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 of Chemistry Department, College of Education for Pure Science, University of Mosul 2024-2025

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 of Education in Chemistry

Final Certificate Name: Bachelor of Education in Chemistry

Academic System: Annual

Description Preparation Date: 3/9/2024

File Completion Date: 3/9/2024

Signature:

Head of Department: أ.م.د. عزة [illegible]
رئيس قسم الكيمياء

Date: 14/4/2025

Signature:

Scientific Associate Name : أ.د. ياسر خيس قاسم

Date: 14/4/2025

The file is checked by: Assist. Prof. Dr. Yasser shakeeb Mohamed
Director of the Quality Assurance Department

Signature:

Date: 2025/4/14

أ.د. ياسر شكيب محمد
شعبة ضمان الجودة

وزارة التعليم العالي والبحث العلمي
جامعة الموصل
كلية التربية للعلوم الصرفة
شعبة ضمان الجودة والاداء الجامعي

Dean's approval:

أ. د. [illegible] إبراهيم
و. عميد كلية التربية للعلوم الصرفة
٤/١٥

وزارة التعليم العالي والبحث العلمي
جامعة الموصل
كلية التربية للعلوم الصرفة

1. **Program Vision**
• The program seeks to provide an appropriate scientific environment and develop the level of education at the undergraduate and postgraduate levels. • Achieving the pioneering role of the department by contributing to scientific progress and keeping up with everything new.
2. **Program Mission**
The department's mission is to graduate high-level educational cadres capable of working in the institutions and be supportive of the development of society.
3. **Program Objectives**
1. Prepare and train teachers, researchers and chemical experts by emphasizing the development of the fields (cognitive, skill, and emotional). 2. Plan, implement and evaluate teaching and develop chemistry curricula and teaching methods to suit the requirements of the era. 3. Train students to practice continuous self-learning skills to continue academic and professional growth in the field of chemistry. 4. Develop students' laboratory skills by preparing and practicing various chemistry experiments. 5. Encourage students to conduct scientific studies and research in the field of chemistry and its teaching methods derived from the 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

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

7. Programe Description

Year/Level	Course code	Course name	Credit Hours	
			Theoretical	Practical
First	EDCH25F1011	Inorganic Chemistry	**2**	-------
	EDCH25F1021	Analytical Chemistry	**2**	**2**
	EDCH25F1031	Organic Chemistry	**2**	**2**
	EDCH25F1041	Democracy and Human Rights	**1**	-------
	EDCH25F1051	Computer 1	2	-------
	EDCH25F1061	Life Sciences	1	2
	EDCH25F1071	Mathematics and Statistics	1	-------
	EDCH25F1081	Developmental and Educational Psychology	2	-------
	EDCH25F1091	Principles of Education and Teaching	1	-------
	EDCH25F1101	Arabic Language	1	-------
	EDCH25F1111	English Language	1	-------
	EDCH25F1121	Chemical Safety and Security	1	-------
Second	EDCH25F2011	Inorganic Chemistry	2	3
	EDCH25F2021	Analytical Chemistry	2	3
	EDCH25F2031	Organic Chemistry	2	3
	EDCH25F2041	Computer 2	1	-------
	EDCH25F2051	Physical Chemistry	3	3
	EDCH25F2061	Mathematics	1	-------
	EDCH25F2071	Psychology	2	-------
	EDCH25F2081	Secondary Education	2	-------
	EDCH25F2091	English	1	-------
	EDCH25 F2101	Baath Crimes	1	-------
	EDCH25 F2111	Arabic	1	-------
Third	EDCH25F3011	Inorganic Chemistry	2	3
	EDCH25F3021	Scientific Research Methodology	2	-------
	EDCH25F3031	Organic Chemistry	2	3
	EDCH25F3041	Physical Chemistry	2	3
	EDCH25F3051	Industrial Chemistry	2	-------
	EDCH25F3061	Teaching Methods	2	-------
	EDCH25F3071	Biochemistry	2	3
	EDCH25F3081	Analytical Chemistry/ Elective	2	-------
	EDCH25F3091	Industrial Chemistry/ Elective	2	-------
	EDCH25F3101	Physical Chemistry/ Elective	2	-------
	EDCH25F3111	Organic Chemistry/ Elective	2	-------
	EDCH25F3121	Inorganic Chemistry/ Elective	2	-------
	EDCH25F3131	Biochemistry/Elective	2	-------
	EDCH25F3141	Counseling and Mental Health	2	-------

Fourth	EDCH25F4011	Biochemistry	2	-------
	EDCH25F4021	Instrumental Analysis	3	3
	EDCH25F4031	Physical Chemistry	2	-------
	EDCH25F4041	Organic Identificati	2	3
	EDCH25F4051	Measurement and Evaluation	2	-------
	EDCH25F4061	Industrial Chemistry	2	3
	EDCH25F4071	Analytical Chemistry/ Elective	2	-------
	EDCH25F4081	Industrial Chemistry/ Elective	2	-------
	EDCH25F4091	Physical Chemistry/ Elective	2	-------
	EDCH25F4101	Organic Chemistry/ Elective	2	-------
	EDCH25F4111	Inorganic Chemistry/ Elective	2	-------
	EDCH25F4121	Biochemistry/ Elective	2	-------
	EDCH25F4131	Research Project	2	-------
	EDCH25F4141	Educational Applications	2	-------

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 depletion in all fields
Practical skills	Developing student skills in the laboratory
Ethics	
Developing ethics and useful attitudes	In accordance with religion , habits and costumes
Developing attitudes towards teaching job	To face current challenges and developing overall education system
Establishing the principles of teaching	To limit the 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

• Using project-based learning, lecture, brainstorming, discussion, and cooperative learning (distributing students into groups - teamwork).
• Lecture - using computer and internet technologies in teaching and learning chemistry topics, learning via the web through interaction with professors via the Google Classroom system.

10. Evaluation methods

Formative assessment integrated into lectures, group discussions, and brainstorming sessions — **short quizzes** administered after successive lectures — **midterm and final exams** for the respective courses — **student assignments**, including translations and presentations on selected course topics, application of research tools in the field of chemistry, evaluation of laboratory experiment results, and **measurement of attitudes** among students and instructors across various educational levels.

11.Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements /Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor	Chemistry	Organic, Inorganic, industrial, teaching methods, physical chemistry, and biochemistry.			10	
Assistant professor	Chemistry	Organic, inorganic, industrial, analytical, physical chemistry, teaching methods, educational psychology, educational sciences and biochemistry.			35	
	Arabic language	Arabic language			1	
Lecturer	Chemistry	Organic, inorganic, industrial, analytical, physical chemistry, educational sciences and biochemistry.			23	
Assistant lecturer	Chemistry	Organic, inorganic, industrial, analytical, physical chemistry, educational psychology, and biochemistry.			13	
	English language	English language			1	

Professional Development

Mentoring new faculty members

Modern scientific sources, educational films, training courses, and practical workshops can be relied upon as important tools to enhance understanding and expand skills field of chemistry

Professional development of faculty members

Enhancing teaching and learning strategies through the implementation of innovative methods such as interactive teaching and blended learning, as well as improving assessment methods for learning outcomes. It also includes continuous development through training courses and workshops that contribute to improving academic and research competencies.

12. Acceptance Criterion

To register for a Bachelor's degree in Chemistry Education, a student must be a graduate from preparatory or high school.

13. The most important sources of information about the program

1. College of Education Programs - Secondary Education Program, Qatar University
2. College of Arts and Sciences Programs - Department of Chemistry - Qatar University.
3. College of Science Programs - Department of Chemistry - King Saud University, Kingdom of Saudi Arabia.
4. Colleges and Physics Programs - Department of Chemistry - Khalifa University.
5. College of Science Programs - Department of Chemistry - University of Sharjah.
6. College of Education and Human Development Programs, Temple University, Philadelphia, Pennsylvania, USA.
7. Trevecca Nazarene University Programs, Chemistry Education - Trevecca Nazarene University - Nashville, Tennessee, USA.

14. Program Development Plan

The development plan for the Bachelor of Education program in Chemistry aims to update the curriculum to align with modern scientific advancements, focusing on enhancing teaching and learning skills using modern techniques. The plan also includes strengthening practical and applied training for students through workshops and research projects to enhance their educational experience

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 Or optional	Cognitive goals				Skills objectives of the program				Emotional and value goals				General and rehabilitative transferable skills 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	EDCH25F1011	Inorganic Chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F1021	Analytical Chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F1031	Organic Chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F1041	Democracy and Human Rights	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F1051	Computer 1	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F1061	Life Sciences	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F1071	Mathematics and Statistics	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

	EDCH25F1081	Developmental and Educational Psychology	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F1091	Principles of Education	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F1101	Arabic	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F1111	English	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F1121	Chemical Safety and Security	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Second stage	EDCH25F2011	Inorganic Chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F2021	Analytical Chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F2031	Organic Chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F2041	Computer	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F2051	Physical Chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F2061	Mathematics	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F2071	Psychology	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F2081	Secondary Education	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

	EDCH25F2091	English	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Third stage	EDCH25 F2101	Baath Crimes	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25 F2111	Arabic	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F3011	Inorganic Chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F3021	Scientific Research Methodology	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F3031	Organic Chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F3041	Physical Chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F3051	Industrial Chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F3061	Teaching Methods	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F3071	Biochemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F3081	Analytical Chemistry/ Elective	Elective	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F3091	Industrial Chemistry/ Elective	Elective	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

	EDCH25F3101	Physical Chemistry/ Elective	Elective	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F3111	Organic Chemistry/ Elective	Elective	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F3121	Inorganic Chemistry/ Elective	Elective	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F3131	Biochemistry/ Elective	Elective	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F3141	Counseling and Mental Health	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Fourth stage	EDCH25F4011	Biochemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F4021	Instrumental Analysis	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F4031	Physical Chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F4041	Organic Identification	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F4051	Measurement and Evaluation	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F4061	Industrial Chemistry	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F4071	Analytical Chemistry/ Elective	Elective	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F4081	Industrial Chemistry/ Elective	Elective	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

	EDCH25F4091	Physical Chemistry/ Elective	Elective	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F4101	Organic Chemistry/ Elective	Elective	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F4111	Inorganic Chemistry/ Elective	Elective	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F4121	Biochemistry/ Elective	Elective	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F4131	Research Project	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	EDCH25F4141	Educational Applications	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

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

وزارة التعليم العالي والبحث العلمي
جهاز الإشراف والتقويم العلمي
دائرة ضمان الجودة والاعتماد الأكاديمي
قسم الاعتماد

Course Description Form

Chemistry Department

College of Education for Pure Science

University of Mosul

2025-2024

Course Description Form

Chemistry Department

First Year

2025-2024

Course Description Form

University: Mosul College: Education for pure Science Department or Branch:Chemistry

1. Course Name: Organic chemistry lab / first stage -
2. Course Code: **EDCH25F10131**
3. Semester / Year: 2024-2025
4. Description Preparation Date: 2024/9/1– 2025/8/ 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. Hadil Samir Aziz E-mail: hadilmagid1977@uomosul.edu.iq Name: Dr. Intisar Qahtan Email:Mahmood_Intisar@uomosul.edu.iq Name: Anwar Mahmood Ahmed Email: anwar.mahmoud@uomosul.edu.iq Anwar.mahmoud@uomosul.edu.iq Name:Dr.Neam Hazem Name: Dr.Yasser Shakeeb Name: Dr.Omar Abdulla
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
		Lab equipment and Tools			
			Melting point for organic Compounds	Practical experiment Procedure	
			Boiling point for organic Compounds	Practical experiment Procedure	
		Purification of liquid organic compounds		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	
		Purification of solid organic compounds		Practical experiment Procedure	
		Purification of solid organic compounds		Practical experiment Procedure	
			Extraction of caffeine from Tea	Practical experiment Procedure	
				Practical experiment Procedure	

1. 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	
2. 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	

Dr.Omar Thanoon

Head of Dept.

رئيس قسم الكيمياء

Anwar.mahmoud

Course Description Form

University: Mosul **College: Education for Pure Sciences**
Department: Chemistry

1. Course Name and Stage:
Analytical chemistry The First stage
2. Course Code:
EDCH24 M1021
3. Semester / Year:
First and second semesters of the academic year 2024-2025
4. Description Preparation Date:
2/9/2024
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) and Scientific title
Name: Assistant Teacher Noor Mazin Ibrahim Dr. Sobhe Mohsen Jarallah Assistant Teacher Hind Shaker Mahmoud Assistant Teacher Maysam Hossam Fakhry Email: noormazin81@uomosul.edu.iq
8. Course Objectives

Subject 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 yourself and .laboratory equipment	Laboratory safety and security precautions	practical	Home work
2	2	Gain a general knowledge of chemistry and descriptive and .quantitative analysis	introduction General to analytical chemistry and its types	practical	Exam, daily activity and homework
3	2	Gain knowledge on how to separate Group and factor ions Suitable sediment for separation Selection of sedimentation medium	Qualitative analysis of and roots cracks Group 1 ions separation The group first group	practical	Exam, daily activity and homework
4	2	Gain knowledge on how to Separation of group ions and the appropriate precipitating factor For separation and selection of sedimentation medium reveal it, reveal it And	Group 1ions separation Second group II	practical	Exam, daily activity and homework
5	2	Gain knowledge on how to separate Group and factor ions Suitable sediment for separation Selection of sedimentation medium And reveal it	A analysis ions	practical	Exam, daily activity and homework

6	2	Gain knowledge of how to separate Group ions and detection About her	B ions analysis	practical	Exam, daily activity and homework
7	2	Gain knowledge on how to separate Group and factor ions sediment for Suitable separation Selection of sedimentation medium And reveal it	Separation of group II ions	practical	Exam, daily activity and homework
8	2	Gain knowledge on how to separate Group and factor ions Suitable sediment for separation Selection of sedimentation medium And reveal it	Separation of group III ions	practical	Exam, daily activity and homework
9	2	Gain knowledge on how to separate Group and factor ions Suitable sediment for separation Selection of sedimentation medium And reveal it	IV ions Group separation	practical	Exam, daily activity and homework
10	2	Gain knowledge on how to separate Group and factor ions Suitable sediment for separation Selection of sedimentation medium And reveal it	Separation of group 5 ions	practical	Exam, daily activity and homework
11	2	Gain knowledge about what has been done Study it and how to separate each group Alone	Separation of ions from a mixture	practical	Exam, daily activity and homework
12	2	Gain knowledge on how to use the necessary .equipment	Brief overview of the devices used in descriptive analysis	practical	Exam, daily activity and homework
13	2	Gain knowledge on how .to estimate chloride ion	for method determination of chloride ion	practical	Exam, daily activity and homework
14	2	knowledge of how Gain to estimate iron	iron Determination of 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 sodium iodine using thiosulfate	practical	An exam, a daily activity, homework, and writing a report on the experiment

11.Course Evaluation and Marks

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
Percentage of Curriculum update	

Name and Signature of Curriculum Administrator

Assistant Teacher Noor Mazin Ibrahim

Name and Signature

of Department or Branch Head

Dr. Omar. T. Al.

Course Description Form

University of Mosul Collage: Education for pure Sciences Department: Chemical

1. Course Name:
English Language
2. Course Code:
EDCH24 M 1111
3. Semester / Year:
Annual System 2024-2025
4. Description Preparation Date:
1/9/2024
5. Available Attendance Forms:
Actual, theoretical and electronic to display required tasks and duties
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours theory
7. Course administrator's name (mention all, if more than one name)
Name: Nagham Mohuyaldeen AL-Oubaidy Email: nagham.mohuyaldeen@oumosul.edu.iq

8. Course Objectives

Course Objectives	**Communicating students with the English language and developing their linguistic ability with regard to terminology** **Introducing students to correct reading and writing in Engl** **Introducing students to the correct pronunciation of Eng words** **• Knowing and understanding the basics of the Englis language** **• Explaining the basic processes of the subject.** **• Identifying the most important terms in the compute subject in the English language**

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-4	4	Personal Information	Chapter 1	According to point 9 above and as needed	Daily Exams / Assignments / Interaction / Reports
5-9	5	Family and Friend	Chapter 2	According to point 9 above and as needed	Daily Exams / Assignments / Interaction / Reports
10-14	5	Present and Past simple	Chapter 3	According to point 9 above and as needed	Daily Exams / Assignments / Interaction / Reports
15-19	5	Comparative and Superlative	Chapter 4	According to point 9 above and as needed	Daily Exams / Assignments / Interaction / Reports
20-25	6	Sounds in English	Chapter 5	According to point 9 above and as needed	Daily Exams / Assignments / Interaction / Reports
26-30	5	Patterns the sentences	Chapter 6	According to point 9 above and as needed	Daily Exams / Assignments / Interaction / Reports

11. Course Evaluation

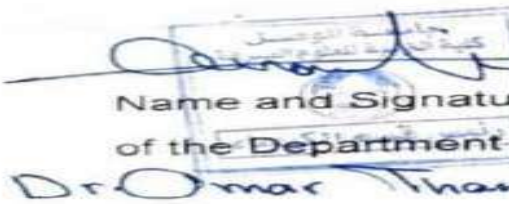
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

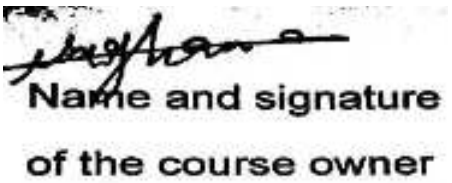
- Mid-year 25%
- Endeavor 15% includes (theoretical tests 5%, homework 5%, attendance 5%

• Final 60%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	"New Headway, pre-intermediate Student Book "Johan and Liz Soars
Main references (sources)	Practical English Usage
Recommended books and references (scientific journals, reports…)	Al-MAWRID – MODREN ARABIC/ENGLISH DICTIONARY
Electronic References, Websites	https://arabic.britannicaenglish.com/
Curriculum update rate	





Course Description Form

University of mosul College of Education for Pure Sciences Department of Chemistry

1. Course Name and Stage:
Human Rights
2. Course Code:
EDCH25 F1041
3. Semester / Year:
annual
4. Description Preparation Date:
5/10/2024
5. Available Attendance Forms:
My presence only
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours annually/ 2
7. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Name: dr. younis muayad younis Email: younis1986mmyy@uomosul.edu.iq
8. Course Objectives

Subject Objectives	1- Introducing the concept of human rights an democracy 2- Knowledge of how these rights developed a were divided into generations, and what are th international institutions concerned with hum rights 3- Knowing human rights in times of peace an war and how to preserve them 4- Identify the collective and individual rights peoples 5- Identifying the procedures and guarantees necessary to lead a state that respects human rights and prevents any abuse of human rights 6- Learn about human rights during investigation and trial 7- Identifying the crimes and violations

	committed by the defunct Baath regime during its rule of Iraq from 1979 until 2003. 8- Identify the concepts of democracy, syste of government, rights and freedoms stipulat in the Iraqi Constitution of 2005.

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 2 3 4 5	1hours 1 hours 1 hours 1 hours 1hours 1 hours 1 hours 1 hours 1 hours 1hours 1 hours 1 hours 1 hours 1hours 1 hours 1 hours 1 hours 1 hours 1hours 1 hours 1 hours 1 hours 1 hours 1hours	-Knowledge and understanding. - Subject-specific skills, through the ability to explore the true foundations of human rights principles. -Developing students' ability to describe and develop descriptive skills. - The ability to distinguish and compare. - The ability to comprehend.	Introduction to the Subject of Human Rights. Introduction to Islamic Human Rights Historical sequence of human rights legislation Characteristics and Sources of Human Rights Western Revolutions Contributin	Lectures and discussions, live and online education, video lectures, the use of concept maps, open discussion based on the exchange of ideas, visual aids, and classroom exercises to participate in finding appropriate solutions.	Daily assessment through daily discussions and participation / practical problems / daily, semester, mid-year and final written and oral tests / homework and preparation of research reports.

