Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

2024

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: ...Mosul.....
Faculty/Institute: ..College of Education for Pure Sciences.....
Scientific Department: .. Department of Chemistry.....
Academic or Professional Program Name: ...Bachelor.....
Final Certificate Name: ... Bachelor of Chemistry.....
Academic System: …**Annual**……
Description Preparation Date: 1/9/2023
File Completion Date: 1/9/2023

Signature:
Head of Department Name:

Date: أ.م.د. عمر ذنون علي
رئيس قسم الكيمياء

Signature:
Scientific Associate Name: أ.م.د. ياسر يحيى قاسم
معاون العميد للشؤون العلمية
٢٠٢٣/٤/٢

Date:

The file is checked by: Assist. Prof . Dr. Yassir Shakeeb Mohamed
Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:
Date:
Signature:

أ.م.د. ياسر شكيب محمد
شعبة ضمان الجودة

Approval of the Dean

أ.م.د. قيس اسماعيل ابراهيم
عميد كلية التربية للعلوم الصرفة
٢٠٢٣/٤/٢٧

1. Program Vision

1- The department seeks to provide an appropriate scientific environment and develop the level of education at the undergraduate and postgraduate levels.

2- 2- Achieving the pioneering role of the department by contributing to scientific progress and keeping up to date with all new.

2. Program Mission

The department's mission is to graduate high-level educational cadres capable of working in the country institutions and be supportive of the development of society.

3. Program Objectives

1 - Preparing and training teachers, researchers, and chemical experts by emphasizing teaching on developing the areas (cognitive, skillful, and emotional) in all branches of chemistry.

2 - Planning, implementing, evaluating and developing educational chemistry curricula and teaching methods.

3 - Training students/teachers to practice continuous self-learning skills to continue academic and professional growth in the field of chemistry.

4 - Improving the laboratory skills of students/teachers through their preparation and practice of various chemistry experiments.

5 - Encouraging students to conduct scientific studies and research in the field of chemistry and its teaching methods, which are derived from global societal reality, and employ them in developing the science of chemistry.

4. Program Accreditation

Does the program have program accreditation? And from which agency? No

5. Other external influences

Is there a sponsor for the program? Ministry of Higher Education/ University of Mosul

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	8	20	10.75	Basic
College Requirements	11	40	21.5	Basic
Department Requirements	24	128	68.8	Basic

Summer Training	**1**	**4**	**2.15**	**Application in Schools**
Other				

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
First year	EDCH24 F1011	Inorganic chemistry	2	-
	EDCH24 F1021	Analytical chemistry	3	3
	EDCH24 F1031	organic chemistry	2	3
	EDCH24 F1041	human rights	1	-
	EDCH24 F1051	Computer	2	-
	EDCH24 F1061	Life science	2	-
	EDCH24 F1071	mathematics	2	-
	EDCH24 F1081	psychology	2	-
	EDCH24 F1091	Foundations of education	2	-
	EDCH24 F1101	Arabic	1	-
	EDCH24 F1111	English	1	-
	EDCH24 F1121	Occupational safety	1	-
Second year	EDCH24 F2011	Inorganic chemistry	2	3
	EDCH24 F2021	Analytical chemistry	2	3
	EDCH24 F2031	organic chemistry	2	3
	EDCH24 F2041	Computer	1	-
	EDCH24 F2051	Physical chemistry	3	3
	EDCH24 F2061	mathematics	1	-
	EDCH24 F2071	Developmental psychology	2	-
	EDCH24 F2081	high school education	2	-
		Baath crimes	1	-
	EDCH24 F2091	The language is English	1	-
Third year	EDCH24 F3011	Inorganic chemistry	2	3
	EDCH24 F3021	Scientific research method	2	-
	EDCH24 F3031	organic chemistry	2	3
	EDCH24 F3041	Physical chemistry	2	3
	EDCH24 F3051	Industrial chemistry	2	-
	EDCH24 F3061	Teaching methods	2	-
	EDCH24 F3071	Biochemistry	2	3
	EDCH24 F3081	Analytical chemistry/optional	2	-
	EDCH24 F3091	Industrial chemistry/optional	2	-
	EDCH24 F3101	Physical chemistry/optional	2	-
	EDCH24 F3111	Organic chemistry/optional	2	-

	EDCH24 F3121	Inorganic chemistry/optional	2	-
	EDCH24 F3131	Biochemistry/optional	2	-
	EDCH24 F3141	guidance	2	-
	EDCH24 F3151	English language	1	-
Fourth year	EDCH24 F4011	Biochemistry	2	-
	EDCH24 F4021	Automated analysis	3	3
	EDCH24 F4031	Physical chemistry	2	-
	EDCH24 F4041	Organic diagnosis	2	3
	EDCH24 F4051	Measurement and evaluation	2	-
	EDCH24 F4061	Industrial chemistry	2	3
	EDCH24 F4071	Analytical chemistry/optional	2	-
	EDCH24 F4081	Industrial chemistry/optional	2	-
	EDCH24 F4091	Physical chemistry/optional	2	-
	EDCH24 F4101	Organic chemistry/optional	2	-
	EDCH24 F4111	Inorganic chemistry/optional	2	-
	EDCH24 F4121	Biochemistry/optional	2	-
	EDCH24 F4141	Practical education (applications)	2	-
	EDCH24 F4122	research project	2	-
	EDCH24 F4131	English language	1	-

8. Expected learning outcomes of the program

Knowledge	
Recruiting teachers	Scientific, professional and technical recruiting with a high standard of cultural and proficiency
Recruiting Scientific researchers	Achieving the basic principles of scientific research and teaching
Reinforcement of Scientific co-operation	Via training courses, workshops and symposia
Post-graduate studies opportunities	Through accomplishing scientific material and scientific teaching methods
Skills	
Teaching skills	Acquiring basic skills of teaching fields of chemistry
Scientific research skills	Developing scientific research in chemistry and teaching methods fields
Sustainable development skills	Preservation of state resources from delpletion in all fields
Practical skills	Developing student skills in the laboratory
Ethics	
Developing ethics and useful attitudes	In accordance with religion and habits and costumes
Developing attitudes towards teaching job	To face current challenges and developing overall education system
Establishing the principles of teaching	To limit toe abuse of their responsibilities in scientific and education fields
Disclosing the importance of science in human life	The great role of chemistry in people life.

9. Teaching and Learning Strategies

Theoretical and practical lecture, conversation and discussion, problem solving, performing practical experiment, project and application in school

10. Evaluation methods

Quizzes, practical semester exam, mid and final exam in first and second turn, preparing reports and homework.

11.Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements /Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor	Chemistry	Inorganic, industrial, teaching methods, educational, and physical chemistry, and biochemistry.			6	
Assistant professor	Chemistry	Organic, inorganic, synthetic, analytical and physical chemistry, teaching methods, educational psychology, educational sciences and biochemistry.			31	
Lecturer	Chemistry	Organic, inorganic, synthetic, analytical and physical chemistry, teaching methods, educational psychology, educational sciences and biochemistry.			34	
Assistant lecturer	Chemistry	Organic, inorganic, synthetic, analytical and physical chemistry, teaching methods, educational psychology, educational sciences and biochemistry.			11	

Professional Development

Mentoring new faculty members

Using recent scientific references , teaching films , training ciurses and workshops

Professional development of faculty members

Proving new references for the library , participating in specialized training courses

12.Acceptance Criterion

Central admission through the ministry of higher education

13.**The most important sources of information about the program**
Central admission guide, electronic site of the department and internet

14.**Program Development Plan**
Updating the content of the program according to new references

Curriculum skills chart																			
Please check the boxes corresponding to the individual learning outcomes from the program subject to evaluation																			
				Required program Learning outcomes															
Year/level	**Course Code**	**Course Name**	**Basic**	**Cognitive goals**				**Skills objectives of the program**				**Emotional and value goals**				**General and rehabilitative transferable skills**			
			Or optional													**Other skills related to employability and personal development**			
				A1	**A2**	**A3**	**A4**	**B 1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**D1**	**D2**	**D3**	**D4**
First stage	EDCH24 F1011	Inorganic chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F1021	Analytical chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F1031	organic chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F1041	human rights	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F1051	Computer	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F1061	Biology	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F1071	mathematics	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F1081	psychology	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F1091	Foundations of education	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F1101	Arabic	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F1111	English	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F1121	Occupational safety	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Second stage	EDCH24 F2011	Inorganic chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

	EDCH24 F2021	Analytical chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F2031	organic chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F2041	Computer	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F2051	Physical chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F2061	mathematics	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F2071	Developmental psychology	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F2081	high school education	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F2091	Baath crimes	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Third stage	EDCH24 F3011	The language is English	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F3021	Inorganic chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F3031	Scientific research method	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F3041	organic chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F3051	Physical chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F3061	Industrial chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F3071	Teaching methods	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F3081	Biochemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F3091	Analytical chemistry/optional	Optional	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F3101	Industrial chemistry/optional	Optional	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F3111	Physical chemistry/optional	Optional	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

	EDCH24 F3121	Organic chemistry/optional	Optional	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F3131	Inorganic chemistry/optional	Optional	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F3141	Biochemistry/optional	Optional	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F3151	guidance	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F3151	English language	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Fourth stage	EDCH24 F4011	Biochemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F4021	Automated analysis	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F4031	Physical chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F4041	Organic diagnosis	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F4051	Measurement and evaluation	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F4061	Industrial chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F4071	Analytical chemistry/optional	Optional	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F4081	Industrial chemistry/optional	Optional	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F4091	Physical chemistry/optional	Optional	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F4101	Organic chemistry/optional	Optional	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F4111	Inorganic chemistry/optional	Optional	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F4121	Biochemistry/optional	Optional	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F4141	Practical education (applications)	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F4122	research project	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH24 F4131	English language	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description Form

1. Course Name: Analytical Chemistry

2. Course Code: EDCH24M1021

3. Semester / Year: 2023-2024

4. Description Preparation Date: 1/9/2023-31/8/2024

5. Available Attendance Forms: Daily working hours- Electronic classes

6. Number of Credit Hours (Total) / Number of Units (Total): (58) / 9 uints

7. Course administrator's name (mention all, if more than one name)

Name: Assist. Prof. Dr.Rawaa Abdulaleem Zakaria
Email:rawaazakaria72@uomosul.edu.iq

8. Course Objectives

Course Objectives	**■Learn about analytical chemistry and its sections** **■Learn about ways to express chemical concentration** **■Identify the dissolution product constant**

9. Teaching and Learning Strategies

Strategy	a-Course definition analytical chemistry: It is a chemistry branch deals with the study on the identificati of material composition and the determination of the amount of each component. b-Subject-specific skills: The student acquires knowledge of chemistry, the periodic table and chemical elements c-Thinking skills: Asking questions during the lecture for the purpose of attracting students' attention and making them think about the answer. d-General and transferable skills: The sudent acquires skill in correction

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	2×1=2	Gain a genral knowledge of chemistry and chemical elements	Ageneral introduction of chemistry, the periodicity atoms	Theoretical	
2-4	2×3=6	Gain knowledge of methods for expressing concentraion and preparing solids and liquids	Molarity,Normality,for mality,% and ppm	Theoretical	An exam,daily activity and homework
5-7	2×3=6	Gain knowledge of how to calculate the molecular weight and equivalent weight of solid and liquid compounds	solving problems related to the topic	Theoretical	An exam,daily activity a homework
8-9	2×2=4	Gain knowledge of chemical equilibrium	Reversible and irreversible reactions, types of chemical systems, and solving problems related to the topic	Theoretical	An exam,daily activity a homework
10-11	2×2=4	Gain knowledge of chemical equilibrium	Solving problems relsted to the topic	Theoretical	An exam, daily activity and homew
12-14	2×3=6	Gain knowledge of The dissolution product constant for poorly soluble salts	What is the dissolution Product constant and factors affecting the solubility of the precipitate?solving the mathematical problems	Theoretical	An exam,daily activity and homework
15			Mid-year exam		
16-18	2×3=6	Gain knowledge of the Salts and salts hydrolysis	Types of salts and relation between Kh,Kw and Ka, and solving the mathemati problems	Theoretical	an exam, daily activity and homework
19-21	2×3=6	Buffer solutions	Types of buffer solutions and solving the mathematical problems	Theoretical	An exam,daily activity homework
22-24	2×3=6	Gain knowledge of Ionic equilibrium	Definition of weak and strong electronics and solving the mathematical problems	Theoretical	An exam,daily activity homework
25-27	2×3=6	Volumetric ananlysis, indicators and how to explain his work?	Characteristics of primary and secondary standard materials, types of titrations	Theoretical	An exam,daily activity homework
28-30	2×3=6	Curves of titrations	Types of titration curves And solving the problems	Theoretical	An exam,daily activity homework

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, any)	Qualilative and volumetric analysis Dr. Thabet Saeed Al-Ghabsha, (1986) university of mosu (in Arabic)
Main references (sources)	Fundamentals of analytical chemistry (Skoog and west

Recommended books and references (scientific journals, reports...)	Fundamentals of analytical chemistry Dr.Thabit S.Al-Ghabsha and Dr. Mouayed Q.Al-Abachi
Electronic References, Websites	Chemix, Chemsketc, Chemdraw

Course Description Form

1. Course Name: Practical analytical chemistry
University of Mosul / College of Education for Pure Sciences / Department of Chemistry
2. Course Code:
EDCH24 M1021
3. Semester / Year:
The second semester of the academic year 2023-2024
4. Description Preparation Date:
2/9/2023
5. Available Attendance Forms:
Daily working hours
6. Number of Credit Hours (Total) / Number of Units (Total)
36 hours for each section, 6 hours for the first stage, Chemistry Department Two units....three hours
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Teacher Noor Mazin Ibrahim Dr. Sobhe Mohsen Jarallah Assistant Teacher Hind Shaker Mahmoud Email: noormazin81@uomosul.edu.iq
8. Course Objectives

Course Objectives	• Learn about quantitative analysis methods..... • Identify ways to express chemical concentration... • Learn about gravimetric analysis and the gravimetric factor..... • Learn about volumetric analysis and its types of reactions • Identify separation methods and devices used

9. Teaching and Learning Strategies

Strategy

A. Definition of the course

Analytical chemistry is one of the branches of chemistry and is defined as the chemical method by which elements and substances are detected, methods of separating them, and knowledge of the components of those substances in a mixture of them, in addition to quantitative estimation of these components.

B. Subject-specific skills

- The student acquires knowledge of chemistry, the periodic table, and chemical elements
- Providing the student with advanced knowledge of the chemistry of solutions, chemical equilibrium, and the law of mass action
- Providing the student with knowledge of volumetric analysis and types of clarification
- The student acquires knowledge of weight analysis and the weight factor
- The student acquires knowledge of spectroscopy, Berlambert's law and its analytical applications

10.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Gain insight into how to maintain oneself and laboratory equipment	Laboratory security and safety precautions	practical	Homework
2	2	Gain a general knowledge of chemistry and preparation of compounds	A general introduction to analytical chemistry and its types	practical	An exam, a daily activity, and homework
3	2	Gain knowledge of	Preparation of solid	practical	An exam, a daily

		how to prepare a liquid substance	and liquid compounds		activity, and homework
4	2	Gain knowledge about Christification	Decontamination and its conditions	practical	An exam, a daily activity, and homework
5	2	Gain knowledge of correction methods	volumetric methods clarification	practical	An exam, a daily activity, and homework
6	2	Gain knowledge about the conditions	Standard conditions for primary and secondary materials	practical	An exam, a daily activity, and homework
7	2	Gaining knowledge about the colors of circles signs in	Indicators of acidity and -basicity evidence of neutrality	practical	An exam, a daily activity, homework, and writing a report
8	2	Gain knowledge of how sodium carbonate is prepared practically	Experiment 1- Preparing sodium carbonate and calculating the standard of hydrochloric acid	practical	An exam, a daily activity, homework, and writing a report
9	2	Gain knowledge of how to find focus	Experiment 2- Calculating the standard of sodium hydroxide by plating with hydrochloric acid	practical	An exam, a daily activity, homework, and writing a report on the experiment
10	2	Gain knowledge of how to calculate concentration	Experiment 3- Calculating the standard of acetic acid	practical	An exam, a daily activity, homework, and writing a report the on experiment
11	2	Gain knowledge of how to estimate a	Estimate a mixture of	practical	An exam, a daily activity, homework, and

		mixture	sodium carbonate and sodium hydroxide		writing a report on the experiment
12	2	Gain knowledge of how to estimate a mixture	Determine the mixture of carbonates Sodium bicarbonate	practical	An exam, a daily activity, homework, and writing a report on the experiment
13	2	Gain knowledge of how to estimate chlorine ions	for method chloride ion determination	practical	exam, a daily An activity, homework, and writing a report on the experiment
14	2	Gain knowledge of how to estimate iron	Determination of iron using potassium permanganate	practical	An exam, a daily activity, homework, and writing a report on the experiment
15	2	Gain knowledge of how to estimate iodine	Determination of iodine using sodium thiosulfate	practical	An exam, a daily activity, homework, and writing a report on the experiment

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	**The methodological book in Arabic:** Descriptive and volumetric analysis, Dr. Thabet Saeed Al-Ghabsha, (1986) University of Mosul **The methodological book in English:** Fundamentals of analytical chemistry (Skoog and west)

Main references (sources)	Practical inorganic chemistry book
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Directing students to websites related to subject areas, directing students to use the college library to expand their knowledge

Subject Teacther

Assistant Teacher Noor Mazin Ibrahim

Course Description Form

1. Course Name: Theoretical Organic Chemistry / First Stage - Department Chemistry

2. Course Code: **EDCH23M10131**

3. Semester / Year: 2024- 2023

4. Description Preparation Date:1/9/2023 -81/8/2024

5. Available Attendance Forms: in person - electronic classes

6. Number of Credit Hours (Total) / Number of Units (Total) 2 hours per lecture / 7 units

7. Course administrator's name (mention all, if more than one name)

Name: Name:. Dr. Ghufran Thanoon Siddiq / Email: gsadeek @uomosul.edu.iq
Name.D. neam Hazem Salim / Email: d.n3malmola@uomosul.edu.iq

8. Course Objectives

Course Objectives	• **The student learns the importance of organic chemistry, its branches, the composition of compounds, and methods of preparing them** • **1. Students are introduced to the subject of organic chemistry and its role in understanding the principles of modern chemistry and its daily uses.** • **2. How to use this knowledge in daily life and link it to other scientific phenomena** • **3. It makes students of colleges of education for pure sciences feel the value of the chemistry subject and how they deal with the students of the university** • **4- Performing their work in research laboratories** • **5. Urging students to perform their duties not only as teachers, but also in other state**

	departments.....

9. Teaching and Learning Strategies

Strategy	Theoretical lecture, dialogue and discussions, presenting examples and solving problems, homework, Daily activity of students and recording contributions for ea male and female student.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	aluatio nethod
1	2	The importar of organic chemistry	Organic compounds, electronic distribution, ior bonding, electronegativit types of covaler and hydrogen bonds	a lecture	Daily and mont hly exam s
2	2	The types of bonds	Methods of forming single, double and trip bonds, breaking	a lecture	Daily and
2	2	Types of Alkane	bonds chemical reactions, alkanes, cyclic alkanes, naming alkanes, preparing alkanes, and methods of preparing them	a lecture a lecture	mont hly exam s Daily and mont hly exam s
3 4	2 2	Cycloalkane	Synthesis of cycloalkane and	lecture	

			methods of preparations		
5	2	Alkene			
			Synthesis of alkene ,method preparation	Lecture	
6	2				Daily and monthly exams
		Alkene	Rearrangement of carbonium io and mechanism	Lecture	
7	2		dehalohydrogenation		
		Alkene			Daily and monthly exams
8	2		Electrophilic addition reactio	Lecture	
		Alkenes	of alkenes		
9	2		Addition of hydrogen ,		
		Alkene	carbine , Simon smith reaction		
10	2				
		dienes	Addition of free		
11	2				
			Synthesis of		
		Dienes	dienes		
12	2				
		Dienes	Polymers of		
13	2		dienes		
				Lecture	
			Delis alder , oxidation by super acids ,dimer of alkene ,free radical additions		

14	2	Alkyl halide	Types of dienes Polymers of dienes ,synthesis and preparation	Lecture	
15	2	Aromatic componds	Ractions , name	Lecture	

11.Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc 5 daily exam,20 point in mid year and the final exam from 50	
12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	Organic chemistry,Morrison and Boyd
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://faculty.uobasrah.edu.iq

Course Description Form

1. Course Name: Organic chemistry lab / Bachelor's

2. Course Code: **EDCH24M1031**

3. Semester / Year: 2023-2024

4. Description Preparation Date: 2023/9/1– 2024/8/ 31

5. Available Attendance Forms: Weekly laboratory attendance / online class

6. Number of Credit Hours (Total) / Number of Units 2 hours a week / 7 Credit

7. Course administrator's name (mention all, if more than one name)

Name: Dr. Nameer Ezzat E-mail:Nameer.ezzat@uomosul.edu.iq
Name: Dr. Yassir Shakeeb Mohamed E-mail: yassir_chem71@uomosul.edu.iq
Name: Ghufran Thanon Sadeek Email: gsadeek @uomosul.edu.iq
Name: Neam Hazem Email: d.n3malmola@uomosul.edu.iq

8. Course Objectives

Course Objectives	1- Learn the students the role of organic chemistry to understand the principles of modern chemistry and how can use it. 2- How can use this knowledge in our lives and connect with other scientific phenomena. 3- Make the students at colleges of education and pure science fill the value of chemistry and how can deal with schools' students. 4- Make the best in research labs. **5-** Students demand to perform their duties not only as teachers, but als in other state departments.

9. Teaching and Learning Strategies

Strategy	Theoretical lecture, discussion, and examples, solve homework problems, Daily activity of students and recording contributions for each student.

1. Course structure

weeks	hrs	Required learning outcomes	Name of the subject	Teaching method	Evaluation method
1	2	Lab equipment and tools	Lab tools	Watch the lab tools	Quizzes and monthly exams
2	2	Physical constant	Melting point for organic compounds	Practical experiment procedure	
3	2	Physical constant	Boiling point for organic compounds	Practical experiment procedure	
4	2	Purification of liquid organic compounds	Simple distillation	Practical experiment procedure	
5	4	Purification of liquid organic compounds	Fractional distillation	Practical experiment procedure	
6	4	Purification of liquid organic compounds	Vapor distillation	Practical experiment procedure	
7	2	Purification of solid organic compounds	Recrystallization	Practical experiment procedure	
8	4	Purification of solid organic compounds	Sublimation	Practical experiment procedure	
9	2	Extraction	Extraction of caffeine from tea	Practical experiment procedure	
10	2	Preparation of alkane	Preparation of Methane	Practical experiment procedure	
11	4	Preparation of alkene	Preparation of cyclohexene	Practical experiment procedure	
12	4	Preparation of alkyne	Preparation of acetylene	Practical experiment procedure	
13	4	Arenes oxidation	Preparation of benzoic acid	Practical experiment procedure	
14	4	Nitrtion of organic compounds	Nitration of Toluene	Practical experiment procedure	

10. Course Evaluation

Distribution of the grade out of 25 according to the tasks assigned to the student, such as daily preparation, weekly written exams, mid-year exams, final exams, reports, etc. The daily exam is 5 grades, the mid-year exam is 5 grades, reports 10 grades , and the result is 25 grades

11. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	Practical experment of organic compounds
Recommended books and references (scientific journals, reports...)	Journal of chemical education
Electronic References, Websites	

Course Description Form

1. Course Name: theoretical Inorganic chemistry first class Bs.c 2024

2. Course Code: EDCH24M1011

3. Semester / Year: Semester

2023-2024

4. Description Preparation Date: 1/9/2023

5. Available Attendance Forms:

Attending regular

6. Number of Credit Hours (Total) / Number of Units (Total) 30 hours

60/ 4 units

7. Course administrator's name (mention all, if more than one name)

Name: Prof. Dr. Jassim M Alyass
Email: shumoo20@uomosul.edu.iq
Name: Dr. Abeer S Mohammed
Email:
abeersalim1971@uomosul.edu.iq

8. Course Objectives

Course Objectives	**1 - principle of inorganic chemistry, Electronic structure symbol terms, quantum No. and Classification of periodic table. 2 – Periodic properties of atoms.. 3- Type of bonds (ionic compounds) 4 - Bond theories (covalent bonds). 6 – Hybridization and geometry of simple compounds.**

9. Teaching and Learning Strategies

Strategy	buildind graduates' skills students to know the inorganic chemistry through the lecture , discussions, home works and examinations.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1,2	2x2=4	Acquire knowledge of Subject	Principle of inorganic chemistry	Lecture and Discussion	Oral questions

3,4	2x2=4	Acquire knowledge	Principle of inorganic chemistry	Lecture	Discussions
5,6	2x2=4	Learning principle of Orbital shapes	Symbol terms and shape Of orbitals.	Lecture . discussi With the help of Different Facilitate	Short examination and home work
7,8	2x2=4	Acquire knowledge Concerning Symbol term	Symbol terms and shape Of orbitals	Symbol terms	Oral questions
9,10	2x2=4	Periodic table	Periodic table	Lecture	Oral questions
11,12	2x2=4		Periodic table	Electronic Configuration	Lecture and Discussion
13,14	2x2=4		Periodic properties of atoms	examples	Short examination and home work
15,16	2x2=4		Periodic properties of Atoms	Ionic radii Covalent	.
17,18	2x2=4		Mid course examination	Exam.	Mid. Course Examination
19,20	2x2=4	Knowledge of bonds	Bond energy calculation And periodic properties	Ionization Energy etc.	Short examination and home work
21,22	2x2=4		Tape of bonds	VBT MOT	Oral questions
23,24	2x2=4	Acquire knowledege of Bonding	Bonding molecular orbital	VBT MOT	
25,26	2x2=4		Hybridization	Hybridization	
27,28	2x2=4		Back feeding discussions	Backfeeding discussions	Oral questions
29,30	2x2=4		Final exam.	Final exam.	Final exam.

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Inorganic chemistry Dr. n al- Needmy First part Arabic version mBaghdad Un.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Cotton and wilkenson Advanced inorganic chem. 1990
Electronic References, Websites	Different electronic web.

