



University of Mosul  
جامعة الموصل  
College of Science  
كلية العلوم  
Chemistry Department  
قسم الكيمياء



*First Cycle – Bachelor's degree (B.Sc.) – Chemistry*  
بكالوريوس علوم - علوم الكيمياء



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## 1. About the Department

The College of Science now houses the Department of Chemistry. The department has a four-year study duration. After the student has finished a systematic scientific preparation that qualifies him or her to keep up with technical advancement in the field of scientific research and to provide service to the public and private sectors, such as the ministry of health, the department awards a bachelor's degree in general chemistry. Students can exhibit the following chemical understanding, knowledge, and abilities with this program: Knowledge and comprehension, educational techniques, and Lectures, tutorials, book-guided reading sessions, conferences and workshops where participants may engage in scientific debate, interactive teaching sessions, practical lessons, and long-term projects are just a few of the learning and teaching methods employed. Additionally, the Department of Chemistry provides labs for atomic absorption, F. T. I. R., and UV-Vis that might help PhD and MSc students identify their compounds.

The department grants the following degrees:

### ❖ Bachelor's Degree:

Each period of the bachelor's degree consists of two semesters, therefore for a student to graduate, they must have successfully completed eight semesters. A BSc in general chemistry is offered by the Department of Chemistry.

### ❖ **Master's Degree**

Includes two stages, the first of which is the preparatory year, which is divided into two semesters (two courses). In the first semester, fundamental courses are offered, including analytical chemistry, biochemistry, physical chemistry, organic chemistry, and inorganic chemistry, while the second semester offers specialized courses in specialized fields, along with some elective courses. The second stage entails carrying out scientific research, whether on the theoretical or practical side, and lasts for a period of one calendar year. The student then defends his or her research work (thesis) before a committee of experts in order to be awarded a higher degree that entitles him or her to practice his or her work in that specialization.

### ❖ **PhD Degree**

There are two steps to it. The PhD preparation stage is divided into two semesters, with the first semester consisting of basic courses (such as analytical chemistry, biochemistry, physical chemistry, organic chemistry, and inorganic chemistry), and the second semester consisting of specialized courses in specialized fields with some optional courses. To advance to the second stage, which involves a practical component as well as fulfilling scientific research requirements and spending at least two years, students must pass the comprehensive test after the second semester ends. The student submits his theses for the final viva after the thesis is finished.

## **2. Mission & Vision Statement**

The goal of the Department of Chemistry is to lead the field of chemistry toward a sustainable future by concentrating on key areas of fundamental research. These include researching and designing novel materials and chemical processes. In addition to being exceptional designers in the fields of science and technology, our students will also be model citizens who exhibit discipline and good behavior. Our aim is to create well-rounded thinkers and compassionate people who can produce a powerful and advanced country.

### ***Vision Statement***

We need dedicated teachers who employ efficient teaching techniques if we're going to realize the objective. to disseminate modern technological knowledge and education. to mold our young kids into morally and professionally upright adults. to raise productivity and value-based living standards through an ethical and rational strategy. The goal of the Department of Chemistry is to lead the field of chemistry toward a sustainable future by concentrating on key

areas of fundamental research. These include researching and designing novel materials and chemical processes. Additionally, by integrating teaching, research, and growth across the curriculum, we want to change the student experience.

### ***Mission Statement***

One of the main goals of the college was to qualify students academically and scientifically in a way that is fully consistent with the requirements of scientific progress regarding basic sciences, which represent the fundamental knowledge of the universe. The chemistry department's mission is to prepare students professionally and scientifically through a scientific program that focuses on the student's need for education and tools. The Chemistry Department, which is trying to enhance human health, opens the path for research into possible cures. Advancements in diagnosis and mechanism of action are made possible by the development of innovative instruments for investigation and diagnosis.

## **3. Program Specification**

<b>Program code:</b>	BSc-Che	<b>ECTS</b>	240
<b>Duration:</b>	4 levels, 8 Semesters	<b>Method of Attendance:</b>	Full Time

## **4. Educational and Program Goals**

1. Offer chemistry majors' current curriculum in each of the five major sub-disciplines of chemistry: organic, inorganic, physical, analytical, and biochemistry to give them a solid foundation in each field.
2. Give biochemistry majors a solid foundation in organic, analytical, and biochemistry while placing an emphasis on the intersection of chemistry and biology.
3. Give students hands-on lab and research experiences that are pertinent to their studies of chemistry while also instructing them in safe, ethical laboratory procedures.
4. Give students the chance to learn about the chemical industries, careers, and daily duties of working chemists and biochemists.
5. By highlighting the interdisciplinary character of chemistry and utilizing concrete examples to highlight links between it and other scientific disciplines, you may give pupils a more comprehensive understanding of the subject.

## **5. Program Objectives**

1. expose the learner to chemistry's key subfields.
2. aiding in the understanding of chemical principles by students.
3. Give students an excellent basis for a rewarding career in chemistry.
4. help you to build analytical, quantitative, and critical thinking abilities in chemistry.
5. Enable students to gain knowledge and laboratory skills by having them work in the lab with a variety of chemical processes.
6. increase the student's ability to self-study.
7. assist students in gaining a greater understanding of the theories underpinning the concepts of chemistry.
8. scientists with advanced degrees who can oversee industrial projects.
9. graduates with the scientific expertise to run universities and research institutions both scientifically and administratively.

