وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
بدمياط الجديدة

2023- 2024

Chemical Engineering Program Report
فصول دراسية

Program Report for B.Sc.
Chemical Engineering Program

Program Report

Program Report 2023/2024

Bachelor of Science in chemical Engineering

Academic Year: (2023 -2024)

A- Basic Information

1. Program Title: **B. Sc.**
2. Program Type: **Single**
3. Department(s): **chemical Engineering**
4. Program Duration: **A minimum of 5 years (including one year of preparatory year)**
5. Co-Ordinator: **Prof. Dr. Hend Elsayed Gadow**
6. External Evaluator:
7. Year of Operation: **2023-2024**
8. Last date of program specifications approval: **October 2023**
9. Base of Examination Committee formulation: is formulated from 2 faculty members and suggested by the academic department based on the area of specialization for each course.
10. External Examiners System: **Available (Especially in Project)**

B- Statistics

1. Total number of students in the program (2023-2024): **235**
2. No. of students starting the program (First year: 2023-2024): **61**
3. No. of students in second year (2023-2024): **73**
4. No. of students in the third year (2023-2024): **56**
5. No. of students starting fourth year (2023-2024): **45**
6. No. of students completed and graduated from the program (2023-2024):**45**
7. No. of students completing and graduated from the program (Fourth year) and as a percentage of those who started in fourth year (2023-2024): **100%**
8. No. and percentage of students passing in each year: **Table A**
9. Grading: numbers and percentages in each grade: **Table B**

Table A: The Number and percentage of students passing in the program (2023- 2024)

Academic level	First Year 2023-2024	Second Year 2023-2024	Third Year 2023-2024	Fourth Year 2023-2024
No. of Attending student	61	73	56	45
No. of Attending passing	38	59	55	45
Percentage	62.29%	80.82%	98.2%	100%

Table B: Number and Percentage of students in each Grade (2023-2024) (% from the total students completed the year)

Academic level	Excellent		V. Good		Good		Passed		Passed with Courses		Failed	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
First Year	4	6.56	4	6.56	1	1.6	10	16.39	19	31.14	23	37.7
Second Year	3	4.11	11	15.1	6	8.2	16	21.9	23	31.5	14	19.2
Third Year	3	5.3	13	23.21	23	41	5	8.93	11	19.64	1	1.78
Fourth Year	9	20	21	46.67	11	24.44	2	4.44	2	4.44	0	0

Commentary

Closer look to Table (B) **reversal** the following notes:

The good result indicates in the table. The main reason behind this is due to:

1. The high level of the teaching stuff in this program.
2. The high level of the accepted students in this program.
3. The students' skills and awareness during the program.

1. First destinations of graduates

i. Proceeded to appropriate employment: (yes)

ii. Proceeded to other employment: (yes)

iii. Undertaken postgraduate study: (N/A)

iv. Engaged in other types of activity: (yes)

v. Unknown first destination: (N/A)

C- Academic Standards

1. Achievement of program intended learning outcomes

A. Compulsory								
Level	Semester	Code	Course Name	Hours per week			Competencies	Program LO'S
				Lec.	Lab.	Exer.		
LEVEL 0	SEMESTER 1	BAS011	Mathematics 1	2	-	2	A1	a3,b3, c3
		BAS012	Mechanics 1	2	-	2	A1	a1, b1, a2
		BAS013	Physics 1	2	2	2	A1	a1, b1, a2
		BAS014	Engineering Chemistry	2	2	-	A1	a1, c2, c3
							A10	d2
		BAS015	Engineering drawing and projection	1	4	-	A1	a1, b1, a2, b2
		BAS016	Int. to computer systems	2	2	-	A4	a3, c3
							A8	d1,d2
		Total		**11**	**8**	**8**		
	SEMESTER 2	BAS021	Mathematics 2	2	-	2	A1	c2,b3
							A5	b1, d1
		BAS022	Mechanics 2	2	-	2	A1	a1, b1, a2, ,c1
		BAS023	Physics 2	2	2	2	A1	a1, b2, a2, a3
		BAS024	Production engineering	3	2	-	A1	a1,a3
							A2	a1,b2
							A4	a3
		BAS025	Int. to Engineering and environment	2	-	-	A3	a2, a3, b1, c1
							A4	a1
							A10	d1,d2
							B2	d1
		BAS026	Technical English Language 1	2	2	-	A8	d1
		BAS027	Human Rights	2	-	-	A8	d1

