هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-106
2022

Annual Program Report

Program Name:	**Bachelor Degree in Chemistry**
Program Code (as per Saudi university ranking):	**CHM**
Qualification Level:	**6th level**
Department:	**Chemistry**
College:	**Science**
Institution:	**Jouf University**
Academic Year:	**1444**
Main Location:	**Sakaka**
Branches offering the Program (if any):	• **Main Campus–Sakaka** • **Female Campus–Sakaka**

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A. Program Statistics

Item	Number
Number of students enrolled in the program	75
Number of students who started the program (in reporting year)	55
Number of students who completed the program	25

B. Program Assessment

1. Program Learning Outcomes Assessment and analysis according to PLOs assessment plan *

(Direct assessment from Capstone Courses)

#	Program Learning Outcomes	Assessment Methods (Direct and Indirect)	Targeted Performance (%)	Assessment Results	
				Male	Female
Knowledge and understanding					
K1	Demonstrate the main concepts and chemical laws in all studied chemistry branches	Theory paper exams Quizzes Class participation [Rubrics-based] Discussions [Rubrics-based]. Home work Mid-term and final exams	**75%**	81.13	85.77
K2	Outline the scientific principlesin the subfields of chemistry (analytical, inorganic, organic and physical), and apply these principles to interact with industrial fields		**75%**	65.33	71.88
K3	Discuss the major types of chemical reactions, their characteristics, and mechanismsas well as their kinetics		**75%**	77.37	80.23

K4	Explain, integrate and apply the relevant knowledge and theories in basic sciences and other disciplines and professional fields		**75%**	90.42	94.58
Skills					
S1	Classify the chemical compounds and identify their properties	● Theory paper exams ● Class ● participation [Rubrics-based] ●Discussions [Rubrics-based] ● Seminar ● evaluation [Rubrics-based] ● Assignment Quizzes ● Practical Exams Mid-term and final exams	75%	96.89	96.33
S2	Compare the results to predict and rationalize properties, mechanisms and patterns of reactivity.		75%	74.98	75.12
S3	Formulate processes, relationships and techniques related to different chemistry branches		75%	69.21	78.18
S4	Obtain information from library, online and literature resources that will support the solving of chemical		75%	98.09	90.14
S5	Evaluate, develop and conduct Chemistry experiments or test hypotheses, analyze and interpret data and use scientific judgment to address		75%	97.55	84.02

	conclusions and make a criticism				
Values, autonomy, and responsibility					
V1	Conduct laboratory experiments safely, evaluate the potential impact of chemistry that may have on society, health and the environment	• Seminar evaluation [Rubrics-based] • Discussions [Rubrics-based] • Practical tests • Projects [Rubrics-based]	80%	97.21	84.02
V2	Enhance students' self and long life-learning using information technology, risk management, organization of time, and reviewing of a quality control process.	• Continuous evaluations • Reports and surveys [Rubrics-based] • Oral presentation [Rubrics-based]	80%	72.88	79.91
V3	Collaborate effectively as part of a team, recognizing and respecting the viewpoints of others and developing understanding and awareness of leadership styles and their impacts upon projects.		80%	97.44	95.13

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

(Indirect assessment from surveys)

#	Program Learning Outcomes	Assessment Methods (Direct and Indirect)	Targeted Performance (%)	Assessment Results		
				Students Evaluation of program	Alumni Survey	Employer Survey
Knowledge and understanding						
K1	Demonstrate the main concepts and chemical laws in all studied chemistry branches	Indirect from Surveys	**4/5**	4.1	3.73	4.00
K2	Outline the scientific principlesin the subfields of chemistry (analytical, inorganic, organic and physical), and apply these principles to interact with industrial fields			4.2	4.09	4.00
K3	Discuss the major types of chemical reactions, their characteristics, and mechanismsas well as their kinetics			3.9	4.55	4.25
K4	Explain, integrate and apply the relevant knowledge and theories in basic sciences and other disciplines and professional fields			4.1	3.58	4.00
Skills						

