University of Mosul

College of Petroleum and Mining Engineering

Bachelor's degree (B.Sc.) in Petroleum and Refining Engineering

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1. Mission & Vision Statement

Vision Statement

Here are a few points,**:**

- To be the leading center of excellence in refining and gas processing engineering, renowned for producing highly skilled graduates, groundbreaking research, and innovative solutions that shape the future of the energy industry**.**
- To pioneer sustainable refining and gas processing technologies, minimizing environmental impact and maximizing resource efficiency, while educating future generations of engineers committed to responsible energy practices**.**
- To drive innovation in refining and gas processing through cutting-edge research and development, fostering a culture of creativity and entrepreneurship, and preparing engineers to lead the industry's transformation**.**
- To be the premier resource for refining and gas processing expertise in Iraq, contributing to economic growth and energy security through world-class education, research, and industry partnerships**.**
- To shape the future of energy through advancements in refining and gas processing engineering**.**

Mission Statement

Here are some examples, highlighting different aspects:

- To provide high-quality education and conduct cutting-edge research in refining and gas processing engineering, preparing graduates to excel in the energy industry and contribute to technological advancements.
- To equip students with the practical skills and theoretical knowledge necessary to succeed in the refining and gas processing industry, fostering strong industry partnerships and promoting experiential learning.
- To advance sustainable refining and gas processing technologies through innovative research and education, addressing the evolving energy needs of society while minimizing environmental impact.
- To serve as a hub for collaborative research and education in refining and gas processing, fostering a vibrant learning community and engaging with industry and government partners to address critical energy challenges.
- To educate and inspire the next generation of refining and gas processing engineers, driving innovation and shaping the future of energy.

2. Program Specification

Programme code:	BSc-PE	**ECTS**	240
Duration:	4 levels, 8 Semesters	**Method of Attendance:**	Full Time

Program Overview : The Petroleum and Refining Engineering program focuses on providing students with a comprehensive understanding of petroleum exploration, production, refining, and processing. It equips students with the knowledge and skills necessary for a career in the oil and gas industry.

Duration: The program typically spans four years, divided into eight semesters

3. Program Objectives

Program objectives for a Refining of Oil and Gas Engineering program define the specific, measurable, achievable, relevant, and time-bound (SMART) goals that the program aims to accomplish. They describe what graduates are expected to be able to do after completing the program. Here are some points of program objectives, categorized for clarity:

I. Technical Competence:

* Apply fundamental principles: Graduates will be able to apply fundamental principles of mathematics, science, and engineering to solve problems related to refining and gas processing.
* Design and analyze processes: Graduates will be able to design, analyze, and optimize refining and gas processing operations, considering technical, economic, and environmental factors.
* Utilize modern tools: Graduates will be proficient in using modern engineering tools and software relevant to the refining and gas processing industry (e.g., process simulators, CAD software).
* Understand unit operations: Graduates will have a comprehensive understanding of various unit operations involved in refining and gas processing, such as distillation, separation, and reaction.

II. Professional Skills:

* Problem-solving: Graduates will be able to identify, formulate, and solve complex engineering problems related to refining and gas processing.
* Critical thinking: Graduates will be able to critically evaluate information and data, and make informed decisions based on sound engineering judgment.
* Communication: Graduates will be able to communicate effectively, both orally and in writing, with technical and non-technical audiences.
* Teamwork: Graduates will be able to work effectively in teams, collaborating with others to achieve common goals.
* Lifelong learning: Graduates will be committed to lifelong learning and professional development, staying current with advancements in the field.

III. Professional Ethics and Responsibility:

* Ethical practice: Graduates will adhere to the highest ethical standards in their professional practice.
* Environmental awareness: Graduates will demonstrate an understanding of environmental issues related to refining and gas processing and will be committed to sustainable practices.
* Safety consciousness: Graduates will prioritize safety in all aspects of their work, promoting a safe working environment.

* Social responsibility: Graduates will recognize the broader societal impact of their work and will act responsibly.

IV. Career Readiness:

* Industry preparedness: Graduates will be prepared for successful careers in the refining and gas processing industry or related fields.

* Leadership potential: Graduates will demonstrate leadership potential and will be able to take on leadership roles in their profession.

* Graduate studies: Graduates will be prepared for pursuing graduate studies in refining and gas processing or related fields, if they choose.

4. Student Learning Outcomes

have introductory information about petroleum and refinery. learn the history of refinery development and composition of petroleum. learn the refinery products, test methods and petroleum properties. recognize the characteristics of petroleum refinery process. recognize the distillation processes. learn solvent treating and extraction processes. learn fluid mechanics. learn combustion, vaporization and condensation. learn fractionation and towers. have information about heat and cracking. learn heat transfer and exchangers. learn Thermal cracking. learn catalytic cracking and reforming. learn typical design calculation and economics of design.

Knowledge and Understanding:

* Understanding of crude oil composition and properties: Students should be able to analyze and characterize different types of crude oil, understanding their physical and chemical properties.

* Knowledge of refining processes: Students should be familiar with various refining processes such as distillation, cracking, reforming, and hydro-treating, and understand the principles behind each process.

