



وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
بدمياط الجديدة



2022- 2023

Chemical Engineering Program Report

فصول دراسية



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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): **194**
2. No. of students starting the program (First year: 2022-2023): **86**
3. No. of students in second year (2022-2023): **62**
4. No. of students in the third year (2022-2023): **46**
5. No. of students starting fourth year (2022-2023): **-**
6. No. of students completed and graduated from the program (2022-2023): **-**
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): **-**
8. The enrollment trend of students attributed to the numbers enrolled during the last 3 years: the number is increasing
9. No. and percentage of students passing in each year: **Table A**
10. 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	86	62	46	-
No. of Attending passing	67	55	45	-
Percentage	77.91%	88.71%	97.82%	-

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		Passed with Courses		Failed	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
First Year	10	11.63	9	10.47	10	11.63	13	15.12	25	29.07	19	22.09
Second Year	6	9.68	10	16.13	25	40.32	3	4.84	11	17.74	7	11.29
Third Year	7	15.22	18	39.13	14	30.43	2	4.35	4	8.7	1	2.17
Fourth Year	-	-	-	-	-	-	-	-	-	-	-	-

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 staff 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: (N/A)
- ii. Proceeded to other employment: (N/A)
- iii. Undertaken postgraduate study: (N/A)
- iv. Engaged in other types of activity: (N/A)
- 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	a1, b1, a3	
		BAS012	Mechanics 1	2	-	2	A1	a1, b1, a2	
		BAS013	Physics 1	2	2	2	A1	a1, b1, a2	
		BAS014	Engineering Chemistry	A1	a1, c2, c3				
				A10	d2				
		BAS015	Engineering drawing and projection	1	-	2	A1	a1, b1, a2, b2	
		BAS016	Int. to computer systems	A1	c2, c3				
	A5			b1					
	Total				11	8	8		
	SEMESTER 2	BAS021	Mathematics 2	2	-	2	A1	a1, b1, a3, b3	
		BAS022	Mechanics 2	2	-	2	A1	a1, b1, a2, c1	
		BAS023	Physics 2	2	2	2	A1	a1, b2, a2, a3	
		BAS024	Production engineering	A3	c1, c2				
				A5	a1,b1,c1,d1				
A6				a1, c2					
A9				d1,d2,d3					
BAS025		Int. to Engineering and environment	A3	a2, a3, b1, c1					
	A4		a1						
	A10		d1,d2						
	B2		d1						
BAS026	Technical English Language 1	1	-	2	A8	d1			



A. Compulsory								
Level	Semester	Code	Course Name	Hours per week			Competencies	Program LO'S
				Lec.	Lab.	Exer.		
		BAS027	Human Rights	2	-	-	A8	d1
		Total		15	6	6		
LEVEL 1	SEMESTER 1	BAS111	Mathematics 3	2	-	2	A1	a1, a2, a3, b1
		BAS112	Electrical Engineering Fundamental	3	-	2	A1	a1, a2, b1, b2, c1, c2
							A2	a1, b3, b4, c1
		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	-	A2	a1, b3, c1
							A5	a1, b1, c1, d1
							A7	d1, d2, d3
	CHE111	Inorganic Chemistry	2	2	-	A8	d1, d2	
A2						a2, b2, c2		
		Total		14	6	6		
S E		BAS121	Mathematics 4	2	-	2	A1	a1, a2, a3, b1, c1



A. Compulsory								
Level	Semester	Code	Course Name	Hours per week			Competencies	Program LO'S
				Lec.	Lab.	Exer.		
		BAS122	Technical Report Writing	2	2	-	A5	a1,a2,b1,b2,c1,d1
							A8	d1,d2
		BAS123	Int. to Information Technology	2	-	2	A4	a2, a3, c3
							A8	d1, d2
		BAS124	Strengthen 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, a2, b1, b3, c2
		BAS212	Fluid Mechanics	2	1	1	A1	a1, a2, b1, b2, b3
							A2	a1, a2, b1
		BAS213	Engineering Economy	2	-	1	A3	a1, a2, b1, c1
							A4	a2,b1,c2