S1	Classify the chemical compounds and identify their properties	Indirect from Surveys	4/5	4.1	4.07	4.00
S2	Compare the results to predict and rationalize properties, mechanisms and patterns of reactivity.			4.3	3.99	4.00
S3	Formulate processes, relationships and techniques related to different chemistry branches			4.0	4.80	4.00
S4	Obtain information from library, online and literature resources that will support the solving of chemical			4.2	3.05	3.25
S5	Evaluate, develop and conduct Chemistry experiments or test hypotheses, analyze and interpret data and use scientific judgment to address conclusions and make a criticism			4.1	4.66	3.75
Values, autonomy, and responsibility						
V1	Conduct laboratory experiments safely, evaluate the potential impact of chemistry that may have on	Indirect from Surveys	4/5	4.1	4.83	3.75

	society, health and the environment					
V2	Enhance students' self and long life-learning using information technology, risk management, organization of time, and reviewing of a quality control process.			4.2	4.66	3.25
V3	Collaborate effectively as part of a team, recognizing and respecting the viewpoints of others and developing understanding and awareness of leadership styles and their impacts upon projects.			4.1	4.48	3.75

Strengths:

- Six PLOs out of 12 showed achievement equal to or above the target level
- All PLOs are assessed during his year
- Some of the PLOs showed high employer, students' evaluation of program and graduatesatisfaction which exceeded the level of 4 out of 5 points survey.
- employers survey expressed higher level of satisfaction than Students' evaluation of program
  and graduates about most of PLOs which also showed higher satisfaction more than the last year.

Aspects that need improvement with priorities:

- Improving of PLOs 1 for female; Demonstrate the main concepts and chemical laws

in all
studied chemistry branches with update of the contents, teaching/learning strategies andassessment methods with update of the used checklists for evaluation.

- Improving of PLOs-2 for male and female; Outline the scientific principles in the subfields of chemistry (analytical, inorganic, organic and physical), and apply these principles to interact with industrial fields with update of the contents, teaching/learning strategies and assessment methods with update of the used checklists for evaluation.
- work in team, applying the principles of chemistry to interact with industrial fieldsskills needs improvement as per the results of the Alumina's survey.

Encourage more students to share in extracurricular activities through students' club activitiesand community involvement to improve their teamwork abilities

2. Evaluation of Courses

Course Code	Course Title	Number of Students Who Evaluated the Course	Percentage of Participants	Evaluation Results (out of 10)	Developmental Recommendations
CHM 101	Chemistry general 1	**45**	**90%**	**9/10**	✓
CHM 202	Chemistry general 2	**30**	**93%**	**8.5/10**	✓
CHM 241	Principles of organic chemistry 1	**35**	**95%**	**9.22/10**	✓
CHM 231	Chemical thermodynamic	**25**	**94%**	**8.24/10**	✓
CHM 221	Chemistry of main groups elements	**33**	**89%**	**8.46/10**	✓
CHM 242	Principles of Organic Chemistry 2	**20**	**91%**	**9.12/10**	✓
CHM 222	Practical Inorganic Chemistry 1	**30**	**88**	**7.99**	✓

Course Code	Course Title	Number of Students Who Evaluated the Course	Percentage of Participants	Evaluation Results (out of 10)	Developmental Recommendations
CHM 251	Volumetric and gravimetric analysis	**36**	**90%**	**7.89/10**	✓
CHM 232	Phase rule and solutions	**18**	**86**	**8.52/10**	✓
CHM243	Practical organic chemistry 1	**25**	**87**	**9.68/10**	✓
CHM233	Principles of quantum chemistry	**16**	**88**	**8.95/10**	✓
CHM 321	Transition Elements and coordination Chemistry	**32**	**94.67**	**9.85/10**	✓
CHM 322	Inorganic Reaction mechanism	**26**	**97.34%**	**9.55**	✓
CHM341	Heterocyclic chemistry	**19**	**99.12**	**9.66/10**	✓
CHM331	Electro chemistry	**15**	**98.36**	**9.74/10**	✓
CHM351	Instrumental analysis methods	**23**	**97.48**	**9.58/10**	✓
CHM332	Practical physical chemistry 1	**29**	**95.84**	**8.97/10**	✓
CHM 333	Chemistry of solid state	**18**	**95.77**	**9.23/10**	✓
CHM 334	Chemical kinetics	**20**	**93.55**	**9.38/10**	✓
CHM 342	Biochemistry	**27**	**94.88**	**9.63/10**	✓