	1 hours 1 hours		g to Human Rights		
6			Global Dedication to Human Rights		
7			Generations of Human Rights		
8			Rights and Freedoms		
9			Collective Human Rights		
10			Rights of Minorities and Vulnerable Groups		
11			Human Rights in Times of War		
12			Human Rights in Times of Military		
13			Crimes Against		

			Humanity		
14			Crimes Against Humanity		
15			National Human Rights Guarantees		
16			Regional Human Rights Guarantees		
17			Human Rights Guarantees in International Organizations		
18			International Intervention to Protect Human Rights		
19			Human Rights in Iraq According to the 2005 Constitution		
20			Introductio		

21			n to Democracy and Its Origins Types of States and Governments		
22			Philosophical Conceptions of Democracy		
23			Characteristics of Democratic Systems		
24			Direct Democracy		
25			Indirect Democracy		
26			Semi-Direct Democracy		
27			Crimes Against Humanity		
28			Human		

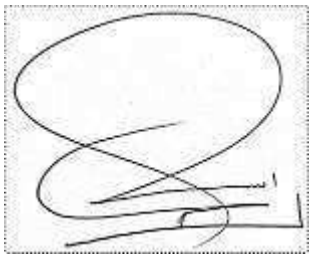
29 30			Rights Guarantees Transitional Justice Sustainable Development Goals		

11. Course Evaluation and Marks

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)	Dr. Hafez Alwan, Human Rights
Recommended books and references (scientific journals, reports…)	Dr. Khalij bin Muhammad: Human Rights i Judaism, Christianity, and Islam Dr. Muhammad Yusuf Alwan and Muhammad Khalil Al-Musa: Internatio Human Rights Law: Sources and Means Control
Electronic References, Websites	
Percentage of Curriculum update	



younis muayad younis

Course Description Form

University: Mosul **College: Education for Pure Sciences** **Department or Branch: Chemistry**

1. Course Name:
Foundamentals of Education / First Stage
2. Course Code:
EDCH25M1091
3. Semester / Year:
Chapter one and two/ 2024-2025
4. Description Preparation Date:
2024/ 2025
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 society and t role of education in daily life. To recognize the need for the student to know the value of ancient civilizations in the progress of societies. The student should know the basic concepts of the foundations education The student should know the characteristics of education and its objectives. To familiarize the student with the institutes of education in Isla 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 its 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 past - 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 / factors 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 Islamic call - the stage of the spread of the Islamic religion in the era of the Rightly-Guided Caliphs and Umayyads outside the Arabian Peninsula - the stage of the Abbasid era	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		Daily	Activity and participation during the lecture and exam
25+26	2*2=4	Learn about the flags of educational thought			Activity and participation during the lecture and exam

27+28+29	2*3=6	Recognize the meaning of family and its function	(the golden age) progress and prosperity - the stage of decline and decay	Daily	
30+31+32	2*3=6	Identify the educational role of the family	Institutes of education in Islam / book - mosque - schools - libraries - shops of the papers - houses of scholars - palaces - literary		First semester exam
33+34+35+36	2*4=8	Recognize the educational role of the school	councils Methods of education in Arab-Islamic education - method of education - age of education - punishment - education of women - compulsory education - teachers – students	Daily Daily	Activity and participation during the lecture and exam
37+38+39+40	2*4=8	Identify the educational role of the community	Flags of educational thought / 1. Ibn Khaldun - his educational opinions 2. Ibn Sina - his writings - his educational opinions - the policy of the man		Secend semester Exam
41+42	2*2=4	Understand the meaning, steps and methodology of scientific research	himself - the policy of the man and his son. 3. Al-Ghazali - his educational views - his opinion on child education and	Daily daily	Activity and participation during the lecture and exam
43	2 hours		moral education - his views on the teacher's etiquette - his views of the learner - his writings		Activity and participation during the lecture and exam
			The social basis of education / the educational role of the family - the meaning of the family and its function 2. The role of the family in the educational process - early socialization - the framework of family relations - the impact of the comprehensive cultural system The family in raising a child		Activity and participation during the lecture and exam final exam

			The role of the family in educational problems - childhood demands - self-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 family cohesion - the impact of change in the function of the family The educational role of the school / the concept and function of the school \ the school environment and its social faces - social interaction and educational authority - the framework of social relations in the school - the relationship between teachers - the relationship between students and teachers – the relationship of the principal with teachers and students - the relationship of the school and the outside community = cooperation between the family and the school The educational role of society The meaning of society / social institutions Educational media - Coordination between educational media / activity of institutions (radio, television, press, theater, places of worship, public libraries, clubs and sports arenas, exhibitions and museums, economic return of education, financing education The concept of scientific research / steps of scientific research - difficulties of the scientific method in the social sciences - research methodology in education review.		

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 of 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, Knowledge 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.
Percentage of Curriculum update	

Name and Signature

Of Curriculum Administrator

Asst.Prof.dr. Mohammed Jasim Mohammed

Name and Signature

of Department or Branch Head

Asst.Prof.dr. Omar thanoon Ali

Course Description Form

University: Mosul College: Education of Pure Science Department: Chemistry

1. Course Name and Stage
Biology/ First stage
2. Course Code
EDCH25M1061
3. Semester / Year
2024-2025
4. Description Preparation Date
1/9/2024
5. Available Attendance Forms
Classroom and google classroom
6. Number of Credit Hours (Total) / Number of Units (Total)
2 hours /4 units
7. Course administrator's name (mention all, if more than one name) and Scientific title
Dr. Hanan Sadeeq Sadoon Email : noor2005@uomosul.edu.iq Dr. Taha Abdullwahab Khamees Email: dr.tahaalawni19@uomosul.edu.iq Dr. Rafea Qasim Mohammed Email: dr.rafeaqm@uomosul.edu.iq
8. Course Objectives

Subject Objectives	• Knowing the basic principles of biology • Learn about practical applications of biology

9. Teaching and Learning Strategies	
Strategy	Theoretical 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	development of zoology through historical stages	Lecture	Homework
Second	2	Understanding basic principles	Introduction to Botany	Lecture	Homework
Third	2	Understanding basic principles	Biology's relationship with other sciences	Lecture	Quiz
Fourth	2	Understanding basic principles	Plant Cell	Lecture	Preparing reports and homework

Fifth	2	Understanding basic principles	Animal cells animal cell types	Lecture	Homework
Sixth	2	Understanding basic principles	Photosynthesis in plant	Lecture	Quiz
Seventh	2	Understanding basic principles	Animal Cell Organisms	Lecture	Homework
Eighth	2	Understanding basic principles	Respiration in the plant	Lecture	preparing reports and homewor
Nineth	2	Understanding basic principles	Introduction to histology	Lecture	Homework
Tenth	2	Understanding basic principles	Principles of plant taxonomy	Lecture	Quiz ,preparing reports an homework
Eleventh	2	Understanding basic principles	types of animal tissue	Lecture	Quiz, preparing reports and homework
Twelfth	2	Understanding basic principles	Introduction to mycology	Lecture	Homework
Thirteen	2	Understanding basic principles	Glandular tissues and types of glands	Lecture	Quiz and homework
Fourteenth	2	Understanding basic principles	Divisions of Fungi	Lecture	Homework
Fifteenth	2	Understanding basic principles	Animal tissue components cells	Lecture	Quiz
Sixteenth	2	Understanding basic principles	Introduction to phycology	Lecture	Preparing reports and homework
Seventeent	2	Understanding basic principles	Muscular system	Lecture	Quiz
Eighteenth	2	Understanding basic principles	Divisions of algae	Lecture	Homework
Nineteenth	2	Understanding basic principles	Circulatory system	Lecture	Homewor
Twentieth	2	Understanding basic principles	Introduction microbiology	Lecture	Homework
Twenty first	2	Understanding basic principles	Characteristics of life	Lecture	Homework
Twenty second	2	Understanding basic principles	Soil microbiology	Lecture	Quiz
Twenty third	2	Understanding basic principles	Introduction to plant physiology	Lecture	Homework

11.Course Evaluation and Marks

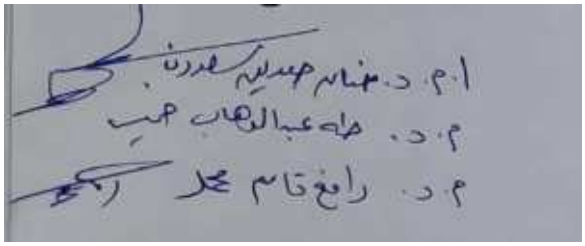
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	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 (1977) 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. Hyo Jones. 7th Edition, Blackwell
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	
Percentage of Curriculum update	15%

Name and Signature of Curriculum Administrator	Name and Signature of Department or Branch Head
Dr. Hanan Sadeeq Sadoon Dr. Taha Abdullwahab Khamees Dr. Rafea Qasim Mohammed	



Course Description Form

University:of Mosul College: of Education for pure science
Department or Branch: chemistry

1. Course Name and Stage:
theoretical Inorganic chemistry first class Bs.c 2025
2. Course Code:
theoretical Inorganic chemistry first class Bs.c 2024
3. Semester / Year:
Year: Semester
4. Description Preparation Date:
2024−2025
5. Available Attendance Forms:
Attending regular
6. Number of Credit Hours (Total) / Number of Units (Total)
60/ 4 units
7. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Email: Name: Prof. Dr. Jassim M Alyass Email: shumoo20@uomosul.edu.iq Name: Dr. Abeer S Mohammed Email: abeersalim1971@uomosul.edu.iq
8. Course Objectives

Subject Objectives	• ..... **1 − principle of inorganic chemistry, Electronic structure symbol terms, quantum and** **Classification of periodic table.** **2 – Periodic properties of atoms..** **3− Type of bonds (ionic compounds)** **4 − Bond theories (covalent bonds).** • **6 – Hybridization and geome of simple compounds. .....**

	• …..

9. Teaching and Learning Strategies

Strategy	
	buildind graduates' skills students to know the inorga chemistry through the lecture , discussions, home works a 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 orbita	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 and Marks	
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)	Cotton and wilkenson Advanced inorganic chem. 199
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	
Percentage of Curriculum update	none

Name and Signature

Prof. Dr. Jassim M Alyass

Dr. Abeer S Mohammed

Name and Signature

of Department or Branch Head

اسم وتوقيع رئيس القسم اوالفرع

ا.م.د.عمر ذنون علي

Course Description Form

University: MOSUL College: Education For Pure Sciences
Department or Branch :Chemistry

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

2. Course Code: EDCH25M10131

3. Semester / Year:2025-2024

4. Description Preparation Date:1/9/2024 - 31/8/2025

5. Available Attendance Forms: in person - electruonic classes

6. Number of Credit Hours (Total) / Number of Units (Total): 2 hours per lecture unit

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

Name: Name:. Dr. Hadil Samir Aziz / Email: hadilmagid1977@uomosul.edu.iq
Name. Dr. Intisar Qahtan Mahmood / Email: mahmood_intisar@uomosul.edu.iq

8. Course Objectives

Subject 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 each male and female student.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
111	**2**	The importance organic chemistry	Organic compounds, electronic distribution, ionic bonding, electronegativity, types of covale	a lecture	Daily and monthly exam

			and hydrogen bonds Methods of forming single, double and triple bonds, breaking bonds chemical reactions, alkanes, cyclic alkanes, naming alkanes, preparing alkanes, and methods of preparing them		
232	**2**	The types of bonds	Methods of forming single, double and triple bonds, breaking bonds chemical	a lecture	Daily and monthly exams
333	**2**	Types of Alkane	Methods of forming single, double and triple bonds, breaking bonds chemical reactions,	a lecture	Daily and monthly exams
454	**2**	Alkane	Naming alkanes , synthesis of alkanes	a lecture	Daily and monthly exams
555	**2**	Alkanes and Cyclic alkanes	Reaction of alkanes and naming of cyclic alkanes	a lecture	Daily and monthly exams
666	**2**	Alkenes	Naming alkenes and preparation alkenes	a lecture	Daily and monthly exams
777	**2**	Alkenes	Reaction and geometrical isomers of alkenes	a lecture	Daily and monthly exams
888	**2**	Dienes	Types of Dienes ,naming , synthesis, reactions	a lecture	Daily and monthly exams
9	**2**	Alkynes	Naming ,synthesis, reaction	a lecture	Daily and monthly exams
	2	Aromatic compounds	The importance of aromatic compounds, naming aromatic compounds	a lecture	Daily and monthly exams
	2	Aromatic compounds	Preparation and reaction	a lecture	Daily and monthly exams
	2	Aromatic compounds	Pulling and pushing groups	a lecture	Daily and exams
	2	Alkyl and aryl halide	Naming ,reaction ,preparation mechanism	a lecture	Daily and monthly exams

11. Course Evaluation and Marks

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 any)	
Main references (sources)	Organic chemistry, Morrison and Boyd
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://faculty.uobasrah.edu.iq
Percentage of Curriculum update	

جامعة الموصل
كلية التربية للعلوم الصرفة
رئاسة قسم الكيمياء

Name and Signature

of Curriculum Administrator

Dr. Intisar Qahtan Mahmood

Dr. Hadil Samir Aziz

Name and Signature

of Department or Branch Head

Dr. Omar Thanoon Ali

Course Description Form

University: Mosul College: Eudcation for pure sciences Department or Branch: Chemistry

1. Course Name: Analytical Chemistry
2. Course Code: EDCH24M1021
3. Semester / Year: 2024-2025
4. Description Preparation Date: 1/9/2024-31/8/2025
5. Available Attendance Forms: Daily working hours- Electronic classes
6. Number of Credit Hours (Total) / Number of Units (Total)): (58) / 6 uints
7. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Assist. Prof. Dr.Rawaa Abdulaleem Zakaria Email:rawaazakaria72@uomosul.edu.iq
8. Course Objectives

Subject 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 of atoms	Theoretical	
2-4	2×3=6	Gain knowledge of methods for expressing concentraion and preparing solids and liquids	Molarity,Normality,formali % and ppm	Theoretical	Anexam,daily activity homework
5-7	2×3=6	Gain knowledge of how to calculate the molecular weight equivalent weight of solid and liquid compounds	solving problems related to the topic	Theoretical	An exam,daily activity and homework
8-9	2×2=4	Gain knowledge of chemical equilibrium	Reversible and irreversible reactions, types of chemical systems, solving problems related to the topic	Theoretical	An exam,daily activity and homework
10-11	2×2=4	Gain knowledge of chemical equilibrium	Solving problems relsted the topic	Theoretical	An exam, daily activity and homework
12-14	2×3=6	Gain knowledge of the dissolution product constant poorly soluble salts	What is the dissolution Product constant and factors affecting the solub of the precipitate?solving 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 mathematical 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 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 and Marks

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)	Qualilative and volumetric analysis Dr. Thabet Saeed Al-Ghabsha, (1986) university of mosul (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
Percentage of Curriculum update	

Name and Signature

of Curriculum Administrator

Asst. Prof. Dr. Rawaa abdulaleem Ahmed

Name and Signature

of Department or Branch Head

Course Description Form

Chemistry Department

Second Year

2025-2024

Course Description Form

University: Mosul College: Education for Pure Science Department: Chemistry

1. Course Name:
Physical Chemistry II
2. Course Code:
EDCH24 -2051
3. Semester / Year:
2024-2025
4. Description Preparation Date:
10/ 9 / 2024
5. Available Attendance Forms:
In-person lectures / classroom
6. Number of Credit Hours (Total) / Number of Units (Total)
(2x30=60) Credit Hours (Total) / 6 Units
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Dunia Butrus Toma / Email: dn_842007@uomosul.edu.iq Name: Dr. May Ghanim Ameen / Email: mayaldabbagh2000@uomosul.edu.iq

8. Course Objectives	
Course Objectives	• **Understand concepts such as system, equilibrium, reversible processes, state a state-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 proble relating to 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 tates, a 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 t 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 t entropy of Ideal Gas	Lecture-based learning	Tasks and Assignments ,Quiz1,Midter Exam,Quiz 2 , Final Exam (theoretial)

		Branches of sciene Chemistry	**● Entropy as a function of pressure and 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 equilibrium constant ●Determination of equilibrium constan 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)	**ياء 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	
Percentage of Curriculum update	NO Update

Name and Signature

of Curriculum Administrator

Dr. Dunia Butrus Toma

Dr. May Ghanim Ameen

Name and Signature

of Department or Branch Head

Dr. Omar Thanoon Ali

Course Description Template for Practical Analytical Chemistry

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

1. Course Name and Stage:
Practical Analytical Chemistry
2. Course Code:
EDCH22 F2021
3. Semester / Year:
2024/2025
4. Description Preparation Date:
1/9/2024
5. Available Attendance Forms:
Practical / Laboratory Sessions
6. Number of Credit Hours (Total) / Number of Units (Total)
2/4 units
7. Course administrator's name (mention all, if more than one name) and Scientific title
Assist Prof.Dr. Omar Abdulhay Sheej Ahmad/// Dr.omar1979@uomosul.edu.iq **Assist Prof.Dr. Mohamed dhamra Mohameddhamra@uomosul.edu.iq** **Assist.lec. Leena Adil saber leena.adil484@uomosul.edu.iq** **Assist.lec. noor mazin noormazin81@uomosul.edu.iq** **Assist.lec. hind.shaker hind.shaker@uomosul.edu.iq** **Assist.lec. tamarah.abdulsalam tamarah.abdulsalam@uomosul.edu.iq** **Assist.lec. israa.ahmed israa.ahmed@uomosul.edu.iq**
8. Course Objectives

Subject Objectives	This course aims to: • Teach students the fundamentals of gravimetric analysis and how to analyze unknown samples. • Use the solubility product principle and relate it to chemical reactions for ion analysis. • Introduce methods for estimating various elements and chemical compounds.

	• Differentiate between precipitation from a homogeneous solution and direct addition of a precipitating agent. • Provide experience in solvent extraction and conducting related experiments. • Introduce separation techniques, including chromatography principles and types

9. Teaching and Learning Strategies

Strategy	Different strategies are adopted based on the scientific content, including: 1. Discussion-based learning. 2. Group-based learning. 3. Individual and group assessments (oral and written exams) to evaluate students' response to the material

10. Course Structure

11.

