

Al-Muthanna University

جامعة المثنى



First Cycle – Bachelor's degree (B.Sc.) – Chemical Engineering

بكالوريوس علوم - الهندسة الكيماوية



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1. Mission & Vision Statement

Vision Statement

The department seeks to enrich students with academic and practical scientific information in the field of chemical engineering, which can contribute to progress and development in various related sectors.

Mission Statement

Preparing a specialized staff in chemical engineering whose responsibility is to advance the scientific field and keep pace with the industrial movement and technological progress in all institutions. In addition, improving the student's ability to meet the needs and requirements of work in related facilities and achieve the desired goals according to the future plans of the country and in various fields related to this specialization such as the oil industries and petrochemical, food and pharmaceutical, and the diversification of scientific and applied studies and research.

2. Program Specification

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

The aim of this program is to graduate students of the highest quality who will demonstrate technical and professional leadership and who will go on to successful careers in industrial and other sectors of the economy. Students will achieve this aim by developing a strong foundation in the fundamental principles of science, mathematics and engineering and use this to build sound practical expertise and engineering judgment. Students will study core chemical engineering subjects and will be able to demonstrate your competency in these subjects. This is a holistic, systems-based approach to problem analysis and solution the aim of which is to ensure that students can demonstrate the essential elements of Chemical Engineering to a high standard. Students will also study relevant business, economic and environmental subjects which will complement your core competencies resulting in a well-rounded graduate profile. The course will use a variety of learning and teaching methods to help you become a well-rounded, independent practitioner and students are expected to contribute to the discussion with academic and technical staff during your lectures, practical work and laboratories. We aim to encourage interdisciplinary interests and you may find that as you become more aware of the chemical engineering industry, student's interests may develop in complementary directions. A variety of options is therefore available in the last year of the program which provide specialized options to fit individual needs and career preferences. Examples of these options include choosing streams that range from core chemical engineering subjects to management and humanities options, as well as technical options from across the Faculty of Engineering. As part of an integrated approach, students will also develop your professional and transferrable skills which include skills in group working, time and project management, problem-solving and competence in oral and written communication and presentation. Students will also gain a strong awareness of industrial requirements for ethics, health and safety. This will broaden your outlook and employability skills. At the end of this course, students will be fully qualified in Chemical Engineering but will also take a series of specialist modules which will give you a basis for employment in different industries. Consequently upon successful completion of student's degree, students will be an industry-ready graduate with notable competencies across a wide of range of technical and non-technical subjects.

3. Program Goals

- 1- Preparing qualified engineers in the field of chemical engineering to keep abreast of contemporary developments and meet the requirements of the country's scientific and economic development plans.
- 2- Developing their skills in analyzing, designing, operating and using modern laboratory equipment and software to conduct practical experiments.
- 3- Developing its ability to communicate verbally with scientific societies in order to conceptualize and interpret the work in a more advanced way, as well as developing its ability to conduct applied research that can contribute to community service.
- 4- Communicating with service institutions in the country related to the nature of the program by providing engineering consultations and participating or holding seminars and discussions.
- 5- Improving their understanding of professional ethics, sustainability and occupational safety that allows them to be influential engineers in society by finding solutions to the problems of industrial facilities related to the program.

4. Student Learning Outcomes

- 1- Apply knowledge acquired in mathematics, science and engineering.
- 2- The ability to produce engineering designs that meet required needs within certain constraints.
- 3- Designing a whole or partial system or industrial process to achieve a specific goal.
- 4- Active participation in multidisciplinary teams or scientific backgrounds.
- 5- Understanding and formulating issues in chemical engineering and developing practical solutions to them.
- 6- Understanding the professional and ethical responsibility of the chemical engineer.
- 7- Apply engineering methods, tools and skills to solve engineering problems.

8- Awareness of safety requirements and the ability to abide by safety laws and instructions

5. **Academic Staff**

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6. Credits, Grading and GPA

Credits

(Name) 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:

$$\text{CGPA} = [(1^{\text{st}} \text{ module score} \times \text{ECTS}) + (2^{\text{nd}} \text{ module score} \times \text{ECTS}) + \dots] / 240$$

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ENG111	Mathematics I	62	88	6.00	B	
CHE112	Physics	62	88	6.00	B	
CHE113	Chemical Eng. Principle I	62	113	7.00	C	
ENG114	Engineering drawing	47	53	4.00	S	
UNI115	Computer Science	62	38	4.00	B	
UNI116	Arabic Language	32	43	3.00	S	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ENG121	Mathematics II	62	88	6.00	B	ENG111
CHE122	Chemistry	77	73	6.00	B	
CHE123	Chemical Eng. Principle II	62	113	7.00	C	CHE113
UNI124	Human Rights and Democracy	32	43	3.00	S	
UNI125	English Language I	32	68	4.00	S	
ENG126	Workshops	47	53	4.00	S	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CHE211	Engineering Mathematics I	62	38	4.00	B	ENG121
CHE212	Fluid Flow I	77	73	6.00	C	
CEH213	Physical chemistry I	77	73	6.00	C	
CHE214	Chemical Eng. Principle III	62	88	6.00	C	CHE123
ENG215	Engineering Statistics	47	53	4.00	S	
CHE216	Pollution	32	68	4.00	S	

Semester 4 | ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CHE221	Engineering Mathematics II	62	63	5.00	B	CHE211
CHE222	Fluid Flow II	77	73	6.00	C	CHE212
CHE223	Physical chemistry II	77	73	6.00	C	CEH213
UNI224	Computer Programming	62	38	4.00	S	UNI115
CHE225	Properties of materials	47	78	5.00	S	
UNI226	English Language II	32	68	4.00	S	UNI125

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CHE311	Engineering analysis	47	28	3.00	B	CHE221
CHE312	Mass transfer I	62	88	6.00	C	
CHE313	Heat transfer I	77	73	6.00	C	
CHE314	Industrial management	32	43	3.00	S	
CHE315	Reactor design I	62	88	6.00	C	
CHE316	Thermodynamic I	62	88	6.00	C	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CHE321	Numerical methods	62	63	5.00	B	CHE311
CHE322	Mass transfer II	62	63	5.00	C	CHE312
CHE323	Heat transfer II	77	48	5.00	C	CHE313
CHE324	Reactor design II	62	63	5.00	C	CHE315
CHE325	Thermodynamic II	62	63	5.00	C	CHE316
CHE326	Equipment design I	62	63	5.00	C	

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CHE411	Unit operation I	77	73	6.00	C	
CHE412	Process control I	77	73	6.00	C	
CHE413	Equipment design II	62	63	5.00	C	CHE326
CHE414	Computer application	62	38	4.00	B	
ENG415	Engineering Project I	32	93	5.00	C	
CHE416	Petroleum refining I	62	38	4.00	B	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CHE421	Unit operation II	77	73	6.00	C	CHE411
CHE422	Process control II	77	73	6.00	C	CHE412
CHE423	Petroleum refining II	62	38	4.00	B	CHE416
CHE424	Chemical and Petrochemical Industries	32	68	4.00	B	
ENG425	Engineering Project II	32	168	8.00	C	ENG415
UNI426	Ethics	32	18	2.00	S	

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