Course Code	Course Title	Number of Students Who Evaluated the Course	Percentage of Participants	Evaluation Results (out of 10)	Developmental Recommendations
CHM 352	Separation methods and chromatography	**18**	**88.99**	**8.59/10**	✓
CHM 343	Polymers and petrochemicals	**26**	**98.86**	**9.87/10**	✓
CHM 344	Organic reactions mechanism	**25**	**97.99**	**9.77/10**	✓
CHM 421	Organometallic chemistry	**19**	**98.88**	**9.95/10**	✓
CHM431	Surface and catalysis chemistry	**29**	**89.96**	**9.15/10**	✓
CHM 441	Practical organic chemistry 2	**30**	**90.88**	**9.47/10**	✓
CHM 451	Environmental chemistry	**27**	**92.99**	**9.58/10**	✓
CHM498	Field training	**20**	**97.86**	**9.42/10**	✓
CHM 422	Lanthanides and actinides chemistry	**25**	**88.98**	**9.56/10**	✓
CHM424	Spectroscopy of inorganic compounds	**30**	**97.66**	**9.59/10**	✓
CHM425	Practical inorganic chemistry 2	**18**	**96.88**	**9.77/10**	✓
CHM434	Practical physical chemistry 2	**10**	**98.31**	**9.12/10**	✓

Course Code	Course Title	Number of Students Who Evaluated the Course	Percentage of Participants	Evaluation Results (out of 10)	Developmental Recommendations
CHM 442	Organic compounds spectroscopy	**25**	**95.48%**	**9.49/10**	✓
CHM 499	Research project	**10**	**97.44%**	**9.57/10**	✓
CHM453	Medical and industrial analysis	**19**	**98.55**	**9.61/10**	✓

3. Students Evaluation of Program Quality

Evaluation Date: Final year students (Program Evaluation Survey) May-2023	Number of Participants:241
Students Feedback	**Program Response**
Strengths: • Good satisfaction with PLOs i.e., 4.35 • Good overall student satisfaction	Results of PLOs assessment integrated with otherindirect and direct assessment of PLOs
Areas of Improvement: • Students feedback to be provided on the Blackboard and documented in the course file • Rubrics explain to the students before evaluating the assessment • During the tutorial classes session discuss the practical skills and how to improve them	The program will encourage the teaching staff of the courses concerned with these to give more attention on provide feedback, explanation of rubrics and practical skills
Suggestions for improvement: • Students need more training on practical t skills.	The program will organize seminars or workshopfor training on practical skills

4. Scientific research and innovation during the reporting year

Activities Implemented	Number
Published scientific research	120
Current research projects	7
conferences organized by the program	2

Seminars held by the program	7
Conferences attendees	4
Seminars attendees	40

Discussion and analysis of scientific research and innovation activities

- The Percentage of full-time faculty members who published at least one research during the year to total faculty members in the program is 96%, this is good achievement if compared with the last year.
- Almost all workshops and training sessions related to researches showed high staff satisfaction with the program content, instructors, timing and other related items. The

average satisfaction was 4.45/5.

5. Community Partnership

Activities Implemented	Brief Description*
20 workshops agreed and approved	A number of 20 workshops have been received and approved to be conducted for the community on internal/external- community level. Such topics include but not limited to: renewable energy & applications, on-campus tours for laboratories, chemistry in life, extraction of olive oil.
Arab Week of Chemistry	On 17-22 of October 2023 a number of students and staff have taken part in this event in association with the school in Jouf region. The event involved splitting them into groups in which each group was assigned a supervisor and was allocated a specific school. Their task involved do some experiment and give lecture about the important of chemistry in life.
Sixteen Olive Festival	On12th of January 2023, the student of chemistry department shar in thetwelfth olive festival via making some products depend up on olive oil like soap, shampoo, cream, the student shows their product for various types of the community regardless of their backgrounds and employment status, many students have shared in this festival which will undoubtedly benefit them in their studies and later on their career
^{1}HNMRSpectroscopy workshop	On the 10th of Apriel 2023, a workshop titled '^{1}HNMR Spectroscopy workshop' took place in the central laboratory center building. That workshop targets various types of the community regardless of their backgrounds and employment status. Many students have attended this workshop which will undoubtedly benefit them in their studies and later on, their career.

Comment on community partnership activities**

- Many community service events were conducted with involvement of about 50% of faculty staffand administrative staff were involved in these events.
- Many students were involved in community services aiming at improving their teamwork, leadership and communication skills as well as ethics and professionalism

*including timing of implementation, number of participants, and outcomes.
**including overall evaluation of the program's performance in these activities (if any).