Course description form

1. Course Name
Educational psychology
2. Course Code
EDCH24 M1081
3. Semester/year
2024/2023
4. Date this description was prepared
1/9/2023
5. Available attendance forms
Daily attendance
6. Number of study hours (total)/number of units (total)
2 hours a week and 30 weeks
7. Name of the course administrator (if more than one name is mentioned)
Name: A. M. Dr.. Tanhed Adel Fadel Email: dr.tanhed@uomosul.edu.iq
8. Course objectives

Objectives of the study subject	. **For the student to become familiar with the concept of educational psychology and its areas of interest and study.** . **For the student to know the meaning of educational objectives, classify them, and transform them into educatio objectives.** . **That the student understands the meaning of memory, its nature, and its role in teaching.** . **For the student to recognize the importance of motivation i the field of educational psychology** . **The student gets to know the meaning of the transfer of the learning effect and its educational applications** . **For the student to recognize and understand the meaning o the concept and its relationship to scientific thinking and creative thinking** . **For the student to know the meaning of feedback, its types, and its importance to the teacher.** . **The student gets to know the theories of education and thei educational applications.** . **The student understands the factors affecting learning.** . **The student gets to know the skills and habits and how to acquire them and benefit from them in learning.**

9. Teaching and learning strategies	
The strategy	Method of solving problems Cooperative learning method

10. Course structure

the week	hours	Required learning outcomes	Name of the unit or topic	Learning method	Evaluation method

the first	2	Learn about the meaning of educational psychology	Science self Educational And its development	Dialogue and discussion	Asking questions And the answer to it is from requester
the second the third the fourth	2	The student should be able to formulate behavioral objectives and formulate a question that achieves the objective	Objectives Educational	=	=
The fifth	Is the first exam for the first semester				
Sixth	2	Learn about memory and its theories	memory Her theories And its role In teaching	=	=
Seventh	2	=	=	=	=
Eighth	2	Learn about forgetting and its theories	Forgetting	=	=
Ninth	2	=	=	=	=

The tenth					
eleventh	2	Identify the transfer of learning effects	Transfer effect Learning		
twelveth	2				The second exam of the first semester
Thirteenth	2	Identify the role of motivation in the process	Motivation		=
fourteenth	2	Learning			=
Fifteenth	2				=
sixteen	2	Learn the meaning of the concept and creative and scientific thinking	Concepts and their relationships		=
seventeenth	2				With scientific and creative thinking
eighteen					
nineteenth	2	Learn the meaning of feedback	Feedback		=
The twentieth	2	=	=		=
The twenty-first week					The first exam of the second semester
The twenty-second week		Learn about education theories	Education theories		=
The twenty-third week		=	=		=
The twenty-fourth week		=	=		=
The twenty-fifth week		Identify the factors affecting learning	Factors affecting learning		=

The twenty-sixth week		=	=		=
The twenty-seventh week		Identify individual differences	Individual differences and their impact on learning		=
The twenty-eighth week		=	=		=
The twenty-ninth week					The second exam for the second semester
The thirtieth week		Identify skills and habits			Skills and habits and how to acquire them

11.Course evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

12.Learning and teaching resources

Required textbooks (methodology, if any)	Basics of educational psychology
Main references (sources)	Educational psychology Cognitive psychology Thinking without limits
Recommended supporting books and referen (scientific journals, reports....)	nothing
Electronic references, Internet sites	Nothing

Course description form

1. Course Name
Educational psychology
2. Course Code
EDCH24 M1081
3. Semester/year
2024/2023
4. Date this description was prepared
1/9/2023
5. Available attendance forms
Daily attendance
6. Number of study hours (total)/number of units (total)
2 hours a week and 30 weeks
7. Name of the course administrator (if more than one name is mentioned)
Name: A. M. Dr.. Tanhed Adel Fadel Email: dr.tanhed@uomosul.edu.iq
8. Course objectives

Objectives of the study subject	. **For the student to become familiar with the concept of educational psychology and its areas of interest and study.** . **For the student to know the meaning of educational objectives, classify them, and transform them into educatio objectives.** . **That the student understands the meaning of memory, its nature, and its role in teaching.** . **For the student to recognize the importance of motivation i the field of educational psychology** . **The student gets to know the meaning of the transfer of the learning effect and its educational applications** . **For the student to recognize and understand the meaning o the concept and its relationship to scientific thinking and creative thinking** . **For the student to know the meaning of feedback, its types, and its importance to the teacher.** . **The student gets to know the theories of education and thei educational applications.** . **The student understands the factors affecting learning.** . **The student gets to know the skills and habits and how to acquire them and benefit from them in learning.**

9. Teaching and learning strategies	
The strategy	Method of solving problems Cooperative learning method

10. Course structure

the week	hours	Required learning outcomes	Name of the unit or topic	Learning method	Evaluation method

the first	2	Learn about the meaning of educational psychology	Science self Educational And its development	Dialogue and discussion	Asking questions And the answer to it is from requester
the second the third the fourth	2	The student should be able to formulate behavioral objectives and formulate a question that achieves the objective	Objectives Educational	=	=
The fifth	Is the first exam for the first semester				
Sixth	2	Learn about memory and its theories	memory Her theories And its role In teaching	=	=
Seventh	2	=	=	=	=
Eighth	2	Learn about forgetting and its theories	Forgetting	=	=
Ninth	2	=	=	=	=

The tenth					
eleventh	2	Identify the transfer of learning effects	Transfer effect Learning		
twelveth	2				The second exam of the first semester
Thirteenth	2	Identify the role of motivation in the process	Motivation		=
fourteenth	2	Learning			=
Fifteenth	2				=
sixteen	2	Learn the meaning of the concept and creative and scientific thinking	Concepts and their relationships		=
seventeenth	2				With scientific and creative thinking
eighteen					
nineteenth	2	Learn the meaning of feedback	Feedback		=
The twentieth	2	=	=		=
The twenty-first week					The first exam of the second semester
The twenty-second week		Learn about education theories	Education theories		=
The twenty-third week		=	=		=
The twenty-fourth week		=	=		=
The twenty-fifth week		Identify the factors affecting learning	Factors affecting learning		=

The twenty-sixth week		=	=		=
The twenty-seventh week		Identify individual differences	Individual differences and their impact on learning		=
The twenty-eighth week		=	=		=
The twenty-ninth week					The second exam for the second semester
The thirtieth week		Identify skills and habits			Skills and habits and how to acquire them

11.Course evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

12.Learning and teaching resources

Required textbooks (methodology, if any)	Basics of educational psychology
Main references (sources)	Educational psychology Cognitive psychology Thinking without limits
Recommended supporting books and referen (scientific journals, reports....)	nothing
Electronic references, Internet sites	Nothing

Course Description Form

1. Course Name:	
Foundations of Education / First Stage	
2. Course Code:	
EDCH24M1091	
3. Semester / Year:	
2023- 2024	
4. Description Preparation Date:	
1/9/2023	
5. Available Attendance Forms:	
Daily attendance	
6. Number of Credit Hours (Total) / Number of Units (Total):	
There are two groups A,B each group consisting of three sections, meaning that the number of hours per week for both groups =6 As for a month 6*4 weeks=24 hours.	
7. Course administrator's name (mention all, if more than one name)	
Name: Mohammed jassim mohammed Email: mjasimm855@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	The student should know the civilized basis of our soci and the role of education in daily life. To recognize the need for the student to know the value of ancient civilizations in the progress of societie The student should know the basic concepts of the foundations of education The student should know the characteristics of education and its objectives. To familiarize the student with the institutes of educatic in Islam To familiarize the student with the historical basis and curricula of ancient and modern times. The student should compare education in Ethnoia and Sparta. To understand the stages of Arab-Islamic education that the student should know the educational role of the family, school and society. To understand the meaning of scientific research and its steps.
9. Teaching and Learning Strategies	
Strategy	Lecture, discussion and dialogue, Google classroom, problem solving, developed lecture, cooperative learning, educational games, brainstorming, interrogation.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1+2+3+4	2*4=8	Identify the objectives of cognitive, emotional and skill education	The concept of education / its objectives / characteristics of education	Daily	Activity and participation during the lecture and exam
5+6+7+8	2*4=8	Learn about the historical basis and curricula of ancient and modern times	The historical basis of education / Education in primitive societies and features / The old Iraqi school / Education system and curricula / School administration / Libraries / The relationship between home and school	Daily	Activity and participation during the lecture and exam
9+10+11+12	2*4=8	Learn about breeding in ancient China	Chinese education / education system and examinations in the pas first, second and third degree exams	Daily	Activity and participation during the lecture and exam
13+14+15+16	2*4=8	Learn about ancient Greek education (Ethnoia and Sparta)	Greek education / factor that helped its progress stages of education systems - education system in Sparta - education of girls in Sparta – education system in Ethnia - education of girls in Ethnia	Daily	Activity and participation during the lecture and exam
17+18+19+20	2*4=8	Understands the stages that Arab-Islamic education went through	Stages of Arab-Islamic education / stage of the pre-Islamic era - the emergence of the Islami call - the stage of the spread of the Islamic religion in the era of the Rightly-Guided Caliphs and Umayyads outside t Arabian Peninsula - the stage of the Abbasid era (the golden age) progres and prosperity - the stag of decline and decay	Daily	Activity and participation during the lecture and exam
21+22+23+24	2*4=8	Learn about the institutes of education in Islam in previous eras	Institutes of education i Islam / book - mosque - schools - libraries - shop of the papers - houses o scholars - palaces - liter	Daily	Activity and participation during the lecture and exam

25+26	2*2=4	Learn about the flags of educational thought	councils Methods of education in Arab-Islam education - method of education - age of education - punishment education of women - compulsory education - teachers – students Flags of educational thought / 1. Ibn Khaldur his educational opinions Ibn Sina - his writings - his educational opinions the policy of the man himself - the policy of t man and his son. 3. Al-Ghazali - his educationa views - his opinion on child education and mor education - his views or the teacher's etiquette - views of the learner - hi writings	Daily	First semester exam
27+28+29	2*3=6	Recognize the meaning of family and its function	The social basis of education / the educatio role of the family - the meaning of the family a its function 2. The role the family in the educational process - ea socialization - the framework of family relations - the impact of the comprehensive cultu system The family in raising a child The role of the family ir educational problems - childhood demands - se reliance - equality in the treatment of children - escape from school - parents' control over the fate of children - family and social change - the impact of change in fam cohesion - the impact of change in the function c the family The educational role of	Daily	Activity and participation during the lecture and exam
30+31+32	2*3=6	Identify the educational role of the family		Daily	Secend semester Exam
33+34+35+36	2*4=8	Recognize the educational role		Daily	Activity and participation during the lecture and exam

37+38+39+40	2*4=8	of the school Identify the educational role of the community	school / the concept and function of the school \ school environment and social faces - social interaction and educatio authority - the framewo of social relations in the school - the relationship between teachers - the relationship between students and teachers - t relationship of the principal with teachers a students - the relationsh of the school and the outside community = cooperation between the family and the school The educational role of society The meaning of society / social institutio Educational media - Coordination between educational media / activity of institutions (radio, television, press, theater, places of worsh public libraries, clubs ar sports arenas, exhibition and museums, economi	Daily	Activity and participation during the lecture and exam
41+42	2*2=4				
43	2 hours	Understand the meaning, steps and methodology scientific research	return of education, financing education The concept of scientifi research / steps of scientific research - difficulties of the scient method in the social sciences - research methodology in educati review.	daily	Activity and participation during the lecture and exam final exam

11.Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Dr. Ali Al-Qaimi, Book of Foundations of Education and Educational Guidance, Dar Al-Nabala, Amman (2014).
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Dr. Ibrahim Ramadan Al-Deeb, Foundations and skills o building educational values, Al-Noor Library, Amman (2013) Dr. Muhammad Al-Shazly, Foundations of Social Education in Islam, Noor Library, Amman (2013). Dr. Attia Khalil Attia, Foundations of Education Nineveh Center for Information Technology (2020). Dr. Abdul Karim Al-Yamani, Foundations of Education, Knowledg Treasures Series 2018.
Electronic References, Websites	Directing to websites related to the topics of the subject, directing students to use the college library to view the resources for the foundations of education.

Course Description Form

1. Course Name: Practical biology/botany-zoology

2. Course Code: **EDCH24 M1061**

3. Semester / Year: 2023-2024

4. Description Preparation Date: 1/9/2023

5. Available Attendance Forms: Laboratory , Classroom

6. Number of Credit Hours (Total) / Number of Units (Total)

4/4

7. Course administrator's name (mention all, if more than one name)

1- Dr. Banan Rakan Dabdoub Email: dr.banandabdoub@uomosul.edu.iq
2- Dr. Amal Abdulilah Alkashab Email: amal.biology@uomosul.edu.iq
3- Dr. Taha Abdullwahab Khamees Email: dr.tahaalamawni19@uomosul.edu.i
4-Dr. Noor Ameer Mohameed Email: noorameeralaubidi@uomosul.edu.iq

8. Course Objectives

Course Objectives	**Knowing the basic principles of biology** **Learn about practical applications of biology**

9. Teaching and Learning Strategies

Strategy	Theoretical and practical lecture, dialogue and discussions, presentation of plant models and slides for cells and tissues, daily reports and assignments.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	2	Understanding basic principles	Introduction to Zoology	lecture	Daily exams
Second	2	Understanding basic principles	Introduction to Botany	Lecture	Daily exams
Third	2	Understanding basic principles	Biology's relationship other sciences	Lecture	Daily exams
Fourth	2	Understanding basic principles	Plant Cell	Lecture	preparing reports and homework
Fifth	2	Understanding basic principles	animal cell	Lecture	Homework
Sixth	2	Understanding basic principles	Photosynthesis in plant	Lecture	Daily exams

Seventh	2	Understanding basic principles	Animal Cell Organisms	Lecture	Homework
Eighth	2	Understanding basic principles	Respiration in the plant	Lecture	preparing reports and homework
Nineth	2	Understanding basic principles	Introduction to histology	Lecture	Homework
Tenth	2	Understanding basic principles	Principles of plant taxonomy	Lecture	Daily exams, prepa reports and homew
Eleventh	2	Understanding ba principles	types of animal tiss	Lecture	Daily exams, prepa reports and homew
Twelfth	2	Understanding basic principles	Introduction to mycology	Lecture	Homework
Thirteen	2	Understanding basic principles	types of animal cells	Lecture	Daily exams and homework
Fourteenth	2	Understanding basic principles	Division Fungi	Lecture	Homework
Fifteenth	2	Understanding basic principles	Animal tissue components and cells	Lecture	
Sixteenth	2	Understanding basic principles	Introduction to phycology	Lecture	Daily exams, preparing reports and homework
Seventeenth	2	Understanding basic principles	muscular system	Lecture	Daily exams
Eighteenth	2	Understanding basic principles	Division algae	Lecture	Daily exams and homework
Nineteenth	2	Understanding basic principles	circulatory system	Lecture	Daily exams
Twentieth	2	Understanding basic principles	Introduction to microbiology	Lecture	Homework
Twenty first	2	Understanding basic principles	characteristics of life	Lecture	Daily exams
Twenty second	2	Understanding basic principles	The bacteria	Lecture	Homework

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- Histology 2000, d. Abd al-Qader al-Mukhtar planets, Dr. Abd al-Hakim Ahmed al-Rawi. Ministry of Higher Education and Scientific Research, Baghdad University. 2- The Plant Kingdom / Dr. Hussein Al-Arousi 3- Algae and Archegonaits 1991 , Ibrahim Khader Moulud, Nidal Idriss Suleiman and Ibrahim Tawfiq al-Basalem/Ibn al-Ether Printing & Publishing

	House/Mosul University 4- Physiology 2020, Linda S. Costanzo, Tokyo, Commonwealth University School of Medicine. 5- Human Body and Disease (2006). Author: Dr. Elias Hajoj, Bibliography Institute, Germany. 6- Blood disease. (2004). Author: N. Q. Hyons Jones. 7th Edition, Blackwell Publishing.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name: Biology laboratory – students of Chemistry department

2. Course Code: EDBI24F101

3. Semester / Year: 2023-2024

4. Description Preparation Date: 1.9.2023

5. Available Attendance Forms: Attendance and electronic course

6. Number of Credit Hours (Total)/Number of Units (Total): 6hrs and 4 unites

7. Course administrator's name (mention all, if more than one name)

Name: Assist. Pro. Dr. Ibrahim Faris Ali (ibrahimfali@uomosul.edu.iq)
Name: Dr. Mona Omar Mohammed (mona.omar@uomosul.edu.iq)
Name: Lect. Shireen Yaseen Kasim (shireenyaseen@uomosul.edu.iq)
Name: Ekhlass Kalifa Hamed (ekhlasshamid@uomosul.edu.iq)
Name: Assist. Lect. Maya Ibrahim Jasim
Name: Assist. Lect. Zahra Hazim

8. Course Objectives

Course Objectives	**1. Identify the basic principles of biology** **2. Identify the practical applications of biology**

9. Teaching and Learning Strategies

Strategy	Theoretical and practical lectures, dialogues and discussions. Solving problems, conducting scientific experiments, reporting, and daily assignments

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	One	Understand h to use Microscope a types microscopes	Animal laboratory microscope and its type	practical lecture	Daily exams
2	One	Recognition Plant cell and types	Plant cell and Division process	practical lecture	Daily exams and Report writing And homework
3	One	Recognition Animal cell its componen	Animal cell And the process of division	practical lecture	Daily exams
4	One	Identify the types	Root	practical lecture	Daily exams and Report writing

		Roots and the classification			
5	One	Identify this t of tissues and their functior	Simple epithelial tissues	practical lecture	Daily exams and Report writing
6	One	Identify the types Stems and their classification	Stem	practical lecture	Daily exams and Report writing
7	One	Identify this t of tissues their function	Stratified epithelial tissues	practical lecture	Daily exams and Report writing And homework
8	One	Identify the types of leaves and their classification	Leaves	practical lecture	Daily exams and Report writing And homework
9	One	Identify this t of tissues their function	Dense Connective tissue	practical lecture	Daily exams
10	One	Identify the types of Compound leaves	Compound leaves	practical lecture	Daily exams and Report writing And homework
11	One	Identify this t of tissues their function	Loose connective tissu	practical lecture	Daily exams and Report writing And homework
12	One	Identify the types vein in leaves	Leaf venation	practical lecture	homework
13	One	Identify this t of tissues their function	Cartilage	practical lecture	Daily exams and homework
14	One	Identify the types Flowers and their classification	Flowers	practical lecture	homework
15	One	Identify this t of tissues their function	Bone	practical lecture	Daily exams
16	One	Identify the types The cup and t crown	The cup and the crown	practical lecture	Daily exams and Report writing
17	One	Identify the types Pollen blossom	Pollen and blossom	practical lecture	Daily exams
18	One	Identify this t of tissues their function	Blood	practical lecture	Daily exams and homework

19	One	Identify the types Inflorescence and their classification	Inflorescences	practical lecture	Daily exams
20	One	Identify this t of tissues their function	Lymph	practical lecture	Daily exams and Report writing
21	One	Identify the d fruits and its types	The dry fruits	practical lecture	Daily exams and Report writing
22	One	Identify this t of tissues their function	Muscle tissue	practical lecture	Daily exams and Report writing
23	One	Identify the s fruits and its types	The soft fruits	practical lecture	Daily exams
24	One	Identify this t of tissues their function	Nervous system	practical lecture	Daily exams
25	One	Identify the types Seeds and their classification	Seeds	practical lecture	Daily exams
26	One	Identify the types Bacteria and their importa And its harms	Bacteria	practical lecture	Daily exams
27	One	Identify the types Algae and its importance And its harms	Algae	practical lecture	Daily exams
28	One	Identify the types Environments for animals	Animal environment	practical lecture	Daily exams
29	One	Identify the types Fungi and the importance And its harms	Fungi	practical lecture	Daily exams
30			Seasonal exam		

11.Course evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

12.Learning and teaching resources

Required textbooks	Fundamentals of Biology text book Practical text book for Biology
Main references	Essential of Zoology - Dr. Muhammad Kamal Abdel

	Moez Essential of botany - A. Ruqaya Hussein Jassim
Recommended supporting books and references (scientific journals, reports....)	e Science of Plant- Book Animal primary tissues - Book
Electronic references, Inter websites	tps://byjus.com/biology/animal-tissuetypes ps://www.biologyonline.com/tutorials/plan t-biology

Course Description Form

1. Course Name: programing

2. Course Code: EDCH24 M1051

3. Semester / Year: 2023/2024

4. Description Preparation Date: 1/9/2023

5. Available Attendance Forms: Daily shift

6. Number of Credit Hours (Total) / Number of Units (Total)

30Hours / 2 Units

7. Course administrator's name (mention all, if more than one name)

Name: mazin salim mohammed
Email: mazinsalm@uomosul.edu.iq

8. Course Objectives

Course Objectives	• **Identify the component of computer.** • **Know the tasks of task bar.** • **Identify computers operating systems** • **See the internet using.** • **Identify computer network types.** • **Getting know of internet browser.**

9. Teaching and Learning Strategies

Strategy	The method of lecturing is discussing and asking question's with student

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Components of Computer	The computer and its ba components	the lecture	the daily a monthly exams

2	2	The development computers	types of computers,	lecture,	Daily and monthly exams
3	2	File measurement un	file sizes and proportic	lecture,	Daily and monthly exa
4	2	physical components the computer,	the central process unit,	lecture,	Daily and monthly exa
5	2	Physical components	of the computer Mem unit	lecture,	Daily and monthly exa
6	2	Types of memory	Read-only memory	lecture,	Daily and monthly exa
7	2	Types of Memory	Random Access Memo	lecture,	Daily and monthly exa
8	2	Instructions The cont button	Instructions The cont button and its functior	lecture,	Daily and monthly exa
9	2	Evolution of Windows operat system	Windows 10 operat system	lecture,	Daily and monthly exa
10	2	Types of Networks	The Internet	lecture,	Daily and monthly exa
11	2	Types of networks	The World Wide Web	lecture,	Daily and monthly exa
12	2	Benefits of networks	, uses of the Internet,	lecture,	Daily and monthly exa
13	2	Internet applications	, websites	lecture,	Daily and monthly exa
14	2	Internet applications	, browsers,	lecture,	Daily and monthly exa
15	2	Internet applications	, e-mail, lecture,	lecture,	Daily and monthly exa

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	The methodological book in Arabic
Main references (sources)	Computer Systems: Digital Design, Fundamentals of Computer Architecture and Assembly
Recommended books and references (scientific journals, reports...)	Computer Organization and Design Fundamentals
Electronic References, Websites	Lecture 1 (EECS2021E) - Computer Organizat and Architecture (RISC-V) Chapter 1 (F I),youtube

Course description form

1. Course name
Arabic language, first stage
Course code .1
EDCH24M1101
semester/year .2
First and second semester 2023-2024
Date this description was prepared 1/9/2023 .3
5 attendance forms available
ork (attendanceDaily
6 Number of study hours (total) Number of units (total)
ere are four groups in each section, meaning that the number of hours is 8 per week, but r month: 8 times 4 = 32
7. Name of the course administrator lif more than one name is mentioned
me: Ghassanaziz1966@gmail.com Ghassan: Ghassanaziz1966@gmail.com
.4 Objectives of the study subent .5

They carry out practical experiments that contribute to increasing students' ability to investigate, discover, and critical thinking and develop mental skills, creative thinking skills, Developing a number of positive trends such as Objectivity, scientific honesty in research, appreciation of manual work, acceptance of working within a cooperative team and respect for the opinions of others, and economy in the use of human arts such as theater and cinema	Introducing mew students to the importance of our Arabic language and

6. استراتيجيات التعليم والتعلم

	ا Course objectives

Knowledge of the basic concepts of the Arabic language and the most importan	

7. بنية المقرر

Evaluation	Learning method	Learning OutcomesLearning Outcomes	Learning Outcomes	Alsaat	Week
aliamtihan walnashat alyawmii	Theoretical lesson	sharah ahimiat mawsilna bishakl shamil min alnusus lilkurs althaani watafasiliha	aiktisab almaerifa fi almajal aladib alqadim	3x3=9	1+2+3
aliamtihan walnashat alyawmii	عملي	Explanation of the active participle and its branches Introducing Arabic language terms, such as words, pronunciations, etc Explaining the types of verbs and their grammatical signs	Gaining knowledge and understanding For linguistic terms	3x3=9	4+5+6

Daily exam	Theoretical lesson	. Explaining globalization as a modern term and its social effects.	Gaining knowledge and understanding to the topic of globalization	3x3=9	7+8+9
			Gaining knowledge and understanding through the results of the study	3x3=9	10
Monthly exam	Theros tical lesson				
Final theoretical exam	theoretical	Conduct a final exam for the course to evaluate the student's performance	exam Final tical lesson theoretical theores For the course exam	3	15
8. Course					
Gain knowledge and understanding of fully practical experiences of student performance					
9 Learning and teaching resources					

. Basic texts ● . Other	(Required textbooks methodology, if anyال
	meet the performance of the student taking the final exam
	Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly
Modern sources and research from the Internet system	Main references (sources

Course description form

1. Course name
Arabic language, first stage
Course code .1
EDCH24M1101
semester/year .2
First and second semester 2023-2024
Date this description was prepared 1/9/2023 .3
5 attendance forms available
work (attendanceDaily
6 Number of study hours (total) Number of units (total)
There are four groups in each section, meaning that the number of hours is 8 per week, but per month: 8 times 4 = 32
7. Name of the course administrator lif more than one name is mentioned
Name: Ghassanaziz1966@gmail.com Ghassan: Ghassanaziz1966@gmail.com
.4
Objectives of the study subent .5

They carry out practical experiments that contribute to increasing students' ability to investigate, discover, and critical thinking and develop mental skills, creative thinking skills, Developing a number of positive trends such as Objectivity, scientific honesty in research, appreciation of manual work, acceptance of working within a cooperative team and respect for the opinions of others, and economy in the use of human arts such as theater and cinema	Introducing mew students to the importance of our Arabic language and

6. استراتيجيات التعليم والتعلم

	ا Course objectives

Knowledge of the basic concepts of the Arabic language and the most important	

7. بنية المقرر

Evaluation	Learning method	Learning OutcomesLearning Outcomes	Learning Outcomes	Alsaat	Week
aliamtihan walnashat alyawmii	Theoretical lesson	sharah ahimiat mawsilna bishakl shamil min alnusus lilkurs althaani watafasiliha	aiktisab almaerifa fi almajal aladib alqadim	3x3=9	1+2+3
aliamtihan walnashat alyawmii	عملي	Explanation of the active participle and its branches Introducing Arabic language terms, such as words, pronunciations, etc Explaining the types of verbs and their grammatical signs	Gaining knowledge and understanding For linguistic terms	3x3=9	4+5+6

