وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
بدمياط الجديدة

قسم الهندسة الكيميائية

وثيقة إعتماد

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

ProgramTitle	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 2nd 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		university	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		university	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	4

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)
		BAS112	Electrical Engineering Fundamental			9	3	-	2	4
		BAS113	Engineering Thermodynamics			9	3	-	2	4
		BAS114	Technical English Language 2		university	7	2	2	-	3
		BAS115	Computer programming		General	8	2	2	-	4
		CHE111	Inorganic Chemistry			9	2	2	-	5
	SEMESTER 2	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		9	3	-	2	4
		CHE324	Process Modeling and Simulation			9	3	2	-	4
		CHE325	Elective 2	Elective		8	2	-	2	4
		CHE326	Training 2*	Compulsory	-	-	-	-	-	-

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	3
		CHE424	Project 2*		Specific	10	2	4	-	4
		CHE425	Elective 5	Elective		7	2	-	2	3
		CHE426	Elective 6				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 Egyption 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		CHE315	Electrochemistry		■								■		■		
	Elective 1	CHE316 A	Liquified Natural Gas			■						■		■	■		
		CHE316 B	Gas Sweetning			■						■		■	■		
		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		■											■	
	Elective2	CHE325 A	Foam Industry												■		■
		CHE325 B	Ceramics Industry												■		■
		CHE325 C	Polymer Engineering												■		■
		CHE325 D	Food Processing Technology												■		■
		CHE326	Training 2					■					■		■		
		CHE411	Computer Applications in Chem. Eng.											■		■	
		CHE412	Petrochemical Engineering												■		
		CHE413	Plant Design			■						■		■		■	■
		CHE414	Project 1		■	■		■	■								
	Elective 3	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 Enginering			■								■			
		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	≥ 80%	Course reports + exam analysis	Percentage of students scoring "acceptable" or not
2	Student satisfaction rate with the quality of the program	≥ 80%	Questionnaires	Analyzed results of student satisfaction surveys approved by the Quality Assurance Unit
3	Graduation rate within the minimum study duration (5 years)	≥ 75%	Student academic records	Number of students graduating on time ÷ total number of students in the cohort × 100
4	Employer and external stakeholders' satisfaction with graduates	≥ 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