وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
بدمياط الجديدة

2022- 2023

Chemical Engineering Program Report

Program Report for B.Sc.
Chemical Engineering Program

Program Report

Program Report 2022/2023

Bachelor of Science in chemical Engineering

Academic Year: (2022 -2023)

A- Basic Information

1. Programme Title: **B. Sc.**
2. Programme 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: **2022-2023**
8. Last date of program specifications approval: **October 2022**
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 (2022-2023): **92**
2. No. of students starting the program (First year: 2022-2023): **4**
3. No. of students in second year (2022-2023): **8**
4. No. of students in the third year (2022-2023): **12**
5. No. of students starting fourth year (2022-2023): **68**
6. No. of students completed and graduated from the program (2022-2023): **63**
7. No. of students completing and graduated from the program (Fourth year) and as a percentage of those who started in fourth year (2022-2023): **92.65%**
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 (2022- 2023)

Academic level	First Year 2022-2023	Second Year 2022-2023	Third Year 2022-2023	Fourth Year 2022-2023
No. of Attending student	4	8	12	68
No. of Attending passing	2	2	7	63
Percentage	50%	25%	58.33%	92.65%

Table B: Number and Percentage of students in each Grade (2022-2023) (% from the total students completed the year)

Academic level	Excellent		V. Good		Good		Passed		Failed	
	No.	%	No.	%	No.	%	No.	%	No.	%
First Year	0	0	0	0	0	0	2	50	2	50
Second Year	0	0	0	0	0	0	2	25	6	75
Third Year	0	0	0	0	2	16.67	5	41.67	5	41.67
Fourth Year	4	5.89	9	13.24	30	44.12	20	29.41	5	7.35

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.

C- Academic Standards

1. Achievement of program intended learning outcomes

A. Compulsory										
Level	Semester	Code	Course Name	units	Prerequisite	Hours per week			Competencies	LO'S
						Lect.	Lab	Exer.		
LEVEL 1	SEMESTER 1	MTH101	Mathematics 1	3	-	2	-	2	A1	a1,b1,a3
		ENG 101	Mechanics 1	3	-	2	-	2	A1	a1,b1,a2
		PHY101	Physics 1	4	-	2	2	2	A1	a1,b1,a2
		CHE 101	Engineering Chemistry	3	-	2	2	-	A1	a1,c2,c3
									A10	d2
		ENG 103	Engineering drawing and projection	3	-	1	4	-	A1	a1,b1,a2, b2
		ENG 104	Int. to computer systems	2	-	1	2	-	A1	c2,c3
									A5	b1
		Total		**18**		**10**	**10**	**6**		
	SEMESTER 2	MTH102	Mathematics 2	3	-	2	-	2	A1	a1,b1,a3, b3
		ENG 102	Mechanics 2	3	-	2	-	2	A1	a1,b1,a2, c1
		PHY102	Physics 2	4	-	2	2	2	A1	a1,b2,a2, a3
		ENG 105	Production engineering	4	-	3	2	-	A1	a1,b3,a3
									A3	c1,c2
									A6	a1,c2
		ENG 106	Introduction to Engineering and environment	2	-	2	-	-	A1	a2,a3,b2, c3
									A3	a2,a3,b1, c1
		LNG 101	Technical English Language 1	2	-	1	2	-	A8	d1
		Total		**18**		**12**	**6**	**6**		