A. Compulsory								
Level	Semester	Code	Course Name	Hours per week			Competencies	Program LO'S
				Lec.	Lab.	Exer.		
		Total		**15**	**6**	**6**		
LEVEL 1	SEMESTER 1	BAS111	Mathematics 3	2	-	2	A1	a1, c2, b1
							A10	d1,d2
		BAS112	Electrical Engineering Fundamental	3	-	2	A1	b3,c1,c2
							A2	b1,b4
		BAS113	Engineering Thermodynamics	3	-	2	A1	a1,a2,a3, b1, b2 , c1,c2
		BAS114	Technical English Language 2	2	2	-	A8	d1,d2
							A10	d1,d2
		BAS115	Computer programming	2	2	-	A1	a1,c2,c3
							A8	d1,d2
		CHE111	Inorganic Chemistry	2	2	-	A2	a2, b2, c2
							A7	d2
		Total		**14**	**6**	**6**		
	SEMESTER 2	BAS121	Mathematics 4	2	-	2	A1	a1,b1
							A3	a2,c2
		BAS122	Technical Report Writing	2	2	-	A5	a1,b1, ,c1,d1
							A8	d1
		BAS123	Int. to Information Technology	2	-	2	A3	b1, c1, c2
							A4	a1, b1

A. Compulsory								
Level	Semester	Code	Course Name	Hours per week			Competencies	Program LO'S
				Lec.	Lab.	Exer.		
		BAS124	Strength of materials	2	-	2	A1	a1, b1, c2, c3
		CHE121	Organic Chemistry	2	2	-	A2	a1,b1
							A6	b1
							A7	d1,d2,d3
							B1	a1, b1, c1
		CHE122	Physical Chemistry	2	2	-	A5	a1,c1,d1
							A6	b1
							A7	d1,d2,d3
							B1	a1,b1
		Total		**12**	**6**	**6**		
LEVEL 2	SEMESTER 1	BAS211	Engineering Probability and Statistics	2	-	2	A1	a1, c2
							A2	b1,b3
		BAS212	Fluid Mechanics	2	1	1	A1	a1, a2, b1, b2, b3
							A2	a1, a2, b1
		BAS213	Engineering Economy	2	-	1	A1	a3,b1
							A3	b1,c1
		BAS214	Heritage of Egyptian Literature	2	-	-	A9	d3

A. Compulsory								
Level	Semester	Code	Course Name	Hours per week			Competencies	Program LO'S
				Lec.	Lab.	Exer.		
		CHE211	Chemical Eng. principles 1	2	-	2	A1	a1,b2,b3,c3
		CHE212	Material science and metallurgy	2	-	2	A10	d1,d2
							B2	d1
							A2	b3
		CHE213	Principles of Eng. Design	2	-	2	A5	b1
							A9	d1,d2
							A10	d2
							B2	d1
		Total		**14**	**1**	**10**		
	SEMESTER 2	BAS221	Numerical Methods in Engineering	2	-	2	A2	b2,c1
							A5	b1,d1
		CHE221	Chemical Eng. Principles2	3	-	2	A1	a1, b2,b3,c2
		CHE222	Chemical Engineering Thermodynamics	2	1	2	A1	c3, b3
							B1	a1, b1
		CHE223	Analytical Chemistry	2	2	-	A10	d1
							A1	B2, c2
							B3	d1
							A2	b3,c3
							B2	d1

A. Compulsory								
Level	Semester	Code	Course Name	Hours per week			Competencies	Program LO'S
				Lec.	Lab.	Exer.		
		CHE224	Process Dynamics and Control	2	-	2	A2	c1
							A6	b1
							B3	d1
		CHE225	Heat transfer	2	1	2	A1	b2
							A2	b3,c2
							A10	d1
							B1	a1
		CHE 226	Training 1 *	-	-	-	A5	a1,b1
							A7	d1, d2, d3
							A8	d1, d2
							B1	b1, c1
		Total		**15**	**4**	**8**		
		BAS311	Environmental management	2	-	1	A3	a2, a3, b1, c1
							A4	a1, c1, c3
							A10	d1
LEVEL 3	SEMESTER 1	CHE311	Reactor Design	2	-	2	A6	a1, b1, c1
							B1	a1, c1
		CHE312	Operations Research	2	-	2	A2	a1, b3
							A4	a2,c2, b1
							A6	b1, c2
		CHE313	Mass Transfer Operations I	2	-	2	B1	a1, b1, c1
							A7	d1
		CHE314	Bio chemistry	2	-	2	A2	a1
							A4	a3
							A5	b1,d1

