



قسم الهندسة الكيميائية



وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
بدمياط الجديدة

وثيقة اعتماد
برنامج "الهندسة الكيميائية"
للفصول الدراسية

لائحة الفصول الدراسية قرار رقم 1328

بتاريخ 2019/4/14

مجلس القسم العلمي لإعتماد توصيف البرنامج والمقررات

بتاريخ 27/7/2025

المجلس الأكاديمي لإعتماد توصيف البرامج والمقررات

بتاريخ 29/7/2025

مجلس إدارة المعهد لإعتماد توصيف البرامج والمقررات

بقرار رقم (120) بتاريخ 30/7/2025



Program Coordinator	Vice Dean for Education and Student Affairs
Assoc. Prof. Dr. Hend Elsayed Gadow	Prof. Dr. Khaled Samir



برنامج الهندسة الكيميائية

(2025-2026)

**Name & Signature
Program Coordinator**

**Assoc. prof. Hend Elsayed
Gadow**

**Name & Signature
Vice Dean for Education and
Student Affairs**

Prof. Dr. Khaled Samir



Program Specification

(2025-2026)

1. Basic Information

Program Title	Chemical Engineering Program
Total number of points of the program:	269
Number of academic years/levels (expected program duration):	Five years
Department (s) Participating (if any) in teaching the program:	Basic Science and Engineering Department
Institute:	The Higher Institute of Engineering and Technology in Nem Damietta
University	Ministry of Higher Education & Scientific Research
Program majors/divisions/tracks/specialties in the final year (if any):	-
Partnerships with other parties and the nature of each (if any):	-
Name of the program coordinator (attach the assignment decision):	Assoc.prof. Hend Elsayed Gadow
Program Specification Approval Date:	27/7/2025
Council responsible for Program Specification Approval (Attach the Decision / Minutes):	29/7/2025

2. Program Aims (Brief description of the overall purpose the program)

The program aims to forge expert problem-solvers who can convert scientific theory into efficient, real-world processes and products. It develops strong analytical and systemic thinkers capable of designing and optimizing systems while managing economic and environmental impacts. A core goal is to cultivate collaborative, ethical professionals who lead multidisciplinary teams with effective communication. It instills a responsibility for societal advancement and sustainability through engineering innovation. Finally, it prepares graduates for lifelong learning and leadership, equipping them with the business and entrepreneurial skills to drive industry forward.

3. Program Structure (Curriculum)

Requirement Category/Type			Number of Courses	Number of Points	Percentage from the total number points
University Requirements			7	20	7.43 %
Institute Requirements			17	76	28.25 %
Program Requirements	General Department Requirements		23	94	34.94 %
	Specific Department Requirement		18	79	29.37 %
Requirements of the majors/ divisions/ tracks/ specializations in the final year (if any)			-	-	-
Other requirements	Field Training			Note: The student should make training in the summer following the 2 nd semester for 4 weeks.	
	Graduation Project	Project 1		5	1.86 %
		Project 2		6	2.23 %
Total Compulsory Courses			60	245	91.08 %
Elective Courses			6	24	8.92 %
Total			66	269	100 %

- Program Components
- Program courses according to the expected study plan

Academic Level	Semester	Course Code	Course Title	Course Type	Requirement Category/ Type	No. of points	Hours per week			
							Theoretical teaching	Practical training	Tutorial	Self-learning (Tasks/ Assignments/ Projects)
LEVEL 0	SEMESTER 1	BAS011	Mathematics 1	Compulsory	Institute	8	2	-	2	4
		BAS012	Mechanics 1			8	2	-	2	4
		BAS013	Physics 1			10	2	2	2	4
		BAS014	Engineering Chemistry			8	2	2	-	4
		BAS015	Engineering drawing and projection			9	1	4	-	4
		BAS016	Int. to computer systems		8	2	2	-	4	
	SEMESTER 2	BAS021	Mathematics 2	Compulsory	Institute	8	2	-	2	4
		BAS022	Mechanics 2			8	2	-	2	4
		BAS023	Physics 2			10	2	2	2	4
		BAS024	Production engineering			9	3	2	-	4
		BAS025	Int. to Engineering and environment		4	2	-	-	2	
		BAS026	Technical English Language 1		7	2	2	-	3	
		BAS027	Human Rights		4	2	-	-	2	
	L	S	BAS111	Mathematics 3	Co m	In sti	8	2	-	2

Academic Level	Semester	Course Code	Course Title	Course Type	Requirement Category/ Type	No. of points	Hours per week			
							Theoretical teaching	Practical training	Tutorial	Self-learning (Tasks/ Assignments/ Projects)
SEMESTER 2		BAS112	Electrical Engineering Fundamental	Compulsory	university	9	3	-	2	4
		BAS113	Engineering Thermodynamics			9	3	-	2	4
		BAS114	Technical English Language 2			7	2	2	-	3
		BAS115	Computer programming		General	8	2	2	-	4
		CHE111	Inorganic Chemistry			9	2	2	-	5
	BAS121	Mathematics 4	Compulsory	Institute	9	2	-	2	5	
	BAS122	Technical Report Writing			8	2	2	-	4	
	BAS123	Int. to Information Technology			8	2	-	2	4	
	BAS124	Strength of materials		General	8	2	-	2	4	
	CHE121	Organic Chemistry			9	2	2	-	5	
	CHE122	Physical Chemistry			7	2	2	-	3	