Daily exam	Theoretical lesson	. Explaining globalization as a modern term and its social effects.	Gaining knowledge and understanding to the topic of globalization	3x3=9	7+8+9
			Gaining knowledge and understanding through the results of the study	3x3=9	10
Monthly exam	Theros tical lesson				
Final theoretical exam	theoretical	Conduct a final exam for the course to evaluate the student's performance	exam Final tical lesson theoretical theores For the course exam	3	15
8. Course					
Gain knowledge and understanding of fully practical experiences of student performance					
9 Learning and teaching resources					

. Basic texts ● . Other	(Required textbooks methodology, if anyال
	meet the performance of the student taking the final exam
	Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly
Modern sources and research from the Internet system	Main references (sources

Course Description Form

1. Course Name: programing

2. Course Code: EDCH24 M1051

3. Semester / Year: 2023/2024

4. Description Preparation Date: 1/9/2023

5. Available Attendance Forms: Daily shift

6. Number of Credit Hours (Total) / Number of Units (Total)

30Hours / 2 Units

7. Course administrator's name (mention all, if more than one name)

Name: mazin salim mohammed
Email: mazinsalm@uomosul.edu.iq

8. Course Objectives

Course Objectives	• **Identify the component of computer.** • **Know the tasks of task bar.** • **Identify computers operating systems** • **See the internet using.** • **Identify computer network types.** • **Getting know of internet browser.**

9. Teaching and Learning Strategies

Strategy	The method of lecturing is discussing and asking question's with student

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Components of Computer	The computer and its ba components	the lecture	the daily a monthly exams

2	2	The development computers	types of computers,	lecture,	Daily and monthly exams
3	2	File measurement units,	file sizes a proportions,	lecture,	Daily and monthly exams
4	2	physical components of the computer,	the central process unit,	lecture,	Daily and monthly exams
5	2	Physical components	of the computer Mem unit	lecture,	Daily and monthly exams
6	2	Types of memory	Read-only memory	lecture,	Daily and monthly exams
7	2	Types of Memory	Random Access Memo	lecture,	Daily and monthly exams
8	2	Instructions The control button	Instructions The cont button and its functio	lecture,	Daily and monthly exams
9	2	Evolution of the Windows operating system	Windows 10 operat system	lecture,	Daily and monthly exams
10	2	Types of Networks	The Internet	lecture,	Daily and monthly exams
11	2	Types of networks	The World Wide Web	lecture,	Daily and monthly exams
12	2	Benefits of networks	, uses of the Internet,	lecture,	Daily and monthly exams
13	2	Internet applications	, websites	lecture,	Daily and monthly exams
14	2	Internet applications	, browsers,	lecture,	Daily and monthly exams
15	2	Internet applications	, e-mail, lecture,	lecture,	Daily and monthly exams

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	The methodological book in Arabic
Main references (sources)	Computer Systems: Digital Design, Fundamentals of Computer Architecture and Assembly
Recommended books and references (scientific journals, reports...)	Computer Organization and Design Fundamentals
Electronic References, Websites	Lecture 1 (EECS2021E) - Computer Organizat and Architecture (RISC-V) Chapter 1 (I I),youtube

Course Description Form

1. Course Name:
Physical Chemistry
2. Course Code:
EDCH24 M2051
3. Semester / Year:
2023 -2024
4. Description Preparation Date:
1/ 9 / 2023
5. Available Attendance Forms:
In-person lectures / classroom
6. Number of Credit Hours (Total) / Number of Units (Total)
(2x30=60) Credit Hours (Total) / 9 Units
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Alaa Abdul Azeez Ahmed / Email: alaa_kemia @uomosul.edu.iq Name: Dr. Dunia Butrus Toma / Email: dn_842007 @uomosul.edu.iq
8. Course Objectives

Course Objectives	• **Understand concepts such as system, equilibrium, reversible processes, state and sta functions, and path-functions.** • **Use the Equations of State.** • **Apply the First Law and the Second Law of Thermodynamics to closed systems.** • **Apply the First Law and the Second Law of Thermodynamics to solve problems relating reversible and irreversible processes for ideal gases.** • **Understand different processes (isothermal, adiabatic, isobaric, isontropic).** • **Calculate the changes in properties of the system from the PVT data, the Equations of S ta and the heat capacity data.** • **Understand the vapor – liquid equilibrium and apply the simple** • **thermodynamic models.** • **Use variables such as fugacity and fugacity coefficients, activity and activity coefficients more rigorous calculations.** • **Apply the models to real chemical reactions and phase changes.**
9. Teaching and Learning Strategies	
Strategy	• **Teaching and learning methods: lecture, dialogue, discussion, examples, practi laboratory, and information available online.** • **Evaluation methods: monthly exams, homework, and students' daily activities (da preparation and recording of participation for each male and female student).**

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1+2+3	**2x3=6**	**Gaining knowledge in t field of physic chemistry and introducing some basic concepts relat to the branche of chemistry**	**Applications of Thermodynamics • What is studied in thermodynamics? • Fundamental definitions (system, type of systems, state variable, state of the system) • Meaning of temperature • Meaning of pressure • Equation of State • Perfect (ideal) gas law ● The Gas laws ● boyle's law ● Charle's or Gay lussac's law ● Avogadro 's law ● Ideal Gas law or The perfect Gas law ● Dalton's law for partial pressures ● Amagat law for partial Volumes ●:Graham's law of diffusion ● Kinetic Theory for Ideal gases ● Molecular Velocities ● Speed of collision ● Viscosity of gases ● Heat capacity of gases at constant Volume ● Heat capacity of gases at constant pressure • Mixture of gases**	**Lecture-based learning**	**Tasks and Assignments , Quiz1,Midtern Exam, Quiz 2 , Final Exam (theoretical)**
4+5+6	**2x3=6**		**● Real Gases • Deviation of the prefect gas from real gases • Compression factor Relation to intermolecular Interactions ● compressibility factor • Van der Waals equation of State Explanation of the van der Waals isotherms • Law of corresponding states • Significance of the van derWaals equation Other equations of state • Solution of problems**	**Lecture-based learning**	**Quiz 2 , Final Exam (theoretical)**

			• Varial equation		
7+8+9	2x3=6	The acquisitio of knowledge In the field of thermodynam and energy forms	work, different types of work ,volume-change work, surface tension work • heat •internal energy • molecular interpretation of internal energy • Heat and work are not state functions • First law of thermodynamics • Reversible vs irreversible processes•	Lecture-bas learning	Tasks and Assignments Quiz
10+11+12	2x3=6		• Estimating work, heat internal energy for Isothermal and Isobaric processes • Maximum work Heat Capacity • Enthalpy		
13+14+15	2x3=6		•Joule and thomson experiment • Adiabatic process •the change in volume and pressure at constant temperature in the reversible adiabatic expansion .	Lecture-based learning	Tasks and Assignments ,Midterm Exam, Quiz Final Exam (theoretical
16+17+18	2x3=6	Acquisition of knowledge in thermochemis	• Thermochemistry •Heat of chemical reaction •Heat of chemical of constant volume a pressure •law hiss's •enthalpies of formation • Heat of combustion • Heat of solution • Heat of Neutralization •Effect of temperature on Heat consta of reaction •Effect of temperature on enthalpy	Lecture-based learning	Tasks and Assignments , Quiz1,Midtern Exam, Quiz 2 , Final Exam (theoretical)
19+20+21	2x3=6	Gaining knowledge In the field of Physical chemistry of th second and Third Law an introduction For some concepts Basic related	• Second low of Thermodynamic • Clausius statement, statement Lord kelvin, Boltzmann statement • Entropy • Spontaneous and Non – spontaneous processes • Carnot cycle • Carnot Refrigerator • The entropy as a state function and th entropy of Ideal Gas • Entropy as a function of pressure and	Lecture-based learning	Tasks and Assignments ,Quiz1,Midterr Exam,Quiz 2 , Final Exam (theoretial)

		Branches of sciene Chemistry	**temperature** **● the condition of equilibrium** **● Third low of Thermodynamic**		
22+23+24	**2x3=6**	**The acquisitio of knowledge In the field of thermodynam and the relationship between free energy and chemical equilibrium**	**● Gibbs Energy** **● Helmholtz energy** **● Adsorption Processes** **● Gibbs energies of formation the standard** **● conventional Gibbs energy of formati** **● Gibbs energy and reversible work**	**Lecture-based learning**	**Tasks and Assignments ,Quiz1**
25+26+27	**2x3=6**	**Gain knowled of Maxwell's relationship a Gibbs equatio**	**● Maxwell relations** **● Fugacity and activity** **● the Gibbs – Helmholtz equation** **●Effect of temperature on the Gibbs** **● the Gibbs as a function of pressure a temperature**	**Lecture-based learning**	**Midterm Exam,Quiz 2 Final Exam (theoretcal)**
28+29+30	**2x3=6**	**Acquire knowedge of t types of equilbria and Les Chateet's law**	**●chemical equilibrium** **●law of mass action** **●quanitive relation between Gibbs and equilibrium constant** **● relation between equilibrium consta s** **●Le-chatelier Braun principle** **●Effect of temperature on the chemical equilibrium** **●Effect of pressure on the chemical equilibrium** **●Effect of concentration on the chemic equilibrium** **●characteristic of chemical equilibriu constant** **●Determination of equilibrium consta For gas reactions** **● chemical equilibrium for heterogene reaction** **●Variation of equilibrium constant wit temperature**	**Lecture-based learning**	**Tasks and Assignments ,Quiz1,Midter Exam,Quiz 2 , Final Exam (theoretial)**

11.Course Evaluation

Term Tests	Laboratory	Quizzes	Project	Final Exam
20	25	5	---	50

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	**الكيمياء الفيزياوية تاليف دكتور محمود شاكر والدكتورة ليلى محمد نجيب/**
Main references (sources)	**Physical Chemistry** **Dr.Petra Ctines** **Physical Chemistry principles and problems**

	D V S Jain and S P Jauhar
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name: Practical Physical chemistry / Bachelor's

2. Course Code: EDCH24 M2051

3. Semester / Year: 2023-2024

4. Description Preparation Date: 1/9/2023

5. Available Attendance Forms: Weekly - classroom attendance

6. Number of Credit Hours (Total) / Number of Units (Total) 90 hours / 3 Credit

60 hours/ 9 Credit

7. Course administrator's name (mention all, if more than one name)

Name:
1. Lecturer. Dr. May Ghanim Ameen Al-Dabbagh / Email: mayaldabbagh2000@uomosul.edu.iq
2.Prof. Dr. Emad A. S. Al-Hyali dremadalhyali@uomosul.edu.iq
3. Assist.Prof. Dr. Zaheda Ahmed Najim zahedahmed@uomosul.edu.iq
4.Assist.Prof. Dr. Mohammad Mahmoud Al-Niemi drmohammadalhusseiny@uomosul.edu.iq
5.Assist.Prof. Dr. Mohammed M.Ameen Alimam mohammedalimamm@uomosul.edu.iq
6. Assist.Prof. Dr. Raed tareq Ghanem raedtareq1979@uomosul.edu.iq
7. lect.Dr. Younis Turki Mahmood younsturkian@uomosul.edu.iq
8. lect. Dr. Alaa Abdul Azeez Ahmed Alaa_kemia@uomosul.edu.iq
9.lect. Maather abed alelah huseen maatherabdelah@uomosul.edu.iq
10. lect. Ayman saeed Mohammad tayb Ayman535@uomosul.edu.iq
11.Assist.Lect. Ahmed Hussien Ali ahmad883@uomosul.edu.iq

8. Course Objectives

Course Objectives	**1-Learning the basic principles of physical chemistry (thermodynamic) and it applications linked to other scientific phenomena.** **2-illustrating the importance of physical chemistry in daily life.** **3-Improving students' practical skills by engaging them in lab work which contributes to enhancing their scientific mentality to search, investigate, explo think towards creativity.** **4-Developing some positive activities and attitudes such as objectivity, scientif honesty, improving handy skills, teamwork, respecting others' opinions, and maintaining equipment.** **5-Preparing students to work as teachers in schools or other research or industrial institutions after graduation.** **6-Utilizing the students' scientific knowledge in a way that helps th troubleshoot life problems.**

9. Teaching and Learning Strategies

Strategy	Following the attendance in the laboratory, where a short theoretical idea about the experiment is given, and then the practical part of the experiment is elaborated upon, where students are distributed into groups to conduct

	the experiment, draw results, and prepare laboratory reports including the name and date of the experiment, the theory of the experiment, the practical part, then the results and discussion.

1. Course structure

weeks	Hours	Required learning outcomes	Name of the unit/course or subject	Teaching method	Evaluation method
1,2,3	3X3=9	With laboratory equipment and how to employ them and benefit from their capabilities in laboratory research, in addition to dealing discussing abnormal results with the teachers in the laboratory.			Quizzes and discussion
4,5,6	3X3=9		**Experiment (1): The Viscosity.** **Experiment (2): The Surface tension.** **Experiment (3): Phase Equilibrium.**	Practical procedure	
7,8,9	3X3=9		**Experiment (4): Finding vapor density and molecular weight using the Victor Mayer method.** **Experiment (5):Finding the molecular weight of a liquid by steam distillation.** **Experiment (6): Determining the heat of neutralization of the acid and base using a calorimeter.**	Practical procedure	
10,11,12	3X3=9		**Experiment (7): Finding the molecular weight using the chryoscope method.** **Experiment (8): Finding the molar heat of vaporization using a calorimeter.** **Experiment (9): Determining the temperature of the solution from measuring the solubility.** **Experiment (10): The three-component systems**	Practical procedure	
13	3		**Conducting mid-term exam to assess students' performance**	Theocratical and practical exam	Quizzes and discussion
14,15,16	3X3=9			Lecture	

17,18,19	3X3=9		**Experiment (11): Viscosity changes with temperature/ethanol.** **Experiment (12): Viscosity changes with temperature/water.** **Experiment (13): Determining of the adsorption for acetic acid from an aqueous solution by animal charcoal at constant temperature.**	Practical procedure	
20,21,22	3X3=9		**Experiment (14): Determining the refractive index of a number of pure organic liquids.** **Experiment (15): Determine the refractive index of a mixture of two liquids of different sizes.**	Practical procedure	
23,24,25	3X3=9		**Experiment (16): Liquid density and its relationship to temperature, finding absolute and relative density.** **Experiment (17): Finding the temperature of magnesium with dilute sulfuric acid in an ice calorimeter.** **Experiment (18): Determining the molecular weight by measuring the height at the boiling point.**	Practical procedure	
26	3		**Conducting mid-term exam to assess students' performance**	Theocratical and practical exam	

10.Course Evaluation

The assessment marks are as follows:
- mid year exam 4 marks
- end of year exam 6 marks
- laboratory work 10 marks (5 marks for commitment and laboratory work, 5 marks for quizzes and weekly reports)

11.Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- A book of practical experiments in Arabic 2- Practical Physical Chemistry 2019 In addition to some practical scientific publications
Recommended books and references (scient journals, reports...)	The most important requirements are the methodological book, lectures given in the laboratory, and conducting practical experiments
	While explaining or conducting the experiment, it is possible to link the results and practical procedures to daily life htpps://almerja.net.reading

Course Description Form

1. Course Name:
Organic Chemistry “Second Stage ” Theoretical
2. Course Code:
EDCH24M2031
3. Semester / Year:
2023-2024
4. Description Preparation Date:
1-9-2023
5. Available Attendance Forms:
Presence
6. Number of Credit Hours (Total) / Number of Units (Total)
2 hours per week / 7 units
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Shaimaa Samir Ismaeel Email: dr.shaimaasamir83@uomosul.edu.iq Name: Dr. Hussein Yousif Ridha Email: husseinyossif83@uomosul.edu.iq
8. Course Objectives

Course Objectives	1. Identify some chemical compounds such as carboxylic acids, name them, properties, methods of preparation, and interactions. 2. Knowledge of compounds derived from carboxylic acids, such as esters, acid chlorides, anhydrides, and others, methods of preparation, and some of their reactions. 3. Identifying aldehydes and ketones, their names, physical properties, preparation, and reactions. 4. Identifying amine compounds, their properties, how to name them using regular and

	common methods, and knowing the methods of their preparation and reactions. 5. Identify the names and properties of phenolic compounds, methods of preparing them, and some of their important reactions 6. Identify aryl halides compounds, learn about preparation methods and their effectiveness towards nucleophilic and electrophilic substitution, and compare them to alkyl halides.

9. Teaching and Learning Strategies

Strategy

- Providing the student with the necessary skills to learn the method of scientific thinking that helps him obtain scientific knowledge and transform that into behavior followed in solving scientific problems.
- The skill of completing equations for the preparation of organic compounds and their reactions
- Knowing the importance of these compounds and materials in the pharmaceutical industries

This can be achieved by

- Discussion
- ask questions
- lecture

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	2	Gaining knowledge of how to name organic compounds and their properties	Carboxylic acids Calling them the IUPAC Systematic Methods and the Common Method	theoretical	Daily activity (homework)
2	2	Gain knowledge in preparation method Organic compounds and knowledge of their interactions	Methods for preparing carboxylic acid and its properties	theoretical	Daily exam
3	2	Acquiring knowledge in interactions Organic compounds and knowing some of the names of their reactions	Carboxylic acid reactions	theoretical	Daily activity
4	2	Acquiring knowledge in interactions Organic compounds and knowing some of the names of their reactions	Carboxylic acid reactions	theoretical	homework
5	2	Acquiring knowledge in interactions Organic compounds	(naming, preparing, Reactions) of Dicarboxylic acids	theoretical	homework

		and knowing some of the names of their reactions			
6	2	Gain knowledge of derivatives and reactions of some compounds Organic compounds and knowing some of the names of their reactions	Naming some derivatives of carboxylic acids	theoretical	Daily activity
7	2	Acquiring knowledge in interactions Organic compounds and knowing some of the names of their reactions	Preparation of some carboxylic acid derivatives	theoretical	Daily activity
8	2	Acquiring knowledge in interactions Organic compounds and knowing some of the names of their reactions	Reactions of some carboxylic acid derivatives	theoretical	Daily activity
9	2	Acquire knowledge in naming Organic compounds and	Aldehydes and ketones Naming them according to the	theoretical	Daily activity + daily exam

		knowing some of their properties	IUPAC system and knowing some of their properties		
10,11, 12,13	2*4=8	Gain knowledge in preparation Organic compounds and knowing some of the names of their reactions	Aldehydes and ketones Their preparation and interactions	theoretical	Daily activity
14		Mid-year exam			
15,16	2*2=4	Acquire knowledge in naming Organic compounds, knowing some of their properties, preparing them, and knowing their interactions	Amine compounds Naming, properties	theoretical	Daily activity
17,18, 19,20	2*4=8	Gain knowledge in preparation Organic compounds and knowing some of the names of their reactions	Amine compounds Preparation, reactions	theoretical	Daily activity and exam
21,22, 23,24,	2*5=10	Gain knowledge in	Phenolic compounds	theoretical	Daily activity

25		preparation Organic compounds and knowing some of the names of their reactions	Nomenclature, properties, preparation and some of their interactions		
26,27, 28,29, 30	2*5=10	Gain knowledge in preparation Organic compounds and knowing some of the names of their reactions	Arylhalides compounds Naming, preparing and nucleophilic and electrophilic substitution reactions	theoretical	Daily exam and homework
31		Final exam			

11.Course Evaluation

Distributing the score out of 50 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	The methodological book in Arabic • Organic Chemistry\Dr. Khaled Mahmoud Daoud The methodological book in English: • MORRISON & BOYD Organic Chemistry
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Use classroom

Course Description Form

1. Course Name: Organic chemistry lab / Bachelor's	
2. Course Code: **EDCH24M2031**	
3. Semester / Year: 2023-2024	
4. Description Preparation Date: 31 /8/2024 –1/9/2023	
5. Available Attendance Forms: Weekly laboratory attendance / online class	
6. Number of Credit Hours (Total) / Number of Units 2 hours a week / 7 Credit	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Nameer Ezzat E-mail:Nameer.ezzat@uomosul.edu.iq Name: E-mail: Name: Email: Name: Email:	
8. Course Objectives	
Course Objectives	1- Learn the students the role of organic chemistry to understand the principles of modern chemistry and how can use it. 2- How can use this knowledge in our lives and connect with other scientific phenomena. 3- Make the students at colleges of education and pure science fill the value of chemistry and how can deal with schools' students. 4- Make the best in research labs. **5-** Students demand to perform their duties not only as teachers, but als in other state departments.
9. Teaching and Learning Strategies	
Strategy	Theoretical lecture, discussion, and examples, solve homework problems, Daily activity of students and recording contributions for each student.

1. Course structure

weeks	hrs	Required learning outcomes	Name of the subject	Teaching method	Evaluation method
1&2	2	Intake knowledge	• Laboratory safety procedures • Treatment with chemicals • Treatment with lab equipment. • Be careful with dangerous chemicals	Watch the lab tools	Quizzes and monthly exams
3&4	4	Preparation of propionaldehyde	Take knowledge in practical organic chemistry	Practical experiment procedure	
5&6	4	Preparation of cyclohexanone	Take knowledge in practical organic chemistry	Practical experiment procedure	
7&8	4	Preparation of benzoic acid	Take knowledge in practical organic chemistry	Practical experiment procedure	
9&10 &11	6	Preparation of malice and fumaric acids	Take knowledge in practical organic chemistry	Practical experiment procedure	
12&13	4	Review for all experiments	Take knowledge in practical organic chemistry	Practical experiment procedure	
14&15	4	Preparation of Aspirin	Take knowledge in practical organic chemistry	Practical experiment procedure	
16&17	4	Preparation of Acetanilide	Take knowledge in practical organic chemistry	Practical experiment procedure	
18&19	4	Nitration of methyl benzoate (synthesis)	Take knowledge in practical organic chemistry	Practical experiment procedure	
20&21	4	Preparation of tert-butyl chloride	Take knowledge in practical organic chemistry	Practical experiment procedure	
22&23 &24	6	Review for all experiments	Take knowledge in practical organic chemistry	Practical experiment procedure	

10. Course Evaluation	
Distribution of the grade out of 25 according to the tasks assigned to the student, such as daily preparation, weekly written exams, mid-year exams, final exams, reports, etc. The daily exam is 5 grades, the mid-year exam is 5 grades, reports 10 grades, and the result is 25 grades	
11. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	Practical experment of organic compounds
Recommended books and references (scientific journals, reports...)	Journal of chemical education
Electronic References, Websites	

Course Description Form

1. Course Name: Inorganic Chemistry

2. Course Code: EDCH24M2011

3. Semester / Year: 2024-2023

4. Description Preparation Date: 1/9/2023

5. Available Attendance Forms: In presence

6. Number of Credit Hours (Total) / Number of Units (Total) 30 hour

7. Course administrator's name (mention all, if more than one name)

Name: Rana R. Abed , Fadya Jalal Ahmed
Email: ranaalbustani@uomosul.edu.iq

8. Course Objectives

Course Objectives	1- That the student be able to memorize the symbols of the elements in the correct format 2-The student understands how the electronic distribution of elements and determines the oxidation state 3-The student should identify each group, its characteristics, and its location on the periodic table 4-The student will learn how to prepare gaseous elements, detect them, and know their properties 5- The student should distinguish between metals, non-metals, and metalloids in terms of properties and importance 6-The student should write balanced equations describing the interactions of each group 7- Utilizing the student's scientific knowledge and preparing him to be a pioneering teacher in his field of work through understanding the academic subject 8-Utilizing the student's scientific knowledge and preparing him to be a pioneering teacher in his field of work through understanding the academic subject

9. Teaching and Learning Strategies

1-Knowledge and understanding

Recognizing the subject of inorganic chemistry and its parts and how this science developed to become of the most important branches of chemistry and a basic pillar of its direct connection to modern scientific applications.

2- Skills related to the subject

Recognizing the basic concepts of inorganic chemistry How to benefit from it and link it to daily phenomena. Providing the student with the necessary skill in employing the acquired knowledge to be a pillar in the understanding process for the purpose of applying it in the practical aspect and communicating it correctly to the students. Providing the student with knowledge i the field of chemistry, as it is possible for the student to transform this knowledge into action when the situation requires a specific response to solve a problem.

3- Teaching and learning methods

Teaching and learning methods: lecture, dialogue, discussion And presenting examples , exams and tests, writing and discussing reports, practical laboratory, and information available on the Internet

4-Thinking skills

Asking questions during the lecture, for the purpose of attracting students and the ability to answer them. And linking inorganic chemistry topics to what is happening. In the environment in which students live, and the possibility of benefiting from it to facilitate life and enjoy scientific and technological achievements.