A. Compulsory									
Level	Semester	Code	Course Name	Hours per week			Competencies	Program LO'S	
				Lec.	Lab.	Exer.			
		BAS214	Heritage of Egyptian Literature	2	-	-	A9	d1,d3	
		CHE211	Chemical Eng. principles 1	2	-	2	A9	d1, d2	
							A10	d1	
		CHE212	Material science and metallurgy	2	-	2	A7	d2,d3	
							A10	d1,d2	
							B2	d1	
	CHE213	Principles of Eng. Design	2	-	2	A5	a1,b1,d1		
						A9	d1,d2,d3		
						A10	d2		
						B2	d1		
	Total				14	1	10		
		SEMESTER 2	BAS221	Numerical Methods in Engineering	2	-	2	A1	a1, a2, b1, b2, c1, c2
			CHE221	Chemical Eng. Principles2	3	-	2	A2	b4, c1, c3
								A3	b1, c2
B1								a1	
B3								d1	
CHE222			Chemical Engineering Thermodynamics	2	1	2	A1	a1, a2, b1	
							B1	a1, b1, c1	
CHE223			Analytical Chemistry	2	2	-	A2	b2,b3	
							A6	a1, b1, c2	
							A9	d2,d3	
	B3	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
							A4	a3
							A6	b1, c2
							B3	d1
		CHE225	Heat transfer	2	1	2	A2	b3,c2,c3
							A10	d1,d2
							B4	d1
		CIE 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
							A3	a2,b1,c2
							A6	b1, c2
		CHE313	Mass Transfer Operations I	2	-	2	B1	a1, b1, c1
							B2	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
							B4	d1
		CHE316	Elective 1	2	-	2	A3	a1,b1,c1
							A9	d1,d2,d3
							B2	d1
		Total		14	1	12		
	SEMESTER 2	BAS321	Project Management and Control	2	-	2	A4	a2, b1, c2
							A6	a1,b1
							A8	d1
		CHE321	Mass Transfer Operations II	3	-	2	A7	d1, d2, d3
							B1	b1, c1
		CHE322	Corrosion engineering	2	-	2	A4	b1,c1
							A10	d1,d2
							B2	d1
							B4	d1
		CHE323	Mechanical unit operations	3	-	2	A3	a1, b1, c1
						A5	c1, d1	
						B1	a1, b1, c1	
	CHE324	Process Modeling and Simulation	3	2	-	A2	a2, b3, b4	
						B3	d1	
	CHE325	Elective 2	2	-	2	B1	a1,b1,c1	
						B2	d1	
	CHE326	Training 2*	-	-	-	A5	c1, d1	



A. Compulsory								
Level	Semester	Code	Course Name	Hours per week			Competencies	Program LO'S
				Lec.	Lab.	Exer.		
							A10	d1, d2
							B2	d1
		Total		14	2	10		
LEVEL 4	SEMESTER 1	CHE411	Computer Applications in Chem. Eng.	3	-	2	B1	a1, b1, c1
							B3	d1
		CHE412	Petrochemical Engineering	2	-	2	B1	a1, b1, c1
							B2	d1
		CHE413	Plant Design	3	-	2	A9	d1, d2, d3
							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
							B1	a1, b1, c1
							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 15 th week
2- Quizzes and reports	To assess knowledge and understanding & general and transferable skills: a, d	Continuous assessment	The 2 nd -7 th - 9 th week
3- Oral exams	To assess knowledge and understanding, intellectual, general and transferable skill: a, b, d	Assessment Session	The 14 th week
4- Practical	To assess knowledge and understanding, professional, general and transferable skill: a, c, d	2 hours examination	The 14 th 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 194
- "Staff members / Students" Ratio $1:30 = 3.33\%$
- " Assistants / Student" Ratio $1:32 = 3.125\%$

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



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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