Student Guide of Chemical Engineering program (CHE) 2024/2025

Chemical Engineering Program (CHE)
2024/2025

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Introduction to the guide

This guide aims to introduce the student to the basic data and information about the Chemical Engineering Program, which includes the definition of the program, the vision, mission and objectives of the program, the distinctive features of the program, as well as the graduate specifications and fields of work. The guide also includes the departments and units supporting the program, as well as the curricula of the 2019 regulations according to what is available in the study regulations.

First: Basic information about the program

Name of the institution to which the program is affiliated: Higher Institute of Engineering in EL-Shorouk.

Type of institution: Private higher institute with fees.

Name of the university/academy affiliated with the institution: The institute is affiliated with the Ministry of Higher Education and Scientific Research.

Name of the scientific department to which the program is affiliated: Chemical Engineering department

Date of establishment: 1995

Duration of study: Five (5) years

Language of study: English

Geographical location: Cairo Governorate EL- Shorouk City – EL-Nakhil Suburb - P.O. Box 3 - Telephone 19644

Website: www.hie.sha.edu.eg

Second: Definition of the program

Chemical Engineering is one of the most challenging and rewarding careers one can choose. One of the hallmarks of a chemical engineering education is flexibility. Students study chemical processes at the molecular level and the chemical plant level and gain an education deeply grounded in mathematics, chemistry, physics, biology, and materials science . . . not to mention engineering itself.

Technical knowledge alone is not enough, and chemical engineers must also understand engineering economics, project management, and global business practices.

The chemical industry is one of the major driving forces of our nation’s economy. From innovations and continual improvements made by chemical engineers flow every new medicine, electronic device and high-performance material, plus new technologies for cleaning the environment and feeding and clothing the world’s population.

An education in chemical engineering can serve as the foundation for a wide variety of careers. Many, but not most, chemical engineering jobs can be found in the chemical

process industry, including oil and chemical companies, but other large employers of chemical engineers include organizations involved with food and consumer products, semiconductors, energy and environmental engineering, pharmaceuticals, and cosmetics.
Chemical engineers typically work to design new processes, improve existing processes, reduce manufacturing costs, research, and develop new processes and products, and manage corporate assets.

1. Chemical Engineering program (General Division):

Chemical Engineering is a branch of Engineering, deal with chemistry, physics, mathematics, computer science and basic and applied engineering, moreover studies economics. He transforms natural and artificial raw materials to products with great value and economic productivity. These are done by consecutive processes where raw materials undergo chemical and physical changes to get a product with great value.
Graduates of chemical engineering develop modern and old methods of chemical industries that require chemical processes. Chemical engineers designs, and supervise in factories where chemical industries and chemical processes undergo. He develops production processes and study the optimum economic methods to avoid environmental pollution in all forms. Also, he treats industrial waste water and carries out feasibility study for products of chemical and petrochemical materials, medicine and chemical fertilizers. He does research, marketing and sales.

2. Petrochemical Engineering:

Petrochemical engineering is a branch of chemical engineering that focuses on the processes involved in the production, transformation, and utilization of petrochemicals—chemical products derived from petroleum and natural gas. This field covers the design and operation of petrochemical plants, the development of catalysts for refining and chemical processes, and the optimization of processes to create products like plastics, fertilizers, solvents, and synthetic fibers. Petrochemical engineers work to improve efficiency, reduce environmental impact, and ensure the safe and sustainable production of petrochemical products.

Third: Vision, Mission and Objectives of the Program

(1) Program Vision

Commitment to comprehensive quality in education and scientific research and aspiration to leadership in teaching chemical engineering sciences and petrochemical industries.

(2) Program Mission

The Chemical engineering program’s mission (General Division) Harness the capabilities and efforts to build, train, and qualify a chemical engineer professionally to conduct research and provide advisory services specialized in chemical engineering and science applications. The Chemical Engineering program’s mission (Petrochemical Division) Harness the capabilities and efforts to build, train, and qualify a chemical engineer

professionally to conduct research and provide advisory services specialized in chemical engineering and petrochemical industries.

(3) Program Objectives

The Chemical engineering program's mission (General Division) According to the program structure, labor market requirements, graduate attributes, and based on what is stated in the National Authority for Quality Assurance and Accreditation of Education NARS 2018 Standards document.