6. Other Evaluation (if any)

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

Evaluation method: Alumni Satisfaction survey	Date: May-2023	Number of Participants:29
Summary of Evaluator Review		**Program Response**
Strengths: • Good overall Satisfaction i.e., 4.21 • All questions related to the "Qualities and Abilities"showed good results. • All questions related to the "level of program preparation for the Program Learning Outcomes" showed good results		
Points for Improvements: • Soft Skills • Teamwork		• Alumni Committee will arrange a workshop targeting the soft-kills. Faculty members will be asked to prepare assignments that will target to improve the teamwork skills amongst students
Suggestions for development: • Arrange training programs to polish the soft-skills. • Introduce teamwork-based assignments.		

Evaluation method: Employers Satisfaction survey	Date: May-2023	Number of Participants:20
Summary of Evaluator Review		**Program Response**
Strengths: • Good overall Satisfaction i.e., 3.83 • Good satisfaction level with the skills using information technology and the latest modes of communication •		
Points for Improvements: • Increase number of participants		

• Practical Knowledge • Research problems • Suggestions for development: • Increase the number of participants to have informationfrom different sources. • Arrange extra sessions for the research chemistry • problems analysis and practical skills/knowledge •	• Alumni Committee will arrange a workshop targeting the practical skills. Faculty members will arrange extra sessions and assign extra homework inorder to improve the practical knowledge and solve complex research chemistry problems in core courses

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

C. Program Key Performance Indicators (KPIs)

Including the key performance indicators required by the NCAAA.

No	KPI	Key Performance Indicators	Targeted Value	Actual Value	Internal Benchmark	Analysis	New Target
1	KPI-P-01	Percentage of achieved indicators of the program operational plan objectives	**81%**	**Waiting data**	80%	It is noted that the actual benchmark (……. %) value is higher than the target benchmark (81%). And from the values of last two years, the new target benchmark will be -----%	
2	KPI-P-02	Students' Evaluation of quality of learning experience in the program	**4.2**	**4.2**	**4.31**	The questionnaire results show that actual KPI is 4.2, which means that the grade of satisfaction is "very High". And from the values of last two years, the new target KPI will be (4.2) for the next	**4.2**

						academic year	
3	KPI-P-03	Students' evaluation of the quality of thecourses	**4.5**	**4.48**	**4.40**	The questionnaire results show that actual KPI is 4.48, and not achieved the target (4.5). And from the values of last two years, the new target KPI is proposed (4.5) for the next academic year	**4.5**
4	KPI-P-04	Completion rate.	**45%**	**Waiting data**	**30.67%**	The actual value (------ %) is lower than the target (45%). And from the values of last two years, the new target is set to 45%	
5	KPI-P-05	First-year students retention rate	**85%**	**Waiting data**	**88.17%**	Actual value (-------%) achieved the target (85%). And from the values of last two years, The new target is to ------%	
6	KPI-P-06	Students' performance in the professional and/or	**40%**	**Waiting data**	**Waiting data**	Regarding the previous year, actual value (------%) is lower than the target (40%). And from the	

		national examinations				values of last two years, the new target is set to ------%	
7	KPI-P-07	Graduates' employability and enrolment in postgraduate programs	**60%** **5%**	**62%** **15.4%**	**35.5%** **1.7%**	The actual value (62% and 15.4%) is higher than the target (60% and 5%). And from the values of last two years, the new target is set to 60% and 5%	**60%** **5%**
8	KPI-P-08	Average number of students in the class	**20**	**18.3**	**10.4**	Actual value (18.3) is less than target benchmark (20) And from the values of last two years, the new target is set to 20	**20**
9	KPI-P-09	Employers' evaluation of the program graduate's proficiency	**4.2**	**4.5**	**4.18**	The actual benchmark (4.5) is higher than the target benchmark (4.2) and the internal benchmark (4.18). And from the values of last two years, the new target is kept to 4.2	**4.2**
10	KPI-P-10	Students' satisfaction with the offered	**4.1**	**4.2**	**4.0**	The actual benchmark value is 4.2 that is higher than the target benchmark (4.1) and	**4.1**

						higher than the internal benchmark (4). And from the values of last two years, the new target benchmark will be 4.1	
11	KPI -P-11	Ratio of students to teaching staff	**10:1**	**12.2:1**	**11.2:1**	Actual value (12:2: 1). The target is (10:1) and the internal benchmark (11.2:1), and this reflects not good ratio. And from the values of last two years, the new target benchmark kept at 10:1	**10:1**
12	KPI-P-12	Percentage of teaching staff distribution	**Assist. P:40 % Assoc. P:40 % Prof.: 20%**	**Assist. P:39.5% Assoc. P:39.5 % Prof.: 21%**	**Assist. P:49.1 % Assoc. P:36.2 % Prof.: 14.7 %**	For assistant professors, actual value (39.5%) is less than the target (40%). We decided to retain the target benchmark at 40%. For associate professors, actual value (39.5%) is less than the target (40 %). For professors the actual value 21% mor than the target 20%	**Assist. P:40 % Assoc. P:40 % Prof.: 20%**