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understanding analytical chemistry concepts	Chemical safety principles	Lecture & Discussion	Daily exam
2	2	Recognizing laboratory material and equipment	Lab instruments ar tools	Lecture & Discussion	Daily exam

3	2	Understanding qualitative and quantitative analysis steps	Steps in gravimetri analysis	Lecture, Discussion, Exercises	Homework, daily & midterm exams
4	2	Understanding ecipitates and their be	Determining water crystallization in $BaCl_2 \cdot xH_2O$	Laboratory experiments	Weekly report & monthly exam
5	2	Gravimetric analysis	Determination of chloride as AgCl	Laboratory experiments	Weekly report & monthly exam
6	2	Gravimetric analysis	Determination of sulfate as $BaSO_4$	Laboratory experiments	Weekly report & monthly exam
7	2	Solubility product constant	Determination of calcium as CaC_2O_4	Laboratory experiments	Weekly report & monthly exam
8	2	Solubility product constant	Determination of calcium as $CaCO_3$	Laboratory experiments	Weekly report & monthly exam
9	2	Solubility product constant	Determination of calcium as CaO	Laboratory experiments	Weekly report & monthly exam
10	2	Inorganic precipitar	Determination of aluminum as Al_2O_3	Laboratory experiments	Weekly report & monthly exam
11	2	Inorganic precipitar	Determination of iron as Fe_2O_3	Laboratory experiments	Weekly report & monthly exam
12	2	Organic precipitants	Determination of nickel as dimethylglyoxime complex	Laboratory experiments	Weekly report & monthly exam

12	2	Organic precipitant	Determination of nickel as dimethylglyoxime complex	Laboratory experiments	Weekly report & monthly exam
13	2	Precipitation from a homogeneous solution	Determination of sulfate as $BaSO_4$ from a homogeneous solution	Laboratory experiments	Weekly report & monthly exam
14	2	Solvent extraction and its methods	Solvent extraction	Laboratory experiments	Weekly report & monthly exam
15	4	Solvent extraction and its methods	Determining the ammonia distribution coefficient between water and chloroform	Laboratory experiments	Weekly report & monthly exam
6-17	4	Solvent extraction and its methods	Iodine removal from aqueous solution using carbon tetrachloride (single and multiple stages) and calculating extraction percentage	Laboratory experiments	Weekly report & monthly exam
8-19	4	on exchange	Separation of copper and iron using ion exchange	Laboratory experiment	Weekly report & monthly exam

12.Course Evaluation and Marks

he student's grade distribution (20%) is based on daily exams, reports, attendance, and midterm exams, in addition to the practical course grade throughout the academic year, as well as mid-year and final exams:

1. 20% Daily exams, attendance, and reports

2. 20% Mid-year exam 3. 30% Practical course grade 4. 30% Final theoretical exam	
13.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	**Gravimetric Analysis** (Dr. Muaid Al-Abayaji & Dr. Thabet Saeed Al-Ghabsha)
Main references (sources)	1. Fundamentals of Analytical Chemistry 2. Quantitative Chemical Analysis
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Relevant online resources like YouTube
Percentage of Curriculum update	10%

Course Description Form

University: Mosul College: Education of bure science Department: Chemistry

1. Course Name:	
Organic Chemistry “Second grade” Theoretical	
2. Course Code:	
EDCH242031	
3. Semester / Year:	
2024-2025	
4. Description Preparation Date:	
1-9-2024	
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. Nameer Saadallah Ezzat Email: nameer.ezzat@uomosul.edu.iq Name: Dr. Ghufran Thanonn Email: gsadeek@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 by 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 • solve problems in 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 methods 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
		Acquiring knowledge in interactions	(Naming, preparing, Reactions) of	theoretical	

5	2	Organic compounds and knowing some of the names of their reactions	Dicarboxylic acids		homework
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	Acquiring knowledge in naming Organic compounds and knowing some of their properties	Aldehydes and ketones Naming them according to the IUPAC system and knowing some of their properties	theoretical	Daily activity + daily exam
10,11,	2x2=4	Gain knowledge in preparation Organic compounds and knowing some of the names of their reactions	Aldehydes and ketones Name and properties	theoretical	Daily activity
12	2	Gain knowledge in preparation Organic compounds and knowing some of the names of their reactions	Aldehydes and ketones Preparations		
13	2	Gain knowledge in preparation Organic compounds and knowing some of the names of their reactions	Aldehydes and ketones Reaction and solving some problems		
14		Mid-year exam			

15,16	2*2=4	Acquiring 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,	2x2=4	Gain knowledge in preparation Organic compounds and knowing some of the names of their reactions	Amine compounds Preparation, reactions	theoretical	Daily activity and exam
19, 20	2x2=4	Gain knowledge in preparation Organic compounds and knowing some of the names of their reactions	Amine compounds Reactions and solve the chapter problems		
21,22,	2*2=4	Gain knowledge in preparation Organic compounds and knowing some of the names of their reactions	Alcohol and Phenol compounds Nomenclature, properties,	theoretical	Daily activity
23, 24	2x2=4	Gain knowledge in preparation Organic compounds and knowing some of the names of their reactions	Alcohol and Phenol compounds preparation and some of their interactions		
25	2	Gain knowledge in preparation Organic compounds and knowing some of the names of their reactions	Alcohol and Phenol compounds Solve some problems and take an exam		
26,27,	2x2=4	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
28, 29	2x2	Gain knowledge in preparation Organic compounds and knowing some of the names of their reactions	Aryl halides compounds nucleophilic electroph-ilic substitution reactions (SN1 & SN2)		

30	2	Gain knowledge in preparation Organic compounds and knowing some of the names of their reactions	Review of all chapters		
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

Name and Signature
of Department or Branch Head
Dr.Ghufran Thanoon Sdeek

Nameer S. Ezzat

Course Description Form

University of Mosul Collage: Education for pure Sciences Department: Chemical

1. Course Name:
English Language
2. Course Code:
EDCH24M2091
3. Semester / Year:
Annual System 2024-2025
4. Description Preparation Date:
1/9/2024
5. Available Attendance Forms:
Actual, theoretical and electronic to display required tasks and duties
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours theory
7. Course administrator's name (mention all, if more than one name)
Name: Nagham Mohuyaldeen AL-Oubaidy Email: nagham.mohuyaldeen@oumosul.edu.iq
8. Course Objectives

Course Objectives	**Communicating students with the English language and developing their linguistic ability with regard to terminology** **Introducing students to correct reading and writing in Englis** **Introducing students to the correct pronunciation of Eng words** **• Knowing and understanding the basics of the English language** **• Explaining the basic processes of the subject.** **• Identifying the most important terms in the computer subject in the English language**
9. Teaching and Learning Strategies	
Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-4	4	English for special purpose Sports Body parts Soccer	Chapter	According t point 9 abo and as need	Daily Exams Assignments Interaction Reports
5-9	5	Boxing Daily routine Weight lifting Family	Chapter	According to point 9 above and as needed	Daily Exams / Assignments / Interaction / Reports
10-14	5	Athletics Feelings Swimming Weather Basketball	Chapter 3	According to point 9 above and as needed	Daily Exams / Assignments / Interaction / Reports
15-19	5	Daily problem Fencing College Volleyball	Chapter 4	According to point 9 above and as needed	Daily Exams / Assignments / Interaction / Reports
20-25	6	Travelling Gymnastics Food Wrestling Home Handball Animal	Chapter 5	According to point 9 above and as needed	Daily Exams / Assignments / Interaction / Reports
26-30	5	Tennis Jobs 2 .28 Physical fitness Health Travelling	Chapter 6		Daily Exams / Assignments / Interaction / Reports

11. Course Evaluation

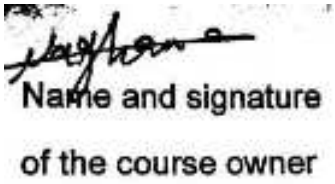
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

- Mid-year 25%

• Endeavor 15% includes (theoretical tests 5%, homework 5%, attendance 5% • Final 60%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	"New Headway, Beginner Student's Book "Johar and Liz Soars
Main references (sources)	Practical English Usage
Recommended books and references (scientific journals, reports…)	Al-MAWRID – MODREN ARABIC/ENGLISH DICTIONARY
Electronic References, Websites	https://arabic.britannicaenglish.com/
Curriculum update rate	



Course Description Form

University: Mosul College: Education for Pure Sciences Department or Branch: Chemistry

1. Course Name: Practical Biochemistry / Bachelor's/ Biology
2. Course Code: **Bachelor's, 2th** grade
3. Semester / Year: 2024−2025
4. Description Preparation Date: 1−9−2024
5. Available Attendance Forms: Weekly
6. Number of Credit Hours (Total) / Number of Units (Total): 3hr / 6 Units
7. Course administrator's name (mention all, if more than one name)
Name: kinda Masood Bilal Email: kindaaltaee99@uomosul.edu.iq
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 experiments** **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	The teaching strategy for the practical biochemistry subject includes the lecture method inside the laboratory as a theoretical part which is published in advance on the classroom for the stage. The lecture also includes a method of stimulating students' motivation, discussion, asking questions and students' participation in answering them. The method of daily tests is followed as an assessment and also to emphasize the consolidation of the subject and its control. Mid-year and final tests

10. 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	

11. Course Evaluation

Grade Distribution
5 marks for daily exams
5 marks for participation in discussions within the lecture
5 marks for commitment and regular attendance of lectures
25 marks for the mid-year exam
60 marks for the final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Pre-prepared lectures
Main references (sources)	Basics Lectures Practical Biochemistry
Recommended books and references (scientific journals, reports…)	

Electronic References, Websites	
Percentage of Curriculum update	Not found

Curriculum AdministratorLect.
Lec.Dr.Kinda Masood Bilal

Department or Branch
HeadAsst.Prof. Dr. Omar Dhanon Ali

Course Description Form

University: Mosul **College:** Education for pure sciences **Department or Branch:** Chemistry

1. Course Name and Stage:
Secondary education / second stage / Chemistry Department
2. Course Code:
EDCH24 M2081
3. Semester / Year:
The first, second, third and fourth semester / 2024-2025
4. Description Preparation Date:
20/ 9/ 2024
5. Available Attendance Forms:
Daily working hours (in 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 gro has two hours, 2*4 = 8 hours per week. 30 weeks * 4 hours = 120 hours
7. Course administrator's name (mention all, if more than one name) and Scientific title
Name: M. Rana Khattab Omar Khattab Al Dulaimi Email: rana.khatta@uomosul.edu.iq
8. Course Objectives

Subject Objectives	**• Helping the student become familiar with the school and institutional system a the importance of the secondary education stage.** **• Students gain knowledge of educational supervision, its goals and metho ancient and modern.** **• The student gains theoretical experience of secondary education systems by b ing exposed to a group of global experiences for this stage.** **• It develops in the student the skill of planning and organizing the lesson a applying scientific steps in managing educational work within the educatio institution.** **• The student's awareness that educational work revolves around the patterns educational administration, which are (authoritarian, democratic, and permissive** **• Helping the student identify the elements, components, and goals of educatio administration.**

	• **Helping the student become familiar with the educational innovations presen Iraq.** • **Identifying the secondary stage, its objectives, admission conditions, and ty of exams.** • **Identifying the skills that a school principal must possess and the duties that must perform.** • **Identify central and decentralized educational administration and their advanta and disadvantages.**

9. Teaching and Learning Strategies

Strategy	Lecture, discussion and dialogue, educational platform Google classroom, problem solving, Developed lecture, reciprocal teaching, brainstorming, questioning.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
2+1	**4*2=8**	Learn about the nature of secondary school	Secondary education, its objectives, conditions for admission, and types of examinations	My Presence	Activity participation during lecture and exam
3+4	**4*2=8**	Learn about the types of educational innovations in Iraq	Educational innovations / advanced schools - comprehensive secondary schools, their principles a goals - industrial arts	My presence	Activity and participa during lecture and exam
5+6	**4*2=8**	It shows the benefit of knowing the ty of secondary education system European countries	departments - multi-purp schools - supplementary classes attached to prima schools - experimental middle schools - students visiting production	My presence	Activity and participa during lecture and exam
7+8+9	**4*3=12**	Understands the Tasks related to managing educational institutions how to	institutions - teaching foreign languages - educational and psychological guidance - teaching programming.	My presence	Activity and participa during lecture and exam
10	**4*1=4**	deal with their employees	Diversifying secondary education - specialized secondary schools - distinguished schools -	My presence	Activity and participa during lecture and exam
11+12	**4*2=8**	Recognizes the nature centralization decentralization	acceleration	My presence	Activity and participa during lecture and exam
13+14+15	**4*3=12**	Educational administrat and the factors affecting i	Educational administratic setting goals _ planning _ organizing _ communicati _ follow-up _ evaluation _ decision making		Activity and participa during lecture and exam

16	**4*1=4**	Educational administrat and the factors affecting i School administration concept and patterns	Centralization and decentralization in educational administration/and their advantages and disadvantages	My presence	Activity and participa during lecture and exam
17+18+19	**4*3=12**		Factors affecting educatio administration in terms o centralization and decentralization The political factor - socia and demographic factors,	My presence	Activity and participa during lecture and exam
20+21+22	**4*3=12**	The autocratic style, characteristics disadvantages. democratic style, characteristics advantages. The permiss style, its characteristics disadvantages. School princip duties	including (population, soc forces and pressures, natural, geographical and economic factors)	My presence	Activity and participa during lecture and exam
23+24+25+26	**4*4=16**	_Skills that must be availa in a school principal/me intellectual skills _techn	Understands matters rela to the school administrati process, its patterns characteristics, and the positives and negatives it carries Understands matters rela	My presence	Activity and participa during lecture and exam
27	**4*1=4**	skills _human skills	to the manager's duties ar the skills that must be available in it		
28	**4*1=4**	Learn about the educatio supervision process t takes place wit educational institutions	Educational supervision: i concept, goals and metho	My presence	
29	**4*1=4**	Learn about the indivic methods used by educational superv when visiting the school	Individual styles -The supervisor's visit to school -The supervisor's visit to t teacher in the classroom -Individual interview -Visiting		
30	**2hours**	Learn about the collec methods used by supervisor when visiting school To understand mat related to the plan contemporary trends Learn about classro management and difficulties it faces Learn about e-learning	Group methods / educatio workshop - meetings with the educational body of th school - educational conference - model lesson committees - meeting wit teachers of a specific subj or class - training courses directed readings - supervisory bulletins - educational research - dialogue and symposium - seminar	My presence	

		review	_Problems facing vocation education _ Contemporary trends in educational administratio _ Elements of a successful plan Classroom management a its problems E-learning, its goals and importance review		

11. Course Evaluation and Marks

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, Second 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, second 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
Curriculum update rate	Nothing

Name and Signature

Rana Khattab Omar

Name and Signature of the Department Head

Dr. Omar Thaneer Ali

Course Description Form

University of Mosul

College: Education for Pure Science (uomosul.edu.iq)

Department or Branch: Chemistry/ Biochemistry

1. Course Name: Biochemistry

2. Course Code: **EDBI24M205**

3. Semester / Year: 2024-2025

4. Description Preparation Date: 3/9/2024

5. Available Attendance Forms: Presentation theory lecture , Classroom attendance

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

Total (60) / 2 Units

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

Name: Lecturer. Dr. Rana Talib Ibrahim
Email: altaee.rana1979@uomosul.edu.iq

Lecturer: Dr. Naufel Sheet Mohammed
Email: nawfelsheet76@uomosul.edu.iq

8. Course Objectives

Course Objectives	• **Knowing the basic principles of Biochemistry And its branches and biomolecules like Carbohydrates, lipids, proteins, enzyme .....** • **Knowing of their vital role and their relationship To human health**

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	4 =2×2	Knowing the importance of biochemistry, cell types and their component	The cell and its component	Lecture	Lecture, discussi With student
3+4	4=2×2	Knowing the properties of water and buffer solution	Water and buffer Solution	Lecture	Lecture, discussi With student, Quiz
5+6+7+8	8=4×2	Knowing types of Carbohydrates and its reactions	Carbohydrates	Lecture	Lecture, discussi With student
9+10+ +11+12	8=4×2	Understanding lipids and its reactions	Lipids, classification and types	Lecture	Lecture, discussi With student Quiz
12+14+ 15+16	8=4×2	Amino acids and peptides	Amino Acid, classification, reaction, peptides	Lecture	Lecture, discussi With student
17+18+ 19+20	8=4×2	Proteins	Protein, solubility, Hydrolysis, Reactions	Lecture	Lecture, discussi With student Quiz
21+22 +23	6=3×2	Chromatography	Knowing the basic principle of Chromatography	Lecture	Lecture, discussi With student
24+25 26	6=3×2	Enzymes	Enzyme, Types, Enzyme nomenclature Factors affecting the rate of enzymatic reactions	Lecture	Lecture, discussi With student
27+28	4=2×2	Vitamins and coenzyme and its vital role and relationship to diseases	Vitamins and, coenzyme	Lecture	Lecture, discussi With student Quiz
29+30	4=2×2	Understanding the basic principles of nucleic acids	Nucleotides and nucleic acids	Lecture	Lecture, discussi With student
31	1	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	Introduction to biochemistry (2007). khawla Al-flaeyh
Main references (sources)	Lippincott's biochemistry (2019) Richard Harvey & Denis Ferrier ., 5th.
Recommended books and references (scientific journals, reports...)	Sami El-Modifier (2002) principle of biochemistry
Electronic References, Websites	https://faculty.uobasrah.edu.iq
Curriculum update	No more

Name and Signature of

Curriculum Administrator

Lec.Dr.Rana Talib Ibrahim

Course Description Form

University of Mosul

College: pure science for education Department: Chemistry

1. Course Name: Organic Chemistry lab / Bachelor's	
2. Course Code: **EDCH24M2031**	
3. Semester / Year: 2024-2025	
4. Description Preparation Date: 2024/9/1– 2025/8/ 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 Name: E-mail: Dr. Neam Hazim Name: Email: Dr. Amena Alyas Name: Email: Dr. Linda Riyadh	
8. Course Objectives	
Course Objectives	1- Learn the students the role of organic chemistry to understand the principles of modern chemistry and how they 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, solving 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 experiment of organic compounds
Recommended books and references (scientific journals, reports...)	Journal of Chemical Education
Electronic References, Websites	
Curriculum update rate	

Name and Signature
of the Department Head
Dr. Omar Thanoon Ali

Name and Signature
of Curriculum Administrator
أ.م.د. آمنة الياس أحمد

Course Description Form

University:Mosul	College: Education for Pure Sciences	Department or Branch:Chemistry–physical chemistry

1. Course Name: Practical Physicalchemistry / Bachelor's

2. Course Code:

3. Semester / Year: 2024-2025

4. Description Preparation Date: 10/10/2024

5. Available Attendance Forms: Weekly - classroom attendance

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

60 hours/ 6 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. Assist.Prof. Dr. Ahmed M. Sadoon **ams95@uomosul.edu.iq**
8. lect.Dr. Younis Turki Mahmood younsturkian@uomosul.edu.iq
9. lect. Dr. Alaa Abdul Azeez Ahmed Alaa_kemia@uomosul.edu.iq
10. lect. Dr. Ibrahim younus Mohammed **Ibrahemawab@uomosul.edu.iq**
11 . lect. Maather abed alelah huseen maatherabdelah@uomosul.edu.iq
12. lect Ayman saeed Mohammad tayb **Ayman535@uomosul.edu.iq**
13. Assist.Lect. Ahmed Hussien Ali ahmad883@uomosul.edu.iq

8. Course Objectives

Course Objectives	**1-Learning the basic principles of physical chemistry (thermodynamic) and 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, explore think towards creativity. **4-Developing some positive activities and attitudes such as objectivity, scientific 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	
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	Quizzes and discussion
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 (scien 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

Name and Signature
of Department or Branch Head
Dr. Omar Thanoon Ali

Name and Signature of Curriculum Administrator

Dr. May Ghanim Ameen

Course Description Form

University of mosul College of Education for Pure Sciences Department of Chemistry

1. Course Name and Stage:

Baath regime crimes in Iraq

2. Course Code:

EDCH25 F2101

3. Semester / Year:

annual

4. Description Preparation Date:

5/10/2024

5. Available Attendance Forms:

My presence only

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

30 hours annually/ 2

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

Name: Name: dr. younis muayad younis
Email: younis1986mmyy@uomosul.edu.iq

8. Course Objectives

Subject Objectives	1- Defining the concept of totalitarian, dictatorial, and individualist regimes that use force and violence against their people. 2- Identifying the crimes of the Ba'ath regime from 1979 to 2003 against the Iraqi people of sects and ethnicities. 3- Identifying the injustices suffered by the Ira people. 4- Identifying international crimes and crimes against humanity. 5- Identifying the methods of torture and the u of force used by the former regime against t 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 2 3 4 5 6	1hours 1 hours 1 hours 1 hours 1hours 1 hours 1 hours 1 hours 1hours 1 hours 1 hours 1 hours 1hours 1 hours 1 hours 1 hours 1hours 1 hours 1 hours 1 hours 1hours 1 hours 1 hours 1 hours 1hours 1 hours 1 hours	- Knowledge and understanding. - Subject-specific skills, including the ability to explore the dictatorship, injustice, and oppression practiced by the Ba'ath regime in Iraq. - The ability to differentiate and compare. - The ability to comprehend.	Introduction to Totalitarian Systems Introduction to Dictatorships Introduction to Individualistic Systems Introduction to the Concept and Types of Crimes Categories of Crimes Ba'athist Crimes According to the	Lectures and discussions, live and online education, video lectures, the use of concept maps, open discussion based on the exchange of ideas, visual aids, and classroom exercises to participate in finding appropriate solutions.	Daily assessment through daily discussions and participation / practical problems / daily, semester, mid-year and final written and oral tests / homework and preparation of research reports.