A. Compulsory										
Level	Semester	Code	Course Name	units	Prerequisite	Hours per week			Competencies	LO'S
						Lect.	Lab	Exer.		
LEVEL 2	SEMESTER 1	MTH201	Mathematics 3	3	MTH 101	2	-	2	A1	a1,a2,a3, b1
		CHE 201	Chemical Engineering Principles I	3	CHE 101	2	-	2	A1	a2,a3,b3, c3
									A6	a1,c1,c2
									A9	d1,d2
		ENG 201	Computer programming	3	-	2	2	-	A1	b3,c1,c2
									A2	a1,b3,c1
		ENG 202	Engineering Thermodynamics	3	ENG 102	2	-	2	A1	a1,a2,a3, b1,b2,c1, c2
		ENG 204	Electrical Engineering Fundamentals	4	-	3	-	2	A1	a1,a2,b1, b2,c1,c2
									A2	a1,b3,b4, c1
		LNG 201	Technical English Language 2	3	LNG 101	1	2	-	A8	d1,d2
									A10	d1,d2
		Total		**18**		**12**	**4**	**8**		
	SEMESTER 2	MTH202	Mathematics 4	3	MTH101	2	-	2	A1	a1,a2,a3, b1,c1
		CHE 202	Organic Chemistry	4	CHE 101	3	2	-	A1	a2, b2, c2
									B1	a1, b1, c1
		CHE 203	Inorganic Chemistry	3	CHE 101	2	2	-	A2	a2, b2, c2
									A7	d2
		ENG 205	Strength of materials	3	ENG 101	2	-	2	A1	a1, b1, c2,c3
		ENG 206	Int. to Information Technology	3	-	2	-	2	A4	a2,a3, c3
									A8	d1,d2
		ENG 207	Technical report writing	2	-	1	2	-	A5	a1,a2,b1, b2,c1,d1
									A8	d1,d2
		Total		**18**		**12**	**6**	**6**		

A. Compulsory										
Level	Semester	Code	Course Name	units	Prerequisite	Hours per week			Competencies	LO'S
						Lect.	Lab	Exer.		
LEVEL 3	SEMESTER 1	MTH301	Engineering Probability and Statistics	3	-	2	-	2	A1	a1,a2,b1, b3,c2
		CHE 301	Physical Chemistry	3	CHE 101	2	2	-	A1	a2, b2, c2
									B1	a1, b1
		CHE 302	Material science and metallurgy	3	ENG 205	2	-	2	A1	a2, b2,c2
									B2	d1
		ENG 301	Fluid Mechanics	3	ENG 102	2	1	1	A1	a1,a2, b1,b2,b3
									A2	a1,a2, b1
		ENG 302	Principles of Engineering Design	3	ENG 103	2	-	2	A1	a3,b2,b3
		ENG 303	Engineering Economy	3	-	2	-	2	A3	a1,a2,b1, c1
									A4	a2,b1,c2
		Total		**18**		**12**	**3**	**9**		
	SEMESTER 2	MTH302	Numerical Methods in Engineering	3	-	2	-	2	A1	a1,a2,b1, b2,c1,c2
		CHE 303	Chemical Engineering Principles II	3	CHE 201	2	-	2	A1	b1,b2,c1
									A2	b4, c1,c3
									A3	b1c2
		CHE 304	Chemical Engineering Thermodynamics	3	-	2	2	-	A1	a1,a2, b1
									B1	a1,b1, c1
		CHE 305	Analytical Chemistry	3	CHE 101	2	2	-	A1	a2 ,b2 ,c2
									A6	a1, b1, c2
									B3	d1
		CHE 306	Process Dynamics and Control	3	-	2	-	2	A1	a1,a2,b1
									A6	b1, c2
		ENG 308	Operations Research	3	MTH 302	2	-	2	A2	a1, b3
									A4	a2,b1,c2

