High Institute of Engineering and Technology

In New Damietta

Chemical Engineering Department

Undergraduate Program Report

Chemical Engineering Department
Undergraduate Program Report

A. BASIC INFORMATION

Program Title	Chemical Engineering
Field of the Program	Chemical Engineering
Number of Study Years	Five levels
Number of Credit Hours	180 hours
System of Exam Committee	Semester Evaluation System
System of External Exam Committee	Not applied
Department offering the program	Chemical Engineering
Date of curriculum approval	2007
Date of Program Report Approval	30/8/2017

B. SPECIALIZED INFORMATION

B.1. Statistics

B.1.1. Program Statistics

Element	Number	Percent
Students *Enrolled* in the program (4 levels)	155	-----
Students *Completing* the program		
First semester	6	
Second semester	46	
Summer semester	11	
Students *Passed* the program		
First semester	5	83.33%
Second semester	37	80.43%
Summer semester	5	45.45%
Students *Excellent* graded		
First semester	0	----
Second semester	8	17.4%
Summer semester	0	------
Students graded *Very Good*		
First semester	0	-----
Second semester	19	41.3%
Summer semester	0	------
Students graded *Good*		
First semester	0	-----

Second semester	8	17.4%
Summer semester	0	-----
Students graded *Pass*		
First semester	5	83.33%
Second semester	2	4.3%
Summer semester	5	45.45%

B.1.2. Years' Statistics

Element	Number of Students			% Passed
	Enrolled	Completed	Passed	
Second level	36	36	24	66.7
Third level	14	14	13	92.85
Fourth level	29	29	26	89.7

B.2. Academic Reference Standards

- Academic standards of reference	NATIONAL ACADEMIC REFERENCE STANDARDS (NARS) FOR ENGINEERING
1- Aims	1. Apply knowledge of mathematics, science and engineering concepts to solve fundamental engineering problems. 2. Use and manage resources creatively through analyzing data of the designed experiments. 3. Apply computer systems in chemical engineering by designing a system; component and process to meet the recent technological changes. 4. Use basic knowledge of chemical process industries, and consider its impact on society, economics and environment. 5. Demonstrate knowledge of contemporary engineering issues through address the issues of process dynamic and control in plant operation. 6. Apply research work in chemical reactions, and

	demonstrate its characterestics to evaluate outcomes and draw conclusion for industrial processess. 7. Work effectively within teams of different disciplines by self and long learning by using safe laboratory practice. 8. Recognize and display the challenging role in ethical responsibilities of the professional engineering.
2- knowledge and understanding	The graduates of the chemical engineering programs should be able to demonstrate the knowledge and understanding of: A1. Define concepts and theories of mathematics and sciences, appropriate to the discipline. A2. Define basics of information and communication technology (ICT) A3. Listing Characteristics of engineering materials related to the discipline. A4. Describe principles of design including elements design, process and/or a system related to specific disciplines. A5. Recognize methodologies of solving engineering problems, data collection and interpretation A6. Describe quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues. A7. List the business and management principles relevant to engineering. A8. Define current engineering technologies as related to disciplines. A9. Investigate topics related to humanitarian interests and moral issues. A10. Define technical language and report writing A11. State professional ethics and impacts of engineering solutions on society and environment A12. Recognize contemporary engineering topics. A13. Define the fundamentals, basic characteristics and features of organic and inorganic reactions, and their application in chemical process industries

	including petroleum refining, natural gas processing, petrochemicals industry, electrochemistry, fertilizers and ceramics, etc. A14. Describe the characteristics of the different states of matter and interfaces between them. A15. Shows the conventional procedures of chemical analysis and characterization of common engineering materials and components. A16. Recognize the principles of chemical engineering including chemical reaction equilibrium and thermodynamics; mass and energy balance; transport processes; separation processes, mechanical unit operations and process control. A17. Learn the general principles of design techniques specific to particular products and processes including reactor and vessel design. A18. Realizes the environmental impact of various industries, waste minimization and treatment of industrial facilities.
3- B. Intellectual skills	The graduates of the engineering programs should be able to: B1. Select appropriate mathematical and computer-based methods for modeling and analyzing problems. B2. Categorise appropriate solutions for engineering problems based on analytical thinking. B3. Think in a creative and innovative way in problem solving and design. B4. Assess different ideas, views, and knowledge from a range of sources. B5. Evaluate the characteristics and performance of components, systems and processes. B6. Investigate the failure of components, systems, and processes. B7. Solve engineering problems, often on the basis of limited and possibly contradicting information. B8. Appraise appropriate ICT tools to a variety of