7			Documentation of the Iraqi Criminal Court Law of 2005 Types of International Crimes		
8			Decisions Issued by the Iraqi Supreme Criminal Court		
9			Decisions Issued by the Iraqi Supreme Criminal Court		
10			Psychological Crimes of the Ba'athist Party and Their Effects		
11			Psychological Crimes of the Ba'athist Party and Their Effects		

12			Social Crimes		
13			Social Crimes		
14			The Ba'ath Party's Position on Religion		
15			Images of Human Rights Violations and Crimes of Power		
16			Examining Documents Issued by the Repressive Security Services Against the Iraqi People		
17			Methods of Torture and Arrest Practiced by the Ba'ath Regime in Iraq		

18			Prison and Detention Facilities of the Ba'ath Regime		
19			Environmental Crimes of the Ba'ath Regime		
20			Environmental Crimes of the Ba'ath Regime		
21			View videos available online regarding Ba'ath crimes		
22			Examples of arbitrary decisions and injustice committed by the Ba'ath regime in Iraq against		

			the Iraqi people		
23			Mass grave crimes		
24			Genocide graves events		
25			Chronological classification of genocide graves		
26			Exam		
27			National Human Rights Guarantees Against Violations		
28			Regional and International Human Rights Guarantees		
29			Transitional Justice to Address the Violations Subjected to the Iraqi People		

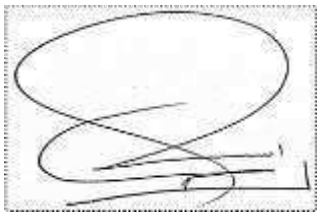
30			under the Ba'ath Regime in Iraq Transitional Justice to Address the Violations Subjected to the Iraqi People under the Ba'ath Regime in Iraq		

11. Course Evaluation and Marks

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)	Crimes of the Ba'ath Regime in Iraq. Curriculum prepared by the Iraqi Ministry of Higher Education and Scientific Research
Recommended books and references (scientific journals, reports…)	Reports and videos on the crimes of the Ba'ath Regime in Iraq are available on the Internet
Electronic References, Websites	
Percentage of Curriculum update	5%



younis muayad younis

Course Description Form

University: of Mosul College of Education for Pure Scienc
Department or Branch:Chemistry

1. Course Name and Stage:			
Educational development psychology			
2. Course Code:			
EDCH25 M1081			
3. Semester / Year:			
2024/2025			
4. Description Preparation Date:			
The beginning of the school year			
5. Available Attendance Forms:			
Daily attendance			
6. Number of Credit Hours (Total) / Number of Units (Total)			
2 hours a week and 30 weeks			
7. Course administrator's name (mention all, if more than one name) and Scientific title			
Name: A. M. Dr.. Tanhed Adel Fadel Email: dr.tanhed@uomosul.edu.iq			
8. Course Objectives			
Subject Objectives	• **For the student to become familiar with the conc of educational psychology and its areas of interes and study.** • **For the student to know the meaning of educatio objectives, classify them, and transform them int educational 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 in 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 of 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 educatio and their educational applications.** • **The student understands the factors affecting learning.** • **The student gets to know the skills and habits an how to acquire them and benefit from them in learning.** • **To familiarize the student with the concept of developmental psychology** • • **To become familiar with the most important developmental theories** • • **To realize the ethics of the learning profession** • • **To care for and develop positive ethics** • • **To stay away from negative ethics.**

9. Teaching and Learning Strategies

Strategy	Method of solving problems Cooperative learning method

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method		
the first	2	Learn about the meaning of educational psychology	Science self Educational And its development	Dialogue and discussion	Askin questi And answe is fro reque		
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	Avoid negative ethics in the	=	=			

		teaching profession			

The tenth					
eleventh	2	Identify the transfer of learning effects	Transfer effect Learning		
twelveth	2				The sec exam o first ser
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 sc and cre thinkin
eighteen					
nineteenth	2	Learn the meaning of feedback	Feedback		
The twentieth	2	=	=		
The twenty-first week					The firs of the s semeste
The twenty-second week		Learn about education theories	Education theories		
The twenty-third week		Understand the concept of professional ethics	Avoid negative ethic the teaching profess		
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 sec exam fo second semeste
The thirtieth week		Identify skills and habits			Skills habits a to acqu

11. Course Evaluation and Marks		
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)	Basics of educational psychology		
Main references (sources)	Educational psychology		
Recommended books and references (scientific journals, reports...)	Journals of Colleges Education		
Electronic References, Websites	nothing		
Percentage of Curriculum update	50%		

تنهيد عادل فاضل

اسم وتوقيع صاحب المقرر
القسم او الفرع

Course Description for Analytical Chemistry/Second Year

Dr. Omar Abdulhay Al-Taee

1. Course Name:
Analytical Chemistry/ Gravimetric Analysis/Glass 2
2. Course Code:
EDCH24 M2021
3. Semester / Year:
2024/2025
4. Description Preparation Date:
1/9/2024
5. Available Attendance Forms:
Theory/Lecture
6. Number of Credit Hours (Total) / Number of Units (Total)
56/4
7. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof. Dr. Omar Abdulhay Mohammed **Email: dr.omar1979@uomosul.edu.iq**
8. Course Objectives

Course Objectives	***Teaching students the fundamentals of the e f gravimetric analysis and how to analyze any unknown sample?** ***Ksp and how to connect it with chemical reaction.** ***Reaction direction and Ksp Value Using the principle of dissolution product, linking it to chemical reactions, and analyzing its value** **• Distinguish between poorly soluble compounds** **• Using information to predict chemical reactions** **• Differentiate between the states of an ion and an element in terms of the number of charges** **• Teach students how to determine ion and chemical compounds** **• separation methods.** **• Chromatography , Types and application**
9. Teaching and Learning Strategies	
Strategy	**To evaluate students understanding, individual and group oral and written tests were conducted. Group teaching and discussion method was used to reach the students.**

10. Course Structure

Week	Hours	Learning method	Evaluation method
1	2	Analytical chemistry Definition and Types	Homework, Quiz, Monthly exam, Midterm exam
2	2	Gravimetric analysis	Homework, Quiz, Monthly exam, Midterm exam

3	2	Steps for analysis	Homework, Quiz, Monthly exam, Midterm exam
4	2	quality of precipitates	Homework, Quiz, Monthly exam, Midterm exam
5	2	Organic and inorganic precipitating agents	Homework, Quiz, Monthly exam, Midterm exam
6	2	chemical reaction of precipitating and calculation related to it	Homework, Quiz, Monthly exam, Midterm exam
7	4	Calculation related to Gravimetric Calculations	Homework, Quiz, Monthly exam, Midterm exam
8	2	Ksp, factors	Homework, Quiz, Monthly exam, Midterm exam
9	9	Exercises related to gravimetric analysis and gravimetric factor	Homework, Quiz, Monthly exam, Midterm exam
10	2	factors affecting the solubility of precipitate	Homework, Quiz, Monthly exam, Midterm exam
11	2	factors affecting the solubility of precipitate	Homework, Quiz, Monthly exam, Midterm exam
12	2	pH and solubility of precipitate	Homework, Quiz, Monthly exam, Midterm exam
13	2	factors affecting the solubility of precipitate	Homework, Quiz, Monthly exam, Midterm exam
14	2	The effect of complex formation on solubility	Homework, Quiz, Monthly exam, Midterm exam
15	2	The effect of complex formation on solubility	Homework, Quiz, Monthly exam, Midterm exam
16	2	Solvent extraction	Homework, Quiz, Monthly exam, Midterm exam
17	8	Solvent extraction	Homework, Quiz, Monthly exam, Midterm exam
18	10	Chromatography	Homework, Quiz, Monthly exam, Midterm exam

11. Course Evaluation	
5% quizzes 10% half term exam 20% Final middle term exam 5% quizzes 10% Reports 50% final exam	
12. Learning and Teaching Resources	
الكتاب المنهجي باللغة العربية • التحليل الوزني (د. مؤيد العبايجي ود. ثابت سعيد الغبشة 1. (Fundamentals of Analytical Chemistry 2. Quantitative chemical analysis	
Electronic References, Websites	YouTube
Curriculum update	5%

Course Description Form

University: Mosul College: Education for Pure Science
Department or Branch: Chemistry

1. Course Name and stage: practical inorganic chemistry/2rd grade

2. Course Code: EDCH25F2011

3. Semester / Year: 2024−2025

4. Description Preparation Date: 11/9/2024 – 31/8/2025

5. Available Attendance Forms: in presence

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

30 weeks * 2= 60 hours/ 2 units

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

Name: Amaal Y Ridha amaalyounis62@uomosul.edu.iq
Jassim M Alyass **shumoo20@uomosul.edu.iq**
Akram A mohammed akramsaleem22@uomosul.edu.iq
Alyaa S Mohammed solve415@uomosul.edu.iq
Raoah A Elya **Yosif.samer79@uomosul.edu.iq**

Baraa S Abdalqader **braasalh2019@uomosul.edu.iq**

8. Course Objectives

Course Objectives: 1) A course designed to give Chemistry students back ground in the Chemistry of the various groups of the periodic table . 2)The role of inorganic chemistry in our lives . 3)The importance of practical inorganic chemistry	4)Developing student scientific thinking . 5)The relationship of laboratory experiments to theoretical inorganic chemistry.

9. Teaching and Learning Strategies

Strategy	1)The lecture inside the laboratory and the students' participation in lecture by asking questions during the lecture so that the student

	stays in touch with the lecturer and attracts their attention. 2) Ask questions and have students bring the answer to the next lab. 3) Oral exams and daily exams while working in the laboratory. 4)Daily preparation and recording of participation for each student 5)The optimal use of laboratory equipments and how to deal with Them and chemicals. 6)Raising some questions from recent information via the internet and solving them by students so that the correct choice can be made. 7)The report prepared by the student after conducting the Experiment.

10. Course Structure

Week	Hrs	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1+2	2*2	Students gain Knowledge in Conducting experiments	Group 1 experiments : Exp(1): preparation of Lithium chloride & Study the physical and chemical properties of LiCl	practical	Oral exam/ report
3+4	2*2	Students gain Knowledge in Conducting experiments	Exp(2): Preparation of Potassium Sulfate hydrate &Study the physical and chemical properties of K_2SO_4	practical	Oral exam/ report
5+6	2*2	Students gain Knowledge in Conducting experiments	Group 2 experiments: Exp(3):preparation of the Magnesiume Amonium phosphate & Study the physical and chemical properties of $MgNH_4PO_4.6H_2O$	practical	QUIZ exam/ report
7+8	2*2	Students gain Knowledge in Conducting	Exp(4):preparation of barium tartrate & Study the physical and	practical	Oral exam/

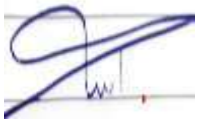
		experiments	chemical properties of $Ba(C_4H_4O_6)$		report
9+10	2*2	Students gain Knowledge in conducting Experiments	Group(3)experiments: Exp(5):preparation of barium borate & Study the physical and chemical properties of $Ba(BO_2)_2$	practical	Oral exam/ report
11+12	2*2	Students gain Knowledge in conducting experiments	Exp(6):preparation of Aluminum hydroxide & Study the physical and chemical properties of $Al(OH)_3$	practical	Quiz & report
13+14	2*2	Students gain Knowledge in Conducting Experiments	Group 4 experiments: Exp(7):preparation of Calcium oxalate& Study the physical and chemical properties of CaC_2O_4	practical	Oral exam & report
15+16	2*2	Students gain Knowledge in Conducting Experiments	Exp(8):preparation of Lead chromate& Study the physical and chemical properties of $PbCrO_4$	practical	Oral exam & report
17+18	2*2	Students gain Knowledge in Conducting Experiments	Group 5 experiments: Exp(9):preparation of Ammonium phospho molybdate& Study the physical and chemical properties of $(NH_4)_3PMo_{12}O_{40}$	practical	Quiz and report

19+20	2*2	Students gain Knowledge in Conducting Experiments	Exp(10):preparation of Antimony trisulfide& Study the physical and chemical properties of Sb_2S_3	practical	Oral exam & report
21+22	2*2	Students gain Knowledge in Conducting experiments	Exp(11):preparation of Barium oxyiodide& Study the physical and chemical properties of BaOI	practical	Oral exam & report
23+24	2*2	Students gain Knowledge in Conducting Experiments	Group (6) experiments Exp(12):preparation of Manganese dioxide& Study the physical and chemical properties of MnO_2	practical	Quiz & report
25+26	2*2	Students gain Knowledge in Conducting Experiments	Exp(13):preparation of silver sulfate& Study the physical and chemical properties of Ag_2SO_4	practical	oral exam & report
27	2	Students gain Knowledge in Conducting Experiments	Group 7 experiments Exp(14):preparation of Manganese chloride& Study the physical and chemical properties of $MnCl_2$	practical	Oral exam & report

28+29	2*2	Students gain Knowledge in Conducting Experiments	Exp(15):preparation of Silver iodide& Study the physical and chemical properties of AgI	practical	QUIZ& report
30	2		Review before the final exam		final exam

11. Course Evaluation	
8% (report+oral and quiz exams) + 2% in-presence +5% mid-year exam + 10% final exam = 25% (practical) + 75%(theoretical) = 100 %	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	ملزمة الكيمياء اللاعضوية العملي اعداد: ا.د. رجب عواد بكر ا.د. زهور فتحي داؤد ا.د. خليل ابراهيم النعيمي
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Some experiments from Internet
Percentage of Curriculum update	No update

Name and Signature
of Department or Branch Head
Dr.Omar Thanon Ali



Name and Signature of
Curriculum Administrator :
Dr. Amaal Younis Ridha

University: Mosul College: The College of Education Sciences
Department or Branch: Chemistry

1. Course Name:
Developmental Psychology/ Stage 2
2. Course Code
EDCH24M2071
3. Term / Year
First and Second Semester/2025
4. Description Preparation Date:
1/9/2025
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 developmental psychology. – Identify the most important stages of growth modern curricula. – Clarifying the stages of development in the worl – Learn about the general principles of the gro process. – Addressing the issue of the child's diet technology. – Identify the types of superfoods that children eat – Comparing the stages of development. – Recognize the importance of social relations in

	adolescent individual. Section II: – Recognize the concept of developmer psychology. – Recognize the importance of developmer psychology. – Clarifying the most important fields and stuc related to developmental psychology. – Explaining the phenomenon of changes that oc in the adolescent. – Introducing the student to the meaning of gro various changes Intellectual, physical and functional. – Detection of factors affecting the growth process – Giving examples of the developmental process t 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	Concept on Self-Growth	Brainstorming Debating and discussing	Asking questions and answering them by the student

		principles of growth			
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 occurs	Brainstorming Debating and discussing	Daily Exam
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	Brainstorming Debating and	Daily Exam

			occurs	discussing	
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 acc private resources Curricula and Teaching Methods Department.
E-References , Websites	Directing to websites related to the subjects of the materia
Percentage of Curriculum update	No thing

Name and Signature
of Department or Branch Head
Asst.Prof.dr. Omar thanoon Ali

Name and Signature

of Curriculum Administrator

Maysa Mohammed Qasim

Course Description Form

Chemistry Department

Thired Year

2025-2024

Course Description Form

1. Course Name: Nutrition and the human body / Optional, 3rd stage/ chemistry
2. Course Code: EDCH24M3131
3. Semester / Year: 2024-2025
4. Description Preparation Date: 2024/9/1
5. Available Attendance Forms: Weekly classroom attendance
6. Number of Credit Hours (Total) / Number of Units (Total)60 hours / 2 Credit
7. Course administrator's name (mention all, if more than one name)
Name: Prof. Dr. Omar Younis Mohammed Email: chem.omar1978@uomosul.edu.iq

8. Course Objectives

Course Objectives	**1. A detailed explanation of the importance of nutrition and its relationship biochemistry, vital compounds, and metabolic pathways that occur a eating.** **2. The concept of nutrition and its relationship to diseases**

9. Teaching and Learning Strategies

Strategy	lectures are followed, the method of discussion and conclusion , and intellectual questions are asked as assignments.

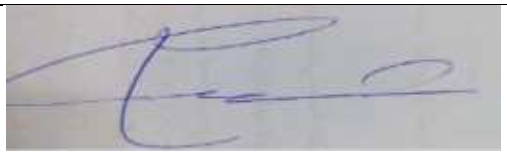
10. Course structure

weeks	Hours	Required learning outcomes	Name of the unit/course or subject	Teaching method	evaluation method
1	2	Understanding and realizing the unit in its details	NUTRITION	Lecture	Quizzes and monthly exams
2	2		Digestive system		
3	2		Carbohydrate metabolism		
4	2		PROTEIN metabolism		
5	2		BLOOD AND ITS FUNCTION		
6	2		BLOOD COMPONENTS		
7	2		URINE		
8	2		NUTRITION AND DISEASES		
9	2		Quiz		
10	2		FIBERS		
11	2		HORMONES		
12	2		ENZYMES		
13	2		ENZYMES AND NUTRITION		
14	2		FOOD FAT		
15	2		Quiz		

11. The grade is distributed out of 100 as follows: 25 mid+ 15 quarterly / then 60 marks for the final exam.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Human nutrition 2017, 4th ed Food chemistry 5th ed 2017
Electronic References, Websites	
Percentage of Curriculum update	



Name and Signature

of Curriculum Administrator

Omar Younis

Name and Signature

of Department or Branch Head

Course Description Form

University of Mosul/ college of education and pure sciences / chemistry department

1. Course Name :
Elective topics /analytical chemistry
2. Course Code:
EDCH24 F6111
3. Semester / Year:
Yearly 3ed class
4. Description Preparation Date:
2/9/2023
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
2 Hours , 4 Units
7. Course administrator's name (mention all, if more than one name)
Name: Ass. Prof. Dr. Subhi M. Jarullah Email: drsubhi74@uomosul.edu.iq

8. Course Objectives

Course Objectives	• **Comprehend the term of qualitative and quantitative analy ical** • **Comprehend the standard materials and who to preparative a so** • **Comprehend the analyses of real samples .....** • **..review of researches ...**

9. Teaching and Learning Strategies

Strategy	• **Comprehend the term of qualitative and quantitative analy ical** • **Comprehend the standard materials and who to preparative a so** • **Comprehend the analyses of real samples .....** **..review of researches ...**

10. Course Structure

Week	Hours	Required Learning Outcomes	Un t or

1 1			• **Comprehend the term of qualitative a quantitative analytical chemistry**	•
2 2		2	**Standard materials and there purity**	Standard r
3	3	2	**Preparation of solutions**	Preparatio
4	4	2	Review of researches	
5	5	2	**Normal concentration**	Norma
6	6	2	Comprehend the percentage and part per milli conc.	The pe
7	7	2	Quiz	
8	8	2	Water dissociation and chemical equilibrium	Kw , ka
9	9	2	Acids , bases and electrolytes	Types
10	10	2		Applicatio
1111		2	Review and discussion of researches	Review
12	12	2	Comprehend the electrochemical sensor uses on the In-vivo analysis and bio analysis	Electroche
13	13	2	Amphoteric term	Amphoter
14 14		2	Chemical equilibrium	Review
1515		2		Examp
		2		Monthl
	16	2	Buffer solutions	Buffer
	17	2	Comprehend the term real samples	The rea
	18	2	How to preparative the real samples to analysis	Crushi
	19	2	Moisture in samples	Types
	20	2	Decomposing and dissolving the samples	
	21	2	Microwave decompositions	
	22	2	Combustion methods for decomposing orga samples	
	23	2	Combustion methods for decomposing inorga samples	
	24	2	Vitamin C in fruits juice	
	25	2	Acetic acid in vinegar	
	26	2	Chemical oxygen demand in waste water	
	27	2	Caffeine and benzoic aced in soft drink	
	28	2	Monthly exam	
11. Course Evaluation				