Ask questions and search for the latest developments in chemistry, especially with regard to medical

5-Evaluation methods

Methods Evaluation: monthly exams, homework, students' daily activity, writing reports and quizzes, daily preparation, and recording participation for each male and female student by taking t

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Basic concepts	**Chapter One / Classification of Elements**	Lecture	**Oral Questions**
2	2	Basic concepts	**Electronegativity and Ionization Energy**	Lecture	**Homework Daily Exam**

3	2	Basic concepts	**Characteristics of the Elements in the Periodic Table**	Lecture	**Monthly exam**
4	2	Basic concepts	**Chapter tow / Hydrogen**	Lecture	**Oral Questions**
5	2	Basic concepts	**Hydrides and methods of preparing them**	Lecture	**Homework Daily Exam**
6	2	Basic concepts	**Hydrogen bonding and its types**	Lecture	**Monthly exam**
7	2	Basic concepts	**Chapter Three / Alkali Metals**	Lecture	**Oral Questions**
8	2	Basic concepts	**Compounds of alkali elements**	Lecture	**Homework Daily Exam**
9	2	Basic concepts	**Methods of preparing group 1 metals**	Lecture	**Monthly exam**
10	2	Basic concepts	**Chapter Four / Alkaline earth metals**	Lecture	**Oral Questions**
11	2	Basic concepts	**Alkaline earth metal compounds**	Lecture	**Homework Daily Exam**
12	2	Basic concepts	**Methods for Preparing Group 2 Metals**	Lecture	**Monthly exam**
13	2	Basic concepts	**Fifth Chapter / Third Group**	Lecture	**Oral Questions**
14	2	Basic concepts	**Boron Element**	Lecture	**Homework Daily Exam**
15	2	Basic concepts	**Boron Compounds and their Nomenclature**	Lecture	**Monthly exam**
16	2	Basic concepts	**Chapter Six / Fourth Group Elements**	Lecture	**Oral Questions**
17	2	Basic concepts	**Carbon and its forms**	Lecture	**Homework Daily Exam**
18	2	Basic concepts	**Silicon compounds**	Lecture	**Monthly exam**
19	2	Basic concepts	**Chapter Seven / Elements of the Nitrogen Group**	Lecture	**Oral Questions**
20	2	Basic concepts	**Nitrogen compounds**	Lecture	**Homework Daily Exam**
21	2	Basic concepts	**Phosphorus and its types**	Lecture	**Homework Daily Exam**
22	2	Basic	**Arsenic, antimony, bismuth**	Lecture	**Monthly exam**

		concepts			
23	2	Basic concepts	**Chapter Eight / Elements of the oxygen group**	Lecture	**Oral Questions**
24	2	Basic concepts	**Methods of preparing oxygen**	Lecture	**Homework Daily Exam**
25	2	Basic concepts	**Oxygen compounds**	Lecture	**Homework Daily Exam**
26	2	Basic concepts	**Sulfur and its forms**	Lecture	**Oral Questions**
27	2	Basic concepts	**Selenium, tellurium, and polonium**	Lecture	**Monthly exam**
28	2	Basic concepts	**Chapter Nine/ Halogens**	Lecture	**Oral Questions**
29	2	Basic concepts	**Halides**	Lecture	**Oral Questions**
30	2	Basic concepts	**Chapter 10 / Noble Gases**	Lecture	**Homework Monthly Exam**

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Chemistry of Representative Elements**
Main references (sources)	Comprehensive Inorganic Chemistry III
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Chemical Equations online

Course Description Form

1. Course Name:
Developmental Psychology/ Stage 2
2. Course Code
EDCH24M2071
3. Term / Year
First and Second Semester/2024
4. Description Preparation Date:
1/9/2023
5. A. Available Attendance Forms
Daily working hours (in presence)
6. Number of Credit Hours (Total) / Number of Units (Total)
There are two groups A,B (each group consists of three divisions), that is, the number of hours both groups per week = 6.....Down below the Month=6*4 weeks=24 hours
7. Course administrator's name (mention all, if more than one name)
Name: Eng. Eng. Maysa Mohammed Qasim ... Email Maisaa.mohammed@uomosul.edu.iq
8. Course Objectives

Objectives of the course :	Part no. (1) - Introducing the student to the meaning of developmental psychology. - Identify the most important stages of growth in modern curricula. - Clarifying the stages of development in the world - Learn about the general principles of the growth process. - Addressing the issue of the child's dietary technology. - Identify the types of superfoods that children eat. - Comparing the stages of development. - Recognize the importance of social relations in the adolescent individual. Section II: - Recognize the concept of developmental psychology. - Recognize the importance of developmental psychology. - Clarifying the most important fields and studies related to developmental psychology. - Explaining the phenomenon of changes that occur in the adolescent. - Introducing the student to the meaning of growth various changes Intellectual, physical and functional. - Detection of factors affecting the growth process.

	- Giving examples of the developmental process that is related to theories. - Giving experiments on the process of growth perception, reincarnation and imitation. - Clarifying the most important factors affect intelligence.

9. TEACHING AND LEARNING STRATEGIES

Strategy	lecture, discussion and dialogue, Google classroom, problem-solving, Advanced lecture, cooperative learning, educational gam brainstorming, questioning.

10. 10. Course Structure

Week	**Hours**	**Learning outcomes required for the program***	**Unit or Topic Name**	**Learning method**	**Valuation Method**
1	2	Development Psychology Meaning of growth and learning about the general principles of growth	Concept on Self-Growth	Brainstorming Debating and discussing	Asking questions and answering them by the student
2	2	To be able to understand the meaning of development and growth and the differences between them	Oh, is that what this is about?	Brainstorming Debating and discussing	Asking questions and answering them by the student
3	2	Learn about the principles of growth and the factors affecting growth	How growth happens	Brainstorming Debating and discussing	Asking questions and answering them by the student
4	2	Learn about the principles of growth and the factors affecting growth	How growth happens	Brainstorming Debating and discussing	Asking questions and answering them by the student
5, 6, 7	2	Research Methods in Developmental Psychology	Applied research	Brainstorming Debating and discussing	Asking questions and answering them by the student
Six, seven, eight, nine, 10.	2	Learning about childhood	How growth and development	Brainstorming Debating and	Daily Exam

			occurs	discussing	
Eleven... twelve...	2	Socialization	The process of upbringing in the family	Brainstorming Debating and discussing	Daily Exam
13+14+15	2	Learning about adolescence	How growth and development occurs	Brainstorming Debating and discussing	Daily Exam
Sixteen... seventeen...	2	Adolescent and community	The impact of the adolescent process on the family	Brainstorming Debating and discussing	Daily Exam
18, 19	2	Adolescent and Occupation	The importance of choosing a profession and the factors affecting it	Brainstorming Debating and discussing	Daily Exam
20+ 21+ 23+ 24+	2	Adolescent attitudes and tendencies	Sources of Trend Acquisition	Brainstorming Debating and discussing	Daily Exam
25, 26, 27	2	Some adolescent problems	Recognize adolescent delinquency and aggressive behavior	Brainstorming Debating and discussing	Directing questions and discussion
28	2	BUILDING READINESS AND CAPACITY	General Characteristics of Mental Development	Brainstorming Debating and discussing	Directing questions and discussion
29	2	Imagination	Its development according to age stages	Brainstorming Debating and discussing	Directing questions and discussion
30	2	Online Exam	Online Exam		

11.Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports .... etc.

12.Learning and Teaching Resources

Required textbooks (methodology if any)	- Developmental Psychology (Childhood - Adolescence - Aging) - Written by Dr. Abbas Mahmoud Awad/University Knowledge House 2014
Key References (Sources)	
Recommended supporting books and references (scientific journals, reports...)	Instructing students to use the college library to access priv resources Curricula and Teaching Methods Department.
E-References , Websites	Directing to websites related to the subjects of the material,

Course Description Form

1. Course Name:	
Secondary education/second stage/ chemistry department	
2. Course Code:	
EDCH24 M2081	
3. Semester / Year:	
First, second, third and fourth semester/2024	
4. Description Preparation Date:	
1/9/2023	
5. Available Attendance Forms:	
Daily work (attendance)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
There are two groups A and B (each group consists of two divisions). Each group has two hours: 2 * 4 = 8 hours per week, 8 * 4 = 32 per month.	
7. Course administrator's name (mention all, if more than one name)	
Name: Rana Khattab Omar Email: rana.khatta@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	• **Helping the student to identify the school and institutional system and the importance of secondary education.** • **Students gain knowledge of educational supervision, its goals and methods, ancient and modern.** • **Students gain theoretical experience of secondary education systems by being exposed to a group of global experiences for this stage.** • **It develops in the student the skill of planning and organizing the lesson and applying scientific steps in managing educational work within the educational institution** • **The student's awareness that educational work revolves around the patterns of educational administration, which are (authoritarian, democratic,** • **and permissive).** • **Helping the student identify the elements, components, and goals of educational administration.** • **Helping the student become familiar with the educational innovations present in Iraq.** • **Identifying the secondary stage, its objectives, conditions for admission, and types of exams.** • **Identify the duties of the school principal and the duties**

	that he has to perform. • **Identifying central and decentralized educational administration and their advantages and disadvantages.**

9. Teaching and Learning Strategies

Strategy	Lecture, discussion and dialogue, educational platform Google classroo problem solving, developed lecture, reciprocal teaching, golden stormin questioning.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1+2+3+4	2*4=8	Learn about the nature of secondary schoo	Secondary education/its objectives, conditio for admission, and types of examinatio	My presence	Activity and participation during lecture and exam
5+6+7+8	2*4=8	Learn about the types of educational innovations in Ir It shows the benefit of knowir the types of secondary education systen in European countries	Educational innovations / advanced schools - comprehensive secondary schools, their principles and goals - industrial ar departments - mult purpose schools - supplementary classes attached to primary schools - experimental midd schools - students visiting production institutions - studying foreign languages - educational and psychological guidance - teaching programming	My presence	Activity and participation during lecture and exam
9+10+11+12	2*4=8		Diversifying	My	Activity and

		Understands the tasks related to managing educational institutions and how to deal with their employees	secondary educatio - specialized secondary schools - distinguished schoo – acceleration	presence	participation during lecture and exam
13+14+15+16	2*4=8	Recognizes the nature of centralization an decentralization Educational administration a the factors affecting it	Educational administration/goa setting, planning, organization, communication, follow-up, evaluatio and decision-makin	My presence	Activity and participation during lecture and exam
17+18+19+20	2*4=8	Understands matters related t the school management process, its patterns and characteristics, a the positives and negatives it carri	Centralization and decentralization in educational administration / their advantages an disadvantages	My presence	Activity and participation during lecture and exam
21+22+23+24	2*4=8	Understands matters related t the manager's duties and the skills that must b available in it	Factors affecting educational administration in terms of centralization and decentralization: th political factor - social and demographic factor including (population, social forces and pressure natural, geographic and economic	My presence	Activity and participation during lecture and exam

			factors).		
25+26+27+28	2*4=8	Learn about the educational supervision process that take place within educational institutions	School administration / its concept, its pattern The autocratic style its characteristics a disadvantages. The democratic style, its characteristics and advantages. The permissive style, its characteristics and disadvantages	My presence	Activity and participation during lecture and exam
29+30+31+32	2*4=8	To understand matters related t the plan and contemporary trends	The tasks of the school principal - th skills that must be possessed by the school principal, mental intellectual skills, technical skil and human skills	My presence	Activity and participation during lecture and exam
33+34+35+36	2*4=8	Learn about classroom management and the difficulties it faces	Educational supervision, its goa and methods, individual methods and group methods	My Presence	Activity and participation during lecture and exam
37+38+39+40	2*4=8		Problems facing vocational educatio - contemporary trends in education administration - components of a successful plan	My presence	Activity and participation during lecture and exam
			Classroom management and it problems	My presence	Activity and participation during lecture and exam

41+42+43	2*3=8	Learn about e-learning	E-learning, its goals and importance	My presence	Activity and participation during lecture and exam
44	2 Two hours		Review		End of year exa

11.Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	*Youssef Qahtan, secondary education *Youssef Yacoub and Ali Hattab, Secondary Education and Educational Administration 2015
Recommended books and references (scientific journals, reports...)	*Report on the educational situation in Iraq, Ministry of Education 2004 *Jihan Muhammad and Raed Ali, secondary education and educational administration
Electronic References, Websites	*www edutrapef net * www edutrapia illaf net * www Mohammed iapesse com * www feedo net IRaising chidren *www aricles Islam *www mesoport com *www uobabylon edu iq

Course description form

1. Course name:	
Computer	
2. Course code	
EDCO24M2041	
3. Semester/year	
Yearly	
4. Preparation date of this description	
2023 / 9 / 1	
5. Available forms of attendance	
Theory and practical lectures	
6. Number of hours (total)/number of credits (total)	
30 hours	
7. Name of the course tutors	
Name: Alla Saad Ahmed E-mail: Allasaad@uomosul.edu.iq	
8. Course objectives	
1. Familiarity with the nature of the computer and its development over time. 2. Identify the physical and software components of the computer and the role played by each component. 3. Knowing how data is processed inside the computer, stored and retrieved. 4. Familiarity with the most prominent terms circulating on the Internet and their purpose. 5. Know everything related to the World Wide Web and its types. 6. Identify computer viruses, their types, causes, methods of treatment and prevention. 7.Learn about everything related to writing and printing on the computer. 8. Learn how to prepare presentations to encourage the presentation of the material while participating in courses and seminars.	**Objectives of the study subject**
9. Teaching and learning strategies	
• The following strategies are used depending on the content of the lecture: • Discussion strategy. • Discovery learning strategy • Problem solving strategy	**The strategy**

• Advanced organizations strategy • Think, discuss, share strategy • Mind mapping strategy • Flexible groups strategy	

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Introduction			1
Daily test	use of resources	Office Program			2
Reports	Training them on electronic research	Basic elements of word			3
Questions	Discussions in the lecture	Word			4
Daily test	use of resources	Save, open, print			5
Reports	Training them on electronic research	Viruses			6
Questions	Discussions in the lecture	Antiviruses and Protection			7
Daily test	use of resources	Internet			8
Reports	Training them on electronic research	Power point			9
Questions	Discussions in the lecture	Slide			10
Daily test	use of resources	Slide show, transition, Animation, sound, video			11
Reports	Training them on electronic research	Excel			12
Questions	Discussions in the lecture	Worksheet			13

Daily test	use of resources	Cells, Data			14
Reports	Training them on electronic research	Formula			15

11.Course assessment

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

- Semi-weekly short tests (quiz) asking sudden and overlapping questions with an explanation of Article 10
- Laboratory tests on the computer and in written form to enable the student to solve them without a computer 10
- Monthly tests 10
- Termly and annual tests 70

12.References

1. Computer Skills 2019 2. Microsoft office 2019 3. Introduction to Computer 2014	BOOKS
Series for obtaining a computer driver's license	Main resources
Various websites on the Internet	Recommended resources
	Electronics and website resources

Course Description Form

1. Course Name:
The crimes of the Baath regime in Iraq
2. Course Code:
3. Semester / Year:
annual
4. Description Preparation Date:
2024/03/1
5. Available Attendance Forms:
My presence only
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours annually. 1 hours a week
7. Course administrator's name (mention all, if more than one name)
Name: dr. younis muayad younis Email: younis1986mmyy@uomosul.edu.iq
8. Course Objectives

Course Objectives . 1- Introducing the concept of totalitarian, dictatorial and individualistic regimes that use force and violence against their people 2- Identifying the crimes of the Baath regime for the period 1979-2003 towards the Iraqi people of all sects an nationalities. 3- Identify the injustices to which the Iraqi people were exposed 4- Identify international crimes and humanitarian crimes 5- Identify the methods of torture a force practices that the former regi used against the Iraqi people	• ..... • ..... • .....

9. Teaching and Learning Strategies

Strategy	1- Education strategy collaborative concept planning. 2- Brainstorming education strategy. 3- Education Strategy Notes Series

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1hours	Introducing the topic of totalitarian systems	The crim	-1Explaining the scienti material through the vocabulary contained in the selected methodological book, Diplomacy in a Changi World, and giving the most important ideas in 2- Assign students to writ worksheet on course vocabulary	Weekly, monthl daily, written exams, and the end-of-year exa And da attendanc
2	1 hours		f the Baa		
3	1 hours		egime		
4	1hours	Introducing the topic of dictatorial regimes	raq		
5	1 hours				
6	1 hours	Introduction to the topic of individual systems			
7	1 hours				
8	1hours	Introducing the concept of crimes and their types			
9	1 hours				
10	1 hours	Crime departments			
11	1 hours				
12	1hours	Baath crimes as documented by the Iraqi Criminal Court Law of 2005			
13	1 hours				
14	1 hours	Types of international crimes			
15	1 hours				
عطلة					
16	1hours	Decisions issued by the Iraqi Supreme Criminal Court			
17	1 hours				
18	1 hours				
19	1 hours	Exam			
20	1hours				
21	1 hours	Psychological crimes of the resurrection and their effects			
22	1 hours				
23	1 hours				
24	1hours	Psychological crimes of the resurrection and their effects			
25	1 hours				
26	1 hours				
27	1 hours	Social crimes			
28	1hours				
29	1 hours	Social crimes			
30	1 hours	The Baath position			

		on religion Pictures of human rights violations and crimes of power Accessing documents issued by the repressive security services towards the Iraqi people Prison and detention places of the Baath regime Environmental crimes of the Baath regime See videos available on the Internet regarding Baath crimes and mass grave crimes Genocide cemeteries events Chronological classification of genocide graves Exam			

11.Course Evaluation
The distribution is as follows: 15 marks for teaching, distributed among weekly and monthly exams and daily attendance. 25 marks for mid-year exams. 60 marks for final exams

12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	The crimes of the Baath regime in Iraq. T curriculum prepared by the Iraqi Minist of Higher Education and Scientific Resear
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name: English language

2. Course Code: EDCH24 M2091

3. Semester / Year: 2023-2024

4. Description Preparation Date: 2/9/2023

5. Available Attendance Forms: email , Classroom

6. Number of Credit Hours (Total) / Number of Units (Total)

1

7. Course administrator's name (mention all, if more than one name)

Name: Assistant Prof. Dr .Zaheda Ahmed Najim
Email: zahedahmed@uomosul.edu.iq

8. Course Objectives

Course Objectives	• **Knowing the basic principles of English language** **Knowing the basic principles of chemical tools**

9. Teaching and Learning Strategies

Strategy	Practical and theoretical lecture , talk and discussions, problem solving , reports and homework

10. Course Structure

Week	Hours	Unit or subject name	Required Learning Outcomes	Learning method	Evaluation method
first	1	The history of English language	Understanding basic principles	Lecture	quizzes
Second	1	Professional academic Email	Understanding basi principles	Lecture	quizzes, homewo and using ema
Third	1	Definition of chemist	Understandir basic princip	Lecture	quizzes, homewo and using ema
Fourth	1	*Branch of chemistry*	Understanding basi principles	Lecture	quizzes, homework and using email
Fifth	1	Laboratory tools	Understanding basic principles	Lecture	Homework
Sixth	1	Inorganic chemistry	Understanding basic principles	Lecture	quizzes, homework and

					using email
Seventh	1	Organic chemistry	Understanding basic principles	Lecture	quizzes, homework and using email
Eighth	1	Physical chemistry	Understanding basic principles	Lecture	quizzes, homework and using email
Nineth	1	Analytical chemistry	Understanding basic principles	Lecture	quizzes, homework and using email
Tenth	1	Industrial chemistry	Understanding basic principles	Lecture	quizzes, homework a using email
Eleventh	1	Green chemistry	Understanding b principles	Lecture	quizzes, homework a using email
Twelfth	1	biochemistry	Understanding basic principles	Lecture	quizzes, homework and using email
Thirteen	1	Writing essay	Understanding basic principles	ecture	quizzes, homework and using email
Fourteenth	1	General review of the course	Understanding basic principles	Lecture	General discussion
Fifteenth		mid exam			
Sixteenth	1	Writing article	Understanding basic principles	Lecture	quizzes, homework and using email
Seventeenth	1	Experimental software	Understanding basic principles	Lecture	homework
Eighteenth	1	Chem draw	Understanding basic principles	Lecture	quizzes, homework and using email
Nineteenth	1	Introduction of environment	Understanding basic principles	Lecture	Quiz
Twentieth	1	Material classification	Understanding basic principles	Lecture	homework
Twenty first	1	Computational chemistry	Understanding basic principles	Lecture	Quiz
Twenty second	1	Theoretical methods	Understanding basic principles	Lecture	homework
Twenty third	1	Molecular mechanics	Understanding basic principles	Lecture	Quiz

Twenty fourth	1	Qantum chemistry	Understanding basic principles	Lecture	homework
Twenty fifth	1	Hazard symbole	Understanding basic principles	Lecture	Quiz
Twenty sixth	1	Phases matter	Understanding basic principles	Lecture	homework
Twenty seventh	1	Writing manuscript	Understanding basic principles	Lecture	Quiz
Twenty eighth	1	Writing abstract	Understanding basic principles	Lecture	Quiz
Twenty nineth	1	General review of the course	Understanding basic principles	Lecture	General discussion
Thirtieth		final exam			

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	English for Chemists
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	http://www.upjs.sk/public/media/3499/English-for-Chemists.pdf

Course Description Form

1. Course Name: Physical chemistry / The third stage	
2. Course Code: **EDCH24 M3041**	
3. Semester / Year: 2023-2024	
4. Description Preparation Date: 2023/9/1– 2024/8/ 31	
5. Available Attendance Forms: Weekly / online class	
6. Number of Credit Hours (Total) / Number of Units 2 hours a week	
7. Course administrator's name (mention all, if more than one name)	
Name: Noor Hazim Mohammedthalji Email: noorsaeed@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	1- learn Students about the topic of kinetic chemistry practically and its role in understanding modern chemistry by find the value of reat constant and half-life – time . 2- How to use this knowledge in daily life and link it to other scientific phenomena 3- Makes students of colleges of education for pure sciences feel the value of practical kinetic chemistry and connect it with theoretical study and how to combine these two studies to be performed effectively with school students after graduation it facilitates understanding of chemistry. 4- Practicing their competencies as school teachers. 5- Learn students can their work in research researcher scientific **6-** Students demand to perform their duties not only as teachers, but also in other state departments. **7-** Utilizing the student's scientific knowledge in a way that helps him face life problems in the field of research
9. Teaching and Learning Strategies	
Strategy	Providing the student with knowledge in the field of kinetic chemistry, both practically and theoretically, It is possible for the student to transform this knowledge into action when the situation requires a specific response to solve a problem, and this is what is observed in conducting scientific research. Providing the student with skills not only in kinetic chemistry, but also in other sciences and employment The knowledge acquired is a foundation for understanding how calculate the rate of reaction and Factors affecting it natural and industrial products related to chemistry

1. Course structure

weeks	hrs	Required learning outcomes	Name of the subject	Teaching method	Evaluation method
1+2	2x2=4	The acquisition of knowledge there is chance Chemistry kinetics and bootstrapping For some concepts Basic related With branches of science Chemistry	Kinetics of simple reactions. The speed of the chemical reaction. The speed and concentration of the reactant.	Theoretical study	Quizzes and monthly exams Daily practical activity writing a report
3+4	2x2=4	The acquisition of knowledge there is chance Chemistry kinetics and bootstrapping For some concepts Basic related With branches of science Chemistry	Methods used to calculate the order of reactions and speed constants. A- Methods of integral equations B- Reaction half-life method C- Methods of differential equations.	Theoretical study	
5+6+7	2x3=6	The acquisition of knowledge In the field of the effect of temperature on kinetic chemistry	The effect of temperature on the speed of a chemical reaction and studying the important theories on this topic.	Theoretical study	
8+9+10	2x3=6	Gaining knowledge in understanding theories of motor study and the most important theories	- Theories of the speed of chemical reactions. A-Collision theory B- The theory of the activated complex, what time is it? C-Lindeman's theory	Theoretical study	
11+12	2x2=4	Gain knowledge in understanding complex interactions	Complex interactions. Types of complex interactions	Theoretical study	Mid exam the year Chapter one
13+14	2x2=4	Gain knowledge in understanding complex interactions	-Catalytic reactions Types of catalytic reactions	Theoretical study	Quizzes and monthly

15	2x1=2	Required learning outcomes	*Review all subject	Theoretical study	exams Daily practical activity writing a report

1. Course Evaluation	
Distribution of the grade out of 5 according to the tasks assigned to the student, such as daily preparation, weekly exams, mid-year exams 20 grades , final exams, is 50 grades.	
2. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	The methodological book in Arabic Kinetics and electrochemistry By Dr. Abdul Majeed Al-Dabbagh and Dr. Banan Aqrawi Kinetic chemistry By Dr. Abdul Majeed Al-Dabbagh/College of Science/University of Mosul November 2010 Theories of explaining chemical reactions Dr. Muhammad Tariq/2017 • The methodological book in English: • Kinetics of Chemical Reactions: Decoding Complexity Guy.B.Marian/Gregory.S.Yablonsky • John Wiley & Sons, 2019 • Other
Main references (sources)	Modern sources have been adopted in addition t the primary sources shown above. For the purpose of preparing the prescribed material according to the vocabulary of the approved sectoral committee In the Ministry of Higher Education and Scienti Research, including sources taken from the Internet.
Recommended books and references (scientific journals, reports...)	Journal of chemical education

Electronic References, Websites	

1. Course Name: Practical physical chemistry - third stage

2. Course Code: EDCH24M3041

3. Semester / Year: Second semester/2024

4. Description Preparation Date:1/9/2023

5. Available Attendance Forms: In-person + electronic classes (classroom)

6. Number of Credit Hours (Total) / Number of Units (Total) 15 (week) 2 x hours = 30

7. Course administrator's name (mention all, if more than one name)

أسماء المحاضرين المجموعة (A1,A2)

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م. د.دنيا بطرس dn_842007@uomosul.edu.iq

م.ايمن سعيد ayman535@uomosul.edu.iq

اسماءالمحاضرين المجموعة (B1,B2)

ا .د. عمادعبد الالة dremadalhyali@uomosul.edu.iq

أ.م د.فداء حسن feedahassan@uomosul.edu.iq

أ.م .د. احمد موفق Ahmed M Sadoon@uomosul.edu.iq

م.د.رواء داودد rawa-daoud2004@uomosui.edu.iq

م.ايمن سعيد ayman535@uomosul.edu.iq

8. Course Objectives

Course Objectives	**• Training students on laboratory work** **• Teaching students about the dangers of chemicals** **• Teaching students about laboratory equipment and glassware** **• Teaching students to write reports and interpret practical data** **• Providing students with practical skills** **• Students learn to link theoretical and practical experiences** **• The student learns experiences that are directly related to daily life•**

9. Teaching and Learning Strategie

Strategy	a . Definition of the course • It is one of the practical courses within the requirements for obtaining a bachelor's degree in chemistry B - Subject-specific skills • Providing the student with scientific and practical skills within laboratory work Teaching and learning methods • Combined (in person + electronic) Evaluation methods • (Writing reports + daily and monthly exams) C- Thinking skills • Teaching students to interpret practical data and its relationship to the experiment and the flov of the reaction Teaching and learning methods • Built-in Evaluation methods • Oral exams and short written exams D - General and transferable skills (other skills related to employability and personal development). • Developing the student's chemical personality as a researcher and preparing him as a future chemistry teacher

10. Course Structure

Week	Hours	Required	Unit or subject name	Learning	Evaluation

		Learning Outcomes		method	method
1	2	Definition of experience and importance	Conductivity equivalent to strong electrolyte	An attendance	An attendance exam
2	2	Definition experience, importance a applications	Find the value of dissociation constant for weak electrolytes from conductivity measurements Its equivalent	An attendance	An attendance exam
3-4	4	Definition of experience a its importanc	Find the molecu weight of polymer measuring viscosity	An attendance	An attendance exam
5-6	4	Definition of experience a its importanc	Determination us electrical connect between A- A strong acid a a strong base. B weak acid and strong base	An attendance	An attendance exam
7	2	Definition of experience a its importanc	Students rev previous experiences a take a daily exam		An attendance exam
8	2	Review previous experiences	Electrophoresis using electr conduction betw a mixture of a str acid and a weak a with a strong bas	An attendance	n-person or electronic exa
9-10	4	Definition of experience a its importanc	Decomposition voltage	An attendance	An attendance exam
11-1	4	Definition of experience a its importanc	Finding the value the dissociat constants K1 and for phosphoric a using the function device	An attendance	An attendance exam

13	2	Definition of experience a its importanc	Kinetics adsorption methyl blue dye activated carbon	An attendance	An attendance exam
14	2	Review previous experiences			n-person or electronic exam
15	2	Taking practical ex (semester)			An attendance exam

11.Course Evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports for each experiment, and laboratory work.