1. Apply knowledge and Advanced technical skills in chemical engineering.
2. Utilize and manage resources creatively through effective analysis and interpretation skills.
3. Recognize the potential and applicability of computer-based methods in chemical engineering design.
4. Address the issues of process dynamics and control in plant operation.
5. Plan and execute research work, evaluate outcomes, and draw conclusions.
6. Identify and control the impact that chemical engineering has on society from an environmental, economic, social, and cultural point of view.

The Chemical Engineering program's mission (Petrochemical Division)

1. Apply knowledge and Advanced technical skills in petrochemical engineering.
2. Utilize and manage resources creatively through effective analysis and interpretation skills.
3. Recognize the potential and applicability of computer-based methods in petrochemical engineering design.
4. Address the issues of process dynamics and control in plant operation.
5. Plan and execute research work, evaluate outcomes, and draw conclusions.
6. Identify and control the impact that petrochemical engineering has on society from an environmental, economic, social, and cultural point of view.

Fourth: Key Features of the Program:

1. Scarcity of Chemical Engineering Specialization in Egypt: The chemical engineering specialization is relatively rare in Egypt, which increases its significance.
2. Program Meets Market Demands and High Employment Rates for Graduates: The program responds to labour market needs, with a high employment rate for graduates reaching 76%.
3. Distinguished Faculty Members: Many faculty members have obtained academic degrees from various prestigious universities and scientific schools known for excellence. Additionally, they actively participate in scientific and research committees both inside and outside the institute.
4. Alignment of the Department's Research Plan with Egypt's National Plan: The department's research aligns with the national research plan of Egypt and community service needs.
5. Continuous Development of the Program: The chemical engineering program is continuously updated to keep pace with new changes and market needs. A petrochemical specialization has been added to the chemical engineering program.

6. Historical Connection with the Institute: The Department of Chemical Engineering was established alongside the founding of the institute in 1995, making it one of the oldest private engineering institutes in Egypt. This long history has allowed the department to develop multiple programs that align with academic advancements and the changing demands of the labor market.

7. Geographic Location of the Institute: The institute has a strategic location, serving students from multiple governorates in Egypt. It provides transportation for students from other regions and offers distinguished on-campus housing.

8. Program's Affiliation with the Higher Institute of Engineering in Shorouk City:
- The institute is a member of the Egyptian Engineers Syndicate.
- All educational programs at the institute are accredited by the National Authority for Quality Assurance and Accreditation of Education.
- The institute supports faculty members and research staff by covering publication costs and granting research leave. It also covers the cost of postgraduate studies for research staff.
- The institute has ranked high in the annual evaluation of the engineering sector committee of the Supreme Council of Universities, winning first place for three consecutive years.
- The institute contributes to community service and has a cooperation protocol with the Shorouk City Authority.

9. Cooperation Protocol with Universities and Equivalent Institutions:
The program benefits from the contribution of distinguished faculty members seconded from Egyptian public universities. These members enrich the educational process and diversify academic expertise.

The program also includes two field training courses (Field Training 1 and 2), taught by institute faculty in collaboration with engineering institutions, to prepare students for the labor market and multidisciplinary collaboration.

10. Job Opportunities for Graduates:
The program equips graduates to work in the design, implementation, and management of major industrial projects and factories, as well as in quality control.

11. Foreign Students in the Program:
Foreign students make up 3.26% of the total student body, indicating the program's importance in international labor markets.

12. Distinguishing Features of the Program Compared to Other Programs at the Institute:
- The student-to-faculty ratio is balanced, offering better communication between students and faculty, and enhancing leadership opportunities.
- The faculty members are annually evaluated, and several have been promoted to prominent positions within the institute.
- Graduates of the chemical engineering program benefit from the institute's affiliation with the Oriental Weavers Group, creating job opportunities for two graduates in key positions within the company.
- The program stays updated with new developments, with the Ministry of Higher Education approving the introduction of the petrochemical specialization.

Fifth: The Attributes of Chemical Engineer

The Chemical Engineering Program adopted the NARS attributes for Engineering and Chemical Engineering. The graduates of Chemical Engineering should have the ability to:

1.1 Master a wide spectrum of engineering knowledge and specialized skills and can apply acquired knowledge using theories and abstract thinking in real life situations.

1.2 Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation.

1.3 Behave professionally and adhere to engineering ethics and standards.

1.4 Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance.

1.5 Recognize his/her role in promoting the engineering field and contribute in the development of the profession and the community.