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation,	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	Fundamentals of Analytical ch
Recommended books and references (scientific journals, reports…)	Different journals in analytical
Electronic References, Websites	

Lecturer

Dr. SUBHI M, JARULLAH

HEAD DEPARTMENT

Course Description Form

University: Mosul **College: Education for Pure Sciences** **Department or Branch: Chemistry**

1. Course Name:
Practical Biochemistry / Bachelor's
2. Course Code:
Bachelor's, 3th grade
3. Semester / Year:
2024-2025
4. Description Preparation Date:
1-9-2024
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
3hr / 6 Units
7. Course administrator's name (mention all, if more than one name)
Name: Nawfal Sheet Shahodh Email: nawfenawfelsheet76@uomosul.edu.iq
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 experiments** **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	The teaching strategy for the practical biochemistry subject includes the lecture method inside the laboratory as a theoretical part which is published in advance on the classroom for the stage. The lecture also includes a method of stimulating students' motivation, discussion, asking questions and students' participation in answering them. The method of daily tests is followed as an assessment and also to emphasize the consolidation of the subject and its control. Mid-year and final tests

10. Course structure

weeks	Hours	Required learning outcomes	Name of the unit/course or subject	Teaching method	evaluation method

١	٢	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
٢	٢		Determination of vitamin C spectrophotometrically
٣	٢		Detection of sugars Monosaccharides Disaccharides Polysaccharides Follow up on starch decomposition
٤	٢		
٥,٦	٤		
7,8	٤		Fats Fat detection
٩	٢		
10,11	٤		Detection of proteins Detection of amino acids Precipitation of proteins Quantitative determination of proteins usin the Biuret method
١٢	٢		
١٣	٢		
١٤,١٥	٤		
١٧و١٦	٤		Enzymes Preparing a standard curve used to measur the activity of the invertase enzyme Factors affecting enzyme activity 1- Acid function 2- Temperature 3- Enzyme concentration 4- Concentration of the substrate
١٨,١٩	٤		
٢١و٢٠	٤		
٢٢	٢		
٢٣	٢		
٢٤	٢		Exams, receiving and correcting reports, a preparing final grades
٢٥	٢		

11.Course Evaluation

Grade Distribution
5 marks for daily exams
5 marks for participation in discussions within the lecture
5 marks for commitment and regular attendance of lectures
25 marks for the mid-year exam
60 marks for the final exam

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Pre-prepared lectures
Main references (sources)	Basics Lectures Practical Biochemistry
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

جامعة الموصل
كلية التربية للعلوم الصرفة

Curriculum AdministratorLec

Nawfal Sheet Mohammad

Department or Branch HeadAsst.Prof. Dr. Omar Dhanon Ali

Course Description Form

1. Course Name:

Physical chemistry/optional

2. Course Code:

EDCH25 M3101

3. Semester / Year:

The first semester and the second semester/2025

4. Description Preparation Date:

1/4/2025

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	Introduction to physical chemistry	theoretical	Exam and daily activity

		basic concepts related to the branches of 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 the process of extracting solvent from solution.	Learn about the extraction law, its conditions, and solve mathematical problems.	theoretical	Exam and daily activity
15	2	Gain knowledge of an introduction to the concept of adsorption	Introduction to the concept of adsorption	theoretical	Exam and daily activity
16	2		Types of adsorption (physical and chemical	theoretical	Exam and daily activity

17	2		Factors affecting adsorption	theoretical	Exam and daily activity
18	2	Gaining knowledge of the types of isotherms	Langmuir isotherm with applied examples	theoretical	Exam and daily activity
19	2		Freundlich isotherm with applied examples	theoretical	Monthly exam
20	2		Isotherm Timken with applied examples	theoretical	Exam and daily activity
21	2	Gain knowledge in types of adsorption kinetics	Pseudo-first order adsorption kinetics with applied examples	theoretical	Exam and daily activity
22	2		Pseudo-second order adsorption kinetics with applied examples	theoretical	Exam and daily activity
23	2		Adsorption kinetics from the implicit molecular diffusion model with applied examples	theoretical	Exam and daily activity
24	2	Gain knowledge in activated complex theory and activation energy	Activated complex theory and activation energy	theoretical	Monthly exam
25	2		Factors affecting activation energy	theoretical	Exam and daily activity
26	2	Gaining knowledge of the thermodynamic functions of activation	Thermodynamic functions of activation	theoretical	Exam and daily activity
27	2		Application of activated complex theory to adsorption	theoretical	Exam and daily activity
28	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
29	2	Gain knowledge of the mechanics of the adsorption process	Mechanics of the adsorption process	theoretical	Exam and daily activity
30	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 .

University: Mosul college: Education of bure science
Department: chemistry.

1. Course Name and Stage:
: Organic/theoretical chemistry, third stage
2. Course Code:
EDCH24 M3031
3. Semester / Year:
2025 −2024
4. Description Preparation Date:
1/9 /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)
Dr.shaimaa Samir. Email. Dr.shaimaasamir83@uomosul.edu Dr.Husain Yusif
8. Course Objectives

Course Objectives	**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, Naphthalene Properti 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 Indole Pyridine Quinoline Label Preparation Interactions	Theoretical lecture	Solve examples
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 Percentage of Curriculum update	

Course Description Form

University: Mosul, College: Education for pure science

Department of Chemistry

1. Course Name and Stage:Organic Chemistry Optional
2. Course Code:
3. Semester / Year:2024−2025
4. Description Preparation Date:1/9/2024−31/8/2025
5. Available Attendance Forms:
Classroom/Regular attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
(60)total (2)hours per week
7. Course administrator's name (mention all, if more than one name)
Name: Neam hazem saleem Email: d.3malmola@uomosul.edu.iq
8. Course Objectives

Course Objectives	**Students learn the importance of condensat chemistry, how to prepare it, its types and mechanics.** **2−How touse this knowledge in everyday life a link it to other scientific phenomena** **3−Encouraging students to perform their dut not only as other government departments**….. • ….. • …..

9. Teaching and Learning Strategies

Strategy	Theoretical lecture, discussion, homework, presenting examp and questions and solving them

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Introducing s Students to t The concepts of condensation	Condensation reaction	The lecture	Daily a monthly exams
2	2	Introducing Students to the Types of condensation	Types condensation reaction	The lecture	Daily a monthly exams
3	2	Introducing Students to the aldol condensation	Aldol Condensation	The lecture	Daily a monthly exams
4	2	Introducing Students to the Types of aldol Condensation	Mixed aldol Reaction and Crossed aldol Condensation	The lecture	Daily a monthly exams
5	2	Introdocing Students to the Applications of aldol condensation	Some applications Of aldol Condensation	The lecture	Daily a monthly exams
6	2	Introdocing Students of Nucleophilic Addition	Nuclephilic Addition to Unsaturated Carbonyl Compounds	The lecture	Daily a monthly exams
7	2	Students Knowledge of the Factors affecting Addition	Factors that Determine the Addition	The lecture	Daily a monthly exams

8	2	Students Knowledge of Aidzonium salts	Diazonium salts Azo compounds	The lecture	Daily a monthly exams
9	2	Students Knowledge of Implicit aldol Reaction	Implicit aldol Reaction	The lecture	
10	2	Students Knowledge of Claisen-schmidt condensation	Claisen-Schmidt condensation	The lecture	Daily a 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)	Advanced Organic Chwmistry
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Name and Signature
of Curriculum Administrator
Dr.Neam Hazem Saleem

Name and Signature
of the Department Head
Dr. Omar Thaneer Ali

Course Description Form

University: Mosul College: Education for Pure Science Department: Chemistry

1. Course Name and Stage:	
3rd Class / Inorganic Chemistry	
2. Course Code:	
EDCH25F3011	
3. Semester / Year:	
1/9/2024 – 31/8/2025	
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) and Scientific title	
Name: Dr. Amaal Younis Ridha Dr. Alyaa Sabah Mohammed Email: Amaalyounis62@uomosul.edu.iq solve415@uomosul.edu.iq	
8. Course Objectives	
Subject Objectives	1. Introduce the student to Coordination chemistry and Coordination compound 2. The student explains the importance of Coordination chemistry in various fields 3. The student will gain an understanding of the correct chemical composition 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 chemical 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 incorrect nomenclature and chemical composition consistency 3. teaching and learning methods * Theoretical lectures, dialogue, discussion, presentationof 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 of participation for students) * Electronic participation and exams on e-learning platforms 4-thinking skills * How to benefit from the vocabulary of the material in everyday 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 of 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 obtainthe appropriate installation

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1		Introduction to coordination chemistry	Definitions	Discussion..etc	Exams..etc
2		Coordinated complexes	A historical look at the development of complexes	Discussion..etc	Exams..etc
3+4		Theories and			Exams..etc

		hypotheses	Chain theory, and Werner's theory	Discussion..etc	
5+6		Coordinated complexes	Types of ligands	Discussion..etc	Exams..etc
7		Coordinated complexes	Nomenclature of harmonic complexes	Discussion..etc	Exams..etc
8+9		Coordinated complexes	Examples	Discussion..etc	Exams..etc
10+11+12		Theories	Theories	Discussion..etc	Exams..etc
13+14+1		Theories	Valence Bond Theory	Discussion..etc	Exams..etc
16+17+18		Theories	Crystal field theory	Discussion..etc	Exams..etc
19		Theories	Molecular orbital theory	Discussion..etc	Exams..etc
20		Methods of preparation of complexes	Methods of preparation of complexes	Discussion…etc	Exams…etc
21		Methods of preparation of complexes	Types of interactions	Discussion..etc	Exams..etc
22		Methods of preparation of complexes	Types of interactions	Discussion..etc	Exams..etc
23		Methods of preparation of complexes	Trans influence	Discussion..etc	Exams..etc
24		Methods of preparation of complexes	Isomers	Discussion..etc	Exams..etc

11.Course Evaluation and Marks	
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, "Advanced Inorganic chemistry" Published by S. Chand &Company Lid
Electronic References, Websites	S;//www.sciencedirect.com/topics /chemistry/coordination chemistry
Percentage of Curriculum update	No update

Name and Signature of Curriculum Administrator	Name and Signature of Department or Branch Head
Prof.Dr. Amaal Younis Ridha Assist.Prof.Dr. Alyaa Sabah Mohammed	Assist.Prof.Dr.Omer Thanoon

Course Description Form

University: Mosul College : Education for pure sciences Department : Chemistry

1. Course Name:
Scientific research methodology
2. Course Code:
EDCH24M3021
3. Semester / Year:
2024−2025
4. Description Preparation Date:
10/9/2024−31/8/2025
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	Lecture	Lecture, discussio With student, Quiz

			Research		
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 are its tools and where are they used ?	Chapter Four / Scientific research methods and tools	Lecture	Lecture, discussio With student Quiz
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	Chapter Ten / Final conclusion of the research	Lecture	Lecture, discussio With student Quiz

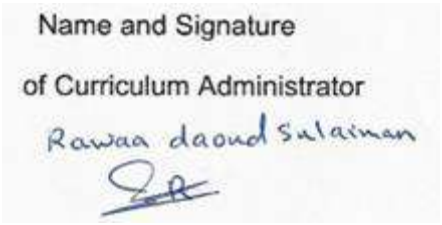
		Word and Excel			

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

University: Mosul **College: Education for Pure Science** **Department: Chemistry**

1. Course Name and stage: Elective(inorganic chemistry) / 3rd grade

2. Course Code: 3121

3. Semester / Year: 2024-2025

4. Description Preparation Date: 11/9/2024 – 31/8/2025

5. Available Attendance Forms: in presence

6. Number of Credit Hours (Total) / Number of Units (Total) 44 / 2

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

Name: Dr. Akram Abdulqader Mohammed(Assistant Professor)
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	h	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 & electronic configuration	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	Oxidation states	lecture	

		the first transition elements			
7	2	Gain knowledge about the nature of transition elements oxides	Transition Elements Oxides	lecture	exam
8	2	Gain knowledge about: Lanthanides and their uses	Inner transition elements and uses of some lanthanides elements and also compounds	lecture	
9	2	Gain knowledge names and occurrence of Lanthanides	Gain knowledge in names and occurrence of Lanthanides	lecture	exam
10	2	Gain knowledge in common properties of lanthanides and actinides and knowledge in using of actinides	Common properties of Lanthanides and Actinides-uses of actinides- Actinides elements	lecture	
11	2	Gain knowledge of Similarities and Differences between Lanthanides & actinides	Similarities and Differences between lanthanides and actinides	lecture	exam
12	2	Identification of lanthanides reactions types	Chemical activity of lanthanides	lecture	
13	2	Identification of lanthanides oxidation states	Oxidation states of lanthanides- oxidations states of 2+	lecture	
14	2	Identification of lanthanides oxidation states	oxidation states of 3+ and 4+ for lanthanides , preparation of quaternary	lecture	exam

			lanthanides compounds		
15	2	Gain knowledge in Lanthanide Contraction	Lanthanide Contraction	lecture	
16	2	Gain knowledge in coordination number Of lanthanides	coordination numbers of lanthanides part: 1	lecture	
17	2		coordination Numbers of Lanthanides p: 2	lecture	
18	2	Gain knowledge in Spectral properties of lanthanides	Spectral Properties of lanthanides	lecture	
19	2	Gain knowledge in Using of optical Properties of lanthanides	Use of the Optical Properties of lanthanides	lecture	
20	2	Gain knowledge in Magnetic properties of lanthanides ,part 1	Magnetic properties of lanthanides p1	lecture	exam
21	2		Magnetic properties of lanthanides p2	lecture	
22	2		Review before final exam	lecture	

11.Course Evaluation and Marks	
15 % daily exams + 25% mid year exam + 60% final exam = 100%	
12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1)كتاب الكيمياء اللاعضوية التناسقية تأليف : ا.د. تغريد هاشم النور ا.د. عمر شهاب حمد العبيدي جامعة بغداد , 2016
	2) كتاب كيمياء اللانثانيدات والاكتينيدات تأليف:د. عبدالعزيز ابراهيم الواصل د.معتصم ابراهيم خليل جامعة الملك سعود
Main references (sources)	
Recommended books and references (scientific journals, reports...)	

Electronic References, Websites	internet
Percentage of Curriculum update	

University: Mosul College: The College of Education Sciences
Department or Branch: Chemistry

1. Course Name:
Counseling and Mental Health/ Phase III
2. Course Code
EDCH24M3141
3. Term / Year
First and Second Semester/2025
4. Description Preparation Date:
1/9/2025
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 ofcounse and mental health. - Clarify the most important stages that exist counseling. - Learn about modern trends in educational guida and 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 general in Schools and their association with theories. – Giving examples of counseling and mental hea within 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 procedu on 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	– Introduction – Guidance in Islamic educational thought – The concept of counseling, educational and psychological	Lecture, Discussion and Interrogation	Oral Discussions

		concept of psychological and educational guidance and counseling in Islamic educational thought as well as the relationship of counseling with other sciences.	guidance − Relationship of counseling to other sciences		
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 − Provide students with information about the principles of counseling and the foundations adopted in the process of educational and psychological counseling	− 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
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 psychologic al and	- Fields of psychological and educational counseling A- The field of preschool "early childhood". أ- Primary school “late childhood” domain.	Interrogation, Lecture, Brainstorming	Constructive oral discussions

		educational counseling for all stages.	ب- Adolescence and youth domain ت- Adult Counseling ث- Extension of Extraordinary"Special Categories"		
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 Division=36 hours (total)	- Introducing the information necessary for guidance or observation - Detailed explanation of the counselling interview - Learn about the case study with examples	- Information needed for guidance or observation - Guided Interview - Case Study - CV	Practical presentations, lecture, questioning and collaborative learning	Classroom questions and oral discussions
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	- The concept of guidance in school First: Teacher Counselor Second:The Educational Counselor Third: Parents' councils and their role in educational	Developed Lecture,	Classroom questions and oral discussions

		− 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	guidance Fourth: The need for psychological and educational counseling programs in middle and middle schools Fifth: Problems dealt with by educational guidance	Interrogation and Discussion	
20, 21, 22,	2 hours per division per week i.e. 6* 6 Division=36 hours (total)	− Introducing the science of mental health − Clarify the concept of mental health − MENTAL ILLNESS − Introducing the concept of normal and abnormal personality and their criteria	− Psychological well-being − Psychological well-being − MENTAL ILLNESS − The Concept of Normal Personality and Abnormal Personality − Normal and non-normal personality criteria	Classroom questions, lecture and discussion	Classroom Questions
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	− Psychological well-being − Characteristics of a Mental Health Personality − Relationship of Mental Health to Education − The concept of	Lecture, discussion and oral discussions	Classroom Questions

		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 crises - Sources of psychological crises - The concept of frustration - Proper methods for resolving psychological crises - Health Maintenance		
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 mechanisms and non-conscious mechanisms	-Defensive mental mechanisms, including both First: Emotional Second: Non-consciousness	Oral Discussions, Lecture and Interrogation	Oral Discussions and Classroom Questions
- 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	- 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

		the psychological dimensions of maladjustment			

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,
Percentage of Curriculum update	No thing

Name and Signature
of Department or Branch Head
Asst.Prof.dr. Omar thanoon Ali

Name and Signature

of Curriculum Administrator

Maysa Mohammed Qasim

Course Description Form

University: Mosul **College: Education for Pure Science** **Department: Chemistry**

1. Course Name and stage: Elective(inorganic chemistry) / 3rd grade

2. Course Code: 3121

3. Semester / Year: semester 1st & 2nd / 2024-2025

4. Description Preparation Date: 11/9/2024 – 31/8/2025

5. Available Attendance Forms: in presence

6. Number of Credit Hours (Total) / Number of Units (Total) 30 weeks/60 hours/ 4units

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

Name: Dr. Akram Abdulqader Mohammed(Assistant Professor)
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

	1)In-person lectures(enhanced by means of explanation) 2) Continuous discussion with students . 3) Presenting problems , collecting solution with students

Strategy	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	h	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+4	4	Gain knowledge of the electronic arrangement and the size of the radii of the first main transition elements	General properties of transition elements & electronic configuration	lecture	exam
5	2	Knowledge of the magnetic properties of the main transition elements	Magnetic Properties	lecture	Home work
6+7	4	Gain knowledge of color diversity& catalysts	Color diversity, Charge transfer, Catalytic activity	lecture	exam
		Gain knowledge of			

8	2	oxidation states for the first transition elements	Oxidation states	lecture	
9+10	4	Gain knowledge about the nature of transition elements oxides	Transition Elements Oxides	lecture	exam
11	2	Gain knowledge about: Lanthanides and their uses	Inner transition elements and uses of some lanthanides elements and also compounds	lecture	
12+13	4	Gain knowledge names and occurrence of Lanthanides	Gain knowledge in names and occurrence of Lanthanides	lecture	exam
14	2	Gain knowledge in common properties of lanthanides and actinides and knowledge in using of actinides	Common properties of Lanthanides and Actinides-uses of actinides-Actinides elements	lecture	
15	2		Review before Mid-exam		
16+17	4	Gain knowledge of Similarities and Differences between Lanthanides & actinides	Similarities and Differences between lanthanides and actinides	lecture	exam
18	2	Identification of lanthanides reactions types	Chemical activity of lanthanides	lecture	
19	2	Identification of lanthanides oxidation states	Oxidation states of lanthanides-oxidations states of 2+	lecture	
		Identification of	oxidation states of 3+ and 4+		