A. Compulsory								
Level	Semester	Code	Course Name	Hours per week			Competencies	Program LO'S
				Lec.	Lab.	Exer.		
							B1	a1, b1
		CHE315	Electrochemistry	2	1	1	A10	d1,d2
							B2	d1
							A2	b3,b4
		CHE316	Elective 1	2	-	2	A3	a1,b1,c2
							A9	d1,d3
							B1	a1,b1,c1
							B2	d1
		Total		**14**	**1**	**12**		
	SEMESTER 2	BAS321	Project Management and Control	2	-	2	A4	c1, c2
							A6	c2,b1
							A1	a3,b3,c3
		CHE321	Mass Transfer Operations II	3	-	2	A1	a2,b2,c2
							A7	d1
							B1	a1,b1, c1
							B2	d1
		CHE322	Corrosion engineering	2	-	2	B2	d1
							B4	d1
		CHE323	Mechanical unit operations	3	-	2	A3	a1, b1
							A5	c1, d1
							A9	d1,d3
							B1	a1, b1, c1
		CHE324	Process Modeling and Simulation	3	2	-	A2	a2, b3
							B3	d1
		CHE325	Elective 2	2	-	2	B2	d1
							B4	d1

A. Compulsory								
Level	Semester	Code	Course Name	Hours per week			Competencies	Program LO'S
				Lec.	Lab.	Exer.		
		CHE326	Training 2*	-	-	-	A5	c1, d1
							A10	d1, d2
							B2	d1
		Total		**14**	**2**	**10**		
LEVEL 4	SEMESTER 1	CHE411	Computer Applications in Chem. Eng.	3	2	-	B1	c1
							B3	d1
		CHE412	Petrochemical Engineering	2	-	2	B2	d1
		CHE413	Plant Design	3	-	2	A3	a1,b1,c1
							A9	d1
							B1	a1, b1, c1
							B3	d1
							B4	d1
		CHE414	Project 1*	3	2	-	A2	c1, c2, c3
							A3	c1, c2
							A5	c1, d1
							A6	b1, c1, c2
		CHE415	Elective 3	2	-	2	B2	d1
							B4	d1
		CHE416	Elective 4	2	-	2	A4	a1,c1,c3
							B1	b1,c1
		Total		**15**	**2**	**10**		
	SEMESTER 2	BAS421	Research and Analytical skills	2	-	-	A2	b3,c3
		CHE421	Industrial Technology in Chem. Eng.	2	-	2	A3	a2, a3, b1, c1
							B1	a1, b1, c1

A. Compulsory								
Level	**Semester**	**Code**	**Course Name**	**Hours per week**			**Competencies**	**Program LO'S**
				Lec.	**Lab.**	**Exer.**		
		CHE422	Petroleum Refining Engineering	2	-	2	A10	d1, d2
							B2	d1
		CHE423	Quality Assurance and Engineering Reliability	2	-	1	A4	a1, a2, b1, c2, c4
							A6	b1, c2
		CHE424	Project 2*	2	4	-	A7	d1, d2, d3
							A8	d1, d2
							A9	d1, d2, d3
							B3	d1
							B4	d1
		CHE425	Elective 5	2	-	2	A3	a2,c1
							A10	d1,d2
		CHE426	Elective 6	2	-	2	A3	a2, c1
							A10	d1,d2
							B2	d1
							B4	d1
		Total		**14**	**4**	**9**		

	Code	Course name
Elective 1	CHE316A	Liquefied Natural Gas
	CHE316B	Gas Sweetening
	CHE316C	Gas engineering
	CHE316D	Introduction to combustion phenomena
	CHE316E	Air Pollution
	CHE316F	Engineering Materials Selection
Elective 2	CHE325A	Foams industry
	CHE325B	Ceramics industry
	CHE325C	Polymer engineering
	CHE325D	Food processing technology
Elective 3	CHE415A	Electroplating
	CHE415B	Synthetic fibers
	CHE415C	Paints technology
	CHE415D	Renewable Energy Sources
Elective 4	CHE416A	Water desalination
	CHE416B	Wastewater Treatment
	CHE416C	Rubber industry
Elective 5	CHE425A	Industrial safety
	CHE425B	Special topics in chemical engineering
	CHE425C	Plasticizers
	CHE425D	Fertilizers technology
Elective 6	CHE426A	Pulp and Paper industry
	CHE426B	Polymer processing
	CHE426C	Refractories
	CHE426D	Printing technology