1.6 Value the importance of the environment, both physical and natural, and work to promote sustainability principles.

1.7 Use techniques, skills and modern engineering tools necessary for engineering practice.

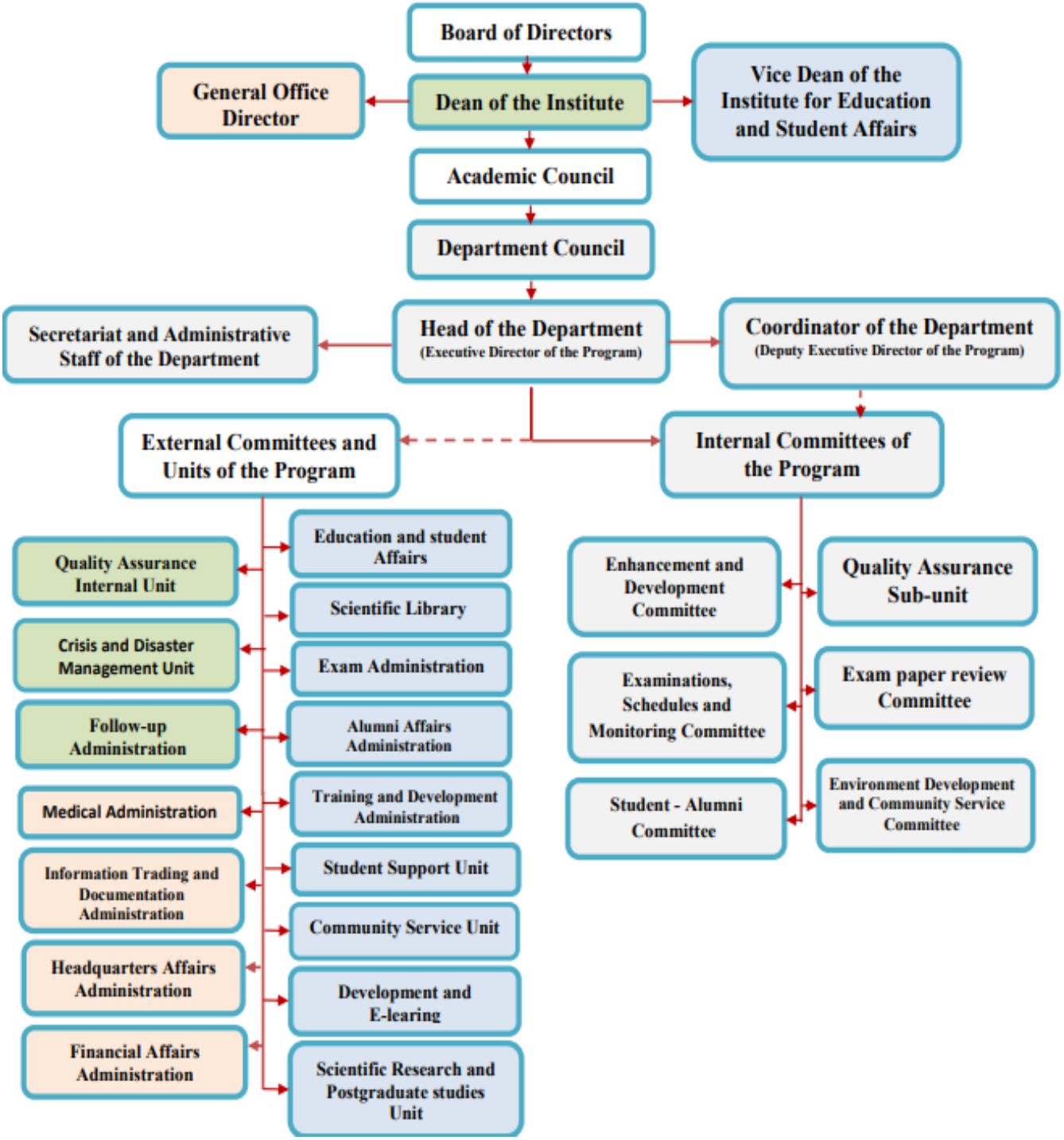
1.8 Assume full responsibility for own learning and self-development, engage in lifelong learning and demonstrate the capacity to engage in post-graduate and research studies.

1.9 Communicate effectively using different modes, tools and languages with various audiences; to deal with academic/professional challenges in a critical and creative manner.