						And from the values of last two years, it is decided to retain the target benchmark at Assist. P:40 % Assoc. P:40 % Prof.: 20%	
13	KPI -P-13	Proportion of teaching staff leaving the program	**0%**	**8%**	**3.33%**	Actual value of this KPI is 8%. The new target benchmark will be equal to 0%, reflecting the department's aims to improve the working environment and to consequently reduce the attrition rate even further. And from the values of last two years, it decided to retain the target benchmark at 0%	**0%**
14	KPI -P-14	Percentage of publications of faculty members	**100%**	**100%**	**100%**	The actual benchmark (100%) is equal to the target (100%). And from the values of last two years, it has been	**100%**

						decided to set the target benchmark to 100%	
15	KPI -P-15	Rate of published research per faculty member	4:1	**6.8:1**	3.2:1	The actual benchmark (6.8:1) is higher than the target benchmark (4:1). And from the values of last two years, it has been decided to set the new target benchmark at (5:1)	**5:1**
16	KPI -P-16	Citations rate in refereed journals per faculty member	65 :1	**113:1**	53.7:1	The actual benchmark (113:1) is higher than the target benchmark (75:1). And from the values of last two years, it is decided to set the new target benchmark at (70:1)	**70:1**
17	KPI -P-17	Satisfaction of beneficiaries with the learning resources	4	**4.15**	3.95	The actual benchmark value is 4.15 is higher than target one (4). And from	**4.1**

						the values of last two years, it is decided to set the new target benchmark to 4.1	
18	KPI-AP-01	Number of research groups in the program	**2**	**9**	**8**	The actual benchmark value is (9) is higher than the target one (2 projects). And from the values of last two years, It is decided to set the new target benchmark to 10	**10**
19	KPI-AP-02	The number of funded research projects that the program's employees obtainannually	**15**	**0**	**11**	The actual benchmark value is (0) is lower than the target one (15projects). And from the values of last two years, it is decided to set the new target benchmark to 15	**15**
20	KPI-AP-03	Percentage of students participating in extra-curricular activities	**85%**	**85%**	**81.4%**	The actual benchmark (85%) is Equal to the target one (85%). It is decided to set the new target	**85%**

						benchmark to 85%	
21	KPI-AP-04	Employers' satisfaction with the program's mission, vision and goals	**4.2**	**4.6**	**4.57**	The actual benchmark value is based on the survey "Employer Survey on EE Vision Mission & Objectives". The actual benchmark (4.6) is higher than the target one (4.2). It is decided to set the new target benchmark to 4.5	**4.2**
22	KPI-AP-05	Percentage of the student's graduation projects related to the surrounding community	**30%**	**76.4%**	**27.75%**	The actual benchmark (76.4%) is Higher than the target one (30%). And from the values of last two years, it is decided to set the new target benchmark to 35%	**35%**

Comments on the Program KPIs and Benchmarks results:

- large number of indicators are in use for evaluation of program quality
- Many KPIs showed improvements
- Internal and external data were available for comparisons, the external one was from highly recognizedchemistry program

D. Challenges and difficulties encountered by the program (if any)

Teaching	None
Assessment	None
Guidance and counseling	None
Learning Resources	None
faculty	None
Research Activities	None
Others	None

E. Program development Plan

No.	Priorities for Improvement	Actions	Action Responsibility
1	Continuous meetings with advisory committee	Meeting of the Advisory Committee with the Council of the Department of Chemistry	Head of Department
2	Increased contact between chemistry department and alumni	Increased event attendance	Head of Department
3	Improve alumni engagement through increased communication	Metting with Alumni	Head of Department and Alumni committee

4	Develop a regularly distributed departmental newsletter for Alumni	newsletter from department to serve Alumni	Head of Department and Alumni committee
5	Increased communication with community		Head of Department
6	Build collaborative initiatives with community.		Head of Department

Attach any unachieved improvement plans from previous report.

The annual program report needs to be discussed in department council

F. Approval of Annual Program Report

COUNCIL / COMMITTEE	
REFERENCE NO.	
DATE:	