course is kept in the relevant Course File in the Program QA Unit.*
- *A list of learning resources is kept in the Program QA Unit.*
- *The list of learning resources is annually updated by teaching Faculty and gets approval by Program Board.*
- *The updated list of learning resources is then raised to College of Science Deanship and hence to Deanship for Library Affairs.*

1b. What processes are followed by faculty and teaching staff for planning and acquisition resources for library, laboratories, and classrooms.

Selected teaching Faculty members are selected every year to attend the Jazan University Book fair to recommend acquisition of new titles

2. What processes are followed by faculty and teaching staff for evaluating the adequacy of textbooks, reference and other resource provisions?

- Selected senior faculty are in charge of annual evaluation of the adequacy of learning resources.

3. What processes are followed by students for evaluating the adequacy of textbooks, reference and other resource provisions?

- Student assessment of quality of library services carried out by College QA Unit.

4. What processes are followed for textbook acquisition and approval?

- *The list of learning resources is annually updated by teaching Faculty and gets approval by Program Board.*
- *The updated list of learning resources is then raised to College of Science Deanship and hence to Deanship for Library Affairs.*
- *Copies (some copies) of the new titles are then transferred from Central University Library to College Library to facilitate student use of learning resources.*

H. Faculty and other Teaching Staff

1. Appointments

Summarize the process of employment of new faculty and teaching staff to ensure that they are appropriately qualified and experienced for their teaching responsibilities.

- Faculty/Staff applying for teaching submit application(s), curriculum vitae, certificate of previous experience, and a comprehensive list of publications as well as other achievements (Scientific Missions, Scientific Projects, Books, Awards, etc.)
- Applications are examined by Department Recruiting Committee chaired by Head of Department.
- Promising applicants are interviewed by a College Recruiting Committee Chaired by the Dean.
- Appointed new Faculty/Staff go through University procedures of employment.
- Appointed new Faculty/Staff are welcomed at Faculty and Department level in a social annual meeting.
- Appointed new Faculty/Staff undertake an Orientation Week (Lectures/Workshops) organized by the College QA Unit.

2. Participation in Program Planning, Monitoring and Review

a. Explain the process for consultation with and involvement of teaching staff in monitoring program quality, annual review and planning for improvement.

- Faculty are required to present Course Reports (NCAAA Form) each semester to be kept in Course File.
- Faculty take part in monitoring of performance by performing Student Assessment of quality of Teaching (NCAAA Form) each semester and present the Program QA Unit with analysis of results to be kept in Course File.
- Faculty are expected to take part in various Program Steering Committees for planning consultation.

b. Explain the process of the Advisory Committee (if applicable)

- Faculty members are selected on merit to join Program Advisory Committee for preparation of Annual Program Report and review of Program Specifications.
- Program Advisory Committee work in cooperation with Program QA Unit for evaluation of analysis of student/Faculty/ stakeholders questionnaires, summary of results, student appeals, updating learning resources, and review of execution of previous academic year action plan.

3. Professional Development

What arrangements are made for professional development of faculty and teaching staff for:

a. Improvement of skills in teaching and student assessment?

- Program QA Committee is linked to Deanship for Academic Development and is actively involved in its training programs.
- Faculty/Staff are required to annually attend/present proof of attendance of College QA Unit activities (Seminars/Workshops).
- Faculty/Staff are required to annually attend/present proof of attendance of Deanship of Academic Development activities (Seminars/Workshops).
- Faculty/Staff are required to attend/present proof of attendance of Annual Quality Forum organized by the Vice President for Quality and Academic Development Office.
- Faculty/Staff are required to attend/present proof of attendance (when available) NCAAA QA activities.

b. Other professional development including knowledge of research?

Faculty/Staff are encouraged/acknowledged/rewarded for attending/presenting proof of attendance of Conferences/Seminars/Symposia/Workshops in their particular specialties.

4. Preparation of New Faculty and Teaching Staff

Describe the process used for orientation and induction of new, visiting or part time teaching staff to ensure full understanding of the program and the role of the course(s) they teach as components within it.