1.10 Demonstrate leadership qualities, business administration and entrepreneurial skills

Sixth: Organizational Structure

Organizational Structure of Chemical Engineering Department



Seventh: Definition of the program committees

The program includes Six internal committees as follows:

1- The Enhancement and Development Committee: It is responsible for everything related to the review, enhancement and development of curricula, study regulations and laboratories, as well as the plans and reports of the work of the various committees and other works to achieve the improvement of the level of performance.

2- **The Quality Committee**: It is responsible for everything related to the quality work in the program and the preparation and processing for the accreditation of the National Authority for Quality Assurance and Accreditation of Education and files of the engineering sector and others, as well as following up and evaluating the level of performance.

3- Examinations, Schedules and Monitoring Committee: The Exam Paper Review Committee, led by the program director and composed of experienced faculty, reviews exam papers for format, question diversity, and alignment with academic standards. It meets at the end of each semester to submit reports and implement corrective measures to ensure the papers meet required quality standards.

4- Exam paper review Committee:

The Exam Paper Review Committee, led by the program director and composed of experienced faculty, reviews exam papers for format, question diversity, and alignment with academic standards. It meets at the end of each semester to submit reports and implement corrective measures to ensure the papers meet required quality standards.

5- Student - Alumni Committee:

The Exams, Schedules, and Control Committee is formed by a decision from the department council. Its main responsibilities include setting the dates for periodic, midterm, and final exams for all academic levels, including practical exams. The committee ensures the necessary resources, such as supervisors and laboratories, are available for exams and coordinates with students to schedule exams in line with course offerings. It also collaborates with e-learning to prepare electronic exam rooms and reviews student results, taking any necessary corrective measures.

6- Environment Development and Community Service Committee:

The Community Service and Environmental Development Committee is formed by a decision from the department council. Its key responsibilities include raising awareness about the importance of community service among students and faculty, promoting their active participation in related activities, and fostering engagement with external stakeholders. The committee also studies and addresses the needs of the surrounding community through the institute's offerings. Additionally, it establishes partnerships with labor market institutions to provide student training and employment opportunities, while assessing the satisfaction of collaborators with the services provided.

Eighth: Departments and units supporting the program

(1) Student Support Unit

- **How to announce the unit:**

A-Communication with the Student Union to advertise the unit's services.

- **Unit activities**

A- Make special certificates of appreciation for outstanding students and present them in a distinguished ceremony attended by the Chairman of the Board of Directors of the Academy, the Vice Chairman of the Board of Directors of the Academy, the Dean of the Higher Institute of Engineering, the vice dean of the Higher Institute of Engineering, and the heads of departments.
B- Photographing the certificate presentation ceremony for outstanding students to motivate them to study and uploading photos of the celebration on the academy's official website.
C- Conducting make-up lectures for students who recently applied to the institute in the preparatory class in coordination with the Department of Mathematics and Engineering Physics.
D- Conducting make-up lectures for students who have been transferred and are loaded with materials after the issuance of the Clearing Committee's decision in coordination with the Student Affairs Program Department.
E- Providing the necessary moral and social support to students, whether outstanding or struggling.

(2) Education and Student Affairs Department

Supporting student affairs for the program through tuition fee exemptions and the exemption percentage is based on the type of exemption (social - siblings - academic excellence - grants).

(3) Development and E-Learning Unit

- Preparing students' email and training on the mechanism of use.
- Preparing the e-learning platform (Moodle) with the curricula for faculty members and students to use in the educational process.
- Training students to use the e-learning platform and preparing explanatory videos for that.
- Providing the necessary technical support for students.
- Sending any instructions or correspondence to students.

(4) Scientific Library

- Arranging books and scientific references in the library for easy access by students.
- Providing the necessary loans for books and scientific references in the library for students.
- Purchasing the necessary books and references based on the needs of the courses and the department.
- Making statistics on the average number of students of the program who visit to study and borrow.

(5) Student Care department

- Receiving and welcoming new students.
- Organizing student union elections.
- Holding student activities and participating in various tournaments and competitions.

(6) Examination Management

- Examination preparations including preparing schedules, seating numbers and distributing students.
- Receiving student petitions regarding the grades of the year's work.