Academic Level	Semester	Course Code	Course Title	Course Type	Requirement Category/ Type	No. of points	Hours per week			
							Theoretical teaching	Practical training	Tutorial	Self-learning (Tasks/ Assignments/ Projects)
LEVEL 2	SEMESTER 1	BAS211	Engineering Probability and Statistics	Compulsory	Institute	8	2	-	2	4
		BAS212	Fluid Mechanics		General	8	2	1	1	4
		BAS213	Engineering Economy			6	2	-	1	3
		BAS214	Heritage of Egyptian Literature		university	5	2	-	-	3
		CHE211	Chemical Eng. principles 1		General	9	2	-	2	5
		CHE212	Material science and metallurgy			7	2	-	2	3
		CHE213	Principles of Eng. Design			7	2	-	2	3
	SEMESTER 2	BAS221	Numerical Methods in Engineering	Compulsory	Institute	8	2	-	2	4
		CHE221	Chemical Eng. Principles2		General	10	3	-	2	5
		CHE222	Chemical Engineering Thermodynamics			9	2	1	2	4
		CHE223	Analytical Chemistry			8	2	2	-	4
		CHE224	Process Dynamics and Control			8	2	-	2	4
		CHE225	Heat transfer			8	2	1	2	3
		CHE 226	Training 1 *			-	-	-	-	-

Academic Level	Semester	Course Code	Course Title	Course Type	Requirement Category/ Type	No. of points	Hours per week			
							Theoretical teaching	Practical training	Tutorial	Self-learning (Tasks/ Assignments/ Projects)
LEVEL 3	SEMESTER 1	BAS311	Environmental management	Compulsory	General	6	2	-	1	3
		CHE311	Reactor Design		Specific	8	2	-	2	4
		CHE312	Operations Research		General	8	2	-	2	4
		CHE313	Mass Transfer Operations I		Specific	8	2	-	2	4
		CHE314	Bio chemistry		General	8	2	-	2	4
		CHE315	Electrochemistry			7	2	1	1	3
		CHE316	Elective 1	Elective	Specific	7	2	-	2	3
	SEMESTER 2	BAS321	Project Management and Control	Compulsory	General	8	2	-	2	4
		CHE321	Mass Transfer Operations II		Specific	9	3	-	2	4
		CHE322	Corrosion engineering			7	2	-	2	3
		CHE323	Mechanical unit operations	Compulsory	Specific	9	3	-	2	4
		CHE324	Process Modeling and Simulation			9	3	2	-	4
		CHE325	Elective 2	Elective	-	8	2	-	2	4
		CHE326	Training 2*	Compuls		-	-	-	-	-

Academic Level	Semester	Course Code	Course Title	Course Type	Requirement Category/ Type	No. of points	Hours per week			
							Theoretical teaching	Practical training	Tutorial	Self-learning (Tasks/ Assignments/ Projects)
LEVEL 4	SEMESTER 1	CHE411	Computer Applications in Chem. Eng.	Compulsory	General	9	3	2	-	4
		CHE412	Petrochemical Engineering		Specific	8	2	-	2	4
		CHE413	Plant Design			9	3	-	2	4
		CHE414	Project 1*			9	3	2	-	4
		CHE415	Elective 3	Elective	8	2	-	2	4	
		CHE416	Elective 4		8	2	-	2	4	
	SEMESTER 2	BAS421	Research and Analytical skills	Compulsory	university	5	2	-	-	3
		CHE421	Industrial Technology in Chem. Eng.		Specific	8	2	-	2	4
		CHE422	Petroleum Refining Engineering			7	2	-	2	3
		CHE423	Quality Assurance and Engineering Reliability			General	6	2	-	1
		CHE424	Project 2*		Specific	10	2	4	-	4
		CHE425	Elective 5			7	2	-	2	3
		CHE426	Elective 6	Elective			2	-	2	3

Elective Courses

The students should choose one course from each of the following tables:

	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

4. Academic Standards

- Adopted Academic Standards (NARS/ARS): NARS 2018
- Date of Adoption of Standards in the governing Council: 26/4/2021
- * Decision/Minutes of the governing Council to be attached

5. Matrix of Academic Standards (Program Outcomes POs) with Courses

	Code	Course title	Competencies															
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4		
Level zero	BAS011	Mathematics 1																
	BAS012	Mechanics 1																
	BAS013	Physics 1																
	BAS014	Engineering Chemistry																
	BAS015	Engineering drawing and projection																
	BAS016	Int. to computer systems																
	BAS021	Mathematics 2																
	BAS022	Mechanics 2																
	BAS023	Physics 2																
	BAS024	Production engineering																
	BAS025	Int. to Engineering and environment																
	BAS026	Technical English Language 1																
	BAS027	Human Rights																
Level one	BAS111	Mathematics 3																
	BAS112	Electrical Engineering Fundamentals																
	BAS113	Engineering Thermodynamics																
	BAS114	Technical English Language 2																
	BAS115	Computer programming																
	CHE111	Inorganic Chemistry																
	BAS121	Mathematics 4																