12.Learning and Teaching Resources

Required textbooks (curricular books, if an	الكتاب المنهجي باللغة العربية الكيمياء الفيزياوية العملي تاليف الدكتور محمود شاكر ملزمة التجارب العملية للمرحلة الثالثة / الكيمياء الفيزياوية, اعداد الأستاذ دكتور محمود شاكر والاستاذ الدكتور عادل عزوز الأستاذ الدكتور عماد عبد الالة الحيالي الأستاذ المساعدالدكتور صفوان عبد الستار • الكتاب المنهجي باللغة الإنكليزية: Book by B. Viswanathan and P. S. Raghavan, Practical Physical Chemistry, .2015
Main references (sources)	Physical Chemistry. By Dr. Hasan Maridi Assista Professor at Taiz university 2017
Recommended books and references (scientific journals, reports...)	الكيمياء الفيزياوية العملي .دكتورمحمد مجدي واصل2008
Electronic References, Websites	https://www.noor-book.com/%D9%83%D8%AA%D8%A7%D8%A8-%D8%A3%D8%B3%D8%A7%D8%B3%D9%8A%D8%A7%D8%AA-%D8%A7%D9%84%D9%83%D9%8A%D9%85%D9%8A%D8%A7%D8%A1-%D8%A7%D9%84%D9%81%D9%8A%D8%B2%D9%8A%D8%A7%D8%A6%D9%8A%D8%A9-%D8%B9%D9%85%D9%84%D9%8A-pd

Course Description Form

1. Course Name: Biochemistry / Bachelor's

2. Course Code: EDCH24 M3071

3. Semester / Year: 2023-2024

4. Description Preparation Date: 2023/9/1– 2024/8/ 31

5. Available Attendance Forms: Weekly classroom attendance

6. Number of Credit Hours (Total) / Number of Units (Total) 48 hours / 7 Credit

7. Course administrator's name (mention all, if more than one name)

Name: Dr. Hamza namik Hameed
Email: hamza83n@uomosul.edu.iq

8. Course Objectives

Course Objectives	• Teaching students how cells function. • Teaching students about the nature of biomolecules (carbohydrates, proteins, lipids, nucleic acids), their estimation, and detection. • Differentiating between compounds and biomolecules. • Enzymes and how to deal with them. • Mutations and how they occur.

9. Teaching and Learning Strategies

Strategy	Giving the lectures and can use of all capabilities available in the classroom. The method of discussion and conclusion is also followed, and intellectual questions are asked as assignments.

1. Course structure

weeks	Hours	Required learning outcomes	Name of the unit/course or subject	Teaching method	evaluation method
1	2	The concept of the cell and its biological system	Definition of biochemistry and the cellular and biological system	Lecture	Quizzes and monthly exams
2	2	Understanding of regulated solutions	Water and regulated solutions	Lecture	
3-6	8	Recognition of carbohydrates and their cellular importance	-Carbohydrates Types of carbohydrates. Optical isomerism of sugars. Monosaccharides. Important reactions of carbohydrates. Disaccharides. Polysaccharides	Lecture	
7-9	6	Understanding of fats (lipids) and their cellular importance	-Fats (lipids). Types of fats. Detection of fats	Lecture	
10-15	12	Understanding of proteins and their cellular importance	-Amino acids and proteins. Types of amino acids. Reactions of amino acids. Detection of amino acids and proteins. Separation and diagnosis of amino acids. Proteins and their functions. Protein precipitation. Common methods for estimating proteins. Classification of proteins. Protein structure	Lecture	
16-18	6	Understanding of enzymes and their cellular importance	-Enzymes and their chemical nature. Activation energy. Active site and enzymatic catalysis. Enzyme nomenclature. Factors affecting enzyme activity. Enzyme inhibition. Quantitative assay of enzyme activity	Lecture	
19-20	4	Understanding of vitamins and their cellular importance	-Vitamins. Coenzymes. Types of vitamins	Lecture	
21-24	8	Understanding of nucleotides and their cellular importance	-Nucleotides and nucleic acids. DNA. RNA. Natural variations in nucleic acids	Lecture	

10.Course Evaluation	
The grade is distributed out of 100 as follows: 25 marks for the mid-year exam / then 60 marks for the end-of-year exam / the teacher's grade within the lecture is 15 marks, 5 of which are commitment and perseverance, 5 are daily exams, and the last 5 are given as an activity and motivation to the students, including discussion and preparation, in addition to completing some homework.	
11.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	The methodological book in the Arabic language: Al Flayeh, Khawla Ahmed (2000). Introduction to biochemistry
Main references (sources)	Biochemistry / Part Two - Prof. Dr. Tariq Younis Ahme Prof. Louay Abdel Ali Al-Hilali
Recommended books and references (scientific journals, reports...)	Lippincott Biochemistry 8th edition , Copyright 2022
Electronic References,	Websites

Course Description Form

1. Course Name: Practical Biochemistry / Bachelor's

2. Course Code:

3. Semester / Year: 2023-2024

4. Description Preparation Date: 2023/9/1– 2024/8/ 31

5. Available Attendance Forms: Weekly classroom attendance

6. Number of Credit Hours (Total) / Number of Units (Total) 90 hours / 3 Credit

7. Course administrator's name (mention all, if more than one name)

Name: Prof. Dr. Nashwan Ibrahem Abo
Email: nashwan78ibrahem@uomosul.edu.iq
Prof. Dr. Omar Younis Muhammad, Assist.Prof. Dr. Lama Abdel Moneim Bakr, Dr. Hamza Namiq Hamid, Dr. Nofal Sheet Muhammad, lect. Shaimaa Zuhair Jalal Al-Din, Assist.Lect. Aya Ihsan Rashan

8. Course Objectives

Course Objectives	**1. Teaching students how to deal with the laboratory and chemical substances** **2. Teaching laboratory students how to write reports for practical experiment** **3. The student learns how to detect life compounds** **4. Estimating life cycles spectroscopically** **5. Distinguish between compounds and life molecules** **6. Enzymes and how to deal with them** **7. Estimation of enzymatic activity spectrophotometrically**

9. Teaching and Learning Strategies

Strategy	Following the attendance in the laboratory, where a short theoretical idea about the experiment is given, and then the practical part of the experiment is elaborated upon, where students are distributed into groups to conduct the experiment, draw results, and prepare laboratory reports including the name and date of the experiment, the theory of the experiment, the practical part, then the results and discussion..

1. Course structure

weeks	Hours	Required learning outcomes	Name of the unit/course or subject	Teaching method	evaluation method
1	2	With laboratory equipment and how to employ them and benefit from their capabilities in laboratory research, in addition to dealing with how to distinguish by colorimetric detection and discussing abnormal results with the teachers in the laboratory.	Spectrophotometric estimation	Lecture	Quizzes and monthly exams
2	2		Determination of vitamin C spectrophotometrically	Lecture	
3	2		Detection of sugars Monosaccharides Disaccharides Polysaccharides Follow up on starch decomposition	Lecture	
4	2			Lecture	
5,6	4			Lecture	
7,8	4		Fats Fat detection	Lecture	
9	2			Lecture	
10,11	4		Detection of proteins Detection of amino acids Precipitation of proteins Quantitative determination of proteins using the Biuret method	Lecture	
12	2			Lecture	
13	2			Lecture	
14,15	4			Lecture	
16و17	4		Enzymes Preparing a standard curve used to measure the activity of the invertase enzyme Factors affecting enzyme activity 1- Acid function 2- Temperature 3- Enzyme concentration 4- Concentration of the substrate	Lecture	
18,19	4			Lecture	
20و21	4			Lecture	
22	2			Lecture	
23	2			Lecture	
24	2		Exams, receiving and correcting reports, and preparing final grades	Lecture	
25	2			Lecture	

10.Course Evaluation

The grade is distributed out of 25 as follows: 5 grades for the mid-year exam / then 5 grades for the end-of-year exam / laboratory grade 15 grades, 5 of which are commitment, perseverance, and laboratory activity, 5 daily exams, and the last 5 for weekly reports on a regular basis.

11.Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- A book of practical experiments in Arabic 2- Practical Bio and Clinical Chemistry 2019 In addition to some practical scientific publications
Recommended books and references (scient journals, reports...)	The most important requirements are the methodological book, lectures given in the laboratory, and conducting practical experiments
	While explaining or conducting the experiment, it is possible to link the results and practical procedures to daily life

Course Description Form

1. Course Name: Organic/theoretical chemistry, third stage

2. Course Code: EDCH24 M3031

3. Semester / Year: 2023 -2024

4. Description Preparation Date: 1/9/2023 – 31/8/2024

5. Available Attendance Forms: daily attendance

6. Number of Credit Hours (Total) / Number of Units (Total)

45 Hours / 7 Units

7. Course administrator's name (mention all, if more than one name)

Name: Dr. Anwar Abdulghani / Dr. Amena Alyas
Email: amenaaltee79@uomosul.edu.iq

8. Course Objectives

Course Objective	**1. Introducing the student to the types of organic compounds** **2. The student acquires knowledge of methods for preparing compounds** **3. The student's knowledge of the ways in which organic compounds interact** **4. The student acquires knowledge of the acidic and basic properties of organic compounds** **5. Familiarize the student with the form of organic compounds in vacuum** **6. The student learned the intermediate compounds of reactions and the ways in which the mechanics of reactions work**

9. Teaching and Learning Strategies

Strategy	**a . Definition of the course** • The course for the third stage is concerned with homogeneous and heterocyclic organic compounds, which include many of the compounds • Preparation of homogeneous and bonded cyclic compounds and their reactions • Preparation of heterocyclic compounds and their reactions • Study of stereochemistry and the distribution of molecules in vacuum • Study of acidity and basicity of organic compounds • Study of effective mediators **B - Subject-specific skills** • Skill in preparation methods

	• Compound interactions skill • Know the importance of organic compounds in the pharmaceutical industries • The skill of recognizing how compounds exist and their shape in a vacuum **C- Teaching and learning methods** • lecture • Discussion • ask questions **D - Thinking skills** • Linking reactions together to prepare compounds and their reactions **E - Evaluation methods** • Homework • Daily exams • Mid-year exam, final exam • Student participation

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	4	Acquire knowledge in the preparation of cyclic compounds and their interactions	Polycyclic aromatic compounds, Naphthal Properties Prepare & Interactions	Theoretical lecture	Homework and Quiz
2.	4	Acquisition of Knowledge in preparation of cyclic compounds and their interactions	Preparation of anthracine its properties interactions	Theoretical lecture	Homework
3.	4	Acquire knowledge in the preparation of cyclic compounds	Phenanthrene prepared by interactions	Theoretical lecture	Homework and Quiz
4,5,6	4*3=12	Acquisition of knowledge in the preparation of heterocyclic compounds	Heterogeneous cyclic Compounds Furan, pyrole and Thiophene Label Composite Electrophilic Replacement Reactions	Theoretical lecture	Solve examples

			Indole Pyridine Quinoline Label Preparation Interactions		
7,8,9	4*3=12	Acquisition of knowledge in the designation of geometric formations	Stereochemistry and optical chemistry compounds	Theoretical lecture	Solve examples
10,11,12	4*3=12	Recognize effective intermediates and their types	Ion carbonium, carbonium and free roots	Theoretical lecture	Quiz
13,14,15	4*3=12	Acquiring knowledge in acids and bases	Strengths of acids and bases. Simple aliphatic acids and substituted phenols. Aromatic acids. Aliphatic and aromatic bases Heterocyclic bases	Theoretical lecture	Exam and solution examples
16,17,18	4*3=12		Rearrangement a mechanics of SN1 a SN2	Theoretical lecture	Homework

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	الكتاب المنهجي باللغة العربية • الكيمياء العضوية /د.رعد الحمداني و د.مقداد توفيق ايوب • ميكانيكية التفاعلا ت العضوية / د.خالد محمود داؤد و د.محمد نزار ابراهيم الكتاب المنهجي باللغة الإنكليزية: • Organig chemistry by moryison and boyd • استخدام مواقع الانترنيت • Heterocyclic compound MC carter ,GS , cockerill, 2004 –google patents William Mickey Maynes CRC Hand book of Chemistry and physics
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Dr. Anwar Abdulghani Dr. Amena Alyas

Course Description Form

1. Course Name:
3rd Class / Inorganic Chemistry
2. Course Code:
EDCH24M3011
3. Semester / Year:
1/9/2023 – 31/8/2024
4. Description Preparation Date:
1/9/2024
5. Available Attendance Forms:
Class Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
48 Hours
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Amaal Younis Ridha Dr. Alyaa Sabah Mohammed Email: Amaalyounis62@uomosul.edu.iq solve415@uomosul.edu.iq
8. Course Objectives

Course Objectives	**1. Introduce the student to Coordination chemistry and Coordination compound** **2. The student explains the importance of Coordination chemistry in variou fields** **3. The student will gain an understanding of the correct chemical compositi and nomenclature of the Coordination compound through Explanation provided** **4. Get to know about the most important theories that have addressed the chemical structure of Coordination complexes** **5. Knowledge of the types of Coordination and geometric shapes of Coordination complexes** **6. The student learned the methods of preparing various Coordination compounds and conjuring examples for them** **7. Distinguishing the types of isomers and how to separate them**

9. Teaching and Learning Strategies	
Strategy	1- Definition of the course * Coordination chemistry, a field within the science of chemistry concerned with the study of compounds in terms of their properties and methods of Coordination preparation, as a Coordination compound is a chemica structure consisting of a central atom or one or more

	ions It is surrounded by a group of molecules or ions called ligands. 2-subject-specific skills * The student gained theoretical experience with the role and importance of the classes of the course in our daily life * Gain experience in distinguishing between correct and incorre nomenclature and chemical composition consistency 3. teaching and learning methods * Theoretical lectures, dialogue, discussion, presentation of examples, e-learning classroom platforms , zoom, meet, Fcc, youtube * Use PowerPoint slides and pdf for lectures * Guide the student to the sources on which the lectures were organized * Guide the student to the websites within the curriculum to benefit from them Evaluation methods * Annual and semi-annual examinations * Monthly exams * Quick exams (Quiz) * Homework assignments and reports * Daily activity of students (daily preparation and registration o participation for students) * Electronic participation and exams on e-learning platforms 4-thinking skills * How to benefit from the vocabulary of the material in everyda life by linking it to reality and the environment in which we live and through Laboratory work * Ask questions during the explanation to attract students ' attention and the possibility of their answers to them * Search for the latest developments regarding Coordination chemistry 5-teaching and learning methods * Theoretical lectures, dialogue, discussion, giving examples, e-learning platforms classroom, zoom, Meet, Fcc, youtube * Use PowerPoint slides and pdf for lectures * Guide the student to the sources on which the lectures were organized * Guide the student to the websites within the curriculum

	to benefit from them 6. evaluation methods * Annual and semi-annual examinations * Monthly exams * Quick exams (Quiz) * Homework assignments and reports * Daily activity of students (daily preparation and registration o participation for students) * Electronic participation and exams on e-learning platforms 7-general and transferable skills (other skills related to employability and personal development) * The student gains experience in how to obtain the appropriate installation

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Introduction coordination chemistry	Definitions	Discussion..etc	Exams..etc
2	2	Coordinated complexes	A historical look at development complexes	Discussion..etc	Exams..etc
3+4	4	Theories and hypothes	Chain theory, Werner's theory	Discussion..etc	Exams..etc
5+6	4	Coordinated complexes	Types of ligands	Discussion..etc	Exams..etc
7	2	Coordinated complexes	Nomenclature harmonic complexes	Discussion..etc	Exams..etc
8+9	4	Coordinated complexes	Examples	Discussion..etc	Exams..etc
10+11+12	6	Theories	Theories	Discussion..etc	Exams..etc
13+14+1	6	Theories	Valence Bond Theory	Discussion..etc	Exams..etc
16+17+1	6	Theories	Crystal field theory	Discussion..etc	Exams..etc
19	2	Theories	Molecular orbital theo	Discussion..etc	Exams..etc
20	2	Methods of preparatio complexes	Methods of preparat of complexes	Discussion…etc	Exams…etc

21	2	Methods of preparation complexes	Types of interactions	Discussion..etc	Exams..etc
22	2	Methods of preparation complexes	Types of interactions	Discussion..etc	Exams..etc
23	2	Methods of preparation complexes	Trans influence	Discussion..etc	Exams..etc
24	2	Methods of preparation complexes	Isomers	Discussion..etc	Exams..etc

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Systematic books in Arabic
Main references (sources)	Systematic books in Arabic
Recommended books and references (scientific journals, reports...)	M.Gerloch and E.C.Constable ," Transition metal chemistry "Weinheim< NewYork, G.D.Tuli.R.D.MadanS.K. Basu, "Advan Inorganic chemistry" Published by S. Ch &Company Lid
Electronic References, Websites	S;//www.sciencedirect.com/topics /chemistry/coordination chemistry

Course Description Form

1. Course Name:
Industrial chemistry/chemical industries and industrial pollution
2. Course Code:
EDCH22 M4021
3. Semester / Year:
2023/2024
4. Description Preparation Date:
1/9/2023
5. Available Attendance Forms:
Regular Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hr /4 unit
7. Course administrator's name (mention all, if more than one name)
Name: Mohammed Hajjy Ali Saad Email: Mohhajraz@uomosul.edu.iq
8. Course Objectives

Course Objectives	**Student knowledge of the cement industry** **Student knowledge of the glass industry** **Student knowledge of perfumery industry** **The student's knowledge of industrial uses of water** **student knows information about all types of pollution** **Air, water pollution and treatment methods** **Student knowledge of the fertilizer and**

	pesticide industry **Student knowledge of sulfur industries** **Student knowledge of paper industry**

9. Teaching and Learning Strategies

Strategy	**Using various educational means, the first of which is the blackboard and the projector For data above the head, DATA SHOW is also including other educational methods Videos about the required industries and conducting scientific trips to city factories**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	2	**Explanation of pollution (Air pollution**	**Pollution**	**lecture**	**Quiz**
2nd	2	**/types of pollutants Explaining global warmingAnd the associated bad effects**	**Air pollution**	**Lecture**	**Daily Oral questions**
3rd	2	**Identification of water pollutants And its types**	**Water pollution**	**Discussion and lecture**	**Discussion**
4th	2	**Explaining treatment methods**	**Water waste treatment Industrial and domestic**	**Discussion lecture**	**Discussion**
5th	2	**Teaching students glass industry**	**glass industry**	**Lecture**	**daily oral**

6th	2	Re information	review	Discution	quiz
7th	2	Teaching students Perfumes industry	Perfumes industry	Lecture	Discution
8th	2	Explaining the fertilizer industry And pesticides	fertilizer industry And pesticides	Lecture	Discution
9th	2	Explaining the types of fertilizers	fertilizer industry And pesticides	Lecture	Discution
10th	2	Teaching students Cement industry	Cement industry	Lecture	Discution
11th	2	Re information	review	Discution	quiz
12th	2	Teaching students Paper industry raw material And types of paper	Paper industry	lecture	Discution
13th	2	Clarification of Sulfur industries and its products	Sulfur industries	lecture	Discution
14th	2	Explaining the types of production for Sulfur products	Sulfur industries	lecture	Discution
15th		Re information	review	Discution	quiz

11.Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	**Industrial chemistry and industrial pollution** **Industrial chemistry**
Main references (sources)	**Industrial chemistry and industrial pollution** **Industrial chemistry**
Recommended books and references (scientific journals, reports...)	Hand book of chemical industry
Electronic References, Websites	z-library / google scholar

Course Description Form

1. Course Name:
Scientific research methodology
2. Course Code:
EDCH24M3021
3. Semester / Year:
2023-2024
4. Description Preparation Date:
1/9/2023-31/8/2024
5. Available Attendance Forms:
Presentation theory lecture , classroom attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
Total (60) / 4 Units
7. Course administrator's name (mention all, if more than one name)
Name: lecturer Dr. Rawaa daoud sulaiman Email: rawa-daoud2004@uomosul.edu.iq

8. Course Objectives	
Course Objectives	Knowing the history of science publishing and understand the publishing movement stages , knowing the scientific research concept . Knowing the methods of recording scientific products and comparing . Knowing the methods of scientific research and their tools.
9. Teaching and Learning Strategies	
Strategy	Theoretical lecture, talk and discussions, problem solving, performing practical experiments, reports and homework

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1+2+3	2×2x2=6	knowing the development of science	Chapter One/The origins and development of science	Lecture	Lecture, discussio With student Quiz
4+5+6	2×2x2=6	Knowing the differences between research	Chapter Two: Types of Scientific Research	Lecture	Lecture, discussio With student, Quiz
7+8	2x2=4	Knowing the beginnings of the research and its plan	Chapter Three: Research plan and hypotheses	Lecture	Lecture, discussio With student Quiz
9+10+ +11+12	8=4×2	What is the research methodology, what	Chapter Four / Scientific research methods	Lecture	Lecture, discussio With student Quiz

		are its tools and where are they used ?	and tools		
13+14+15	6=3x2	Knowing what the experimental methodology requires.	Chapter Five/The main requirements for carrying out experimental research	Lecture	Lecture, discussion With student Quiz
16+17+18	6=3x2	Identify the sources and their types Knowing how to use a postcard Knowing how to obtain electronic resources	Chapter Six / Sources of Information	Lecture	Lecture, discussio With student Quiz
19+20+21	6=3×2	Knowing what the paragraphs of research writing are Knowing what are the main paragraphs especially for experimental research Knowing the rules of writing in order to translate them practically later	Chapter Seven / Writing down research	Lecture	Lecture, discussio With student Quiz
22+23+24	6=3×2	Knowing the main paragraphs of the research Adherence to schedule controls Trained in methods of writing references	Chapter Eight/ Recording the contents of the main paragraphs	Lecture	Lecture, discussio With student
25+26+27+28	16=4x2	Knowing their departments And knowing the difference between them and their uses Identify the types of leaves, their shapes, and methods of dividing them Knowing where to use it	Chapter Nine / Linear illustrations	Lecture	Lecture, discussio With student Quiz
29+30	4=2×2	Give a summary to write down the research Know the importance of using Word and Excel	Chapter Ten / Final conclusion of the research	Lecture	Lecture, discussio With student Quiz

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc.

12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Scientific research methodology / Muthanna Abdel Razzaq Al-Omar
Main references (sources)	1-Scientific research methodology, steps and stages / Qasim Matar Abdel Khaledi 2-Scientific research methodology in Islamic financial and banking sciences / Abdel Halim Ammar Gharbi .
Recommended books and references (scientific journals, reports...)	Scientific research methods / Aziz Daoud
Electronic References, Websites	

Course Description Form

1. Course Name:
Teaching curricula and methods
2. Course Code:
EDCH24M3061
3. Semester / Year:
Chapter one and two/ 2024
4. Description Preparation Date:
1/9/2023
5. Available Attendance Forms:
Daily attendance
6. Number of Credit Hours (Total) / Number of Units (Total):
There are two groups A,B each group consisting of three sections, meaning that the number of hours per week for both groups =6 As for a month 6*4 weeks=24 hours.
7. Course administrator's name (mention all, if more than one name)
Name: Mohammed jassim mohammed Email: mjasimm855@uomosul.edu.iq
8. Course Objectives

Course Objectives	Part I: 1- Introducing the student to the meaning of curricula and teaching methods. 2- Identify the most important modern trends in curricula and teaching method 3- Clarifying the stages of development of the curriculum. 4- Comparison between the old concept and the modern concept of the curricu 5- Identify the components of the curriculum in its modern sense. 6- Addressing the subject of the foundations of curriculum building. 7- Identify the types of curricula and the characteristics of each type. 8- Comparison between the types of curricula. 9- Identify the behavioral rule for writing behavioral purposes. 10- Classification of behavioral purposes. Part II: 1- Identify the concept of teaching methods and methods and teaching strategy. 2- Clarifying teaching methods and their link to theories. 3- Give examples of teaching methods related to cognitive theories and their characteristics. 4- Give examples of teaching methods related to behavioral theories and their characteristics. 5- Give examples of teaching methods related to social theories and their characteristics. 6- Identify the importance of the laboratory in teaching. 7- Classification of educational technologies. 8- 8- Clarifying the concept of evaluation, its importance and types. 9- Identify the concept of planning in teaching, its types and importance. 10-A detailed explanation of how to write annual plans .

9. Teaching and Learning Strategies	
Strategy	Lecture, discussion and dialogue, Google classroom, problem solving, developed lecture, cooperative learning, educational games, brainstorming, interrogation.