College QA Unit Orientation Week

- New Faculty/Staff are welcomed at Faculty and Department level in a social annual meeting.
- New Faculty/Staff undertake an Orientation Week (Lectures/Workshops) organized by the College QA Unit.

5. Part Time and Visiting Faculty and Teaching Staff

Provide a summary of Program/Department/ College/institution policy on appointment of part time and visiting teaching staff. (i.e. Approvals required, selection process, proportion of total teaching staff etc.)

Not Applicable (No recruitment of part time faculty/Staff)

I. Program Evaluation and Improvement Processes

1. Effectiveness of Teaching

a. What QA procedures for developing and accessing learning outcomes?

The QA committee will improve the assessment tools to be sure that each learning outcome was achieved to the desired level.

The tools used will be direct and indirect methods of measurements;

Direct measures:

A set of common rubrics will be used for both grading and assessment at the program level. In some cases, student overall grades in courses may be used through impeded questions in Quiz, Midterm exam or Final Exam,. . The intent by using rubrics to help students understand departmental expectation, to gauge student progress over time, and to provide a basis for faculty discussions concerning possible areas for program improvement. In most cases these rubric lines will be incorporated into a course specific rubric that contains additional elements specific to the course learning outcomes and expectations. The student grades is used in knowledge domains.

A1. **Laboratory Report Rubric** – This rubric will be used to assess full laboratory reports for the quality of writing (section 1) and experimental design and data analysis (section 2). When used for program assessment, a minimum of 15% of the class or four students (whichever is less) are scored by two or more faculty members to ensure consistent application of the rubric. Each student passing the course is expected to earn an average of 1.5 of 3 with no more than one poor (0) score.

A2. **Laboratory Notebook Rubric** – This rubric will be used by instructors to provide feedback to students and assess the quality of the students' laboratory notebooks and record keeping. It may be applied to individual laboratories or to the notebook as a whole. When used for program assessment, a minimum of 15% of the class or four students (whichever is less) are scored by two or more faculty members to ensure consistent application of the rubric. Each student passing the course is expected to earn an average of 1.5 of 3 with no more than one poor (0) score.

A3. **Instructor Evaluation Rubric** – This rubric will be applied primarily in laboratory courses as a Check on the quality and ethics of student laboratory work along with their ability to function in teamwork and collaborative assignments. When used for program assessment, a minimum of 15% of the class or four students (whichever is less) are scored by two or more faculty members to ensure consistent application of the rubric. Each student passing the course is expected to earn an average of 1.5 of 3 with no more than one poor (0) score.

A4. **Literature Search Rubric** – This rubric outline expectation for a literature search and review that may be completed as an independent assignment or as part of larger written reports or oral presentations. When used for program assessment, a minimum of 15% of the class or four assignments (whichever is less) are scored by two or more faculty members to ensure consistent application of the rubric. Each student passing the course is expected to earn an average score of 1.5 of 3 with no more than one poor (0) score.

A5. **Undergraduate Student Presentation Rubric** – This rubric will be used to provide feedback on oral and poster presentations. When used for program assessment, a minimum of 15% of the class or four students (whichever is less) are scored by two or more faculty members to ensure consistent application of the rubric. Each student passing the course is expected to earn an average score of 1.5 of 3 with no more than one poor (0) score.

Indirect Measures

B1. On a periodic basis the department will solicit feedback on graduate skills from **alumni** and their **employers** using either **surveys or focus groups**. These mechanisms may allow the department to reevaluate the target student outcomes to match changing needs in the Chemistry community. The department expects that all numerical responses on this survey will be a 3 or higher and that written responses will be generally positive, yet constructive in improving department programs.

B2. The department will ask for feedback from **graduating students** using **surveys or focus groups** to evaluate their perception of whether the degree has adequately prepared them for their chosen career. This may include job placement and graduate/professional school admission rates. The department expects that all numerical responses on this survey will be a 3 or higher and that written responses will be generally positive, yet constructive in improving department programs.

B3. The department will periodically hold a **focus group with existing Chemistry majors and Chemistry club members**. This will provide an opportunity to identify emerging problems quickly before they show up in tracked data. The department expects that student responses will be generally positive, yet constructive in improving department programs.