(7) Crisis and Disaster Management Unit

- Providing the necessary precautionary measures, especially during the Covid-19 pandemic, in coordination with the institute's administration to limit the spread of the Covid-19 virus.
- Providing procedures and controls that are applied for the safety of workers and students.
- Spreading awareness of safety and security issues through educational seminars and lectures.
- Following up on fire and alarm equipment and devices in buildings and ensuring their safety.
- Following up and reviewing the procedures followed in the event of a fire, God forbid, and reviewing follow up reports on fire extinguishers and alarm devices and their validity.
- Following up cafeterias and visiting them.

(8) Follow-up Department

- Coordination between the program regarding the preparation of study schedules and other programs at the institute, such as providing halls, lecture rooms, etc.
- Following up student attendance on the absence monitoring program and providing reports on student absence rates and notifying them.

(9) Legal Affairs Department

- Settling student disputes by presenting them to the Student Disciplinary Council and imposing appropriate penalties in accordance with the regulations in force in this regard.
- Reviewing the agreements and contracts that are legally implemented, such as the cooperation agreement with the Egyptian Space Agency and the cooperation agreement with Huawei and any other agreements for the benefit of students.

(10) Security Department

- Securing the institute in a way that preserves the safety of all employees, students and facilities.
- Reporting and finding any lost items or financial amounts for students.

(11) Transportation Management

- Providing transportation lines for program employees, including faculty members, support staff, administrative staff, and students.
- Providing any requirements regarding the allocation of cars for the purpose of special missions or errands for the program.

(12) Medical Management

- Providing Covid-19 vaccines for students as part of a cooperation agreement between El-Shorouk Academy and the Ministry of Health and Population.
- Providing medical seminars to raise awareness of Covid-19 and epidemic diseases in coordination with the Crisis and Disaster Management Unit.
- Transferring a number of students to conduct a Covid-19 virus analysis and swab test after the initial symptoms appear on them. Also, transferring students to external hospitals after conducting a medical examination on them.
- Providing medical services and first aid to all students.
- Providing first aid in laboratories and training laboratory specialists on how to use them.

(13) Graduate Affairs Unit

- Preparing, following up, updating and conducting the necessary statistics on graduates' database.
- Preparing a database for institutions and companies related to graduates.
- Documenting communication ties with graduates and relevant institutions by inviting them to scientific and employment forums and any other events that are organized.

Ninth: Program Structure and Contents

A. Program duration Five years including a preparatory year

B. Program Structure:

The main structure of the chemical engineering program is performed according to the Engineering, Technological, Industrial Studies Sector Committee and Standards of National Authority for Quality Assurance and Accreditation**.**

The chemical engineering program includes 65 courses of total 250 contact hours; these courses are classified according to the relevant sector NARS requirements to the following subject areas:

1. Humanities and Social Sciences
2. Mathematics and Basic Sciences
3. Basic Engineering Sciences
4. Applied Engineering and design
5. Computer Application and ICT
6. Projects and Practice
7. Selective Subjects

The following are the subjects taught during this progra

prep 1st Semester (Chemical engineering General)

Code	Course Name	First semester								Subject Area							Total marks
		Teaching Hours				Marking			Exam Time (hr)	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course	
		Lectures	Tutorial hour	Practical hour	Total hour	Written Exam	Year work	Practical/ oral Exam									
PHM 011	Mathematics (1)	2	2	-	4	90	60	-	2		4						150
PHM 013	Physics(1)	2	1	2	5	90	30	30	2		5						150
PHM 015	Mechanics (1)	2	2	-	4	90	60	-	2		4						150
ARC 011	Engineering Drawing& Projection (1)	1	2	-	3	60	40	-	2			3					100
CHE 011	Chemistry	2	1	1	4	60	20	20	2		4						100
HUM 013	ICDL	1	-	2	3	30	10	10	2					3			50
HUM 011	Technical English Language (1)	1	-	1	2	30	10	10	1	2							50
		11	8	6						2	17	3		3			750
Total hour of first semester		25				Total marks											

prep 2nd Semester (Chemical engineering General)