20+21	4	lanthanides oxidation states	for lanthanides , preparation of quaternary lanthanides compounds	lecture	exam
22	2	Gain knowledge in Lanthanide Contraction	Lanthanide Contraction	lecture	
23	2	Gain knowledge in coordination number Of lanthanides	coordination numbers of lanthanides part: 1	lecture	
24	2		coordination Numbers of Lanthanides p: 2	lecture	
25	2	Gain knowledge in Spectral properties of lanthanides	Spectral Properties of lanthanides	lecture	
26	2	Gain knowledge in Using of optical Properties of lanthanides	Use of the Optical Properties of lanthanides	lecture	
27+28	4	Gain knowledge in Magnetic properties of lanthanides ,part 1	Magnetic properties of lanthanides p1	lecture	exam
29	2		Magnetic properties of lanthanides p2	lecture	
30	2		Review before final exam		

11.Course Evaluation and Marks	
15 % daily exams + 25% mid year exam + 60% final exam = 100%	
12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1)كتاب الكيمياء اللاعضوية التناسقية تأليف : ا.د. تغريد هاشم النور ا.د. عمر شهاب حمد العبيدي جامعة بغداد , 2016
	2) كتاب كيمياء اللانثانيدات والاكتينيدات تأليف:د. عبدالعزيز ابراهيم الواصل د.معتصم ابراهيم خليل جامعة الملك سعود

Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	internet
Percentage of Curriculum update	

Course Description Form

University : Mosul University College : Education College for Pure Science

Department or Branch : Chemistry

1. Course Name:
Industrial chemistry/chemical industries and industrial pollution
2. Course Code:
EDCH24 M4021
3. Semester / Year:
2023/2024
4. Description Preparation Date:
2023 /7/1
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**	**Water waste treatment**	**Discussion**	**Discussion**

		methods	Industrial and domestic	lecture	
5th	2	Teaching students glass industry	glass industry	Lecture	daily oral quiz
6th	2	Re information	review	Discution	
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

اسم وتوقيع رئيس القسم

ا.م.د عمر ذنون علي

اسم و وتوقيع صاحب المقرر

م.د محمد حجي علي

Course Description Form

University: Mosul **College: Education for pure sciences**

Dep. or Branch: Chemistry

1. Course Title and Academic Level:
Electrochemistry / Third Year
2. Course Code:
EDCH24 3041
3. Semester/Year:
2024/2025
4. Date this description was prepared:
September 1, 2024 - August 31, 2025
5. Available Attendance Formats:
In-person // Online
6. Number of Study Hours (Total) / Number of Units (Total)
2 x 30 hours / 2 units
7. Course administrator's name (mention all, if more than one name) and Scientific title
Dr. Ibrahim Younis Mohammed ibrahemawab@uomosul.edu.iq Dr. Noor Hazem Mohamed noorsaeed@uomosul.edu.iq
8. Course Objectives

Subject Objectives	• **Study how reactions occur and factors affecting them...** • **Apply basic laws, such as the r law, and understand mathemat models.** • **Develop laboratory skills conducting kinetic experiments a analyzing the results.**
9. Teaching and Learning Strategies	
Strategy	1. Active Learning: Encouraging students to actively participate through activi such as group discussions, simulations, and practical experiments. 2. Project-Based Learning: Implementing group projects related to chemi kinetics applications, which helps students develop teamwork and problem-solv skills. 3. Use of Technology: Leveraging technological tools such as software simulat and educational applications to illustrate the concepts of speed and chemi reaction. 4. Cooperative Learning: Organizing students into small groups to work togethe solve problems or conduct experiments, which promotes the exchange knowledge and experiences.

	5. Continuous Assessment: Conducting periodic assessments including short te reviews, and projects to track student progress on an ongoing basis. 6. Critical and Analytical Thinking: Encouraging students to ask questions develop their critical thinking skills by analyzing data and comparing results. 7. Practical Applications Linking theoretical concepts to practical applications in everyday life, such studying the effect of various factors on the rate of chemical reactions.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	Electrochemistry	theoretical	Daily oral and written tests with assignments
2	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	Applications of Electrochemistry	theoretical	Daily oral written te with assignments
3	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	Electricity	theoretical	Daily oral and written tests with assignments
4	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	Electrolytes	theoretical	Daily oral and written tests with assignments
5	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	Types of Electrolytes	theoretical	Daily oral written te with assignments
6	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	Viscosity	theoretical	Daily oral written te with assignments
7	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	Factors Affecting Viscosity	theoretical	Daily oral written te with assignments
8	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	Diffusion Phenomenon	theoretical	Dailyoral written te with assignments
9	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	Fuchs's First and Second Laws	theoretical	Daily oral written te with assignments
10	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	Electrical conductivity	theoretical	Daily oral written te with

					assignments
11	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	Equivalent conductivity and olar conductivity	theoretical	Daily oral written te with assignments
12	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	Koloruch's law	theoretical	Daily oral written te with assignments
13	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	nsaker's equation	theoretical	Daily oral written te with assignments
14	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	ypes of chemical lls and reference electrodes	theoretical	Daily oral written te with assignments
15	2 hours	Analyze data, understand interaction mechanisms, and develop skills.	Final monthly exam	heoretical	Daily oral written te with assignment S
1	2hours	Data analysis, understanding reaction mechanisms,and skill development	Definition of Chemical Kinetics and Its Importance. Difference Between Chemical Kinetics and Thermodynamics. Basic Concepts: Reaction Rate	1	2hours
2	2 hours	Data analysis, understanding reaction mechanisms,and skill development	Methods for Measuring the Speed of Chemical Reactions Factors Affecting Reaction Rate Concentration, temperature, and pressure. Practical Examples of easuring Rate	2	2 hours

3	2hours	Data analysis, understanding reaction mechanisms,and skill development	3	2hours	Data analysis, understanding reaction mechanisms,and skill development
4	2hours	Data analysis, understanding reaction mechanisms,and skill development	4	2hours	Data analysis, understanding reaction mechanisms,and skill development
5	2hours	Data analysis, understanding reaction mechanisms,and skill development	5	2hours	Data analysis, understanding reaction mechanisms,and skill development
6	2hours	Data analysis, understanding reaction mechanisms,and skill development	6	2hours	Data analysis, understanding reaction mechanisms,and skill development

7	2hours	Data analysis, understanding reaction mechanisms,and skill development	Reversible Reactions.	heoritical	Daily o and writt tests w assignment
8	2hours	Data analysis, understanding reaction mechanisms,and skill development	Collision Theory in Chemical Kinetics. Factors Affecting Effective Collisions.	heoritical	Daily o and writt tests w assignment
9	2hours	Data analysis, understanding reaction mechanisms,and skill development	Activation Energy Applying Several Mathematical Examples	heoritical	Daily o and writt tests w assignment
10	2hours	Data analysis, understanding reaction mechanisms,and skill development	ansition State Theory:	heoritical	Daily o and writt tests w assignment
11	2hours	Data analysis, understanding reaction mechanisms,and skill development	Calculating Activation Energy using ansition State Theory	heoritical	Daily o and writt tests w assignment
12	2hours	Data analysis, understanding reaction mechanisms,and skill development	Comparison between Collision Theory and ansition State Theory	heoritical	Daily o and writt tests w assignment
13	2hours	Data analysis, understanding reaction mechanisms,and skill development	Arrhenius Equation Calculating Activation Energy using	heoritical	Daily o and writt tests w assignment

			Arrhenius Equation Explaining the Effect of Temperature on Rate Constant		
14	2hours	Data analysis, understanding reaction mechanisms,and skill development	Concept of Reaction Mechanisms	heoritical	Daily o and writt tests w assignment
15	2hours	Data analysis, understanding reaction mechanisms,and skill development	A review of revious topics with example solutions and questions, along with a test on some subjects.	heoritical	Daily o and writt tests w assignment

11.Course Evaluation and Marks

10% reports + 10% practical exams for the mid-year and end of the year + 5% attendance and daily exams (25% practical material) + 20% mid-year exam (theoretical material) + 5% daily exams for the theoretical material + 50% theoretical material at the end of the year) so the total = 100%

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	A book for the third stage / Physical Chemis prepared by Professor Mahmoud Shaker and Dr. Ba Al-Aqrawi.
Main references (sources)	Book by B. Viswanathan and P. S. Raghavan, Practical Physical Chemistry, 2005.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Book by B. Viswanathan and P. S. Raghavan, Practical Physical Chemistry, 2005.
Percentage of Curriculum update	

Name and Signature

of Curriculum Administrator

Dr. Ibrahim Younis Mohammed

Name and Signature

of Department or Branch Head

Dr. Noor Hazem Mohamed


جامعة كفر الشيخ للعلوم
كلية التربية للعلوم النظرية
رئيس قسم الكيمياء

Course Description Form

University: Mosul College: Education for Pure Sciences Department or Branch: Chemistry

1. Course Name:
Practical Biochemistry / Bachelor's/ Chemistry
2. Course Code:
Bachelor's, 3nd grade
3. Semester / Year:
2023−2024
4. Description Preparation Date:
1−9−2023
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
6hr / 6 Units
7. Course administrator's name (mention all, if more than one name)
Name: Hamza Namik Hameed Email: hamza83n@uomosul.edu.iq
8. Course Objectives

Course Objectives	**1. Teach students the nature, quantification, and detection of life molecu (sugars, proteins, lipids, nucleic acids).** **2. Distinguish between compounds and life molecules.** **3. Enzymes and how to work with them.**

9. Teaching and Learning Strategies

Strategy	The teaching strategy for Biochemistry includes a classroom lecture as a theoretical component, which is published in advance on the course's online class. The lecture also includes methods for stimulating student motivation, discussion, posing questions, and student participation in answering them. Daily tests are used as assessment, and mid-year and final exams are also used to ensure the material is consolidated and consolidated.

10. Course structure

weeks	Hours	Required learning outcomes	Name of the unit/course or subject	Teaching method	evaluation method
1	2	How to Relate Chemistry Vitality and its appreciation in the health and nutritional reality of daily life, especially with regard to diseases that cause an imbalance in its levels	– Introduction to Biochemistry, the Cell, and its Living System	Lecture	Quizzes and monthly exams
2	2		– Water and Buffered Solutions		
3	2		– Carbohydrates – Classes of Carbohydrates – Optical Symmetry of Sugars – Monosaccharides – Important Reactions of Carbohydrates – Disaccharides – Polysaccharides		
4	2				
5	2				
6	2				
7	2		–Lips –Classes of Lipids –Detection of Lipids		
8	2				
9	2				
10	2		– Amino Acids and Proteins – Classes of Amino Acids – Reactions of Amino Acids – Detection of Amino Acids and Proteins – Separation and Identification of Amino Acids – Proteins and Their Functions – Protein Precipitation – Common Methods for Protein Estimation – Protein Classification – Protein Structure		
11	2				
12	2				
13	2				
14	2				
15	2				
16	2		– Enzymes and Their Chemical Nature – Activation Energy – Active Site and Enzyme Catalysis – Enzyme Nomenclature – Factors Affecting Enzyme Activity – Enzyme Inhibition – Quantitative Testing of Enzyme Activity		
17	2				
18	2				
19	2				

20			- Vitamins - Types of vitamins		
21 22 23	2 2 2		- Nucleotides and nucleic acids - DNA - RNA - Natural changes in nucleic acids		
24 25	2 2		- Life energy, its transfer and transformations		

11. Course Evaluation

Grade Distribution
5 marks for daily exams
5 marks for participation in discussions within the lecture
5 marks for commitment and regular attendance of lectures
25 marks for the mid-year exam
60 marks for the final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Pre-prepared lectures
Main references (sources)	Introduction to Biochemistry Textbook
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Curriculum AdministratorLec

Hamza Namik Hameed

Department or Branch
HeadAsst.Prof. Dr. Omar Dhanon Ali

Course Description Form

University: Mosul College: Education for Pure Sciences Department or Branch: Chemistry

1. Course Name:
Teaching curricula and methods
2. Course Code:
EDCH25F3061
3. Semester / Year:
Chapter one and two/ 2024−2025
4. Description Preparation Date:
2024/2025
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 methods. 3- Clarifying the stages of development of the curriculum. 4- Comparison between the old concept and the modern concept of the curriculum. 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 Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1+2+3	6 hours per division 3 hours per week i.e. 9 * 2 divisions 18 hours (total)	Providing students with the concept of science, the concept of technology, the components of science, scientific thinking skills, as well as the characteristics of science.	Introduction to the concept of science and its definitions The concept of technology The importance of technology Components of science and their logical sequence Scientific thinking skills - characteristics of science	Lecture, discussion And Questioning	Oral discussions
4+5+6	3*3=9 hours per division, i.e. 9*2= 18 hours total	Identify the philosophy of science teaching, why we study science, modern trends in science teaching, as well as the stages of curriculum development and types of curriculum. Providing students with information about the meaning of the ancient and modern concept of the curriculum and making a comparison between the two types.	Philosophy of science teaching Modern trends in science teaching The development of the concept of the curriculum The old concept of the curriculum The modern concept of the curriculum Comparison between the old and modern curriculum Criticism directed at the traditional curriculum Components of the curriculum in its modern sense Factors that contributed to the development of the curriculum organizations.	Lecture, discussion and practical presentations	Classroom questions and oral discussions
7+8+9	3*3=9 hours per division, i.e. 9*2= 18 hours total	Providing students with information about the foundations of building curricula - the philosophical basis - philosophical schools - the basis of knowledge - philosophical schools	Logical organization of the curriculum - psychological organization of the curriculum - foundations of curriculum construction - philosophical basis - philosophical schools –	Questioning, lecture And Brainstorming	Oral discussions

10+11+121	3*3=9 hours per division, i.e. 9*2= 18 hours total	Identify the social basis in building the curriculum Explain the relationship of culture to the curriculum Identify the components of culture Give examples of generalities, idiosyncrasies and alternatives Know the relationship of society to the curriculum Clarify the relationship of the curriculum to social change Identify the psychological basis in building the curriculum Statement of curriculum types and characteristics	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
13+14+15	3*3=9 hours per division, i.e. 9*2= 18 hours total	Introducing the elements of the curriculum as a four -way system Educational objectives Content and educational experiences Teaching methods and educational techniques Evaluation.	Educational objectives, importance, sources of derivation and levels Behavioral purposes, how to formulate them and their specifications Classification of behavioral purposes	Hands-on presentations, lecture, questioning and cooperative learning	Classroom questions and oral discussions
16	3*1=3 Hours per	Written exam	The concept of teaching method The concept of teaching method The	Developed lecture, classro questions, questioning and	Classroom questions and oral discussions

17+18+19	division, i.e. 3*2 division =6 hours total	Providing students with information about the concept of teaching method, teaching method and teaching strategy Identifying the foundations of good teaching Advantages a good method Teaching methods associated with cognitive theories Guided exploratory method.	concept of teaching strategy The foundations of good teaching Advantages of a good method Teaching methods associated with cognitive theories Directed exploratory method Lecture method Problem solving method Teaching methods associated with behavioral theories Programmed education method	discussion	
20+21+22	3*3=9 hours per division, i.e. 9*2= 18 hours total	Identify the lecture method, methods, advantages and disadvantages Definition of the method of solving problems, its steps, advantages and disadvantages Clarify the teaching methods associated with behavioral theories The method programmed education.	Cooperative Education Method Discussion Method Project Method Educational Games Method	Classroom questions, lectu discussion and cooperative learning	Class questions
23+24+25 26+27+28	3*3=9 hours per division, i.e. 9*2= 18 hours total	Identify the teaching methods associated with social theories The method of cooperative educatio and its basic pillars, steps, advantages and disadvantages Clarify the method of discussion, its steps, role, advantages and disadvantages The method of the	Live view method Interrogation method Field visits method Calendar reporting method	Lecture, discussion and oral discussion	Class questions

	3*3=9 hours per division, i.e. 9*2= 18 hours total	project, its steps, advantages and disadvantages The method of educationa games, its steps, disadvantages and advantages.	Planning in teaching The importance of planning Types of planning How to write teaching plans		
29+30	3*3=9 hours per division, i.e. 9*2= 18 hours total	Providing students with 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 of field visits, its steps, advantages, disadvantages and stages, the method		Oral discussion lectures, discussion and questioning	Oral discussions and classroom questions
	3*2=6 hours for each division, i.e. 6*2= 12 hours total	of preparing reports, their importance and types of evaluation Identify the concept o planning in teaching, importance, types of school plans, and how to write annual, quarterly and daily school plans..		Lecture, developed lecture and practical presentations	Class questions

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 Mosul / 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.
Percentage of Curriculum update	

Name and Signature

Of Curriculum Administrator

Asst.Prof.dr. Mohammed Jasim Mohammed

Course Description Form

University: Mosul **College: Education for pure sciences**

Dep. or Branch: Chemistry

1. Course Title and Academic Level:
Physical Chemistry Lab - Third Stage
2. Course Code:
0.0
3. Semester/Year:
2024/2025
4. Date this description was prepared:
September 1, 2024 - August 31, 2025
5. Available Attendance Formats:
In-person + online classes
6. Number of Study Hours (Total) / Number of Units (Total)
14 weeks 2 x 1 = 2 x 14 = 28 x 2 courses = 56 hours
7. Course administrator's name (mention all, if more than one name) and Scientific title
the name: Email: Dr. Imad Abdel-Ilah Dr. Safwan Abdul Sattar Safwan6176@uomosul.edu.iq Dr. Noor Hazem. noorsaeed@uomosul.edu.iq Dr. Ahmed Muwaffaq ams95@uomosul.edu.iq Dr. Fidaa Hassan feedahassan@uomosul.edu.iq Dr. Ibrahim Younis Mohammed ibrahemawab@uomosul.edu.iq Dr. Donia Boutros dn_842007@uomosul.edu.iq Dr. Rawaa Daoud rawa-daoud2004@uomosul.edu.iq Mr. Ayman Saeed ayman535@uomosul.edu.iq
8. Course Objectives

Subject Objectives	• **1. Training students in laboratory w** • **2. Educating students about dangers of chemicals** • **3. Teaching students about laborat equipment and glassware** • **4. Teaching students how to w reports and interpret experimental c**

	• **5. Providing students with pract skills**

9. Teaching and Learning Strategies

Strategy	Enhance students' practical skills by conducting experiments that complement theoretical framework. Develop the curriculum and add a number of advanced practical experiments. Provide students with scientific and practical skills through laboratory work. Teach students how to interpret experimental data and its relationship to experiment and the course of the reaction.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1		Definition of Experimen and Its Importance	Experiment (11): Equivalent conductivity of a strong electrolyte	Having presence	An attendanc exam
2	2	Definition of Experimen Its Importance, and Applications	Experiment (12): Finding the value of the dissociation constant for weak electrolytes from measuring their equivalent conductivity	Having presence	
3	2	Definition of Experimen and Its Importance	Experiment (13): nding the molecular weight of a polymer from measuring its viscosity		An attendanc exam
6-4	6	Definition of Experimen and Its Importance	Experiment (14): Correction using ectrical conductivity between . A strong acid and a strong base B. A weak acid and a strong base	Having presence	An attendanc exam