## **6. Student Learning Outcomes**

The Department of Chemistry has been trying to develop professional and educational staffs for the many state directorates, particularly the medical, agricultural, and industrial ones. These staffs are specialized in chemistry and scientific research. The department at the College of Sciences is striving to prepare the students intellectually and scientifically to fully cope with the modernized technology, which is perhaps one of the department's most essential goals. The department is eager to help students improve their research techniques and acquaint them with software and technology while they do their studies.

By the end of this program students will be able to:

1. Show that you are familiar with the core ideas behind the various fields of chemistry, such as organic, inorganic, physical, analytical, petrochemistry, and biochemistry.
2. Demonstrate knowledge of certain chemical subjects at the cutting edge of research.
3. Recognize the ideas that underpin the actual chemistry experiments and data.

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## 8. Credits, Grading and GPA

### Credits

College of Science, 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	م توسط	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:

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

## 9. Curriculum/Modules

### Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CHE1101	Fundamentals of Analytical Chemistry and Qualitative Analysis	109	66	7.00	C	
CHE1102	Fundamentals of inorganic chemistry	64	61	5.00	C	
CHE1103	Physics	109	66	7.00	B	
CHE1104	Chemical Security and Safety	64	61	5.00	C	
UoM1105	Democracy and Human Rights	49	26	3.00	S	
UoM1106	Arabic Language	49	26	3.00	S	

### Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CHE1217	Volumetric Analytical Chemistry	109	66	7.00	C	CHE1101
CHE1218	Ionic Compounds and Periodic table	79	71	6.00	C	CHE1102
CoS1209	Mathematics	64	61	5.00	B	
CoS12010	Geology	64	61	5.00	B	
CoS12011	Cytology	64	36	4.00	B	
UoM12012	English Language	49	26	3.00	S	

### Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CHE23113	Gravimetric Analysis Chemistry	94	56	6.00	C	CHE1101, CHE1217
CHE23114	Chemistry of Representative Elements	79	71	6.00	C	CHE1102, CHE1218,
CHE23015	Thermodynamics	94	56	6.00	C	
CHE23016	Organic Chemistry 1	94	56	6.00	C	
CoS23017	Computer	49	26	3.00	B	
CoS23118	Mathematics and Statistics	34	41	3.00	B	CoS1209

**Semester 4 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CHE24119	Classical Separation Methods	94	56	6.00	C	CHE1101, CHE1217, CHE23113
CHE24120	Solid State Chemistry	94	56	6.00	C	CHE1102,CHE 1218, CHE23114
CHE24121	Phase equilibrium	94	56	6.00	C	CHE23015
CHE24122	Organic Chemistry 2	94	56	6.00	C	CHE23016
CHE24023	Nanochemistry	49	26	3.00	C	
CHE24024	Chemistry Software	49	26	3.00	C	

**Semester 5 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CHE35125	Coordination Chemistry 1	94	56	6.00	C	CHE1102, CHE1218, CHE23114, CHE24120
CHE35126	Chemical Kinetics	94	56	6.00	C	CHE23015, CHE24121
CHE35127	Organic Chemistry 3	94	56	6.00	C	CHE23016, CHE24122
CHE35128	Principles of Biochemistry	94	56	6.00	C	CoS23017
CHE35029	Industrial Chemistry and Pollution	49	51	4.00	C	
CHE35030	Elective 1	19	31	2.00	E	



**Semester 6 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CHE36131	Coordination Chemistry 2	94	56	6.00	C	CHE1102, CHE1218, CHE23114, CHE24120, CHE35125
CHE36132	Electrochemistry and Surface chemistry	109	41	6.00	C	CHE23015, CHE35126
CHE36133	Organic Chemistry 4	94	56	6.00	C	CHE23016, CHE24122, CHE35127
CHE36134	Biomolecules	94	56	6.00	C	CoS23017, CHE35128
CHE36135	Application of Industrial Chemistry	49	51	4.00	C	CHE35029
CHE36036	Scientific Research Methodology	19	31	2.00	C	

**Semester 7 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CHE47137	Instrumental Analysis	94	56	6.00	C	CHE1101, CHE1217, CHE23113, CHE24119
CHE47138	Identification of Organic Compounds	79	71	6.00	C	CHE23016, CHE24122, CHE35127, CHE36133
CHE47139	Metabolism of Carbohydrates	94	56	6.00	C	CoS23017, CHE35128, CHE36134
CHE47140	Petroleum Chemistry and Petrochemicals	109	41	6.00	C	CHE35029, CHE36135
CHE47041	Quantum Chemistry	64	36	4.00	C	
CHE47042	Elective 2	19	31	2.00	E	

**Semester 8 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CHE48143	Chromatographic Methods	94	56	6.00	C	CHE1101, CHE1217, CHE23113, CHE24119, CHE47137
CHE48144	Application of Organic Spectrum	79	71	6.00	C	CHE23016, CHE24122, CHE35127, CHE36133, CHE47138
CHE48145	Metabolism of Lipids and proteins	94	56	6.00	C	CoS23017, CHE35128, CHE36134, CHE47139
CHE48146	Polymers: Fundamentals and applications	109	41	6.00	C	CHE35029, CHE36135, CHE47140
CHE48147	Spectroscopy	64	36	4.00	C	CHE47041
CHE48148	Research Project	33	17	2.00	C	CHE36036

## 10. Contact

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