Code	Course Name	Second semester								Subject Area							Total marks
		Teaching Hours				Marking			Exam Time (hr)	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course	
		Lectures	Tutorial hour	Practical hour	Total hour	Written Exam	Year work	Practical/oral Exam									
PHM 012	Mathematics (2)	2	2	-	4	90	60	-	2		4						150
PHM 014	Physics(2)	2	1	2	5	90	30	30	2		5						150
PHM 016	Mechanics (2)	2	2	-	4	90	60	-	2		4						150
ARC 012	Engineering Drawing& Projection (2)	1	2	2	5	60	20	20	2					5			100
PHM 017	Production Technology	1	-	2	3	45	15	15	2			3					75
HUM 014	History of engineering and technology	2	-	-	2	50	25	-	2	2							75
HUM 012	Technical English Language (2)	1	-	1	2	30	10	10	1	2							50
		11	7	7						4	13	3		5			750
Total hour of second semester		25				Total marks											

*mathematics (1)&(2), Physics(1)&(2), Mechanics(1)& (2) Engineering Drawing& Projection(1)& (2)are continuous subject

First Year / 1st Semester (Chemical engineering General)

Code	Course Name	First semester								Subject Area							Total marks
		Teaching Hours				Marking			Exam Time (hr)	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course	
		Lectures	Tutorial hour	Practical hour	Total hour	Written Exam	Year work	Practical/ oral Exam									
CHE 121	Inorganic Chemistry	2	-	2	4	75	30	20	2			4					125
CHE 131	Introduction to Chemical Engineering and Petroleum Processing	2	2	-	4	90	35	-	2			4					125
PHM 171	Mathematics (3)	2	2	-	4	90	35	-	2		4						125
PHM 173	Physics(3)	2	1	1	4	75	30	20	2		4						125
CHE 151	Machine Design	2	1	-	3	70	30	-	2				3				100
HUM 171	Elective course Humanities (1)	2	1	-	3	50	25	-	1	3							75
HUM 172	technical reports	2	-	-	2	50	25	-	1	2							75
		14	7	3						5	8	8	3				750
Total hour of first semester		24				Total marks											

First Year / 2nd Semester (Chemical engineering General)

Code	Course Name	Second semester								Subject Area							Total marks
		Teaching Hours				Marking			Exam Time (hr)	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course	
		Lectures	Tutorial hour	Practical hour	Total hour	Written Exam	Year work	Practical/oral Exam									
CHE 122	Organic Chemistry (1)	2	-	2	4	75	30	20	2			4					125
CHE 123	Inorganic and Analytical Chemistry	2	-	2	4	75	30	20	2			4					125
PHM 172	Mathematics (4)	2	2	-	4	90	35	-	2		4						125
PHM 174	Mechanics (3)	2	2	-	4	70	30	-	2		4						100
CVE 112	Principles of Construction Engineering	2	1	-	3	70	30	-	2		3						100
EPM 116	electrical and electronic Engineering	2	1	-	3	70	30	-	2		3						100
HUM173	Selective course Humanities (2)	2	1	-	3	50	25	-	1	3							75
		14	7	4						3	14	8					750
Total hour of second semester		25				Total marks											

* Inorganic Chemistry& Inorganic and Analytical Chemistry) are continuous subjects
* Mathematics (3),(4) are continuous subjects

Second Year / 1st Semester (chemical engineering General)

Code	Course Name	First semester								Subject Area							Total marks
		Teaching Hours				Marking			Exam Time (hr)	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course	
		Lectures	Tutorial hour	Practical hour	Total hour	Written Exam	Year work	Practical/ oral Exam									
CHE 221	Organic Chemistry (2)	2	-	2	4	75	30	20	2			4					125
CHE 231	momentum transfer	3	3	-	6	110	65	-	2			6					175
CHE 222	Physical Chemistry and Thermodynamics	2	1	2	5	90	40	20	2			5					150
CHE 232	Chemical engineering fundamental	2	3	-	5	100	50	-	2			4		1			150
HUM 271	Humanities (3)	2	1	-	3	50	25	-	1	3							75
HUM 272	Research and analysis skills	2	1	-	3	50	25	-	1	3							75
		13	9	4						8		19		1			
Total hour of first semester		26				Total marks											750

Second Year / 2nd Semester (chemical engineering General)