7	2	Definition of Experimen Its Importance, and Applications	Review of previous xperiments with an exam	Having presence	
9-8	4	Definition of Experimen and Its Importance	Experiment (15): Correction using ectrical conductivity tween a mixture of a ong acid and a weak id and a strong base		An attendanc exam
10-9	4	Definition of Experimen and Its Importance	Experiment (16): Decomposition Voltage		
-11 12	4	Definition of Experimen and Its Importance	Experiment (17): Determining the values of the ssociation constants K1 and K2 for hosphoric acid using a pH meter	Having presence	An attendanc exam
13	2		Experiment (18): netics of adsorption of methyl blue dye nto activated carbon Review of previous experiments		
14	2			Having presence	
15	2	Evaluating Student Performance	Practical exam		An attendanc exam
11. Course Evaluation and Marks					

% Reports + 10% Practical Examination for the Mid-Year and End of the Year + 5% Attendance and Daily Examinations (25% Practical Subject) + 20% Mid-Year Examination (Theoretical Subject) + 5% Daily Examinations for the Theoretical Subject + 50% Theoretical Subject at the End of the Year) So the total = 100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Dr. Mahmoud Shaker Saeed's book (Practical Physics
Main references (sources)	.
Recommended books and references (scientific journals, reports…)	Practical Physics Book (Dr. Mahmoud Shal Dr. Safwan Abdul Sattar Al-Dabouni)
Electronic References, Websites	Book by B. Viswanathan and P. S. Raghavan, Practical Physical Chemistry, 2005.
Percentage of Curriculum update	no thing

Name and Signature

of Curriculum Administrator

Name and Signature

of Department or Branch Head

Dr. Omar T. Al

Dr. Imad Abdel-Ilah

Dr. Safwan Abdul Sattar

Dr. Noor Hazem

Dr. Ahmed Muwaffaq

Dr. Fidaa Hassan

Dr. Ibrahim Younis Mohammed

Dr. Donia Boutros

Dr. Rawaa Daoud

Dr. Alaa Abdulazeez Ahme

Mr. Ayman Saeed

L. Maather Abdelah Huseen

Course Description Form

Chemistry Department

Fourth Year

2025-2024

Course Description Form

University: Mosul **College: Education For Pure Science**
Department or Branch: Chemistry

1. Course Name: Elective Biochemistry/4 th grade
2.Course Code: EDCH24M4121
3.Semester / Year: 2024-2025
4.Description Preparation Date: 1/9/2024
5.Available Attendance Forms: , Classroom, Fourth stage
6.Number of Credit Hours (Total) / Number of Units (Total)
60/2
7.Course administrator's name (mention all, if more than one name)
Name: Prof. Dr. luma abd almunim baker Email: Lumabaker50@uomosul.edu.iq

8.Course Objectives

Course Objectives	• **Knowing the basic principles of Nutrition** **Knowing the practical applications of Nutrition**

9.Teaching and Learning Strategies

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

10.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First Second	4	Choosing the appropriate types of nutrition for the study and important elements For living cells	Introduction to Food and nutrition	2 Lecture	quizzes

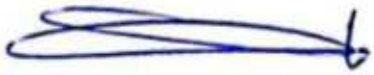
Third Fourth	4	Know the relationship of the organism and nutrition and its types	Classification food according to their functions	2 Lecture	quizzes
Fifth Sixth	4	Knowledge of the organism and its food needs	Macronutrient	2 Lecture	quizzes
Seventh Eighth	4	Understanding basic principles for food	Dietary fiber	2 Lecture	Quiz, report , homework
Ninth Tenth	4	Practical application of nutrition	Study the effect of food on health conditions	2 Lecture	Homework
Eleventh Twelfth	4	Understanding the basic principles of the relationship between dietary antioxidants and health	Micronutrients	2 Lecture	Quiz, report , homework
Thirteen Fourteenth	4	Practical application of Minerals	Study the effect of Minerals	2 Lecture	Homework
Fifteenth Sixteenth	4	Understanding basic principles of water	Learn the importance of water and regulated solutions inside the body	2 Lecture	Quiz, , homework
Seventeenth Eighteenth	4	Exam+Introduction fundamentals of food	Learn about Fundamentals of Foods protein,fat	2 Lecture	Homework
Nineteenth Twentieth	4	Understanding the basic principles of nutrients	Complementary Fundamentals of Food carbohydrate	2 Lecture	Quiz, , homework
Twenty first Twenty second	4	Understanding the ba principles Normal Diet	Adaptation of Normal Diet for Changing Nee	2 Lecture	Quiz, , homework
Twenty third Twenty fourth	4	Understanding the basic principles of normal diet	Learn about Liquid and Soft Diets	2 Lecture	Homework
Twenty fifth Twenty sixth	4	Understanding basic principles Diet Therapy and therapeutic Nutrition	Complementary	2Lecture	Quiz, and homework
Twenty seventh Twenty eighth	4	Understanding the basic principles of therapy diet	Learn about Planning of Therapeutic Diet	2Lecture	Homework
Twenty nineths Thirtieth	4	Exam+ Nutrition in fections, Fever and Lung Diseases	study the effect of Nutrition on Diseases infections	2Lecture	Quiz, and homework
11.Course Evaluation					

Distributing the score out of 100 according to the tasks assigned to the student 5,daily preparation, 10 marks for semester exams 25 marks for midterm exams 60 arks for final exams

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Pre-prepared lectures
Main references (sources)	A TEXT BOOK OF FOOD AND NUTRITION
Recommended books and references (scientific journals, reports…)	Principles of biochemistry-Lehninger Principles of biochemistry, 7th edition, Smith et al., McGraw- Hill
Electronic References, Websites	https:// PubMed library
Percentage of Curriculum update	NO MORE

Department or Branch HeadAsst.Prof.
Dr. Omar Dhanon Ali



Curriculum Administrator Le
Luma abd almunim baker

Course Description Form

University: Mosul **College: Education for pure sciences**

Dep. or Branch: Chemistry

1. Course Name and Stage:
Elective physics(fourth stage)
2. Course Code:
EDCH24F4091
3. Semester / Year:
The first semester + the second semester(2024−2025)
4. Description Preparation Date:
20\1\2025
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) and Scientific title
Name: Ass.Proof.Dr. Fedaa hasan marie Email: feedahassan@uomosul.edu.iq
8. 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 name	Learning method	Evaluation method
1	2	Student definition of chemical equilibrium	chemical equilibrium	theoretical	An attendance exam
2	2	Gaining knowledge in knowing the meaning of balance	Definition of balance	theoretical	An attendance exam
3	2	The student gains experience in the state of equilibrium	The state of equilibrium	theoretical	An attendance exam
4	2	Gaining knowledge in understanding the meaning of equilibrium diagrams.	Equilibrium diagrams	theoretical	An attendance exam
5	2	Gaining knowledge in the field of understanding the properties of equilibrium.	Properties of equilibrium	theoretical	An attendance exam

6	2	Gaining knowledge in the field of understanding the equilibrium constant	the equilibrium constant	theoretical	An attendanc exam
7	2	Acquiring knowledge in the field of pka	pka	theoretical	An attendanc exam
8	2	It takes knowledge to understand the acidity dissociation constant .	Constant acidity dissociation	theoretical	An attendanc
9	2	Gain knowledge in the field of understanding the relationship between Pka and Ka	Pka,ka	theoretical	An attendanc exam
10	2	Gain knowledge in understanding the relationship between Pka and pH	pka وpH	theoretical	An attendanc exam
11	2	he student's understanding of how to calculate Ka	calculate Ka	theoretical	An attendanc
12	2	The student acquires knowledge in converting pka to ka	converting pka to ka	theoretical	An attendanc exam
13	2	Solve issues related to the topic	Solve problems	theoretical	An attendanc exam

14	2	The student gains experience in solving problems related to the topic	Questions and solutions on the topic	theoretical	An attendanc exam
15	2	The student gains knowledge in understanding the Henderson equation	Henderson equation	theoretical	An attendanc exam
The secod semeter					
1	2	application			
2	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	An attendance exam
8	2	Gain knowledge in understanding change in concentration and its impact.	Using Le Chatel's principle as the concentration changes	theoretical	An attendance exam
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	An attendance exam
10	2	Gain knowledge in understanding Le Chatelier's principle and temperature	Use Le Chatel's principle with temperature changes	theoretical	An attendance exam
11	2	*The student's understanding of the meaning of the catalytic effect.*	*Le Chalet's Principle and Catalysts*	theoretical	An attendance exam
12	2	he student gains experience in knowing the contact process.	The process of communication or contact	theoretical	An attendance exam
13	2	The student acquires knowledge of the steps of the contact process	Contact process steps	theoretical	An attendance exam
14	2	The student gains experience in knowing the conditions of interaction.	Reaction conditions (pressure, temperature, catalysts and their effects)	theoretical	An attendance exam

15	2	The student gains knowledge in understanding balance and its impact on our lives.	Applications of balance in our daily lives	theoretical	An attendance exam

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
12. the total score becomes from 100.

13. Learning and Teaching Resources

Required textbooks (curricular books, if any)	There is no systematic book / topics selected from several books
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Several sources and sites on the Internet
Percentage of Curriculum update	

Name and Signature

of Curriculum Administrator

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم وتوقيع رئيس

Name and Signature

of Department or Branch Head

اسم وتوقيع صاحب المقرر
القسم او الفرع
ا.م.د.فداء حسن مرعي

Course Description Form

University: Mosul College: Education for Pure Sciences Department or Branch: Chemistry

1. Course Name: Biochemistry
2. Course Code: **EDCH24M 4011 Bachelor's,** 4th grade
3. Semester / Year: 2024−2025
4. Description Preparation Date: 1−9−2024
5. Available Attendance Forms: Weekly
6. Number of Credit Hours (Total) / Number of Units (Total): 2hr / 4Units
7. Course administrator's name (mention all, if more than one name)
Name: Nashwan Ibrahem Abo Email: nashwan78ibrahem@uomosul.edu.iq
8. Course Objectives

Course Objectives	**1. Teaching students how a living cell works** **2. The metabolic pathways in which sugars, fats, proteins, and amino acids broken down and built.** **3. How to obtain energy** **4. Forms of life energy** **5. Nucleic acid replication and methylation of genetic information** **6. Mutations, how they occur, and the possibility of subsequent mutations**
9. Teaching and Learning Strategies	
Strategy	The teaching strategy for biochemistry includes the lecture method, which is published in advance on the classroom for the stage in print form. The lecture also includes discussing and clarifying the relationship between the scientific material and the health condition. Stimulating students' motivation in the discussion, asking questions and answering them cooperatively under the guidance of the subject teacher.

	The method of daily tests is followed as an assessment and also to emphasize the consolidation and control of the subject. The following model for the assessment is used.

10 – 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	Life energy, its transmission and transformations, energy and living organisms, enthalpy, entropy, and free energy.	Lecture	Quizzes and monthly exams
2	2	Knowledge of important life compounds	Phosphate compounds with high and low energy.	Lecture	Quizzes and monthly exams
3	2	The role of some important energy compounds	Oxidation and reduction reactions, reduction potential - activation energy.	Lecture	Quizzes and monthly exams
4	2	- Learn about the concept of metabolism in the body	- The role of ADP and ATP in transferring phosphate energy.	Lecture	Quizzes and monthly exams
5و6	4	- Learn important system pathways	- Transferring energy as a reduced force.	Lecture	Quizzes and monthly exams
7و8	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	Quizzes and monthly exams
9	2	Important biochemical cycles	- Anaerobic glycolysis	Lecture	Quizzes and monthly exams
10و11	4	- Important secondary metabolic pathways	- Enzymatic steps in the first and second stages of glycolysis.	Lecture	Quizzes and monthly

					exams
12	2	Energy transfer - between components in the cell	- The fate of Pyruvate, the conversion of Pyruvate into ethanol (alcoholic fermentation).	Lecture	Quizzes and monthly exams
13	2	Fats -	- Conversion of pyruvate into acetyl-CoA.	Lecture	Quizzes and monthly exams
15و14	4	The concept of - building fat	- Tricarboxylic acid cycle (Krebs cycle).	Lecture	Quizzes and monthly exams
17و16	4	Cholesterol - compounds that are important in life and the relationship between metabolic pathways	- General features of the course.	Lecture	Quizzes and monthly exams
19و18	4	What are proteins - and how are they digested?	- Sources of fueling the Krebs cycle.	Lecture	Quizzes and monthly exams
21و20	4	Amino acids and - their role in life processes in the living cell	- Organizing the Krebs cycle.	Lecture	Quizzes and monthly exams
22	2	Nucleic acids and their role in transmitting genetic information and mutations	- Clyoxyaltide cycle.	Lecture	Quizzes and monthly exams
23	2	The concept of - mutations	- The pentose/phosphate sugar pathway (phosphogluconate pathway)	Lecture	Quizzes and monthly exams
24	2	Protein - construction	- The importance of the sugar pentaphosphate pathway.	Lecture	Quizzes and monthly exams
25	2	Protein - construction and biological regulation	- Electron transfer and oxidative phosphorylation, components that participate in the process of electron transfer and oxidative phosphorylation.	Lecture	Quizzes and monthly exams

11.Course Evaluation

Grade Distribution
5 marks for daily exams
5 marks for participation in discussions within the lecture
5 marks for commitment and regular attendance of lectures
25 marks for the mid-year exam
60 marks for the final exam

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	The methodological book in the Arabic language: Al Flayeh, Khawla Ahmed (2000).
Main references (sources)	Introduction to biochemistry Lippincott Biochemistry 8th edition , Copyright 2022
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	
Percentage of Curriculum update	Not found

Curriculum AdministratorLect.
Prof.Dr.Nashwan Ibrahem Abo

Department or Branch
HeadAsst.Prof. Dr. Omar Dhanon Ali

Course Description Form

University: Mosul, College: Education for pure science

Department of Chemistry

1. Course Name and Stage:	
Educational Applications/ Forth year students	
2. Course Code:	
EDCH24 M4141	
3. Semester / Year:	
1st & 2nd semesters – 2024/2025	
4. Description Preparation Date:	
1/9/2024	
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 Badiwi Email: dr.mahmood.hafidh@uomosul.edu.iq	
8. Course Objectives	
The course aims to make the student able to:	1. Train students to prepare daily/annual lesson plans 2. Enable practical teaching experience in schools 3. Develop classroom management skills 4. Enhance educational communication skills 5. Gain experience with educational technologies 6. Understand teachers' professional/ethical roles 7. Practice teaching chemistry topics 8. Design chemistry experiments for schools 9. Apply modern teaching strategies 10. Manage chemistry labs effectively
9. Teaching and Learning Strategies	
Strategy	- Interactive lectures - Microteaching - Blended learning - Practical applications - Classroom observations

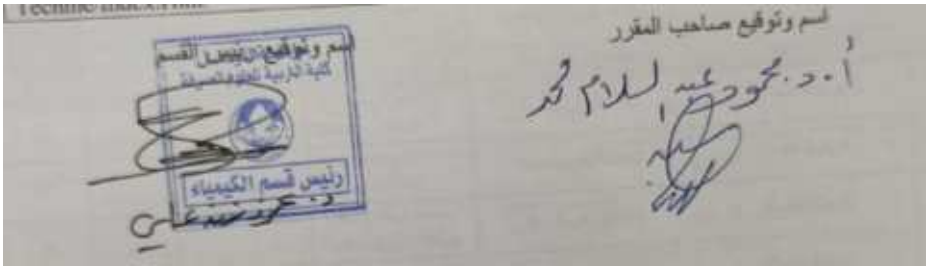
10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The meaning of practical education Objectives of practical education	Practical education	Cooperative Learning	1
2	2	Meaning of teaching aids Types of teaching aids	Educational methods in teaching chemistry	Cooperative Learning	2
3	2	Use of digital teaching aids Online learning Educational software Virtual reality (VR) and augmented reality	Educational technology in teaching chemistry	Cooperative Learning	3

		(AR) Online cooperative education Use of electronic tests and online assessments Blended Learning			
4	2	Classroom Observation Preparing teaching plans in all their details Classroom and laboratory management Designing educational evaluation tools Scientific and educational extracurricular activities Feedback and self-evaluation Educational guidance Solving scientific and educational problems Curriculum Analysis	Application	Cooperative Learning	4
5	2	Lesson implementation in class	Application	Microteaching	5
6	2	Lesson implementation in class	Application	Microteaching	6
7	2	Lesson implementation in class	Application	Microteaching	7
8	2	Lesson implementation in class	Application	Microteaching	8
9	2	Lesson implementation in class	Application	Microteaching	9
10	2	Lesson implementation in class	Application	Microteaching	10
11	2	Lesson implementation in class	Application	Microteaching	11
12	2	Lesson implementation in class	Application	Microteaching	12
13	2	Lesson implementation in class	Application	Microteaching	13
14	2	Lesson implementation in class	Application	Microteaching	14
15	2	Lesson implementation in class	Application	Microteaching	15
16	2	Lesson implementation in	Application	Microteaching	16

		class			
17	2	Lesson implementation in class	Application	Microteaching	17
18	2	Lesson implementation in class	Application	Microteaching	18
19	2	Lesson implementation in class	Application	Microteaching	19
20	2	Lesson implementation in class	Application	Microteaching	20
21	2	Lesson implementation in class	Application	Microteaching	21
22	2	Lesson implementation in class	Application	Microteaching	22
23	2	Lesson implementation in class	Application	Microteaching	23
24	2	Lesson implementation in class	Application	Microteaching	24
25	2	Lesson implementation in class	Application	Microteaching	25
26	2	Lesson implementation in class	Application	Microteaching	26
27	2	Lesson implementation in class	Application	Microteaching	27
28	2	Lesson implementation in class	Application	Microteaching	28
29	2	Lesson implementation in class	Application	Microteaching	29
30	2	Lesson implementation in class	Application	Microteaching	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) training between reality and hopes Field (research in theory and application)
Recommended books and references (scientific journals, reports...)	Books and articles on modern teaching methods
Electronic References, Websites	aching All websites that deal with modern te methods



Name and Signature

of Department or Branch Head

Name and Signature

of Curriculum Administrator

Course Description Form

University: of Mosul **College of Education for Pure Scienc**
Department or **Branch:Chemistry**

1. Course Name and Stage:			
Measurement and Evaluation			
2. Course Code:			
EDCH25 M4051	EDCH25 M4051		
3. Semester / Year:			
2024/2025			
4. Description Preparation Date:			
The beginning of the school year			
5. Available Attendance Forms:			
Daily attendance			
6. Number of Credit Hours (Total) / Number of Units (Total)			
2 hours a week and 30 weeks			
7. Course administrator's name (mention all, if more than one name) and Scientific title			
Waad Ghanem Badawi :الاسم waadalhadidy1@uomosul.edu.iq:الآيميل			
8. Course Objectives			
Subject Objectives	**Introducing students to the concept of educational measurement ar evaluation and its types Distinguishing between measurement, evaluation, and assessment a knowing the difference between them Introducing students to the characteristics of good assessment For students to understand the true meaning of measurement and evaluation.**		
9. Teaching and Learning Strategies			
Strategy	Strategy Problem-solving method		

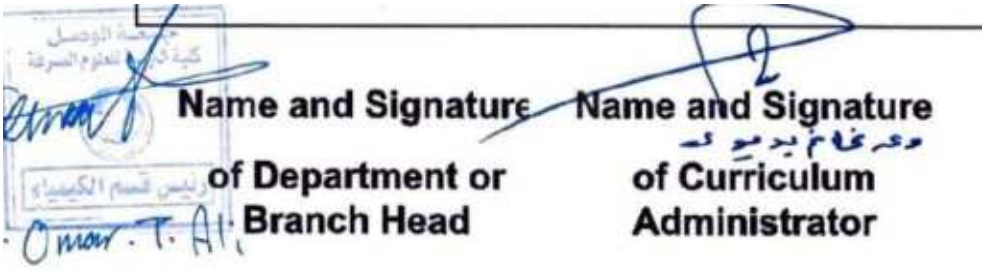
	Cooperative learning method						
10. Course Structure							
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method		