10. Course Structure

Week	Hours	Required	Unit or subject	Learning	Evaluation method

		Learning Outcomes	**name**	**method**	

1+2+3	6 hours per division hours p week, i 9 * 2 divisio = 18 hours (total)	Providing students with the concept of science, the concept technology, the components of science, scientific thinking skills, as w as the characteristic of science.	Introduction to the concept of science ar its definitions The concept of technolog The importance of technology Components of scien and their logical sequence Scientific thinking skills - characteristics of science	Lecture, discussion And Questioning	Oral discussions
4+5+6	*3=9 hours p division i.e. 9*2=18 hours t	Identify the philosop of science teaching, why we study science modern trends in science teaching, as well as the stages of curriculum developm and types of curriculu Providing students w information about the meaning of the ancie and modern concept the curriculum and making a comparison between the two type	Philosophy of science teaching Modern trend in science teaching Th development of the concept of the curriculum The old concept of the curriculum The mode concept of the curriculum Compariso between the old and modern curriculum Criticism directed at t traditional curriculum	Lecture, discussion and practical presentations	Classroom questions and oral discussions
33			Components of the curriculum in its mod		
7+8+9	3*3=9 hours p division i.e. 9*2=18 hours t	Providing students w information about the foundations of buildi	sense Factors that contributed to the development of the curriculum Curriculu organizations. Logical organization	Questioning, lecture And Brainstorming	Oral discussions
10+11+1	3*3=9 hours p division i.e. 9*2=18 hours t	curricula - the philosophical basis - philosophical schools the basis of knowledg philosophical schools Identify the social ba in building the curriculum Explain th relationship of cultur to the curriculum Identify the compone of culture Give examples of generalities, idiosyncrasies and	the curriculum - psychological organization of the curriculum - foundati of curriculum construction - philosophical basis - philosophical schools cognitive basis - philosophical schools Social basis Components of culture Society and curriculum Psychological basis Types of curriculum	Discussion, lecture, questioning and classroom questions	Classroom questions and oral discussions

113+14+ 2 16 17+18+1 20+21+2 23+24+2	3*3=9 hours p division i.e. 9*2=18 hours t 3*1=3 hours p division i.e. 3*2 division 6 hours total 3*3=9 hours p division i.e. 9*2=18 hours t 3*3=9 hours p division i.e. 9*2=18 hours t 3*3=9 hours p division i.e. 9*2=18	alternatives Know the relationship of societ to the curriculum Clarify the relationsh of the curriculum to social change Identif the psychological bas in building the curriculum Statement curriculum types and characteristics Introducing the elements of the curriculum as a four-way system Educatio objectives Content ar educational experienc Teaching methods an educational technique Evaluation. Written exam Providing students w information about the concept of teaching method, teaching method and teaching strategy Identifying t foundations of good teaching Advantages a good method Teaching methods associated with cognitive theories Guided exploratory method. Identify the lecture method, methods, advantages and disadvantages Definition of the method of solving problems, its steps, advantages and	Educational objective importance, sources o derivation and levels Behavioral purposes, how to formulate then and their specification Classification of behavioral purposes The concept of teachi method The concept c teaching method The concept of teaching strategy The foundatic of good teaching Advantages of a good method Teaching methods associated w cognitive theories Directed exploratory method Lecture method Probl solving method Teaching methods associated with behavioral theories Programmed educatio method	Hands-on presentations, lecture, questioning an cooperative learning Developed lecture, classro questions, questioning an discussion Classroom questions, lectu discussion and cooperative learning	Classroom questions an oral discussions Classroom questions and oral discussions Class questions

26+27+2	hours t 3*3=9 hours p division i.e. 9*2=18 hours t	disadvantages Clarify the teaching methods associated with behavioral theories T method of programm education. Identify the teaching methods associated w social theories The method of cooperativ education and its basi pillars, steps, advantages and disadvantages Clarify the method of discussion, its steps, role, advantages and disadvantages The method of the project its steps, advantages and disadvantages Th method of educationa games, its steps, disadvantages and advantages.	Cooperative Education Method Discussion Method Project Method Educational Games Method	Lecture, discussion and oral discussion Oral discussion lectures, discussion and questioning	Class questions Oral discussions and classroom questions
29+30	3*2=6 hours f each divisio i.e. 6*2=12 hours total	Providing students w information about the method of direct presentation, its steps stages, fields, advantages and disadvantages Introducing the interrogation method its steps, advantages and disadvantages Identify the method o field visits, its steps, advantages, disadvantages and stages, the method of preparing reports, the importance and types evaluation Identify the concept o planning in teaching, importance, types of school plans, and hov to write annual,	Live view method Interrogation method Field visits method Calendar reporting method Planning in teaching The importance of planning Types of planning How to write teaching plans	Lecture, developed lecture and practical presentations	Class questions

		quarterly and daily school plans..			

11.Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Curricula and Teaching Methods Authored by Prof. Dr. Abdul Razzaq Yassin Abdullah Prof. Enas Younis Mustafa Assoc. Prof. Dr. Mareb Muhammad Ahmed Al Mawla Methodological book Course / University of Mo / 2018-2019
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Directing to websites related to the topics of the subject directing students to use the college library to view the resources of the curriculum and teaching methods.

Course Description Form

1. Course Name:
Counseling and Mental Health/ Stage III
2. Course Code
EDCH24M3141
3. Term / Year
First and Second Semester/2024
4. Description Preparation Date:
1/9/2023
5. A. Available Attendance Forms
Daily working hours (in presence)
6. Number of Credit Hours (Total) / Number of Units (Total)
There are two groups A,B (each group consists of three divisions), that is, the number of hours both groups per week = 6.....Down below the Month=6*4 weeks=24 hours
7. Course administrator's name (mention all, if more than one name)
Name: Eng. Eng. Maysa Mohammed Qasim ... Email Maisaa.mohammed@uomosul.edu.iq
8. Course Objectives

Objectives of the course :	Part no. (1) - Introducing the student to the meaning ofcounseling a mental health. - Clarify the most important stages that exist counseling. - Learn about modern trends in educational guidance a guidance. - Identify the most important educational applications. - Comparison between CBT and REBT. - Clarify the most important secrets. - Identifying the emergence of psychological toxins at level of the individual. - Do notaddress the subject of suspicion amo individuals. - Identify the most important principles and procedu that underpin On it is the theory of behavior modification. - Detailed explanation of the theories of counseling. Section II: - Learn about the concept ofcounseling. - Clarifying educational guidance and guidance in gene in Schools and their association with theories. - Giving examples of counseling and mental health wit a theory Psychometric Analysis. - Giving examples of counseling for the hearing a

	visual impaired. - Clarifying the concept of counseling, its importa andcharacteristics. - Identify the most important principles and procedures which they are based Theory in Behavior Modification - Detailed explanation of the theories of counseling.

9. TEACHING AND LEARNING STRATEGIES

Strategy	lecture, discussion and dialogue, Google classroom, problem-solving, Advanced lecture, cooperative learning, educational games, brainstormi questioning.

10. 10. Course Structure

Week	**Hours**	**Learning outcomes required for the program***	**Unit or Topic Name**	**Learning method**	**Valuation Method**
2+1=3	2 hours per division per week i.e. 6* 6 Division=36 hours (total)	- Providing students with the meaning of the concept of counseling and the concept of psychological and educational guidance and counseling in Islamic educational thought as well as the relationship of counseling with other sciences.	- Introduction - Guidance in Islamic educational thought - The concept of counseling, educational and psychological guidance - Relationship of counseling to other sciences	Lecture, Discussion and Interrogation	Oral Discussions
Four, five, six.	2 hours per division per week i.e. 6* 6 Division=36 hours (total)	- Identify individual and group counseling methods and objectives of counseling. - Clarify the rationale for guidance in the educational process	- Counselling methods (individual and group counselling) - Guidance Objectives - Justifications for guidance in the educational process - Principles of Educational Guidance - The foundations on which psychological and educational counseling is based	Lecture and Discussion	Classroom questions and oral discussions

		- Provide students with information about the principles of counseling and the foundations adopted in the process of educational and psychological counseling			
Seven. Eight. Nine.	2 hours per division per week i.e. 6* 6 Division=36 hours (total)	- Providing students with information on the fields of psychological and educational counseling for all stages.	- Fields of psychological and educational counseling A- The field of preschool "early childhood". أ- Primary school "late childhood" domain. ب- Adolescence and youth domain ت- Adult Counseling ث- Extension of Extraordinary"Special Categories"	Interrogation, Lecture, Brainstorming	Constructive oral discussions
10+11+12	2 hours per division per week i.e. 6* 6 Division=36 hours (total)	- Identify theories of psychological and educational counseling - Explain psychoanalytic theory in detail - Detailed knowledge of behavioral theory - Detailed Explanation of the Theory of the Self	- Theories of psychological and educational counseling Psychoanalytic Theory Second: Behavioral Theory Self-theory	Discussion, lecture and class questions	Classroom questions and oral discussions
13+14+15	2 hours per division per week i.e. 6* 6	- Introducing the information necessary for	- Information needed for guidance or observation - Guided Interview - Case Study - CV	Practical presentations, lecture, questioning	Classroom questions and oral discussions

	Division=36 hours (total)	guidance or observation - Detailed explanation of the counselling interview - Learn about the case study with examples		and collaborative learning	
16		- Mid-Year Exam Score			
17... 18... 19...	2 hours per division per week i.e. 6* 6 Division=36 hours (total)	- Providing students with information about the concept of guidance in school - Introducing the role of the mentor teacher - Clarify the work of the educational counselor - Identify the role of parents' councils in educational guidance - Clarify the need for guidance programs in schools and study and address the problems addressed by educational guidance	- The concept of guidance in school First: Teacher Counselor Second:The Educational Counselor Third: Parents' councils and their role in educational guidance Fourth: The need for psychological and educational counseling programs in middle and middle schools Fifth: Problems dealt with by educational guidance	Developed Lecture, Interrogation and Discussion	Classroom questions and oral discussions
20, 21, 22,	2 hours per division per week i.e. 6* 6	- Introducing the science of mental health - Clarify the	- Psychological well-being - Psychological well-being - MENTAL ILLNESS	Classroom questions, lecture and	Classroom Questions

	Division=36 hours (total)	concept of mental health - MENTAL ILLNESS - Introducing the concept of normal and abnormal personality and their criteria	- The Concept of Normal Personality and Abnormal Personality - Normal and non-normal personality criteria	discussion	
23-24-25	2 hours per division per week i.e. 6* 6 Division=36 hours (total)	- Learning about mental health approaches - Clarify the relationship of mental health to the enjoyable personality - Introducing the concepts of psychological crises and the concept of frustration - Detailed explanation of the subject of psychological crises and ways to address them and maintain mental health	- Psychological well-being - Characteristics of a Mental Health Personality - Relationship of Mental Health to Education - The concept of psychological crises - Sources of psychological crises - The concept of frustration - Proper methods for resolving psychological crises - Health Maintenance	Lecture, discussion and oral discussions	Classroom Questions
26 27 28	2 hours per division per week i.e. 6* 6 Division=36 Hours	- Providing students with information about defensive mental mechanisms which includes emotional	- Defensive mental mechanisms, including both First: Emotional Second: Non-consciousness	Oral Discussions, Lecture and Interrogation	Oral Discussions and Classroom Questions

		mechanisms and non-conscious mechanisms			
- Twenty-nine. - Thirty.	2 hours per division per week i.e. 6* 4 Div=24 hours (total)	- Identify the concept of compatibility as well as some other concepts - Detailed explanation of the indicators of compatibility and mental health - Introducing the psychological dimensions of maladjustment	- Concept of Compatibility and Other Concepts - Compatibility and Mental Health Indicators - Compatibility Dimensions - Psychological dimensions of maladjustment without the educational counselor in the field of mental health and compatibility	Lecture, Upgraded Lecture and Practical Presentations	Classroom Questions

11.Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports .... etc.

12.Learning and Teaching Resources

Required textbooks (methodology if any)	• Textbook in Arabic: - Educational and psychological guidance in educational institutions Written by Dr. Rafida Hariri Dr. Samir Al-Emami 2018-2019 as well as a binding entitled Counseling and Mental Health
Key References (Sources)	
Recommended supporting books and references (scientific journals, reports...)	Instructing students to use the college library to access priv resources Curricula and Teaching Methods Department.
E-References , Websites	Directing to websites related to the subjects of the material,

Course Description Form

1. Course Name:

Physical chemistry/optional

2. Course Code:

EDCH24 M3101

3. Semester / Year:

The first semester and the second semester/2024

4. Description Preparation Date:

1/9/2023

5. Available Attendance Forms:

Daily

6. Number of Credit Hours (Total) / Number of Units (Total)

(2 x 15 = 30) study hours + 2 hours monthly exam + daily and final exams.

7. Course administrator's name (mention all, if more than one name)

Name: Raed Tareq Ghanem
Email: raedtareq1979@uomosul.edu.iq

8. Course Objectives

Course Objectives	Students learned about the topic of physical chemistry and its role in understanding the principles of molecular interactions and chemical bonding and its importance Students learn about the topic of adsorption and its importance Students learned about the theory of activated complexes and activation energy

9. Teaching and Learning Strategies

Strategy	Lecture, dialogue, discussion, and giving examples

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The acquisition of knowledge In the field of physical chemistry and an introduction to some basic concepts related to the branches of	Introduction to physical chemistry	theoretical	Exam and daily activity

		chemistry			
2	2	Gaining knowledge of the types of chemical interactions and knowing their strength and interconnectedness .	Chemical interactions and their types	theoretical	Exam and daily activity
3	2	Gain knowledge of the types of molecular interactions	Types of molecular interactions	theoretical	Exam and daily activity
4	2	Gain knowledge in the specifications of polar and nonpolar molecules	the specifications of polar and nonpolar molecules	theoretical	Exam and daily activity
5	2	Gaining knowledge in Vander Waals Interventions	Vander Waals Interventions	theoretical	Exam and daily activity
6	2	Gain knowledge in examples of Vanderwaals interactions	Examples of van der Waals interferences	theoretical	Monthly exam
7	2	Gaining knowledge of hydrogen bond interactions and their types	Hydrogen bond interactions and their types	theoretical	Exam and daily activity
8	2	Gain knowledge in ion-ion interactions	Ion-ion interactions	theoretical	Exam and daily activity
9	2	Gaining knowledge in London Interventions (London Forces)	London Interventions (London Forces)	theoretical	Exam and daily activity
10	2		Examples of London interferences (London forces)	theoretical	Exam and daily activity
11	2	Acquiring knowledge in the Born-Haber cycle	The Born-Haber cycle	theoretical	Exam and daily activity
12	2	Gaining knowledge of electrostatic attraction and its types	Electrostatic attraction and its types	theoretical	Monthly exam
13	2	Acquiring knowledge in solving mathematical questions of the Born-Haber cycle	Solve mathematical questions of the Born-Haber cycle	theoretical	Exam and daily activity
14	2	Gain knowledge of an introduction to the concept of adsorption	Introduction to the concept of adsorption	theoretical	Exam and daily activity
15	2		Types of adsorption (physical and chemical	theoretical	Exam and daily activity
16	2		Factors affecting adsorption	theoretical	Exam and daily activity
17	2	Gaining knowledge of the types of isotherms	Langmuir isotherm with applied examples	theoretical	Exam and daily activity
18	2		Freundlich isotherm with applied examples	theoretical	Monthly exam

19	2		Isotherm Timken with applied examples	theoretical	Exam and daily activity
20	2	Gain knowledge in types of adsorption kinetics	Pseudo-first order adsorption kinetics with applied examples	theoretical	Exam and daily activity
21	2		Pseudo-second order adsorption kinetics with applied examples	theoretical	Exam and daily activity
22	2		Adsorption kinetics from the implicit molecular diffusion model with applied examples	theoretical	Exam and daily activity
23	2	Gain knowledge in activated complex theory and activation energy	Activated complex theory and activation energy	theoretical	Monthly exam
24	2		Factors affecting activation energy	theoretical	Exam and daily activity
25	2	Gaining knowledge of the thermodynamic functions of activation	Thermodynamic functions of activation	theoretical	Exam and daily activity
26	2		Application of activated complex theory to adsorption	theoretical	Exam and daily activity
27	2	Gaining knowledge of linking the relationship between the velocity constant and the equilibrium constant	Connect the relationship between the velocity constant and the equilibrium constant	theoretical	Exam and daily activity
28	2	Gain knowledge of the mechanics of the adsorption process	Mechanics of the adsorption process	theoretical	Exam and daily activity
29	2		Solve some problems related to the adsorption process	theoretical	Monthly exam

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc First semester monthly exam 5%. Daily preparation 2%. Daily exam 3%. Mid-year 25%. Second semester monthly 5%. Second exam 60%.

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	**Physical Chemistry principles and problems** **D V S Jain and S P Jauhar** **كيمياء السطح تاليف د.جلال محمد صالح** Thermodynamic and kinetic study of the adsorption of Some Azo Dyes on Activated Carbon and Other new Adsorbents. A Thesis Submitted *By* Ra'ed Tariq Ghanem Al-Abady **مصادر وبحوث حديثة من منظومة الانترنيت**

Electronic References, Websites	

Course Description Form

1. Course Name:
Electrochemistry
2. Course Code:
3041
3. Semester / Year:
2023-2024
4. Description Preparation Date:
1-10-2023
5. Available Attendance Forms:
distance learning
6. Number of Credit Hours (Total) / Number of Units (Total):
30 hours ---- 4 unit
7. Course administrator's name (mention all, if more than one name)

Name	e-mail
Dr.Ibrahem Yonus Mohammed	ibrahemawab@uomosul.edu.iq

8. Course Objectives	
Course Objectives	This course description provides a summary of the most important characteristics of the course and the learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the learning opportunities available. It must be linked to the program description. Providing the student with knowledge of electrical cells theoretically and practically •

9. Teaching and Learning Strategies	
Strategy	Using various educational means, the first of which is the blackboard and the projector . For data above the head, DATA SHOW is also included, including

	other educational methods Videos and conducting scientific trips to the governorate's various factories

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Electrochemistry	Electro	Lecture	Daily and ora exams and discussions
2	2	Applications of electrochemistry	Applications	Lecture	Daily and ora exams and discussions
3	2	Electricit	Electricit	Lecture	Daily and ora exams and discussions
4	2	Electrolyte	e.m.f.	Lecture	Daily and ora exams and discussions
5	2	Types of Electrolyte	Types	Lecture	Daily and ora exams and discussions
6	2	Viscosity	Temparetuer	Lecture	Daily and ora exams and discussions
7	2	Factors affecting viscosity	Factors affecting	Lecture	Daily and ora exams and discussions
8	2	Diffusion	Diffusion	Lecture	Daily and ora exams and discussions
9	2	Fik,s First and 2nd. Lav	Fik,s	Lecture	Daily and ora exams and discussions
10	2	electrical conduction	conduction	Lecture	Daily and ora exams and discussions
11	2	Equivalent - Molar	Conductance		

		Conductance			
12	2	Kohlraush law	Kohlraush	Lecture	Daily and ora exams and discussions
13	2	Onsaker equation	Onsaker	Lecture	Daily and ora exams and discussions
14	2	Chemical cells Reference electrodes	Cells and electrodes	Lecture	Daily and ora exams and discussions
15	2	Final monthly exam	test	test	A written test

11.Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	• الحركيات الكيميائية / للدكتور عبد المجيد الدباغ
Main references (sources)	- اساسيات الكيمياء الفيزياوية الكيمياء الفيزياوية /للدكتورمجدي واصل
Recommended books and references (scientific journals, reports...)	• Physical chemistry for jee 2021 Physical chemistry for Atkins2020
Electronic References, Websites	www.brittanica.com

Course Description Form

1. Course Name:

Instrument Analytical Chemistry

2. Course Code:

EDCH24 M4021

3. Semester / Year:

2023-2024

4. Description Preparation Date:

1/9/2023

5. Available Attendance Forms:

Regularity

6. Number of Credit Hours (Total) / Number of Units (Total)

48 Hours

7. Course administrator's name (mention all, if more than one name)

Name: Dr. zeenz zuhair salih zeenz.2020@uomosul.edu.iq
Dr. Nagham Nazem Habib
Dr. Rawa Abdel Aleem
Lina Adel Saber
Nour Mazen Ibrahim
Tamara Abdel Salam

8. Course Objectives

Course Objectives	• The student will be familiar with modern analytical devices and how to work with them • To learn how to train organic compounds or ions using interactive Uses and various appropriate devices • Distinguish the different spectroscopic methods for estimating organic compounds and ions

9. Teaching and Learning Strategies

Strategy	Cooperative learning strategy Practical simulation demonstration

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	4	Gain a general knowledge of automated analysis	A general introduc to analytical chemis	Theoretical	Exam and homework
3	2	Acquire knowledge related to apply the laws expressing concentrations calculating concentrations theoretic and practically	Methods of express concentrations. Examples and soluti for concentrations	Theoretical and practical	Exam and homework
4	2	Gain knowledge related to Beer's law its applications	Deviation from Beer-Lambert law	Theoretical and practical	Exam, report and daily activity

5-6	4	Gain knowledge related to determination of iodide ions using scaling reactions	Determination iodide ions using scaling reactions	Theoretical and practical	Exam, report and daily activity
7-8	4	Gain knowledge related to the vis molecular spectrum	Determination ferric(III) i spectrophotometrica	Theoretical and practical	Exam, report and daily activity
9-10	4	Gain knowledge related to the visible molecular spectrum spectroscopic	Determination of nitrite ion	Theoretical and practical	Exam, report and daily activity
11-12	4	Gain knowledge related to photometri corrections	Determination benzoic acid	Theoretical and practical	Exam, report and daily activity
13	2	Gain knowledge related to photometric corrections	Determination of z ion	Theoretical and practical	daily activity
14-15	4	Gain knowledge related to flame spectroscopy	Determination sodium and potassium	Theoretical and practical	Exam, report and daily activity
16	--	Mid-year exam	----	---	----
17-22	--	Application for students in schools	-----	---	----
23	2	Gain knowledge related to flame spectroscopy	Determination calcium and barium	Theoretical and practical	Exam, report and daily activity
24-25	4	Gain knowledge related to the effect of scattering and scattering	Determination sulfate ions	Theoretical and practical	Exam, report and daily activity
26	2	Introduction to electrical methods in analysis	Measuring of Potentiometric titration	Theoretical	Exam and daily activity
27-28	4	Gain knowledge related to stress corrections	Determination of mixture of phosph acid and hydrochl acid	Theoretical and practical	Exam, report and daily activity
29	2	Gain knowledge related to the visible molecular spectrum and redox reactions	Spectroscopic determination manganese	Theoretical and practical	Exam, report and daily activity
30	2	Gain knowledge related to calculating complexity ratio of chemical complex	Apply the Jobs method and the molar ratio method	Theoretical and practical	Exam, report and daily activity

11.Course Evaluation

Distributing the score out of 25 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Automated chemical analysis: written by Dr. Abdul Mohsen Abdul Hamid Al-Haidari
Main references (sources)	Automated chemical analysis: written by. Dr.Abdul Mohsen Abdul Hamid Al-Haidari Automated chemical analysis: written by Dr. Fathi Ahmed Obaid
Recommended books and references (scientific journals, reports...)	Instrumental method of analysis, Horbort H. Willia D.V an Nostrand company N.Y, 1981
Electronic References, Websites	Various educational websites for chemistry, such Chemix, Chemsketch, and Chemdraw

Course Description Form

1. Course Name:

Practical Organic diagnosis /fourth stage /Chemistry Department

2. Course Code:

EDCH24-4041

3. Semester / Year:

2023-2024

4. Description Preparation Date:

1/9/2023 – 31/8/2024

5. Available Attendance Forms:

Regular attendance

6. Number of Credit Hours (Total) / Number of Units (Total)

2 hours per week / 45 total / 7 units

7. Course administrator's name (mention all, if more than one name)

Name: **Hadil Samir. Aziz**
Email: Hadilsamir1977@uomosul.edu.iq
Name: Intisar Qahtan Mahmood
Email: mahmood_intisar@uomosul.edu.iq

8. Course Objectives

Course Objectives	•Introducing the student to the subject of practical organic diagnosis in general •Introducing the student to the laboratory equipment and tools he uses •Informing the student about the danger of chemical materials and how to deal with them safely •Introducing the student to the basic steps for diagnosing an organic compound •Introducing the student to how to diagnose a compound laboratory and using chemical tests.

9. Teaching and Learning Strategies

Strategy	•Working in the laboratory by diagnosing an unknown compound and using special detec •Linking scientific material between theory and practice

10. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

1	3	Know the importance of practical diagnosis	General introduction to practical diagnosis	Lecture	discussion
2	3	ain knowledge of measuring physical properties	Physical properties, boi and melting points	Lecture	Discuss and solve examples
3	3	Gain skill in practical application	Detection of chemical elements	Practical applicati on in the laborator y	Discussion and practical application
4	3	Gaining knowledge in conducting statements	General stateme	Work inside the laborator y	homework
5	3	Gaining knowledge in finding solubility class	Solubility detect	Work inside the laborator y	Discussion and practical application
6	3	Acquire the skill in conducting spe statements	Special statemer	Work inside the laborator y	Daily exam
7	3	Familiarity with methods for detec carboxylic acids	Detection carboxylic amino acids	Work inside the laborator y	Oral questions
8	3	Familiarity with methods for detec amines and nitro compounds distinguishing between them	Detection of am and n compounds	Work inside the laborator y	Home duties
9	3	Acquire the skill to distinguish betw ethers and phenol	Detection of ethers and phenols	Work inside the laborator y	discussion
10	3	Gain knowledge in detecting esters	Detection of esters	Work inside the laborator y	Daily exam
11	3	Gaining knowledge in detecting alc and distinguishing between its types	Detection alcohol	Work inside the laborator y	discussion

12	3	Gaining knowledge in distinguish between aldehyde and ketone)	Detection carbonyl compounds (aldehyde ketone)	Work inside the laboratory	discussion
13	3	Gaining knowledge in the detection amides	Detection of am	Work inside the laboratory	discussion
14	3	Familiarity with the derivatives organic compounds	Derivatives for organic compounds	Work inside the laboratory	Solve examples
15	3	Exam			
16	3	Gain knowledge in writing the report	Writing the repo	La at	
17	3	Gain skill in interpreting infrared spe	Infrared spect drawing	Work inside the laboratory	Student participation
18	3	Gain skill in interpreting the spectra the magnetic nuclear	Drawing magnetic nuc spectrum	Work inside the laboratory	Student participation

11.Course Evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.: - The daily exam is 5 marks, the mid-year exam is 20 marks, the practical subject is 25 marks, the annual endeavor score is 50 marks, and the final exam is 50 marks

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Organic Molecules of Spectroscopy
Main references (sources)	Organic chemistry / Glyden Organic chemistry Janice Gorzynski Smith University of Hawai'i at Ma-noa Organic chemistry A Mechanistic Approach
Recommended books and references (scientific journals, reports...)	Chemsteps Master organic Chemistry
Electronic References, Websites	

Course Description Form

1. Course Name:

Organic diagnosis /fourth stage /Chemistry Department

2. Course Code:

EDCH24F4041

3. Semester / Year:

2023-2024

4. Description Preparation Date:

1/9/2023 – 31/8/2024

5. Available Attendance Forms:

Regular attendance

6. Number of Credit Hours (Total) / Number of Units (Total)

2 hours per week / 40 total / 7 units

7. Course administrator's name (mention all, if more than one name)

Name: **Hadil Samir. Aziz**
Email: Hadilsamir1977@uomosul.edu.iq
Name: Intisar Qahtan Mahmood
Email: mahmood_intisar@uomosul.edu.iq

8. Course Objectives

Course Objectives	Introducing the student to organic diagnostics and how to diagnose organic compounds Introducing the student to the infrared spectrum and how to interpret the spectrum of organic compounds Introducing the student to the devices used to measure the infrared spectrum Introducing the student to the ultraviolet spectrum and how to calculate wavelengths. Introducing the student to how to diagnose organic compounds using NMR spectroscopy and what the device used is made of Introducing the student to how to solve problems to find the unknown compound.

9. Teaching and Learning Strategies

Strategy	Theoretical lecture, discussion, homework, presenting examples and questions and solving them.

10. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method
1	2	Knowledge of spectrum science	General introduction to spectrum	Lecture	discussion
2	2	Definition of infrared spectrum	Infrared spectrum	Lecture	Discuss and solve examples
3	2	Know the most important effective groups	Spectrum data analysis	Lecture	Daily exam
4	2	me information about the location of e absorption bands of aromatic rings	Aromatic rings	Lecture	homework
5	2	Some information about the location of absorption bands for carbonyl compounds	Carbonyl compounds	Lecture	discussion
6	2	Factors affecting the stretching frequency of the carbonyl group	Carbonyl compounds	Lecture	discussion
7	2	Absorption bands for carboxylic acids and their derivatives	Carboxylic a and t derivatives	Lecture	Oral questions
8	2	Expected absorption bands for amine compounds and their derivatives	Amines and r compounds	Lecture	Solve examples
9	2	Expected absorption bands for ethers and phenols	Ethers and phenols	Lecture	discussion
10	2	Interpreting the spectra of different compounds	General Review	Lecture	Daily exam
11	2	Spectra of the ultraviolet spectrum	Electronic transfers	Lecture	discussion
12	2	The effect of ultraviolet radiation on organic compounds	UV spectrum for organic vehicles	Lecture	discussion
13	2	The effect of sequence, solvent, and vacuum obstruction on the ultraviolet spectrum	Factors affecting packages in the UV spectrum spectrum	Lecture	discussion
14	2	Introducing the student to the basics of these rules	Wood-widow rules for the wavelength of the debts	Lecture	Solve examples
15		Mid-year exam	Mid-year exam	Mid-year exam	Mid-year exam
16			Field Training		
17					
18					
19					
20					
21					
22		Magnetic nuclei and non -magnetic cores	Diagnosis organic compou by magn nuclear spectrun	Lecture	Student participation

23		The effect of the electronegativity of atoms on the location of the beam	Factors affecting the location of chemical displacemen	Lecture	Student participation
24		Introducing the student to how resonance occurs	How resonance occurs	Lecture	discussion
25		The student learned about the components of the nuclear magnetic resonance spectrometer	Components of the NMR spectromete	Lecture	discussion
26		Explain how to interpret resonance spectra	Interpretation of NMR spectra	Lecture	homework
27		Magnetic cores and non-magnetic cores	Diagnosis of organic compounds using NMR spectroscopy	Lecture	discussion
28		Interpretation of spectrum figures	Solve the graphs of unknown components	Lecture	Drawings of the spectra of organic compounds
29-30			final examination		

11.Course Evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.: - The daily exam is 5 grades, the mid-year exam is 20 grades, the practical subject is 25 grades, the annual endeavor score is 50 grades, and the final exam is 50 grades

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	الكيمياء العضوية العملي / مروان زكريا
Main references (sources)	الكيمياء العضوية العملي / مروان زكريا
Recommended books and references (scientific journals, reports...)	Practical organic chemistry by Vogle
Electronic References, Websites	Master organic chemistry

Course Description Form

1. Course Name:

Industrial chemistry

2. Course Code:

EDCH24 M4061

3. Semester / Year:

2023-2024

4. Description Preparation Date:

29-03-2024

5. Available Attendance Forms:

attendance

6. Number of Credit Hours (Total) / Number of Units (Total)

144

7. Course administrator's name (mention all, if more than one name)

Name: Assistant prof. Dr. Ahmed Ghaleb.
Email: amsss82@uomosul.edu.iq
Name: Lecturer. Dr. Awa Nazar.
Email: awschem@uomosul.edu.iq

8. Course Objectives

Course Objectives	**1-Clarifying the concept of polymers and plastics.....** **2- Comparison of types of polymers based on different classifications.** **3- Description of different types of polymers, their specifications and applications.** **4- Describe the techniques and mechanisms used to produce plastics** **5- Identifying dyes and how they work.** **6-Identify polymeric fibers, their types and applications** **7- Polymeric applications in various fields** **8- The mechanism of action of soap and detergents and their production methods**

9. Teaching and Learning Strategies

Strategy	Lectures, discussion, dialogue, educational platform (Google Classroom), cooperative education brain storming, academic questioning.

10.

11. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	6	Introduction to polym	Introduction to polymers	Discussion using different methods of and Internet	Oral exam
2	6	Nomenclature of polyme	Nomenclature of polymers	Brainstorming using multiple methods	Complete assignment

3	6	Advantages of polymers	Advantages of polymers	Cooperative education using multiple methods	Discussion
4	6	Classification of polymers	Classification of polymer	Brainstorming using multiple methods	Oral exam
5	6	Thermoplastics	Thermoplastics	Discussion using different methods of and Internet	Complete assignment
6	6	Thermosetting	Thermosetting	Brainstorming using multiple methods	Discussion
7	6	Rubber types	Rubber types	Cooperative education using multiple methods	Oral exam
8	6	Fiber classification	Fiber classification	Brainstorming using multiple methods	Complete assignment
9	6	Classification of dyes	Classification of dyes	Discussion using different methods of and Internet	Discussion
10	6	Types of polymerizat processes	Types of polymerizat processes	Cooperative education using multiple methods	Oral exam
11	6	Mechanisms polymerization processe	Mechanisms polymerization processe	Brainstorming using multiple methods	Complete assignment
12	6	Condensation and addition polymerization	Condensation and addition polymerization	Discussion using different methods of and Internet	Discussion
13	6	Daily exam	Daily exam		
14	6	Semester exam	Semester exam		
15	6	Mid exam	Mid exam		
16	6	Training students	Training students		
17	6	Training students	Training students		
18	6	Training students	Training students		
19	6	Training students	Training students		
20	6	Training students	Training students		
21	6	Training students	Training students		

22	6	Training students	Training students		
23	6	Properties of condensing polymers	Properties of condensing polymers	Cooperative education using multiple methods	Discussion
24	6	Types of condensation polymers	Types of condensation polymers	Discussion using different methods of and Internet	Oral exam
25	6	Polymeric fibres	Polymeric fibres	Brainstorming using multiple methods	Complete assignment
26	6	Types of fiber	Types of fiber	Cooperative education using multiple methods	Discussion
27	6	Fiber preparation methods	Fiber preparation methods	Brainstorming using multiple methods	Oral exam
28	6	Detergents and soap	Detergents and soap	Discussion using different methods of and Internet	Discussion
29		Semester exam	Semester exam		
30		Final exam	Final exam		

12.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

13.Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Introduction to Polymers by Peter A. Lovell, Robert J. Young, Robert J. Young, al.
Recommended books and references (scientific journals, reports...)	introduction to Polymers, Third Edition 3rd Editic by Robert J. Young
Electronic References, Websites	https://www.britannica.com/science/polymer https://www.britannica.com/technology/dye

Course Description Form

1. Course Name: Practical industrial chemistry

2. Course Code: EDCH24 M4061

3. Semester / Year: 2023-2024

4. Description Preparation Date: 1-9-2023

5. Available Attendance Forms: distance learning

6. Number of Credit Hours (Total) / Number of Units (Total): 90 hours

7. Course administrator's name (mention all, if more than one name)

Name	e-mail
Dr.Ammar Ahmed Hamdoon	ammarhamdoon@uomosul.edu.iq
Dr.khalid Ahmed Uwaid	khalid.a.waid73@uomosul.edu.iq
Dr.Raghed Yousif Ghazal	ragheedghazal76@uomosul.edu.iq
Dr.Qaidar Salim Jarjees	**qaidarsalim406@uomosul.edu.iq**
Dr.Aws Nazar Abdulaziaz	**awschem@uomosul.edu.iq**
Dr.Ahmed G. S. Al-Azzawi	**amsss82@uomosul.edu.iq**
Dr. Usama Mohammed Majeed	**osamahmohammed81@uomosul.edu.i**
Dr. Mohammed Hazim Sabry	**mohammedhazemm@uomosul.edu.iq**
Dr. Mohammed H.Ali	**mohhajraz@uomosul.edu.iq**
Mrs. Anwar Mahmoud Ahmed	**anwar.mahmoud@uomosul.edu.iq**

8. Course Objectives

Course Objectives	• **1. Teaching the student what meant by practical indust chemistry.....** • **2. Teach the student quality con measurements**

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1-4	12	Teach the studen quality control measurements	1-Oxyger 2-Hardnes 3- hypochlori 5-STPP	Lecture	Daily and oral exams and discussions
5-9	15	Preparing five types of dyes	Preparing five types dyes	Lecture	Daily and oral exams and discussions
10-14	15	Preparation andanalysis four types of polymers	Preparation an analysis of fou types of polyme	Lecture	Daily and oral exams and discussions
15-17	15	Preparation of activated carbon	Preparation and Analysis of activated carbon	Lecture	Daily and oral exams and discussions
18-23	18	Preparing soap a detergents	Preparing soap ar detergents	Lecture	Daily and oral exams and discussions
24+25	6	Kerosene	1-Distillation 2-n-Paraffins	Lecture	Daily and oral exams and discussions
26+27	6	Pesticides	1-D.D.T. 2- Fungicide	Lecture	Daily and oral exams and discussions
28	3	Asphalt	Asphalt	Lecture	Daily and oral exams and discussions
29	3	Perfume	Perfume	Lecture	Daily and oral exams and discussions
30	3	Alum	Alum	Lecture	Daily and oral exams and discussions

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Industrial chemistry and Industr Pollution

Main references (sources)	Various sources in industrial chemistry
Recommended books and references (scientific journals, reports...)	Various sources in industrial chemistry
Electronic References, Websites	www.brittanica.com

Course Description Form

1. Course Name: Biochemistry / Bachelor's

2. Course Code: **EDCH24 M4011**

3. Semester / Year: 2023-2024

4. Description Preparation Date: 2023/9/1– 2024/8/ 31

5. Available Attendance Forms: Weekly classroom attendance

6. Number of Credit Hours (Total) / Number of Units (Total) 48 hours / 4 Credit

7. Course administrator's name (mention all, if more than one name)

Name: Prof. Dr. Nashwan Ibrahem Abo
Email: nashwan78ibrahem@uomosul.edu.iq

8. Course Objectives

Course Objectives	**1. Teaching students how a living cell works** **2. Metabolism of carbohydrate, fats, proteins, and amino acids are catabolism and anabolism .** **3. How to obtain energy** **4. Forms of bio-energy** **5. Nucleic acid replication and transform of genetic information** **6. Mutations, how they occur, and the possibility of avoiding them**

9. Teaching and Learning Strategies

Strategy	Giving the lectures and can use of all capabilities available in the classroom. The method of discussion and conclusion is also followed, and intellectual questions are asked as assignments.

1. Course structure

weeks	Hours	Required learning outcomes	Name of the unit/course or subject	Teaching method	evaluation method
1	2	The concept of life energy	Bio-energy, its transmission and transformations, energy and living organisms, enthalpy, entropy, and free energy.	Lecture	Quizzes and monthly exams
2	2	Knowledge of important biological compounds	Phosphate compounds with high and low energy.	Lecture	
3	2	The role of some important energy compounds	Oxidation and reduction reactions, reduction potential - activation energy.	Lecture	
4	2	Learn about the concept of metabolism in the body	The role of ADP and ATP in transferring phosphate energy.	Lecture	
6و5	4	Learn important system pathways	Transferring energy as a reduced power.	Lecture	
8و7	4	Completion of the concept of the metabolic pathway	Definition of metabolism, digestion of carbohydrates in the mouth, stomach and small intestine, absorption of carbohydrates.	Lecture	
9	2	Important biochemical cycles	- Tricarboxylic acid cycle (Krebs cycle). - General features of the course. - Sources of fueling the Krebs cycle. - Organizing the Krebs cycle. - Clyoxyaltide cycle.	Lecture	
11و10	4	Important secondary metabolic pathways	- The pentose/phosphate sugar pathway (phosphogluconate pathway) - The importance of the sugar pentaphosphate pathway. - Electron transfer and oxidative phosphorylation, components that participate in the process of electron transfer and oxidative phosphorylation. - Energy transformations in aerobic and anaerobic oxidation of sugar: the energy resulting from the total oxidation of glucose	Lecture	
12	2	Energy transfer between components in the cell	- Entry of cytoplasmic NAD-H into mitochondria. - Mallet shuttle. - Glycerol phosphate shuttle - Glycogenolysis - glucose generation and regulation. - Synthesis of lactose and sucrose from glucose pyridine diphosphate.	Lecture	
13	2	Lipds	- Functions of fats, digestion and decomposition of fats. - Oxidation of fatty acids, beta oxidation, oxidation of fatty acids with an individual number of carbon atoms.	Lecture	
15و14	4	The concept of biosynthesis of lipids	- Steps in the biosynthesis of fatty acids, elongation of fatty acids - Biosynthesis of triglycerides. - Biosynthesis of phosphorylated glycerides.	Lecture	
17و16	4	Cholesterol compounds that are important in life and the relationship between metabolic pathways	- Biosynthesis of sterol compounds and regulation of the cholesterol biosynthesis process. - The life processes of ketone bodies. - The relationship between carbohydrate metabolism and fat metabolism	Lecture	
19و18	4	What are proteins and how are they digested?	- Digestion and absorption of protein. - Amino acid metabolism, amino acid transfer,	Lecture	

			amino group transfer, deletion of the amino group, deletion of the carboxyl group. - The biological catabolism of the carbon skeletons of amino acids by the Krebs cycle. - Genetic reductases for catabolism of some amino acids (phenylalanine and thyrosine). - Elimination of excess nitrogen and the urea cycle.		
21و20	4	Amino acids and their role in life processes in the living cell	- Biosynthesis of non-essential amino acids: glutamic acid, ketamine, proline, alanine, aspartic acid, asparagine, thyrosine, and serine. - Biosynthesis of the essential amino acids methionine, isoleucine, tryptophan, and histidine. - Biological composition of porfarin. - Biosynthesis of creatine and creatine.	Lecture	
22	2	Nucleic acids and their role in transmitting genetic information and mutations	-Deoxyribose DNA and molecular genetics - Chromosomes and genes (definition and functions) and definition of chromatin. DNA replication, the mechanism of DNA replication, breakage and repair	Lecture	
23	2	The concept of mutations	- Genetic mutations and the factors that cause them. - Reproduction of genetic information and the biological composition of RNA. - The central principle of heredity and genetic function.	Lecture	
24	2	Protein construction	- Biosynthesis of protein , the necessary basic materials. - Activation of amino acids on transfer RNA.	Lecture	
25	2	Protein construction and biological regulation	- Steps to build protein. - Regulating protein biosynthesis. - Protein synthesis inhibitors..	Lecture	

10.Course Evaluation

The grade is distributed out of 100 as follows: 25 marks for the mid-year exam / then 60 marks for the end-of-year exam / the teacher's grade within the lecture is 15 marks, 5 of which are commitment and perseverance, 5 are daily exams, and the last 5 are given as an activity and motivation to the students, including discussion and preparation, in addition to completing some homework.

11.Learning and Teaching Resources

Required textbooks (curricular books, if any)	The methodological book in the Arabic language: Al Flayeh, Khawla Ahmed (2000). Introduction to biochemistry
Main references (sources)	Biochemistry / Part Two - Prof. Dr. Tariq Younis Ahme Prof. Louay Abdel Ali Al-Hilali
Recommended books and references (scientific journals, reports...)	Lippincott Biochemistry 8th edition , Copyright 2022
Electronic References, Websites	

Course Description Form

1. Course Name:
Measurement and Evaluation/ Phase IV
2. Course Code
EDCH24M4051
3. Term / Year
First and Second Semester/2024
4. Description Preparation Date:
1/9/2023
5. A. Available Attendance Forms
Daily working hours (in presence)
6. Number of Credit Hours (Total) / Number of Units (Total)
There are two groups A,B (each group consists of three divisions), that is, the number of hours both groups per week = 6.....Down below the Month=6*4 weeks=24 hours
7. Course administrator's name (mention all, if more than one name)
Name: Eng. Eng. Maysa Mohammed Qasim ... Email Maisaa.mohammed@uomosul.edu.iq
8. Course Objectives

Objectives of the course :	Part no. (1) 1- Introducing the student to the meaning of measurem and evaluation. 2-Identifying the most important measure and achievem tests. 3. Clarify the relationship between measurement, evaluat and testing. 4-Identifying the specification table. 5-Clarifying the types of achievement tests. 6-Identifying the most important determinants of knowle goals. 7. Comparison of target types. 8. Draw a diagram showing my cognitive goals? 9. Classification of behavioral purposes. 10-Learn the basic rule of writing behavioral purposes. Section II: 1- Learn about the concept of measurement and evaluati 2- Clarify the specification table. 3- Give examples of the specification table associated w the objectives 4- Cognitive and its characteristics. 5- Give examples of ease and difficulty. 6- Recognize the importance of measurement achievement tests which is related to students' abilities, tendencies, readiness. 7- Classification of achievement tests.

	8- Detailed explanation of the specification table with so attachments Illustrative models of the solution.

9. TEACHING AND LEARNING STRATEGIES

Strategy	lecture, discussion and dialogue, Google classroom, problem-solving, Advanced lecture, cooperative learning, educational games, brainstormi questioning.

10. 10. Course Structure

Week	Hours	Learning outcomes required for the program*	Unit or Topic Name	Learning method	Valuation Method
1	2	Measurement Definition, Recognition, Definition, Applications and Uses of Testing	Measurement - Definition	Course	Daily Exam
2	2	Recognize the relationship between measurement, testing and evaluation	Test Definition, Applications and Uses	Discussion	Asking questions and discussing
3	2	Learn about evaluation and its importance in the educational process	Relationship between measurement, testing and evaluation	Lecture	Asking questions and discussing
4	2	Learn about the steps of the achievement test	Evaluation, its definition and importance in the educational process	Course	Asking questions and discussing
5	2	Identify goal setting	Steps to construct an achievement test	Course	Asking questions and discussing
6	2	Identify content	Defining goals	Course	Asking questions

		selection			and discussing
7	2	To know the wording of the paragraphs and the steps to be followed	Selecting Content	Course	Asking questions and discussing
8	2	Identify the order of the questions	Drafting paragraphs and general principles to be taken into account when drafting them	Course	Asking questions and discussing
9	2	Identifying the preparation of instructions	Questions sorting options	Course	Asking questions and discussing
10	2	Identify the types of testing	Preparing Instructions	Course	Asking questions and discussing
11	2	Identify the multiple choice tests and the rules of their preparation and their advantages and disadvantages	Test Types and Formulation	Course	Asking questions and discussing
12	2	Identify the essay tests, their types, and the rules for preparing and correcting them	Types of tests	Course	Asking questions and discussing
13	2	Learn about statistical analysis	Statistical Analysis	Course	Asking questions

		and paragraph analysis for the test			and discussing
14	2	Learn about the subject tests and how to extract their difficulty and ease coefficients	Statistical Analysis of Test Paragraphs	Course	Asking questions and discussing
15	2	Learn about essay tests and how to extract their difficulty and ease coefficients	Statistical Analysis of Test Paragraphs	Course	Asking questions and discussing
16	2	30% written exam	30% written exam		
17, 18, 19, 20, 21, 22, 23.	*6-12	- Students /practitioners practicing teaching skills in the real field (schools)	- Aggregate application	Practical application in schools	Evaluating the performance of students /practitioners according to the observation form educationally and practically
23	2	Effectiveness of Wrong Alternatives	Statistical Analysis of Test Items	Course	Asking questions and discussing
24	2	Identify the ability to apply for students of the	Non-test methods Observation - interview -	Course	Asking questions and

		fourth stage for a period of 6 weeks	estimation lists		discussing
25	2	Getting to know a good quiz	Non-experimental means	Course	Asking questions and discussing
26	2	Types of honesty	Test Characteristics	Course	Asking questions and discussing
27	2	Stability of all kinds	Test Characteristics	Course	Asking questions and discussing
28	2	Methods for Finding Stability	Test Characteristics	Course	Asking questions and discussing
- Twenty-nine. - Thirty.	2	30% written exam	30% written exam		

11.Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports .... etc.

12.Learning and Teaching Resources

Required textbooks (methodology if any)	- Measurement and Evaluation in Education and Psychology Written by Dr. Sami Mohammed Melhem Dar Al-Masirah/Sixth Edition, 2017
Key References (Sources)	- Measurement and evaluation in the teaching process Written by Dr. Ahmed Suleiman Odeh Dar Al-Amal Publishing and Distribution, 2002 - Psychometry Written by Dr. Mahmoud Ahmed Omar et al Amman, Dar Al Masirah for Publishing and Distributi

Recommended supporting books and references (scientific journals, reports...)	Instructing students to use the college library to access priv resources Curricula and Teaching Methods Department.
E-References , Websites	Directing to websites related to the subjects of the material,

Course Description Form

1. Course Name:	
Educational Applications	
2. Course Code:	
EDCH24 M4141	
3. Semester / Year:	
1st & 2nd semesters – 2023/2024	
4. Description Preparation Date:	
1/9/2023	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
72 Hour	
7. Course administrator's name (mention all, if more than one name)	
Name: Prof. Mahmood Abdul-Salam Al-Hafidh, Dr. Waad Ghanim Email: dr.mahmood.hafidh@uomosul.edu.iq	
8. Course Objectives	
The course aims to make the student able to:	**1. Helping the student to identify the components of the school and institutional system, and the integrated interaction between these components .** **2. Gain a true understanding of his abilities and professional qualities, and work to develop them to the greatest extent possible.** **3. Linking theory and application by putting into practice what the student learned in the theoretical aspect of the courses studied at the college.** **4. Testing the extent to which the student teacher and trainee masters the scientific subject he is teaching and training in, and the extent of his ability to develop it during the education and training process and thus increase understanding of the subject of specialization.** **5. Respecting the teaching profession and the services related to it, appreciating its employees, and forming positive attitudes towards it .** **6. Helping the student to acquire the professional competencies that will enable him to perform his work successfully in the field of personal qualities, teaching, training, evaluating student growth, and diversity in educational activities that interest students.**
9. Teaching and Learning Strategies	
Strategy	**Discussion and brainstorming strategies are combined, as well as cooperative learning and problem solving using appropriate examples.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	Knowledge of theoretical and practical aspects	Why practical ?education	Practical and theoretical application	Daily and oral test	1
2	Knowledge of	teaching skills Science	Practical	Daily and oral	2

	theoretical and practical aspects		and theoretical application	test	
3	Knowledge of theoretical and practical aspects	Class management	Practical and theoretical application	Daily and oral test	3
4	Knowledge of theoretical and practical aspects	Class viewing	Practical and theoretical application	Daily and oral test	4
5	Knowledge of theoretical and practical aspects	Principles of practical application	Practical and theoretical application	Daily and oral test	5
6	Know the practical aspects	Formulating behavioral goals	practical application	Daily testing	6
7	Know the practical aspects	Preparing the annual and quarterly plan	practical application	Daily testing	7
8	Know the practical aspects	Preparing a daily plan	practical application	teaching Micro	8
9	Know the practical aspects	Teaching classroom activities	practical application	Micro teaching	9
10	Know the practical aspects	Teaching prepositions	practical application	Micro teaching	10
11	Know the practical aspects	Teaching vocabulary	practical application	Micro teaching	11
12	Know the practical aspects	Teaching listening skill	practical application	Micro teaching	12
13	Know the practical aspects	Teaching speaking skill	practical application	Micro teaching	13
14	Know the practical aspects	Teaching reading skill	practical application	Micro teaching	14
15	Know the practical aspects	Teaching writing skill	practical application	Micro teaching	15
16	Practical application in schools			Field visits	16
17	Practical application in schools			Field visits	17
18	Practical application in schools			Field visits	18
19	Practical application in schools			Field visits	19
20	Practical application in schools			Field visits	20
21	Practical application in schools			Field visits	21
22	Know the	Teaching	practical	Micro teaching	22

	practical aspects	**communication**	**application**		
23	**Know the practical aspects**	**Teaching culture**	**practical application**	**Micro teaching**	**23**
24	**Knowledge of theoretical and practical aspects**	**Systematic book analysis**	**Practical and theoretical application**	**Daily testing**	**24**
25	**Knowledge of theoretical and practical aspects**	**Teaching planning**	**Practical and theoretical application**	**Daily testing**	**25**
26	**Knowledge of theoretical and practical aspects**	**Objective of the lesson**	**Practical and theoretical application**	**Daily testing**	**26**
27	**Knowledge of theoretical and practical aspects**	**Ethics of the teaching profession**	**Practical and theoretical application**	**Daily and oral test**	**27**
28	**Knowledge of theoretical and practical aspects**	**student Discussing reports**	**Class discussion**	**presentation**	**28**
29	**Knowledge of theoretical and practical aspects**	**Discussing student reports**	**Class discussion**	**presentation**	**29**
30	**Knowledge of theoretical and practical aspects**	**Discussing student reports**	**Class discussion**	**presentation**	**30**

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Practical education guide for students of the Faculty of Practical Education, Assiut University, Egypt
Main references (sources)	Abu Shaira, Khaled Muhammad (2013) Field training between reality and hopes (applicatio research in theory andn)
Recommended books and references (scientific journals, reports...)	Books and articles on modern teaching methods
Electronic References, Websites	All websites that deal with modern teaching methods

Course Description Form

1. Course Name:
English language / 4th class.
2. Course Code:
EDCH24-4131
3. Semester / Year:
The first and second semester of the academic year 2023/2024
4. Description Preparation Date:
1/9/2023
5. Available Attendance Forms:
Weekly attendance time
6. Number of Credit Hours (Total) / Number of Units (Total)
The first semester : 14 (weeks) x 2 (hours) = 28 + (2 hours for mid exam) =30 hours + The second semester: 6(weeks) Application in schools+ 9(weeks) lectures*2(hours)=30hours
7. Course administrator's name (mention all, if more than one name)
Name: Assist.Prof..Dr. Mohammad Mahmoud Hussein Younes Al Niemi Email: drmohammadalhusseiny@uomosul.edu.iq

Course Objectives	
Course Objectives	1. Identify the principles and basics of the English language in terms of grammar, translation, pronunciation, spelling, and their relationship to the sciences of chemistry. 2. Introducing students to the topics that will benefit them in their specialty (chemistry), in terms of chemical terminology and topics, as well as writing and translating chemical research, to be a basis for them after graduation or when they complete their postgraduate studies (Master's and Ph.D.).
1- Teaching and Learning Strategies	
Strategy	This semester is known as a theoretical course that provides undergraduate students with information and concepts about the English language and the extent of its application and benefit in the specialty (chemistry), so that it enables students to confront and understand practical problems while translating and writing articles and scientific research into and from the English language. Subject-specific skills are: 1- Providing the student with scientific knowledge in the English language and the extent of its application and benefit in the specialty (chemistry). While evaluation methods include short tests, in addition to dialogues, discussions, and a semester exam.

	While thinking skills are achieved through: 1- Asking deductive, indirect, and enrichment questions that push the student to think and discuss. 2- Urging students to link the topic to their specialization. As for general and transferable skills (other skills related to employment and personal development): the optimal use of general theoretical principles and concepts in the English language and their relationship to chemistry.

2- Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Acquire knowledge in the field of the English language.	Irregular verbs, Parts of speech, and paragraph on the topic (The difference between ethanol and methanol).	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
2	2	Acquire knowledge in the field of the English language.	Irregular verbs, The sentence in English, and paragraph on the topic **(Water purification).**	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
3	2	Acquire knowledge in the field of the English language.	Irregular verbs, The statement: Sentence and Phrase, and paragraph on the topic (Quantum chemistry).	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
4	2	Acquire knowledge in the field of the English language.	Irregular verbs, Helping and Auxiliary Verbs , and paragraph on the topic (**The WOOD**).	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
5	2	Acquire knowledge in the field of the English language.	Irregular verbs, Wh-/How questions, Tag question, and paragraph on the topic (Schiff bases and Azo dyes).	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
6	2	Acquire knowledge in the field of the English language.	Irregular verbs, Imperative and Negative Sentence, and paragraph on the topic (**Diversity of colors**).	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
7	2	Acquire knowledge in the field of the English language.	Irregular verbs, Verb Forms and Tenses, and paragraph on the topic (The Petrol).	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
8	2	Acquire knowledge in the field of the	Irregular verbs, Adjectiv and Adverbs, and paragraph on the topic	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.

		English language.	(Thermodynamic parameters).		
9	2	Acquire knowledge in the field of the English language.	Irregular verbs, Singular and Plural Nouns, and paragraph on the topic (Drug compounds in chemistry).	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
10	2	Acquire knowledge in the field of the English language.	Irregular verbs, Definite and Indefinite Articles (a, an, the) , and paragraph on the topic (Blood and blood groups).	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
11	2	Acquire knowledge in the field of the English language.	Irregular verbs, Conjunctions (If, Unless), and paragraph on the topic (Soap and detergent industry).	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
12	2	Acquire knowledge in the field of the English language.	Irregular verbs, Prepositions (in, on, at, from, to,……), and paragraph on the topic (How to calculate the efficiency of the refrigerator and boiling machine).	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
13	2	Acquire knowledge in the field of the English language.	Irregular verbs, Prefixes and Indirect Speech, and paragraph on the topic (Kinetic chemistry: Speed of chemical reactions).	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
14	2	Acquire knowledge in the field of the English	A comprehensive review of all previous English topics.	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.

		language.			
15	2		**Mid.-Year Exam.**		
16	2		Application (teaching) in secondary schools.		
17	2		Application (teaching) i secondary schools.		
18	2		Application (teaching) i secondary schools.		
19	2		Application (teaching) i secondary schools.		
20	2		Application (teaching) i secondary schools.		
21	2		Application (teaching) i secondary schools.		
22	2	Acquire knowledge in the field of the English language.	English pronunciation and sounds.	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
23	2	Acquire knowledge in the field of the English language.	English pronunciation and sounds.	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
24	2	Acquire knowledge in the field of the English language.	English pronunciation a sounds.	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
25	2	Acquire knowledge in the field of the English language.	English spelling.	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
26	2	Acquire knowledge in the field of the English language.	English spelling.	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
27	2	Acquire knowledge in the field of the English language.	English spelling.	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.

28	2	Acquire knowledge in the field of the English language.	A comprehensive review of all previous English topics.	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
29	2	Acquire knowledge in the field of the English language.	Translating, writing and understanding paragraphs, articles and research in the field of chemistry.	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.
30	2	Acquire knowledge in the field of the English language.	Translating, writing and understanding paragraphs, articles and research in the field of chemistry.	A theoretical lecture.	Short exams, scientific discussion, direct dialogue, and homework.

3- Course Evaluation

Distribution of the marks out of 100 according to the tasks assigned to the student: daily preparation, daily and oral exams, discussions, and reports (15 marks), in addition to (25 marks) for the mid-year exam, so the endeavor becomes (40 marks), followed by the final exam (60 marks).

4- Learning and Teaching Resources

Required textbooks (curricular books, if any)	English language for under graduated
Main references (sources)	English language for 4th stages in chemistry
Recommended books and references (scientific journals, reports...)	www.grammar, English language.
Electronic References, Websites	English language for under graduated (4th stages in chemistry).

Assistant Professor Dr.: Mohammad Mahmoud Hussein Younes Al-Niemi
Department of Chemistry / College of Education for Pure Science / University of Mosul.

University of Mosul\ College of Education for Pure Science
Department of Chemistry

Course Description Form

1. Course Name:	
4th Class, Quantum Chemistry	
2. Course Code:	
EDCH24 M4031	
3. Semester / Year:	
1\9\2023- 30\6\2024	
4. Description Preparation Date:	
1\9\2023	
5. Available Attendance Forms:	
Class Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
24 Hours	
7. Course administrator's name (mention all, if more than one name)	
Name: Prof Assis, Dr. Ahmed M. Sadoon **Email: ams95@uomosul.edu.iq**	
8. Course Objectives	
Course Objectives	1. Some basic concepts and foundations of Classical mechanics 2. Coordinate systems, complex numbers, acceptable wave functions, Newton's law of motion 3. Reasons of quantum mechanics appearance. 4. Black body radiation, the photoelectric effect, spectral lines of atoms, Rutherford-Bohr model of atoms 5. Basics of quantum mechanics 6. Assumptions of quantum mechanics, orthogonality and harmonicity, Schrödinger equation, particle in a box, harmonic oscillator 7. Applications of the Schrödinger equation
9. Teaching and Learning Strategies	
Strategy	**1. Definition of the course** Quantum chemistry is considered one of the important and necessary courses to understand the theoretical physical foundations of chemical reactions and helps develop students' understanding of how to understand chemical reactions by linking three sciences: chemistry, physics, and mathematics. **2. Subject-specific skills** Quantum chemistry provides a rare opportunity to understand and explain many natural phenomena and understand the theoretical foundations of the concept of binding an electron to an atom. **3. Thinking skills** Thinking about how to benefit from the vocabulary of matter and linking scientific materials to the foundations of quantum chemistry in daily life. **4. General and transferable skills** How to link the subject of quantum chemistry to explain natural and physical phenomena in a scientific manner and on precise theoretical mathematical foundations **5. Teaching and learning methods** 1. Discussion, analysis and mathematical derivations 2. Daily assignments, daily and monthly exams, a mid-year and final exam

	3. The lecture style **6. Evaluation methods** Sudden daily exams, monthly exams, attendance and class interaction

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	2	An overview of quantum mechanics	Some basic concepts the foundations of Classical mechanics	Lecture in class	Daily and monthly examinations
2.	2	The difference between coordinate systems and complex number	Coordinate systems, complex numbers	Lecture in class	Daily and monthly examinations
3.	2	Types of influences and the concept of function	Effects, acceptable wave functions, acceptable wavelength	Lecture in class	Daily and monthly examinations
4.	2	Newton's laws of motion	Newton's law of motion	Lecture in class	Daily and monthly examinations
5.	2	Causes and consequences	Reasons for the emergenc of quantum mechanics	Lecture in class	Daily and monthly examinations
6.	2	Explaining some physics phenomena and applications of quantum mechanics	Black body radiation, photoelectric effect	Lecture in class	Daily and monthly examinations
7.	2	Explaining some physics phenomena and applications of quantum mechanics	Spectral lines of atoms	Lecture in class	Daily and monthly examinations
8.	2	Explaining some physics phenomena and applications of quantum mechanics	Rutherford-Bohr model o atoms	Lecture in class	Daily and monthly examinations
9.	2	Overview	Foundations of quantum mechanics	Lecture in class	Daily and monthly examinations
10.	2	The concept of quantum mechanics	Quantum mechanical hypotheses	Lecture in class	Daily and monthly examinations
11.	2	The basics of the Schrödinger equation and its mathematical derivation	Orthogonality, symmetry and Schrödinger equation	Lecture in class	Daily and monthly examinations
12.	2	Applications of the Schrödinge equation by explaining the phenomenon of particles in a box and harmonic oscillators	A particle in a box and a harmonic vibrator	Lecture in class	Daily and monthly examinations

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	The methodological book in Arabic • Quantum mechanics in chemistry
Main references (sources)	Supporting books in English: • Physical Chemistry (Atkins) 8ed
Recommended books and references (scientific journals, reports...)	• Quantum Chemistry (Lowe & Peterson)
Electronic References, Websites	https://www.sciencedirect.com/topics/chemistry/quantum-chemistry

Course Description Form

1. Course Name: Analytical chemistry/Elective

2. Course Code: EDCH24M4071

3. Semester / Year: 2023-2024

4. Description Preparation Date: 1/9/2023

5. Available Attendance Forms: Class, classroom

6. Number of Credit Hours (Total) / Number of Units (Total) 30 Hours

7. Course administrator's name (mention all, if more than one name)

Name: Mohamed Yahya dhamra Al-mashaykhi
Email: mohameddhamra@uomosul.edu.iq

8. Course Objectives

Course Objectives	• **Learn about analytical chemistry and quantitative analysis methods** • **Learn about volumetric analysis and its types of reactions** • **Identify methods for calculating direct and indirect titrations used in volumetr analysis** • **Estimating the number of negative and positive ions by titrations** • **Estimation of a specific ion within a mixture** • **Identify the statistical methods used in evaluating analytical methods**

9. Teaching and Learning Strategies

Strategy	Theoretical and practical lecture, dialogue and discussions, problem solving, conducting practical experiments, reports and daily assignments

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	AN Hour	Learning about classification of analytical chemistry	classification of analytical chemistry	Lecture	Quizzes
Second	AN Hour	Learning about Volumetric analysis	Volumetric analysis and its types	Lecture	Quizzes
Third	AN Hour	Learning about Calculations in Volumetric analysis	Calculations in volumetric analysis	Lecture	Quizzes
Fourth	AN Hour	Learning about calculation of concentrations	Calculation of concentration	Lecture	Report

Fifth	AN Hour	Learning how Calculate concentration directly	Calculate concentration directly	Lecture	Quizzes
Sixth	AN Hour	Learning about calculations of Indirect concentration	Calculate concentration indirectly	Lecture	Quizzes
Seventh	AN Hour	Learning about Determination of positive ions by Titration	Determination of positive ions by Titration	Lecture	Quizzes
Eighth	AN Hour	Learning about Determination of negative ions by Titration	Determination of negative ions by Titration	Lecture	Quizzes
Ninth	AN Hour	Learning about solved problems	Solved problems in volumetric analysis	Lecture	Quizzes
Tenth	AN Hour	Learning about solved problems	supplement	Lecture	Quizzes
Eleventh	AN Hour	Ability to figure out ion in mixture	Determination of positive ion in the mixture	Lecture	Quizzes
Twelfth	AN Hour	Ability to figure out ion in mixture	Determination of negative ion in the mixture	Lecture	Quizzes
Thirteenth	AN Hour	Ability to solve problems	Statistics Used in chemistry	Lecture	Quizzes
Fourteenth		Ability to solve problems	Statistical evaluation		
Fifteenth	AN Hour	Exame	Exame	Lecture	Exame

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricu books, if any)	
Main references (sources)	Qualitative and volumetric analysis, Dr. Thabet Saeed Al-Ghabsha, (1986), University of Mosul
Recommended books and references (scientific journals, reports...)	Fundamentals of analytical chemistry (Skoog and west)
Electronic References, Websit	Directing students to websites related to subject areas, directing students to use the college library to expand their knowledge

Course Description Form

1. Course Name:
Elective(industrial chemistry)/ Bachelor's
2. Course Code:
EDCH23 M4081
3. Semester / Year:
First semester / 2023-2024
4. Description Preparation Date:
2023/9/1
5. Available Attendance Forms:
presence is daily
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours
7. Course administrator's name (mention all, if more than one name)
Name:qaidar salim jarjees Email: qaidarsalim406@uomosul.edu.iq
8. Course Objectives

Course Objectives	**1- The student will be familiar with the basics of choosing chemical reactions** **2- The student's knowledge of chemical technology** **3- Identify the types of chemical manufacturing processes** **4- The student's knowledge of catalysts, their various types, and the catalytic processes sed u in industry**

9. Teaching and Learning Strategies

Strategy	The lecture and discussion methods are combined

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student understands the foundation choosing chemical reactions	Principlesofchoosing chemical reactions	Lecture,discussion questioning	Oral questions
2	2	Defines physical units	Physical operations units		Accomplish a task
3	2	Defines chemical units	Chemical process units		Oral questions
4	2	Compares physical separat methods	Physical separation methods		Discussions
5	2	the purpose of establishing pioneer unit	The leading unit and its objectives		Discussions
		Knows the adsorption process and	Adsorption and		Oral questions

6	2	nature of adsorbent materials	adsorbents		
7	2	Compare the processes of adsorption absorption	The difference between adsorption and absorption		Accomplish a task
8	2	Explains the concept of catalysts their role in industry	Catalysts and their purpose		Discussions
9	2		Midterm exam	Lecture,discussion questioning	
10	2	Explains the relationship between activa energy and the speed of the catalyzed reaction	Mechanics of catalytic action		Oral questions
11	2	Describe catalytic reactions	Types of catalysts		Discussions
12	2	The student knows clay minerals	Clay catalysts of all kinds		Oral questions
13	2	Explains the properties of different types of clay	Applications of zeolite in industry		Accomplish a task
14	2	Compares between Promoters and Carriers	Promoters and Carriers		Discussions
15	2	The student explains the reasons for the decrease in the effectiveness of catalysts	Poisoning, obstruction and flocculation of catalysts		Accomplish a task
16			End of semester exam		

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	There is no prescribed textbook
Main references (sources)	There is no main reference
Recommended books and references (scientific journals, reports...)	Conklin,A.R.,(2005),"Introduction to Soil Chemistry", John Wiley and Sons ,Inc., New Jersey Bergaya,F.and Lagaly, G.,(2006),"Handbook of Clay Science Rothenberg, G., (2008), "Catalysis", Wiley-VCH Verlag GmbH and Co. KGaA, Weinheim, Germany
Electronic References, Websites	

Course Description Form

1. Course Name:
Elective(industrial chemistry)/ Bachelor's
2. Course Code:
EDCH23 M4081
3. Semester / Year:
First semester / 2023-2024
4. Description Preparation Date:
2023/9/1
5. Available Attendance Forms:
presence is daily
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours
7. Course administrator's name (mention all, if more than one name)
Name:qaidar salim jarjees Email: qaidarsalim406@uomosul.edu.iq
8. Course Objectives

Course Objectives	**1- The student will be familiar with the basics of choosing chemical reactions** **2- The student's knowledge of chemical technology** **3- Identify the types of chemical manufacturing processes** **4- The student's knowledge of catalysts, their various types, and the catalytic processes sed u in industry**

9. Teaching and Learning Strategies

Strategy	The lecture and discussion methods are combined

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student understands the foundation choosing chemical reactions	Principlesofchoosing chemical reactions	Lecture,discussion questioning	Oral questions
2	2	Defines physical units	Physical operations units		Accomplish a task
3	2	Defines chemical units	Chemical process units		Oral questions
4	2	Compares physical separat methods	Physical separation methods		Discussions
5	2	the purpose of establishing pioneer unit	The leading unit and its objectives		Discussions
		Knows the adsorption process and	Adsorption and		Oral questions

6	2	nature of adsorbent materials	adsorbents		
7	2	Compare the processes of adsorption absorption	The difference between adsorption and absorption		Accomplish a task
8	2	Explains the concept of catalysts their role in industry	Catalysts and their purpose		Discussions
9	2		Midterm exam	Lecture,discussion questioning	
10	2	Explains the relationship between activa energy and the speed of the catalyzed reaction	Mechanics of catalytic action		Oral questions
11	2	Describe catalytic reactions	Types of catalysts		Discussions
12	2	The student knows clay minerals	Clay catalysts of all kinds		Oral questions
13	2	Explains the properties of different types of clay	Applications of zeolite in industry		Accomplish a task
14	2	Compares between Promoters and Carriers	Promoters and Carriers		Discussions
15	2	The student explains the reasons for the decrease in the effectiveness of catalysts	Poisoning, obstruction and flocculation of catalysts		Accomplish a task
16			End of semester exam		

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	There is no prescribed textbook
Main references (sources)	There is no main reference
Recommended books and references (scientific journals, reports...)	Conklin,A.R.,(2005),"Introduction to Soil Chemistry", John Wiley and Sons ,Inc., New Jersey Bergaya,F.and Lagaly, G.,(2006),"Handbook of Clay Science Rothenberg, G., (2008), "Catalysis", Wiley-VCH Verlag GmbH and Co. KGaA, Weinheim, Germany
Electronic References, Websites	

Course Description Form

1. Course Name: Elective(inorganic chemistry) 4th grade

2. Course Code: 4111

3. Semester / Year: 2023-2024

4. Description Preparation Date: 1/9/2023 – 31/8/2024

5. Available Attendance Forms: in presence

6. Number of Credit Hours (Total) / Number of Units (Total) 36 / 2

7. Course administrator's name (mention all, if more than one name)

Name: Dr. Akram Abdulqader Mohammed
Email: akramsaleem22@uomosul.edu.iq

8. Course Objectives

1)Reminding the students of the Importance of the main and inner Transition elements and their distinctive Properties. 2)The student obtains knowledge of the Electronic configuration of the various Types of transition elements and their Different oxidation states. 3)The student gains knowledge in the magnetic and spectral properties for transition elements and their compounds .	4) In order for the student to gain information about the different applications of transitional elements in various aspects of life. 5) The ability to differentiate Between lanthanides and actinides And the differences between them And the main transition elements. 6) obtaining knowledge in the Coordination numbers of lanthanides •

9. Teaching and Learning Strategies

Strategy	1)In-person lectures(enhanced by means of explanation) 2) Continuous discussion with students . 3) Presenting problems , collecting solution with students and thinking to determine the correct one. 4) Ask questions which are available in references . 5) Preparing the student to recall his mental reserves related

	To the new subject. 6) Connecting learning to the aspects of life .

10. Course Structure

Week	hr	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Gain an Understanding Of the main Transitional elements	Definition of the Transitional element Why are they Called Transitional elements? Economic Importance p:1	lecture	
2	2	gain understanding Of the major Transitional Elements	Economic Importance Part : 2	lecture	
3	2	Gain knowledge Of the electronic Arrangement and The size of the Radii of the first Main transition elements	General properties Of transition elements	lecture	exam
4	2	Knowledge of the Magnetic properties Of the main transition elements	Magnetic properties	lecture	Home work
5	2	Gain knowledge of Color diversity& catalysts	Color diversity Charge transfer Catalytic activity	lecture	exam
6	2	Gain knowledge of Oxidation states for Transition elements	Oxidation states And transition Elements oxides	lecture	
7	2	Identification of the lanthanides	The rare transition Elements-the uses Of some lanthanides Elements and	lecture	exam

			compounds		
8	2	Gain knowledge Names and Occurrence of Lanthanides and its contraction	Gain knowledge In names and Occurrence of Lanthanides and Its contraction	lecture	
9	2	Gain knowledge in actinides	Actinides-uses of actinides- Actinides elements	lecture	exam
10	2	Gain knowledge of Similarities and Differences between Lanthanides & actinides	Similarities and Differences Between lanthanides And actinides	lecture	
11	2	Identification of Lanthanides reactions types	Chemical activity Of lanthanides	lecture	
12	2	Identification of Lanthanides Oxidation states	Oxidation states of Lanthanides- Oxidations states of 2+ & 3 +	lecture	
13	2	Identification of Lanthanides oxidation states	oxidation state of 4+ for lanthanides , preparation of quaternary lanthanides compounds	lecture	Home work
14		Gain knowledge in Coordination number Of lanthanides	Coordination Numbers of Lanthanides part: 1	lecture	
15	2	Gain knowledge in Coordination numbers Of lanthanides	Coordination Numbers of Lanthanides p: 2	lecture	
16	2	Gain knowledge in Spectral properties of lanthanides	Spectral Properties of lanthanides	lecture	
17	2	Gain knowledge in Magnetic properties of Lanthanides ,part 1	Magnetic Properties of lanthanides	lecture	
18	2	Gain knowledge in Magnetic properties	Magnetic Properties of	lecture	Home work

		Of lanthanides	lanthanides		
11.Course Evaluation					
15 % daily exams + 25% mid year exam + 60% final exam = 100%					
12.Learning and Teaching Resources					
Required textbooks (curricular books, if any)			كتاب الكيمياء اللاعضوية التناسقية تأليف : ا.د. تغريد هاشم النور ا.د. عمر شهاب حمد العبيدي جامعة بغداد , 2016		
Main references (sources)			كتاب كيمياء اللانثانيدات والاكتينيدات تأليف: د. عبدالعزيز ابراهيم الواصل د. معتصم ابراهيم خليل جامعة الملك سعود		
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites			internet		

Course Description Form

1. Course Name:
Elective physics(fourth stage)
2. Course Code:
EDCH24F4091
3. Semester / Year:
The first semester + the second semester(2023-2024)
4. Description Preparation Date:
1/9/2023
5. Available Attendance Forms:
Daily work – in person + electronic classes - Meet classroom
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours of study per semester
7. Course administrator's name (mention all, if more than one name)
Name:Ass.Proof.Dr. Fedaa hasan marie Email:feedahassan@uomosul.edu.iq
8. Course Objectives

Course Objectives	• **.....** 1. Students learn about the importance of chemical equilibrium 2. By making students of the College of Education for Pure Sciences feel the value and importance of the subject of physical chemistry and the role of chemical equilibrium in science and technology and how they deal with school students after graduation and practice their specialties as teachers in middle and middle schools and some research laboratories in state departments related to industry and health and in the field of research and development. 3. Utilizing the student's scientific knowledge in a way that helps him face life's problems 4. Developing the student's cognitive abilities 5. The student keeps up with new and developing information..... • **.....**
9. Teaching and Learning Strategies	
Strategy	The student gets to know the facts, concepts, principles, theories and laws related to chemical equilibrium For the student to become familiar with the phenomena and practical applications related to chemical equilibrium

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject	Learning method	Evaluation method

			name		
1	2	Student definition of chemical equilibrium	chemical equilibrium	theoretical	Exams, dialogue and discussion - solving questions and daily activity
2	2	Gaining knowledge in knowing the meaning of balance	Definition of balance	theoretical	Exams, dialogue and discussion - solving questions and daily activity
3	2	The student gains experience in the state of equilibrium.	The state of equilibrium	theoretical	Exams, dialogue and discussion - solving questions and daily activity
4	2	Gaining knowledge in understanding the meaning of equilibrium diagrams.	Equilibrium diagrams	theoretical	Exams, dialogue and discussion - solving questions and daily activity
5	2	Gaining knowledge in the field of understanding the properties of equilibrium.	Properties of equilibrium	theoretical	Exams, dialogue and discussion - solving questions and daily activity
6	2	Gaining knowledge in the field of understanding the equilibrium constant	the equilibrium constant	theoretical	Exams, dialogue and discussion - solving questions and daily activity
7	2	Acquiring knowledge in the field of understanding and solving problems	Problems about the equilibrium constant	theoretical	Exams, dialogue and discussion - solving questions and daily activity
8	2	Gaining knowledge in the field of equilibrium equation conclusions.	Conclusions about the equilibrium equation	theoretical	Exams, dialogue and discussion - solving questions and daily activity
9	2	Acquiring knowledge in the field of understanding the	The positions of equilibriu	theoretical	Exams, dialogue and discussion - solving questions and daily activity

		positions of equilibrium.	m		
10	2	Gain knowledge in understanding equilibrium and pressure	Equilibrium equations related to pressures	theoretical	Exams, dialogue and discussion - solving questions and daily activity
11	2	The student's awareness of the meaning of homogeneous and heterogeneous balance and the distinction between them	Homogeneous equilibrium and heterogeneous equilibrium	theoretical	Exams, dialogue and discussion - solving questions and daily activity
12	2	Student acquisition and awareness of balance applications	Applications of equilibrium, extent of reaction, and reaction quotient	theoretical	Exams, dialogue and discussion – solving questions and daily activity
13	2	The student acquires knowledge and understanding of pressure calculations	Calculate equilibrium pressures and concentrations	theoretical	Exams, dialogue and discussion - solving questions and daily activity
14	2	The student gains experience in solving problems related to the topic	Questions and solutions on the topic	theoretical	Exams, dialogue and discussion - solving questions and daily activity
15	2	The student acquires knowledge in understanding few systems	Treating systems that have few equilibrium constants	theoretical	Exams, dialogue and discussion - solving questions and daily activity

the second semester					
1	2	application			
2	2	application			
3	2	application			
4	2	application			
5	2	application			
6	2	application			
7	2	Gain knowledge in understanding the meaning of the basics of the Le Chatel rule	Basics of Le Chatelier's principle	theoretical	Exams, dialogue and discussion - solving questions and daily activity
8	2	Gain knowledge in understanding change in concentration and its impact.	Using Le Chatel's principle as the concentration changes	theoretical	Exams, dialogue and discussion - solving questions and daily activity
9	2	Gain knowledge in the field of understanding pressure changes based on Le Chatelier's principle	Use Le Chatel's principle as pressure changes	theoretical	Exams, dialogue and discussion - solving questions and daily activity

10	2	Gain knowledge in understanding Le Chatelier's principle and temperature	Use Le Chatel's principle with temperatu re changes	theoretical	Exams, dialogue and discussion - solving questions and daily activity
11	2	*The student's understanding of the meaning of the catalytic effect.*	*Le Chalet's Principle and Catalysts*	theoretical	Exams, dialogue and discussion - solving questions and daily activity
12		The student gains experience in knowing the contact process.	The process of communic ation or contact	theoretical	Exams, dialogue and discussion - solving questions and daily activity
13	2	The student acquires knowledge of the steps of the contact process	Contact process steps	theoretical	Exams, dialogue and discussion - solving questions and daily activity
14	2	The student gains experience in knowing the conditions of interaction.	Reaction conditions (pressure, temperature , catalysts and their effects)	theoretical	Exams, dialogue and discussion - solving questions and daily activity
15	2	The student gains knowledge in understanding balance and its impact on our lives.	Applicatio ns of balance in our daily lives	theoretical	Exams, dialogue and discussion - solving questions and daily activity

11. Course Evaluation: The grade is distributed for the mid-year exam from 25, daily exams + activities and participation from 15, the pursuit becomes from 40, and the final exam from 60, the total score becomes from 100.

12. Learning and Teaching Resources

Required textbo (curricular books, if a	There is no systematic book / topics selected from seve books
Main referen (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic Referenc Websites	Several sources and sites on the Internet