Code	Course Name	Second semester								Subject Area							Total marks
		Teaching Hours				Marking			Exam Time (hr)	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course	
		Lectures	Tutorial hour	Practical hour	Total hour	Written Exam	Year work	Practical/ oral Exam									
CHE 223	Physical chemistry and phase equilibrium	2	1	2	5	90	40	20	2			5					150
CHE 224	Organic and Biochemistry (3)	2	-	2	4	75	30	20	2			4					125
PHM 271	Statistics and probabilities	1	1	-	2	70	30	-	2		2						100
CHE 233	Principles of Mechanical Engineering	2	1	-	3	70	30	-	2		3						100
CHE $2XX_1$	Selective courses (1)	2	2	-	4	90	35	-	2							4	125
HUM273	Humanities (4)	2	1	-	3	50	25	-	1	3							75
HUM 274	Environmental evaluation impact	2	1	-	3	50	25	-	1	3							75
		13	7	4						6	5	9				4	
Total hour of second semester		24				Total marks											750

Third Year / 1st Semester (chemical engineering General Division)

Code	Course Name	First semester								Subject Area							Total marks
		Teaching Hours				Marking			Exam Time (hr)	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course	
		Lectures	Tutorial hour	Practical hour	Total hour	Written Exam	Year work	Practical/ oral Exam									
CHE 371	Mechanical unit operations	2	3	-	5	90	35	-	2				5				125
CHE 361	Organic chemical industries	2	-	2	4	75	30	20	2				2		2		125
CHE 362	Inorganic chemical industries	2	-	2	4	90	40	20	2				2		2		150
CHE 331	Heat transfer and it's application	2	3	-	5	100	50	-	2				5				150
CHE 341	Applied Electrochemistry and corrosion engineering	2	2	-	4	90	35	-	2				2			2	125
HUM371	Project planning	2	1	-	3	50	25	-	2					3			75
		12	9	4									16	3	4	2	750
Total hour of first semester		25				Total marks											

Third Year / 2nd Semester (chemical engineering General Division)

Code	Course Name	Second semester								Subject Area							Total marks
		Teaching Hours				Marking			Exam Time (hr)	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course	
		Lectures	Tutorial hour	Practical hour	Total hour	Written Exam	Year work	Practical/ oral Exam									
CHE 342	Material Science and new materials	2	2	-	4	90	35	-	2			4					125
CHE 363	Polymer Engineering	2	-	2	4	75	30	20	2				2			2	125
CHE 364	High Temperature Industries	3	-	2	5	90	40	20	2				3		2		150
CHE 351	Modeling and simulation in Chemical Engineering	2	3	-	5	100	50	-	2					5			150
CHE $3XX_2$	Elective course (2)	2	2	-	4	90	35	-	2							4	125
CHE 3YY	Field Training (1)	-	-	3	3	-	75	-							3		75
		11	7	7								4	5	5	5	6	750
Total hour of second semester		25				Total marks											

Fourth Year / 1st Semester (chemical engineering General Division)

Code	Course Name	First semester								Subject Area							Total marks
		Teaching Hours				Marking			Exam Time (hr)	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course	
		Lectures	Tutorial hour	Practical hour	Total hour	Written Exam	Year work	Practical/ oral Exam									
CHE 431	Mass transfer and multi-stage separations (1)	2	2	-	4	80	30	15	2				4				125
CHE 491	Petroleum Refining Engineering	2	2	1	5	75	30	20	2				4		1		125
CHE 451	Chemical reactor and vessel Design	3	3	-	6	100	50	-	2				3	3			150
CHE 452	Process and plant design	2	2	-	4	80	30	15	2				4				125
CHE 453	Lab of Chemical Engineering	1	-	3	4	60	20	20	2				1		3		100
CHE 4ZZ	Graduation project	1	-	-	1	-	-	-	-						1		-
CHE 4YY	Field Training (2)	-	-	3	3	-	75	-	-						3		75
		11	9	7									16	3	8		700
Total hour of first semester		27				Total marks											

Fourth Year / 2nd Semester (chemical engineering General Division)

Code	Course Name	Second semester								Subject Area							Total marks
		Teaching Hours				Marking			Exam Time (hr)	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course	
		Lectures	Tutorial hour	Practical hour	Total hour	Written Exam	Year work	Practical/oral Exam									
CHE 432	Mass transfer and multi-stage separations (2)	2	2	-	4	80	30	15	2				4				125
CHE 454	Process control	2	2	-	4	100	50	-	2				2	2			150
CHE 455	Economics of Chemical Plants	2	2	-	4	70	30	-	2				4				100
CHE 481	Environmental engineering	2	1	1	4	60	20	20	2				3		1		100
CHE $4XX_3$	Elective course (3)	2	2	-	4	90	35	-	2							4	125
CHE 4ZZ	Graduation project	1	-	3	4	-	75	125	-						4		200
		11	9	4									13	2	5	4	800
Total hour of second semester		24				Total marks											