* Understanding of product specifications: Students should be able to identify and understand the specifications for various refined products, such as gasoline, diesel, and jet fuel.

* Knowledge of refinery equipment: Students should be familiar with the different types of equipment used in refineries, such as distillation columns, reactors, absorber, and heat exchangers.

* Understanding of environmental and safety regulations: Students should be aware of the environmental and safety regulations that govern the refining industry.

Skills:

* Process design and optimization: Students should be able to design and optimize refining processes to meet desired product specifications and maximize efficiency.

* Troubleshooting and problem-solving: Students should be able to troubleshoot problems that may arise in refinery operations and develop solutions to address them.

* Data analysis and interpretation: Students should be able to analyze data from refinery operations and interpret the results to make informed decisions.

* Communication and teamwork: Students should be able to communicate effectively and work collaboratively in teams to complete projects and solve problems.

Application of Knowledge:

* Applying knowledge to real-world scenarios: Students should be able to apply their knowledge to real-world scenarios in the refining industry, such as designing a new refinery or optimizing an existing one.

* Conducting research: Students should be able to conduct research on current topics in the refining industry and contribute to the body of knowledge in the field.

* Problem-solving: Students should be able to use their knowledge and skills to solve problems that may arise in refinery operations.

Additional Learning Outcomes:

* Critical thinking: Students should be able to think critically about the refining industry and its impact on the environment and society.

* Ethics: Students should be aware of the ethical considerations involved in the refining industry.

* Lifelong learning: Students should be prepared for lifelong learning in the refining industry, as technology and regulations are constantly evolving.

5. Academic Staff

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6. Credits, Grading and GPA

Credits

Mosul University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
Number Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

   CGPA of a 4-year B.Sc. degree:

   CGPA = [(1st ᵐodule score x ECTS) + (2nd ᵐodule score x ECTS) + ……] / 240

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PGR111	Principles of process engineering I	88	87	7	B	
PGR112	Analytical chemistry	59	66	5	B	
PGR113	Mathematics I	59	61	6	B	
UOM1031	Computer science I	30	45	3	S	
PGR114	Engineering mechanics and strength of materials	59	41	4	B	
PGR115	Engineering drawing	45	30	3	B	
UOM1021	English Language I	30	20	2	S	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PGR121	Principles of process engineering II	87	88	7.00	B	
PGR122	Organic chemistry	59	66	5.00	B	PGR112
PGR123	Mathematics II	59	91	6.00	B	
PGR124	Introduction to petroleum technology	59	91	6.00	S	
UOM1040	Human rights and democracy	31	19	2.00	B	
PGR125	Workshops	31	19	2.00	B	
UOM1011	Arabic language I	31	19	2.00	S	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PGR211	Engineering mathematics I	59	66	5.00	B	
PGR212	Fluid flow I	59	66	5.00	B	
PGR213	Thermodynamic I	59	66	5.00	B	
UOM2032	Computer Programming II	45	30	3.00	S	
PGR214	Petroleum chemistry	59	91	6.00	B	
PGR215	Material engineering and Corrosion	45	55	4.00	B	
UOM2022	English Language II	30	20	2.00	S	

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PGR221	Engineering mathematics II	59	66	5.00	B	
PGR222	Fluid flow II	87	63	6.00	B	
PGR223	Thermodynamic II	59	66	5.00	B	
UOM2012	Arabic language II	26	24	2.00	S	
PGR224	Properties of Petroleum & Products	63	87	6.00	B	
PGR225	Electrical Technology	40	60	4.00	B	
UOM2050	جرائم حزب البعث	20	30	2.00	S	

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PGR311	Engineering Analysis I	59	41	4.00	C	
PGR312	Mass transfer I	59	66	5.00	C	
PGR313	Petroleum refining process I	73	77	6.00	C	
PGR314	Reactor design	59	66	5.00	C	
PGR315	Heat transfer I	59	41	4.00	B	
PGR316	Petrochemical engineering	59	91	6.00	C	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PGR321	Engineering Analysis II	59	41	4.00	B	
PGR322	Mass transfer II	59	66	5.00	C	
PGR323	Petroleum refining process II	73	77	6.00	C	
PGR324	Catalysts in petroleum refinery	59	66	5.00	C	
PGR325	Heat transfer II	87	63	6.00	C	
PGR326	Numerical methods and optimization	59	41	4.00	B	

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PGR411	Special petroleum process	59	66	5.00	C	
PGR412	Plant design and utilities	73	77	6.00	C	
PGR413	Process dynamic	73	52	5.00	C	
PGR414	Unit operation I	87	63	6.00	C	
PGR415	Petroleum pollution	59	66	5.00	C	
PGR416	Project I	45	30	3.00	C	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PGR421	Gas technology	59	66	5.00	C	
PGR422	Equipment design	73	77	6.00	C	
PGR423	Process control	73	52	5.00	C	
PGR424	Management and economics of petroleum projects	59	66	5.00	C	
PGR425	Unit operation II	87	63	6.00	C	
PGR426	Project II	45	30	3.00	C	

8. Contact

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