



وزارة التعليم العالي  
المعهد العالي للهندسة والتكنولوجيا  
بدمياط الجديدة



2020- 2021

## Chemical Engineering Program Report



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# Program Report for B.Sc. Chemical Engineering Program

Program Report



## Program Report 2020/2021

### Bachelor of Science in chemical Engineering **Academic Year: (2020 -2021)**

#### 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: **2020-2021**
8. Last date of program specifications approval: **October 2020**
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 (2020-2021): **141**
2. No. of students starting the program (First year: 2020-2021): **28**
3. No. of students in second year (2020-2021): **59**
4. No. of students in the third year (2020-2021): **40**
5. No. of students starting fourth year (2020-2021): **14**
6. No. of students completed and graduated from the program (2020-2021): **14**
7. No. of students completing and graduated from the program (Fourth year) and as a percentage of those who started in fourth year (2020-2021): **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 (2020- 2021)**

Academic level	First Year 2020-2021	Second Year 2020-2021	Third Year 2020-2021	Fourth Year 2020-2021
No. of Attending student	28	59	40	14
No. of Attending passing	25	56	37	14
Percentage	89.29%	94.91%	92.5%	100%

**Table B: Number and Percentage of students in each Grade (2020-2021) (% from the total students completed the year)**

Academic level	Excellent		V. Good		Good		Passed		Failed	
	No.	%	No.	%	No.	%	No.	%	No.	%
First Year	0	0	1	3.57	4	14.29	20	71.43	3	10.71
Second Year	0	0	9	15.25	23	38.98	24	40.68	3	5.08
Third Year	2	5	8	20	9	22.5	18	45	3	7.5
Fourth Year	0	0	3	21.43	7	50	4	28.57	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 staff 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 A10	a1,c2,c3 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 A5	c2,c3 b1
		<b>Total</b>		<b>18</b>			<b>10</b>	<b>10</b>	<b>6</b>	
	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 A3 A6	a1,b3,a3 c1,c2 a1,c2
		ENG 106	Introduction to Engineering and environment	2	-	2	-	-	A1 A3	a2,a3,b2, c3 a2,a3,b1, c1
		LNG 101	Technical English Language 1	2	-	1	2	-	A8	d1
		<b>Total</b>		<b>18</b>			<b>12</b>	<b>6</b>	<b>6</b>	



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	
		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	
	<b>Total</b>				<b>18</b>		<b>12</b>	<b>4</b>	<b>8</b>		
	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			
<b>Total</b>				<b>18</b>		<b>12</b>	<b>6</b>	<b>6</b>			





A. Compulsory											
Level	Semester	Code	Course Name	units	Prerequisite	Hours per week			Competencies	LO'S	
						Lect.	Lab	Exer.			
LEVEL 4	SEMESTER 1	ENG 430	Training 1	0	-	-	90	-	A6 A5 A7 A8 B1	b1, c2 a1, b1 d1, d2,d3 d1, d2 b1, c1	
		<b>Total</b>			<b>18</b>		<b>12</b>	<b>4</b>	<b>8</b>		
		CHE 401	Reactor Design	4	CHE 304	3	-	2	A6 B1	a1,b1, c1 a1,c1	
		CHE 402	Heat transfer	3	ENG 202	2	2	-	A2 A10 B4	b3,b4,c2, c3 d1,d2 d1	
		CHE 403	Mass Transfer	3	ENG 202	2	-	2	B1 B2	a1, b1, c1 d1	
	CHE 404	Corrosion engineering	2	CHE 303	1	-	2	A1 B2	a2, b2, c2 d1		
	ENG 408	Project Management and Control	3	-	2	-	2	A4 A6 A8	a2,b1,c2 a1,b1 d1		
	CHE 4xx	Elective Course 1	3	-	2	-	2	Refer to list of elective			
	<b>Total</b>			<b>18</b>		<b>12</b>	<b>2</b>	<b>10</b>			
	SEMESTER 2	CHE405	Mass Transfer Operations	3	CHE 403	2	-	2	A7 B1	d1,d2,d3 b1, c1	
CHE 406		Bio organic chemistry	3	CHE 203	2	-	2	A1 B1	a2, b2, c2 a1,b1		
CHE 407		Mechanical unit operations	3	CHE 304	2	-	2	A3 A5	a1,b1, c1 c1,d1		
								B1	a1,b1, c1		
CHE 408		Process Modeling and Simulation	3	MTH 302 CHE 405	2	2	-	A2 B3	a2,b3,b4 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	
		<b>Total</b>		<b>18</b>		<b>13</b>	<b>2</b>	<b>8</b>		
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	
		<b>Total</b>		<b>18</b>		<b>12</b>	<b>6</b>	<b>6</b>		
	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 A6	a1,a2,b1, c2, c4 b1, c2
		CHE 510	Project 2	3	CHE 509	1	4	-	A7 A8 A9 B3 B4	d1,d2, d3 d1, d2 d1,d2, d3 d1 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	
		<b>Total</b>		<b>18</b>		<b>11</b>	<b>4</b>	<b>10</b>		

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



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								A9	d1,d2,d3
								B2	d1
<b>Elective 3</b>	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	
<b>Elective 4</b>	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	
<b>Elective 5</b>	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
<b>Elective 6</b>	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 15 <sup>th</sup> week
2- Quizzes and reports	To assess knowledge and understanding & general and transferable skills: a, d	Continuous assessment	The 2 <sup>nd</sup> -7 <sup>th</sup> - 9 <sup>th</sup> week
3- Oral exams	To assess knowledge and understanding, intellectual, general and transferable skill: a, b, d	Assessment Session	The 14 <sup>th</sup> week
4- Practical	To assess knowledge and understanding, professional, general and transferable skill: a, c, d	2 hours examination	The 14 <sup>th</sup> 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 7.5
- Assistants 4
- Students 141
- "Staff members / Students" Ratio  $1:19 = 5.26\%$
- " Assistants / Student" Ratio  $1:35 = 2.86\%$

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
<b>Library convenience</b>		√	
<b>Laboratories convenience</b>		√	
<b>Computer systems convenience</b>		√	

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

- Regular maintenance of display devices
- Providing the Internet within classrooms and strengthening networks to facilitate the teaching staff

#### 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
Keeping up with developments in the field of chemical engineering	Upgrading, modifying curriculum plan and development the new program and courses specifications.	Head of the Department & courses' coordinators	Every 5 years
Increase some of scientific reference In the library of the institute	Add more scientific reference In the electronic library of the institute	Institute management	2021-2022
Increase self-study material	Include chapter one in the self-study material	Courses' Coordinators	2021-2022
Using the internet in the research	self-study	Courses' Coordinators	2021-2022



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Relate the theoretical study by the practical field	Visits to petrochemical plants.	Institute management	2021-2022
Update references	Revising the courses of the new program	Courses' Coordinators	2021-2022
To increase the online teaching	Preparing and adjusting the course material and activities to be more suitable for the online teaching.	Courses' Coordinators	2021-2022

Program coordinator: **Prof. Dr. Hend Elsayed Gadow**

Head of the Department: **Prof. Dr. Hend Elsayed Gadow**

9/2021