B4. The department will periodically collect **feedback** from **faculty** and **instructors** on their perceptions of student strengths and weaknesses.

Program Student Learning Outcomes X Assessment Methods Matrix

This table provides information regarding how the outlined student learning outcomes will be assessed. Methods that provide direct (D) or indirect (I) evidence are indicated.

program Student Learning Outcomes	Student grades	A1. Laboratory Report Rubric	A2. Laboratory Notebook Rubric	A3. Instructor Evaluation Rubric	A4. Literature Search Rubric	A5. Undergraduate Student Presentation Rubric	B1. alumni and employers [surveys or focus groups]	B2. graduating students [surveys or focus groups]	B3. Current Student [surveys or focus groups]	B4. faculty and instructors Feedback
PSLO .1.1	✓ D						✓ I	✓ I	✓ I	✓ I
PSLO 1.2	✓ D						✓ I	✓ I	✓ I	✓ I
PSLO 2.1	✓ D				✓ D	✓ D	✓ I	✓ I	✓ I	✓ I
PSLO 2.2	✓ D				✓ D	✓ D	✓ I	✓ I	✓ I	✓ I
PSLO 3.1		✓ D					✓ I	✓ I	✓ I	✓ I
PSLO 3.2		✓ D					✓ I	✓ I	✓ I	✓ I
PSLO 4.1			✓ D				✓ I	✓ I	✓ I	✓ I
PSLO 4.2				✓ D			✓ I	✓ I	✓ I	✓ I
PSLO 4.3						✓ D	✓ I	✓ I	✓ I	✓ I

- Feedback from Student Assessment of Quality of Teaching and Student Assessment of Quality of Program questionnaires is used to evaluate and improve quality of teaching/teaching strategies/learning resources/Faculty performance/student affairs/student services.



<ul style="list-style-type: none">▪ Results of cross check marking process are used to evaluate quality of assessment of learning achievement.▪ Feedback from Faculty Assessment of Quality Program questionnaires is used to evaluate and improve quality of teaching/teaching strategies/learning resources/student affairs/student services.▪ Feedback from Program Student Counselling Committee Report(s) is used to evaluate and improve quality of teaching/teaching strategies/learning resources/Faculty performance/student affairs/student services.
b. What processes are used for evaluating the skills of faculty and teaching staff in using the planned strategies? <ul style="list-style-type: none">▪ Annual assessment by Program QA Committee of Faculty/Staff performance is performed using feedback from student questionnaires.▪ Annual assessment by Program QA Committee of Faculty/Staff record of attendance of QA training is performed using Faculty/Staff annually updated list of QA activities.

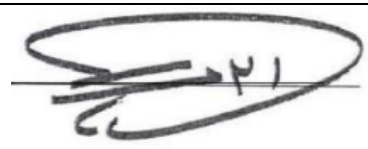
2. Overall Program Evaluation

a. What strategies are used in the program for obtaining assessments of the overall quality of the program and achievement of its intended learning outcomes:
(i) From current students and graduates of the program? <ul style="list-style-type: none">▪ Feedback from Student Assessment of Quality of Teaching questionnaires.▪ Feedback from Graduate Assessment of Quality of Teaching questionnaires.
(ii) from independent advisors and/or evaluator (s)?. <i>Benchmarking with relevant programs nationally and internationally</i>
(iii) From employers and other stakeholders. <i>- Feedback from employer assessment of graduate quality and attributes.</i>

Attachments:

1. Copies of regulations and other documents referred to in template preceded by a table of contents.
2. Course specifications for all program courses including field experience specification if applicable.

Authorized Signatures

Dean/Chair	Name	Title	Signature	Date
Program Dean or Program Chair <i>Main Campus</i>	Dr. Ibrahim Radini	Head of Department		11/6/2018

Attachments:

- 1- Executive Rules of Study Regulations and Tests
<http://colleges.jazanu.edu.sa/sites/en/saf/Pages/defi.aspx>
- 2- Course specifications for all program.