A. Compulsory											
Level	Semester	Code	Course Name	units	Prerequisite	Hours per week			Competencies	LO'S
						Lect.	Lab	Exer.		
									A6	b1, c2
		ENG 430	Training 1	0	-	-	90	-	A5	a1, b1
									A7	d1, d2,d3
									A8	d1, d2
									B1	b1, c1
		Total		**18**		**12**	**4**	**8**		
LEVEL 4	SEMESTER 1	CHE 401	Reactor Design	4	CHE 304	3	-	2	A6	a1,b1, c1
									B1	a1,c1
		CHE 402	Heat transfer	3	ENG 202	2	2	-	A2	b3,b4,c2, c3
									A10	d1,d2
									B4	d1
		CHE 403	Mass Transfer	3	ENG 202	2	-	2	B1	a1, b1, c1
									B2	d1
		CHE 404	Corrosion engineering	2	CHE 303	1	-	2	A1	a2, b2, c2
									B2	d1
		ENG 408	Project Management and Control	3	-	2	-	2	A4	a2,b1,c2
									A6	a1,b1
									A8	d1
		CHE 4xx	Elective Course 1	3	-	2	-	2	Refer to list of elective	
		Total		**18**		**12**	**2**	**10**		
	SEMESTER 2	CHE405	Mass Transfer Operations	3	CHE 403	2	-	2	A7	d1,d2,d3
									B1	b1, c1
		CHE 406	Bio organic chemistry	3	CHE 203	2	-	2	A1	a2, b2, c2
									B1	a1,b1
		CHE 407	Mechanical unit operations	3	CHE 304	2	-	2	A3	a1,b1, c1
									A5	c1,d1
									B1	a1,b1, c1
		CHE 408	Process Modeling and Simulation	3	MTH 302 CHE 405	2	2	-	A2	a2,b3,b4
									B3	d1

A. Compulsory											
Level	Semester	Code	Course Name	units	Prerequisite	Hours per week			Competencies	LO'S
						Lect.	Lab	Exer.		
		ENG 401	Environmental management	3	-	3	-	-	A3	a2,a3,b1, c1
									A4	a1,c1,c3
									A10	d1
		CHE 4xx	Elective Course 2	3	-	2	-	2	Refer to list of elective	
		ENG 530	Training (2)	0	-	-	90	-	A5	c1, d1
									A10	d1, d2
									B2	d1
		Total		**18**		**13**	**2**	**8**		
LEVEL 5	SEMESTER 1	CHE 501	Computer Applications	3	ENG 104	2	2	-	B1	a1,b1, c1
									B3	d1
		CHE 502	Petrochemical Engineering	3	CHE 101,CHE 201	2	-	2	B1	a1,b1,c1
									B2	d1
		CHE 503	Industrial Technology in Chem. Eng.	3	-	2	2	-	A3	a2,a3, b1, c1
									B1	a1,b1, c1
		CHE 509	Project 1	3	-	2	2	-	A2	c1,c2, c3
									A3	c1, c2
									A5	c1, d1
									A6	b1,c1, c2
		CHE 5xx	Elective Course 3	3	-	2	-	2	Refer to list of elective	
		CHE 5xx	Elective Course 4	3	-	2	-	2	Refer to list of elective	
		Total		**18**		**12**	**6**	**6**		
	SEMESTER 2	CHE 504	Plant Design	3	CHE 401	2	-	2	A9	d1,d2, d3
									B1	a1,b1, c1
									B3	d1
									B4	d1
		CHE 505	Petroleum Refining Engineering	3	CHE 405	2	-	2	A10	d1, d2
									B1	a1,b1, c1
									B2	d1

A. Compulsory										
Level	Semester	Code	Course Name	units	Prerequisite	Hours per week			Competencies	LO'S
						Lect.	Lab	Exer.		
		ENG 415	Quality Assurance and Engineering Reliability	3	-	2	-	2	A4	a1,a2,b1, c2, c4
									A6	b1, c2
		CHE 510	Project 2	3	CHE 509	1	4	-	A7	d1,d2, d3
									A8	d1, d2
									A9	d1,d2, d3
									B3	d1
									B4	d1
		CHE 5xx	Elective Course 5	3	-	2	-	2	Refer to list of elective	
		CHE 5xx	Elective Course 6	3	-	2	-	2	Refer to list of elective	
		Total		**18**		**11**	**4**	**10**		