2. Methods and rules for student evaluation

The methods of assessments were set by the institute council and documented. The main assessment methods are:

Method	LO's	Assessment length	schedule
1- Written exam	To assess knowledge and understanding intellectual skills: A,B	3 hours examination	The 15th week
2- Quizzes and reports	To assess knowledge and understanding & general and transferable skills: a, d	Continuous assessment	The 2nd -7th - 9th week
3- Oral exams	To assess knowledge and understanding, intellectual, general and transferable skill: a, b, d	Assessment Session	The 14th week
4- Practical	To assess knowledge and understanding, professional, general and transferable skill: a, c, d	2 hours examination	The 14th week
5- Project applied on a practical field problem	To assess knowledge and understanding skills, intellectual skills, professional skills, general and transferable skill: a, b, c, d	Continuous assessment	At the end of each semester

3. Program Evaluation

Evaluator	Tools	Sample evidence
1-Senior students	▪ Questionnaires	15% of the students
2- Alumni	▪ Questionnaires	
3- Stakeholders	▪ Questionnaires	Samples representative from all sectors
4-External evaluator	▪ Review reports	

4. Learning Resources

a. No. and ratio of institute members and their assistants to students:

- Staff members 7
- Assistants 16
- Students 235
- "Staff members / Students" Ratio 1:33.57
- " Assistants / Student" Ratio 1:14.69

b. Matching of institute members' specialization to program needs.

The institute members' specialization is highly matches the courses offered in the program.

c. Suitability of the workload of the teaching staff

The workload of the teaching staff is Suitable.

d. Availability and adequacy of Program Handbook

The program handbook is available, yearly, for the departmental heads and freely distributed to students of the preparatory level and staff members.

e. Availability and adequacy of library, laboratories, and computer systems

	Appropriate	**To some extent**	**unsuitable**
Library convenience	√		
Laboratories convenience	√		
Computer systems convenience	√		

f. Availability of field training opportunities for students

Communications are done with companies to provide training opportunities for students, and they are followed up by the teaching staff, the supporting staff, and the workers of the company itself.

g. Availability of any other program requirements
No requirements needed

5. Quality Management

a. Availability of regular evaluation and revision system for the program

- Every 5 years the curriculum is revised and updated.
- An internal evaluation system for the program is going to be set.
- An external evaluation system for the program is going to be set
- Commitment to internal and external reviewer amendments, such as updating references and modifying some course

objectives

b. Institute response to student and external evaluations

The evaluation forms for all the courses are spread on samples of students by the end of each course. The evaluation forms are then analyzed and summarized. The students' criticisms summary is sent to the department's head that is in turn hand out the summaries to the department members to consider comments and deficits and take remedial actions.

6. Administrative and organizational obstacles

Not found

7. Action Plan

Aim	Action	Person Responsible	Completion Date
Improving interactive teaching methods	Implement new strategies such as case studies and group discussions	Courses' Coordinators	2024-2025
Guest Lectures and Industry Collaboration	Invite experts from the field for guest lectures.	Courses' Coordinators	2024-2025
Skill Development	Attend workshops and seminars on specialized topics of the course.	Courses' Coordinators	2024-2025
Adding some scientific reference in the electronic library of the institute.	By giving the electronic library some references.	Courses' Coordinators	2024-2025
Online Learning Modules	Utilize e-learning resources, including videos and interactive modules.	Courses' Coordinators	2024-2025

Real-World Examples	Use case studies from existing factories to help students understand the practical challenges and operations in the industry. This will help bridge the gap between theoretical knowledge and real-world application.	Courses' Coordinators	2024-2025
Diverse Assessment Methods	Include a mix of assessments such as quizzes, projects, presentations, and exams to cater to different learning styles.	Courses' Coordinators	2024-2025
Life Cycle Analysis	Teach students how to evaluate the environmental impact of different chemical products from production to disposal.	Courses' Coordinators	2024-2025
Scientific papers submission	Students' participation in scientific papers under the supervision of doctors	Courses' Coordinators	2024-2025

Program coordinator: **Prof. Dr. Hend El-Sayed Gadow**

Head of the Department: **Prof. Dr. Hend El-Sayed Gadow**

10/2024