	Code	Course title	Competencies															
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4		
	BAS122	Technical report writing																
	BAS123	Int. to Information Technology																
	BAS124	Strength of materials																
	CHE121	Organic Chemistry																
	CHE122	Physical Chemistry																
Level two	BAS211	Engineering Probability and Statistics																
	BAS212	Fluid Mechanics																
	BAS213	Engineering Economy																
	BAS214	Heritage of Egyptian Literature																
	CHE211	Chemical ENG Principles1																
	CHE212	Material science and metallurgy																
	CHE213	Principles of Engineering Design																
	BAS221	Numerical Methods in Engineering																
	CHE221	Chemical Engineering Principles 2																
	CHE222	Chemical Engineering Thermodynamics																
	CHE223	Analytical Chemistry																
	CHE224	Process Dynamics and Control																
	CHE225	Heat transfer																
	CHE226	Training 1																
Level three	BAS311	Environmental management																
	CHE311	Reactor Design																
	CHE312	Operations Research																
	CHE313	Mass Transfer Operations 1																
	CHE314	Bio chemistry																

		Code	Course title	Competencies														
				A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	
Level four	Elective 1	CHE315	Electrochemistry															
		CHE316 A	Liquified Natural Gas															
		CHE316 B	Gas Sweetening															
		CHE316 C	Gas Engineering															
		CHE316 D	Introduction to Combustion Phenomena															
		CHE316 E	Air Pollution															
			CHE316 F	Engineering Material Selection														
			BAS321	Project Management and Control														
			CHE321	Mass Transfer Operations 2														
			CHE322	Corrosion Engineering														
			CHE323	Mechanical unit operations														
			CHE324	Process Modeling and Simulation														
		Elective 2	CHE325 A	Foam Industry														
			CHE325 B	Ceramics Industry														
			CHE325 C	Polymer Engineering														
			CHE325 D	Food Processing Technology														
		CHE326	Training 2															
	Elective 3	CHE411	Computer Applications in Chem. Eng.															
		CHE412	Petrochemical Engineering															
		CHE413	Plant Design															
		CHE414	Project 1															
		CHE415 A	Electroplating															
		CHE415 B	Synthetic Fiber															
		CHE415 C	Paints Technology															
		CHE415 D	Renewable Energy Sources															

		Code	Course title	Competencies													
				A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4
Elective 4	CHE416 A	Water Desalination															
	CHE416 B	Wastewater Treatment															
	CHE416 C	Rubber Industry															
	BAS421	Research and Analytic Skills															
	CHE421	Industrial Technology in Chemical Engineering															
	CHE422	Petroleum Refining Engineering															
	CHE423	Quality Assurance and Engineering Reliability															
	CHE424	Project2															
Elective 5	CHE425 A	Industrial Safety															
	CHE425 B	Special Topics in Chemical Engineering															
	CHE425 C	Plasticizers															
	CHE425 D	Fertilizers Technology															
Elective 6	CHE426 A	Pulp and Paper Industry															
	CHE426 B	Polymer Processing															
	CHE426 C	Refractories															
	CHE426 D	Printing Technology															

6. Teaching and Learning strategies/methods to achieve Program Outcomes:

1. Face-to-Face Lecture
2. Flipped Classroom
3. Discussion
4. Brain storming
5. Self-learning and Research
6. Problem solving
7. Site visits
8. Projects
9. Modeling

10. Practical

7. Student Assessment strategies/methods to verify and ensure students' acquisition of Program Outcomes:

1. Periodic exams (midterm, quizzes, sheets, assignments, reports, and presentation).
2. Practical Exam
3. Final oral Exam
4. Final Written Exam

8. Program Key Performance Indicators (if any)

No.	Performance Indicator	Target Level	Method	Measurement
1	Percentage of students achieving the program learning outcomes	$\geq 80\%$	Course reports + exam analysis	Percentage of students scoring "acceptable" or not
2	Student satisfaction rate with the quality of the program	$\geq 80\%$	Questionnaires	Analyzed results of student satisfaction surveys approved by the Quality Assurance Unit
3	Graduation rate within the minimum study duration (5 years)	$\geq 75\%$	Student academic records	Number of students graduating on time \div total number of students in the cohort $\times 100$
4	Employer and external stakeholders' satisfaction with graduates	$\geq 75\%$	Questionnaires + Site visits	Results of surveys evaluating graduate performance and competency in the workplace

Name & Signature
Program Coordinator

Assoc. prof. Hend Elsayed Gadow

Name & Signature
Vice Dean for Education and Student Affairs

Prof. Dr. Khaled Samir