	engineering problems. B9. Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact. B10. Incorporate economic, societal, environmental dimensions and risk management in design. B11. Analyze results of numerical models and their limitations. B12. Create systematic and methodic approaches when dealing with new and advancing technology. B13. Apply analysis technique for processing such as energy and mass balance. B14. Summarize the appropriate techniques relevant to different industries. B15.Collect data draw simplified equipment flow sheets, charts and curves and interpret data derived from laboratory observation. B16. Synthesize new processes or products through utilization and effective management of available resources.
4- Professional skills	The Chemical Engineering graduate must show ability to: C1. Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems. C2. Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services. C3. Create a process, component or system, and carry out specialized engineering designs. C4. Practice the neatness and aesthetics in design and approach. C5. Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyse and interpret results. C6. Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the

	discipline and develop required computer programs. C7. Apply numerical modeling methods to engineering problems. C8. Apply safe systems at work by observing the appropriate steps to manage risks. C9. Demonstrate basic organizational and project management skills. C10. Apply quality assurance procedures and follow codes and standards. C11. Exchange knowledge and skills with engineering community and industry. C12. Prepare technical reports. C13. Perform complete mass and energy balances for chemical engineering plants. C14 Apply the principles of chemical equilibrium and process thermodynamics to systems with chemical reactions.. C15 Conduct troubleshooting in chemical engineering plants. C16 Use chemical engineering IT tools and programming in design. C17 Determine the characteristics and performance of measurement and control systems. C18 Employ principles and concepts of transport phenomena in problem solving.
5- General skills	Graduates will have an educated view of the world including: D1. Collaborate effectively within multidisciplinary team. D2. Work in stressful environment and within constraints. D3. Communicate effectively. D4. Demonstrate efficient IT capabilities. D5. Motivate individuals. D6. Effectively manage tasks, time, and resources. D7.Search for information and engage in

	life-long self-learning discipline. D8. Acquire entrepreneurial skills. D9. Refer to relevant literatures.

B.3. Regulatory and Administrative Constraints

Constraint	Intensity		
	High	Moderate	Low
Shortage of staff members			√
Lack of communication with industry	√		
Lack of coordination between departments		√	
Lack of administrative coordination			√
Lack of administrative to departments coordination			√
Lack of coordination between management and departments		√	
Ineffective acceptance rules for the students		√	
Bad utilization of available facilities			√

B.4. Methods Used for Students Evaluation

No.	Evaluation Method	Time	Remarks of External
1	Written Examination	Midterm, Endterm	
2	Semester Work	Reports, Quizes	
3	Final Term Examination	Endterm	

B.5. Educational Facilities, Methods, and Structure

Element	Appropriateness		
	High	Moderate	Low
Students/Staff Ratio	√		
Staff Specialization	√		
Staff Load		√	
Library		√	
Electronic Library		√	
Labs			√
Computers		√	
Auxiliary Educational Facilities		√	
Teaching Methods		√	
Workshops and Conferences			√
Internal Training Plans			√
External Training Plans			√
Program Structure		√	
Cooperation of Business Organizations			√

B.6. Quality and Development Management

Element	Effectiveness		
	High	Moderate	Low
Student Support System		√	
Follow up and Corrective System		√	
Periodic Review System		√	
Continuous Improvement System			√
Internal Review System		√	
External Review System	√		
Implementation of University Regulations and Rules		√	

B.7. Students' Suggestions

Suggestion	Implemented?	
	Yes	No
Provide training on how to use a new teaching technology in their classes.	√	
Using online course material.		√
Increasing the scientific references.	√	
Integrating work experiences with education by providing field visits.		√

B.8. Program Enhancement Suggestions

Suggested Enhancement	Necessity		
	High	Moderate	Low
Improve lecture notes	√		
Integrating work experiences with education.	√		
Transplant And Assess Pedagogy Utilizing Such Technologies To Enhance Students' Learning.		√	

B.9. Comments from External Evaluators

No.	Comment
1	References Updating
2	Clarity of course aims is not achieved
3	The ability of learning outcomes to be measured is not achieved
4	Appropriate learning outcomes targeted to the aims of the course is not achieved

Coordinator: **Prof.**

Department Head: **Prof. Dr**