*Mass transfer & separation operation(1),(2) are continuous subjects

Third Year / 1st Semester (chemical engineering Petrochemical Division)

Code	Course Name	First semester								Subject Area							Total marks
		Teaching Hours				Marking			Exam Time (hr)	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course	
		Lectures	Tutorial hour	Practical hour	Total hour	Written Exam	Year work	Practical/ oral Exam									
CHE 372	Unit operation for Petrochemical	2	3	-	5	90	35	-	2				5				125
CHE 365	Petrochemical Industries (1)	3	-	2	5	90	40	20	2				3		2		150
CHE 331	Heat transfer and it's application	2	3	-	5	100	50	-	2				5				150
CHE 332	Cryogenic processes	2	1	-	3	90	35	-	2				2		1		125
CHE 341	Applied Electrochemistry and corrosion engineering	2	2	-	4	90	35	-	2				2			2	125
HUM 371	Project planning	2	1	-	3	50	25	-	2					3			75
		13	10	2									17	3	3	2	750
Total hour of first semester		25				Total marks											

Third Year / 2nd Semester (chemical engineering Petrochemical Division)

Code	Course Name	Second semester								Subject Area							Total marks
		Teaching Hours				Marking			Exam Time (hr)	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course	
		Lectures	Tutorial hour	Practical hour	Total hour	Written Exam	Year work	Practical/oral Exam									
CHE 366	Petrochemical Industries (2)	2	-	2	4	90	40	20	2				2		2		150
CHE 352	Modeling and simulation in Chemical Engineering (2)	2	3	-	5	100	50	-	2					5			150
CHE 391	Natural Gas engineering (1)	2	2	1	5	80	30	15	2				2		3		125
CHE 392	Petroleum Production Engineering	2	2	-	4	80	30	15	2				4				125
CHE $3XX_2$	Elective course (2)	2	2	-	4	90	35	-	2							4	125
CHE 3YY	Field Training (1)	-	-	3	3	-	75	-	-						3		75
		10	9	6													750
Total hour of second semester		25				Total marks							8	5	8	4	

* Petrochemical Industries (1) & (2) are continuous subjects

Fourth Year / 1st Semester (chemical engineering Petrochemical Division)

Code	Course Name	First semester								Subject Area							Total marks
		Teaching Hours				Marking			Exam Time (hr)	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course	
		Lectures	Tutorial hour	Practical hour	Total hour	Written Exam	Year work	Practical/oral Exam									
CHE 431	Mass transfer and multi-stage separations (1)	2	2	-	4	80	30	15	2				4				125
CHE491	Petroleum Refining engineering	2	2	1	5	75	30	20	2				4		1		125
CHE 456	Chemical reactor and vessel Design	3	3	-	6	100	50	-	2				3	3			150
CHE 452	Process and plant design	2	2	-	4	80	30	15	2				4				125
CHE492	Natural Gas (2)	2	1	1	4	60	20	20	2				2		2		100
CHE 4ZZ	Graduation project	1	-	-	1	-	-	-	-						1		-
CHE 4YY	Field Training (2)	-	-	3	3	-	75	-	-						3		75
		12	10	5									17	3	7		700
Total hour of first semester		27				Total marks											

Fourth Year / 2nd Semester (chemical engineering Petrochemical Division)

Code	Course Name	Second semester								Subject Area							Total marks
		Teaching Hours				Marking			Exam Time (hr)	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Selective course	
		Lectures	Tutorial hour	Practical hour	Total hour	Written Exam	Year work	Practical/oral Exam									
CHE 432	Mass transfer and multi-stage separations (2)	2	2	-	4	80	30	15	2				4				125
CHE 454	Process control	2	2	-	4	100	50	-	2				2	2			150
CHE 457	Economics of gas and oil	2	2	-	4	70	30	-	2				4				100
CHE $4XX_3$	Elective course (3)	2	2	-	4	90	35	-	2							4	125
CHE $4XX_4$	Elective courses (4)	2	2	-	4	70	30	-	2							4	100
CHE 4ZZ	Graduation Project	1	-	3	4	-	75	125	-						4		200
		11	10	3									10	2	4	8	800
Total hour of second semester		24				Total marks											

*Mass transfer & separation operation(1),(2) are continuous subjects