	Code	Course name	units	Prerequisite	Hours per week			Competencies	LO'S
					Lect.	Lab	Exer.		
Elective 1	CHE 414	Polymer engineering	3	-	2	-	2	A3	a1,a2, a3,b1,c1,c2
								B1	a1,b1,c1
	CHE 415	Engineering Materials Selection	3	-	2	-	2	A3	a1,a2, a3,b1,c1,c2
								B1	a1,b1,c1
	CHE 417	Polymer processing	3	-	2	-	2	A3	a1,a2, a3,b1,c1,c2
								B1	a1,b1,c1
Elective 2	CHE 411	Liquefied Natural Gas	3	-	2	-	2	A3	a1,b1, c1
								A9	d1,d2,d3
								B2	d1
	CHE 412	Air Pollution	3	-	2	-	2	A3	a1,b1, c1
								A9	d1,d2,d3
								B2	d1
	CHE 413	Gas engineering	3	-	2	-	2	A3	a1,b1, c1
								A9	d1,d2,d3
								B2	d1
	CHE 416	Water desalination	3	-	2	-	2	A3	a1,b1, c1

								A9	d1,d2,d3
								B2	d1
Elective 3	CHE 511	Electroplating	3	-	2	-	2	A3	a2, c1
								A10	d1, d2
								B2	d1
								B4	d1
	CHE 514	Printing	3	-	2	-	2	A3	a2, c1
								A10	d1, d2
								B2	d1
								B4	d1
	CHE 515	Paints technology	3	-	2	-	2	A3	a2, c1
								A10	d1, d2
								B2	d1
								B4	d1
	CHE 519	Paper technology	3	-	2	-	2	A3	a2, c1
								A10	d1, d2
								B2	d1
								B4	d1
Elective 4	CHE 512	Ceramics	3	-	2	-	2	B2	d1
								B4	d1
	CHE 513	Refractories	3	-	2	-	2	B2	d1
								B4	d1
	CHE 517	Synthetic fibers	3	-	2	-	2	B2	d1
								B4	d1
	CHE 521	Plasticizers	3	-	2	-	2	B2	d1
								B4	d1
	CHE523	Rubber	3	-	2	-	2	B2	d1
								B4	d1
Elective 5	CHE 516	Wastewater Treatment	3	-	2	-	2	A4	a1, c1, c3
								B1	b1, c1
	CHE 518	Gas Sweetening	3	-	2	-	2	A4	a1, c1, c3
								B1	b1, c1
	CHE 520	Industrial safety	3	-	2	-	2	A4	a1, c1, c3
								B1	b1, c1
	CHE 525	Introduction to combustion phenomena	3	-	2	-	2	A4	a1, c1, c3
								B1	b1, c1
Elective 6	CHE 522	Foams	3	-	2	-	2	B1	a1, b1, c1
								B2	d1
	CHE 524	Food processing technology	3	-	2	-	2	B1	a1, b1, c1
								B2	d1
	CHE 526	Special topics in chemical engineering	3	-	2	-	2	B1	a1, b1, c1
								B2	d1

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 6.5
- Assistants 6
- Students 92
- "Staff members / Students" Ratio 1:14 = 7.14%
- " Assistants / Student" Ratio 1:15 = 6.67%

b. Matching of institute members' specialization to programme 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 Programme 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 programme requirements
No requirements needed

5. Quality Management

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

- Every 5 years the curriculum is revised and updated.
- An internal evaluation system for the programme is going to be set.
- An external evaluation system for the programme 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
Giving enough time during the lecture for discussion	By asking questions and discussing the answers	Courses' Coordinators	2023-2024
Relate the theoretical study by the practical field	Make some scientific visits for petrochemical laboratories and make cooperation protocols with companies.	Courses' Coordinators	2023-2024
Conducting a training course on the use of engineering theories in industry.	Holding a training course on the Zoom program	Courses' Coordinators	2023-2024
Emphasis on linking the practical part with the theoretical part	By discussing during the lecture what has been concluded practically	Courses' Coordinators	2023-2024
Increase some of scientific reference In the library of the institute	Add more scientific reference In the electronic library of the institute	Courses' Coordinators	2023-2024

Application of modern teaching methods	Divide the students into groups to present an applied part about the contents of the course	Courses' Coordinators	2023-2024
Increasing visual aids that help understanding the content	Increasing the explanatory videos in the teaching content	Courses' Coordinators	2023-2024

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

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

9/2023