1. Oral questions 2. Task assignment 3. Oral questions 4. Discussions 5. Oral questions 6. Oral questions 7. Discussions 8. Oral questions 9. Midterm test 10. Software production criteria 11. Software production criteri 12. Software	1. Lecture and discussion using multimedia and the internet 2. Lecture and discussion using multimedia 3. Discussion and brainstorming using multimedia 4. Lecture and discussion using multimedia and the internet 5. Discussion and brainstorming using multimedia 6. Lecture and discussion using multimedia 7. Lecture and discussion using multimedia and the internet 8. Discussion and brainstorming using multimedia and the internet 9. Lecture and discussion using multimedia and the internet 10. Cooperative learning and practical	1. Introduction: Measurement 2. Types of Measurement 3. Introduction to Evaluation and its Types 4. The Relationship between Measurement, Evaluation, and Assessment 5. Test Blueprint 6. Benefits of the Test Blueprint 7. Practical Examples of the Test Blueprint 8. Achievement Tests 9. Midterm Exam 10. Specifications of Achievement Tests 11. Psychometric Properties	1. C1, C3 2. A2, C2, C4 3. A3, C1, C3 4. A4, B1 5. A5, B1 6. A6, B1 7. A6, B1 8. A6, B1 9. A7, B2 10. A8, B3 11. A9, B4, B5 12. B6, C1, C2	3 3 3 3 3 3 3 3 3 3 3 3

production criteria **13. Software production criteria** **14. Software production**	**demonstration using multimedia** **11. Cooperative learning and practical demonstration using multimedia** **12. Cooperative learning and practical demonstration using multimedia** **13. Cooperative learning and practical demonstration using multimedia** **14. Discussion and brainstorming with internet support**	**12. Types of Tests** **13. Validity** **14. Validity**	**13. B7, C1, C3** **14. B6, B7, C1, C2, C1,**	

11. Course Evaluation and Marks			
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)	Basics of educational psychology		
Main references (sources)	Educational psychology		
Recommended books and references (scientific journals, reports...)	Journals of Colleges Education		
Electronic References, Websites	nothing		

Percentage of Curriculum update	50%		



Course Description Form

University: Mosul College: Education of pure science Department or Branch: chemistry

1. Course Name:

Organic diagnosis /fourth stage /Chemistry Department

2. Course Code:

EDCH244041

3. Semester / Year:

2024-2025

4. Description Preparation Date:

1/9/2024 – 31/8/2025

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: **Ghufran Thanoon**
Email: gsdeek@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 compou 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	discu n
2	2	Definition of infrared spectrum	Infrared spectrum	Lecture	Discus and sc examp
3	2	Know the most important effective groups	Spectrum data analysis	Lecture	Daily exam
4	2	me information about the location of absorption bands of aromatic rings	Aromatic rings	Lecture	homev
5	2	Some information about the locatio absorption bands for carb compounds	Carbonyl compounds	Lecture	discu n
6	2	Factors affecting the stretcl frequency of the carbonyl group	Carbonyl compounds	Lecture	discu n
7	2	Absorption bands for carboxylic a and their derivatives	Carboxylic a and t derivatives	Lecture	Oral questi
8	2	Expected absorption bands for ar compounds and their derivatives	Amines and r compounds	Lecture	Solve examp
9	2	Expected absorption bands for ethers phenols	Ethers and phenols	Lecture	discu n
10	2	Interpreting the spectra of diffe compounds	General Review	Lecture	Daily exam
11	2	Spectra of the ultraviolet spectrum	Electronic transi	Lecture	discu n
12	2	The effect of ultraviolet radiation organic compounds	UV spectrum organic vehicles	Lecture	discu n
13	2	The effect of sequence, solvent, vacuum obstruction on the ultravi spectrum	Factors affec packages in the spectrum spectr	Lecture	discu n
14	2	Introducing the student to the basic these rules	Wood-widow ru for the waveleng of the debts	Lecture	Solve examp
15		Mid-year exam	Mid-year exam	Mid-year exam	Mid-y exam
16			Field Training		
17					
18					
19					
20					
21					
22		Magnetic nuclei and non -magnetic c	Diagnosis organic compou by magn nuclear spectrun	L ur	Studer partici on

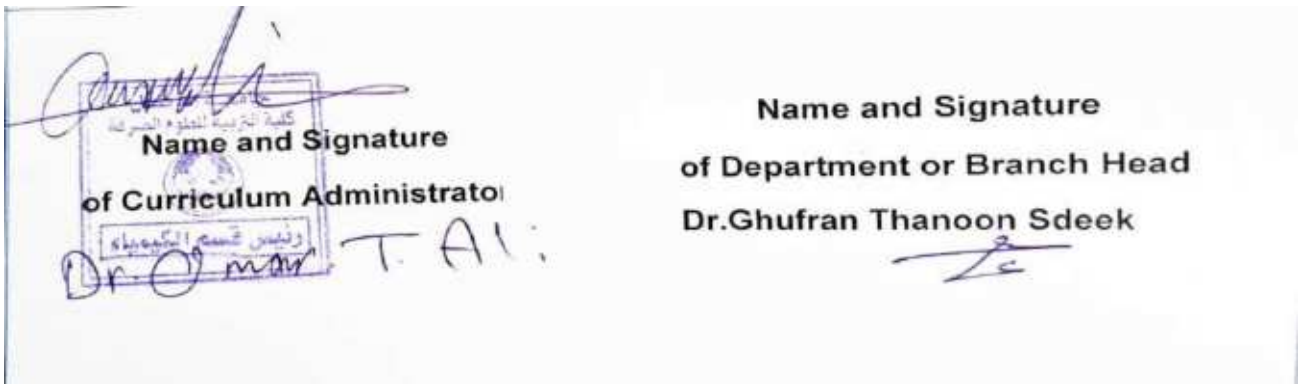
23			The effect of the electronegativity atoms on the location of the beam	Factors affecting the location of chemical displacemen	Lecture	Stude partici on
24			Introducing the student to how resona occurs	How resona occurs	Lecture	discu n
25			The student learned about components of the nuclear magr resonance spectrometer	Components of NMR spectrome	Lecture	discu n
26			Explain how to interpret resona spectra	Interpretation NMR spectra	Lecture	homev
27			Magnetic cores and non-magnetic cor	Diagnosis organic compou using N spectroscopy	Lecture	discu n
28			Interpretation of spectrum figures	Solve the graph unknown components	Lecture	Drawi of spectr organi compo s
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
Percentage of curriculum update	No uptate



Course Description Form

University of Mosul

College: pure science for education Department: Chemistry

1. Course Name:
Organic diagnosis /fourth stage /Chemistry Department
2. Course Code:
EDCH24F4041
3. Semester / Year:
2024−2025
4. Description Preparation Date:
1/9/2024 − 31/8/2025
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: Dr. Omar Abdullah Salah Dr. Amena Alyas
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 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 the spectrum	Lecture	discussion
2	2	Definition of the 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 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 compou 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 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 course	Diagnosis of organic compounds magnetic nuclear spectrum	Lecture	Student participation
23		The effect of the electronegativity of atoms on location of the beam	Factors affecting the location of chemical displacement	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 spectrometer	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 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
Curriculum update rate	

Name and Signature
of the Department Head
Dr Omar Thanoon Ali

Name and Signature
of Curriculum Administrator
أ.م.د. آمنة الياس أحمد

م.د.عمر عبدالله صالح

Course Description Form

University:of Mosul

College: College of Education for Pure Sciences

Department : Chemistry

1. College: College of Education for Pure
2. Department: Chemistry
3. Course Code/Name: EDCH25 M4051 – Multimedi
4. Attendance Format: Regular / In-person
5. Semester/Academic Year: First semester, 2024–2025
6. Total Credit Hours: 45 hours
7. Date of Preparation: 14/04/2025
8. **1. Course Description:** **This course includes the concepts of measurement and evaluation, their classification, types, and evaluation tools based on specific criteria. It addresses achievement tests, their construction, and psychometric properties in terms of validity, reliability, difficulty, and discrimination indices, as well as the effectiveness of distractors.**

9. Course Evaluation and Marks

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

10. Learning and Teaching Resources

Required textbooks (curricular books, if any)

2. Course Objectives:

Knowledge Objectives (A):

1. Define the concept of educational measurement and evaluation and their types.
2. Distinguish between the concepts of measurement, evaluation, and assessment, and their interrelationships.
3. Identify the characteristics and conditions of good educational evaluation.
4. Clarify the concept of validity.
5. Explain the concept of reliability.
6. List the types of methods for establishing reliability.
7. Define the discrimination index.
8. Calculate difficulty and discrimination indices.

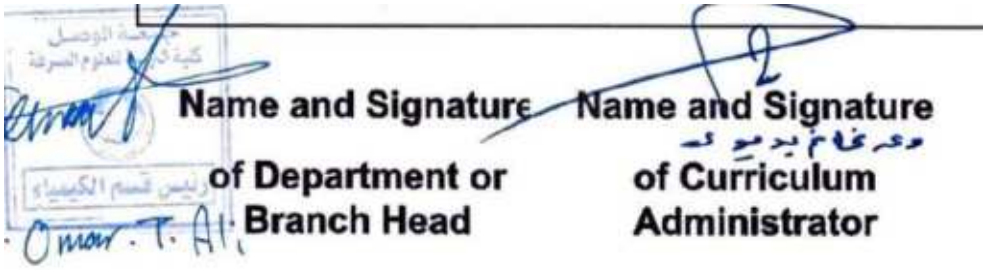
Skill Objectives (B):

9. Apply the discrimination index formula.
10. Apply the difficulty index formula.
11. Apply the ease index formula.
12. Identify the type of questions.
13. Design a specification table.
14. Formulate higher-order thinking questions.
15. Evaluate questions.

Affective Objectives (C):

16. Develop scientific attitudes and interest toward the subject of chemistry.
17. Promote motivation for teaching chemistry.
18. Develop scientific thinking among students.
19. Foster creative thinking among students.

	General Transferable and Professional Skills (D): 20. Design educational programs based on scientific foundations and principles. 21. Produce educational software. 22. Evaluate educational programs based on pedagogical and technical standards. 23. Others as needed...



Course Description Form

University: Mosul **College: education for pure science**

Department or Branch: chemistry / analytical chemistry

1. Course Name and Stage:
Instrument Analytical Chemistry
2. Course Code:
3. Semester / Year:
2024-2025
4. Description Preparation Date:
1/9/2024
5. Available Attendance Forms:
Regularity
6. Number of Credit Hours (Total) / Number of Units (Total)
48 Hours/ 9
7. Course administrator's name (mention all, if more than one name) and Scientific title

Name:	Email:
Name: Dr. zeenz zuhair salih	zeenz.2020@uomosul.edu.iq
Dr. Nagham Nazem Habib	naghamdnbeel@uomosul.edu.iq
Dr. Rawa Abdel Aleem	rawaazakaria72@uomosul.edu.iq
Lina Adel Saber	leena.adil484@uomosul.edu.iq
Salih talal	sata8383@uomosul.edu.iq
Tamara Abdel Salam	tamarah.abdulsalam@uomosul.edu.iq
Israa kalil ahmed	israa.ahmed@uomosul.edu.iq

8. Course Objectives	
Subject 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 orga 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 introduction analytical chemistry	Theoretical	Exam and homework
3	2	Acquire knowledge related to apply the laws expressing concentrations calculating concentrations theoretic and practically	Methods of express concentrations. Exam and solutions concentrations	Theoretical and practical	Exam and homework
4	2	Gain knowledge related to Beer's and 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 of ioc ions using scaling reactions	Theoretical and practical	Exam, report and daily activity
7-8	4	Gain knowledge related to the vis molecular spectrum	Determination of ferric(ions spectrophotometric	Theoretical and practical	Exam, report and daily activity
9-10	4	Gain knowledge related to the visible molecular spectrum spectroscopic	Determination of the nit ion	Theoretical and practical	Exam, report and daily activity
11-12	4	Gain knowledge related to photometric corrections	Determination of benz acid	Theoretical and practical	Exam, report and daily activity
13	2	Gain knowledge related to photometric corrections	Determination of zinc ic	Theoretical and practical	daily activity
14-15	4	Gain knowledge related to flame spectroscopy	Determination of sod 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 of calc and barium	Theoretical and practical	Exam, report and daily activity
24-25	4	Gain knowledge related to the effe of scattering and scattering	Determination of sul ions	Theoretical and practical	Exam, report and daily activity
26	2	Introduction to electrical methods i analysis	Measuring of Potentiometric titration	Theoretical	Exam and daily activity
27-28	4	Gain knowledge related to stress corrections	Determination of a mix of phosphoric acid hydrochloric acid	Theoretical and practical	Exam, report and daily activity
29	2	Gain knowledge related to the visil molecular spectrum and redox reactions	Spectroscopic determination manganese	Theoretical and practical	Exam, report and daily activity
30	2	Gain knowledge related to calculat the complexity ratio of chemical complexes	Apply the Jobs method and the molar ratio method	Theoretical and practical	Exam, report and daily activity

11. Course Evaluation and Marks

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 .... etc

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. Williard, D.V Nostrand company N.Y, 1981
Electronic References, Websites	Various educational websites for chemistry, such as Chen Chemsketch, and Chemdraw
Percentage of Curriculum update	

Name and Signature

of Curriculum Administrator

Dr. Zeena Zohair Salih

Name and Signature

of Department or Branch Head

Dr. Omar Thanoon Ali

Course Description Form

University: **College:** **Department or Branch:**

1. Course Name and Stage:
Theoretical analysis / fourth stage
2. Course Code:
EDCH24M4021
3. Semester / Year:
2024 – 2025
4. Description Preparation Date:
1-9-2025
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
50 9
7. Course administrator's name (mention all, if more than one name) and Scientific title
Name1:Dr.Nagham Nathim Habeeb Ema naghamdnbeel@uomosul.edu.iq Name 2: Dr. zeena Zheer Saleh Email: zeena.2020@uomosul.edu.iq
8. Course Objectives

Subject Objectives	**• Identify the optical properties matter such as absorption, emission, refraction, scattering, turbid polarity, and the electrical properties of matter s as electric potential, electrical conductivity, electric current, and electrical quantity, and ther properties such as thermal analysis • Identify Beer's law, its applicatio and deviations from it • Students are introduced to metho**

	of quantitative spectroscopic analy in the ultraviolet and visible regions • Identify methods of quantitative spectroscopic analysis in the infra region • Learn about quantitative analy methods using atomic absorption and emiss spectroscopy • Identify the analysis by measur scattering and turbidity • Identify electrochemical analy methods

9. Teaching and Learning Strategies

Strategy	Instrumental analysis is a method of analysis and quantification that is based on physical properties For materials such as absorption and emission using specialized devices to determine the type and quantity of materials in general, it is characterized by being Mors elective and qualitative

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Gain an overview the methods of Instrumental analysis and electromagnetic radiation	Classical metho in Analysis-method based on physi properties electromagnetic radiation – wave and particle properties	theoretical	Exam and activity daily

2	2	You learn knowledge of mathematical problems alone Radiation and its frequency	Mathematical issues-impact Photoelectric – radiant capital Stogis and his hesitation	Theoretical	Exam and activity My day is homework
3-4	4	Gain knowledge o the effect of spectrum on matter and Abe scale	Effect of the electromagnetic spectrum with matter- refractio of rays and the equation Sunbul and equation Lorenz-Lorentz and its importance- Mathematical problems-Abbe scale	Theoretical	Exam and activity daily
5-6	4	Gain knowledge about the polarization of lig and optically active substances and rotation specificity, polarization, and radiation absorption atomic and molecular	Light Polarization and effectiveness visual- classification of materials visually effective rotation polarized and rotating ligh qualitative - mathematical problems - polarizer-radiati absorber atomic and molecular	Theoretical	Exam and activity My day is homework
7-8	4	Gain knowledge about the emissio of radiation, the phenomenon	Emission of radiation- the phenomenon of fluorescence	Theoretical	

		of fluorescence and phosphorescence, Beer's law, and ho to solve mathematical problems	and phosphorescenc Beer's law and its conditions -mathematical problems - application to multiple systems		
9-10	4	Gain knowledge o the challenges of Beer's law, sources of visible, ultraviolet and infrared radiation and wavelength controls	Determinations of Beer's Law – Introduction to measuring devices and their parts - Sources Generating visible, ultraviolet and infrared radiation – Back wave controllers	Theoretical	Exam and activity daily
11-12	4	Gain knowledge relate to prisms, gratings, model containers and detectors in the ultraviolet, visible and infrared regions	Prisms,gratings, model containers, detectors, multiplexing and optical tubes, near-infrared detecto	Theoretical	Exam and activity daily
13-14	4	Gain Knowledge relat to measureme applications in the ultraviolet and visible regions, electronic transitions, chromoform, exochrome, and		Theoretical	

		the nature of the complex.			
15	2	Acquire Knowledge relat to photometric corrections, scattering and turbidity analysis methods and their applications	Photometric corrections scattering, turbidity and their application	Theoretical	Exam and activity daily
16		Mid-year exam			
2-17		Application for fourth stage students in schoo			
23	4	Acquire Knowledge related to infrared spectroscopy, importance and applications qualitative and quantitative analysis and the finger prints area.	Infrared spectrometer – types of vibratio - fingerprint area and its importance applications infrared rays in qualitative and quantitative analysis		
24-25	4	Gaining Knowledge about fluid junctions in electrochemistry and the Nernst equation - typical half-cells – relative	Types of fluid junctions in electrochemistry Nernst equation typical half-cells - relative potentials of half-cells – reversible	Theoretical	Exam and activity My day is homework

		potentials of half-cells – reversible and irreversible cells – reference electrodes	and irreversible cells – reference electrodes		
26	2	Acquire Knowledge related to stress measurements, their types, and stress	Voltage measurements, their types \and stress	Theoretical	Exam and activity daily
27-28	4	Acquire Knowledge related to atomic spectroscopy, atomic absorption its device components, and sample excitation method	Atomic spectroscopy – atomic absorption – Boltzmann equation - components of the atomic spectrometer - methods of stirring the sample	Theoretical	Exam and activity daily
29-30	4	Acquire Knowledge related to atomic emission spectroscopy, emission spectroscopy, pology graphy, and mercury electrode train Acquire Knowledge	Atomic emission spectroscopy – its sources – drawing the emission spectrum - voltammetry – the Kovitch equation - polarography – mercury electrode, electrical	Theoretical	Exam and activity My day is homework

		related to spectroscopy by deposition and electrical conductivity	deposition train electrical conductivity		

11. Course Evaluation and Marks

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 Arabi Instrumental chemi analysis written by Dr. Abd Mohsen Abdel Hamid
Main references (sources)	Scientific Analysis: Written by A. Dr.. Abdul Mohsen Abdul Hamid Al-Haidari The Real Scout: Written by Dr. Fathi Ahmed Obaid
Recommended books and references (scientific journals, reports…)	Instrumental method of analysis, Horbort Williard, D.Van Nostrand company N.Y, 1981
Electronic References, Websites	To direct to websites related to th topics of the article, for example chemix, chemsketch, chemdraw
Percentage of Curriculum update	

جامعة الموصل
كلية التربية لعلوم الصرفة
رئيس قسم الكيمياء

Name and Signature
of Curriculum Administrator

Dr. Naghm Nathim Habeeb
Dr. Zeena Zohair Salim

Name and Signature
of Department or Branch Head

Dr. Omar Thanoon Al

Course Description Form

University of Mosul, College of Education for Pure Sciences, Department of Chemistry

1. Course Name: Practical industrial chemistry

2. Course Code: EDCH24 M4061

3. Semester / Year: 2024-2025

4. Description Preparation Date: 3/9/202

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 qua**

	control 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

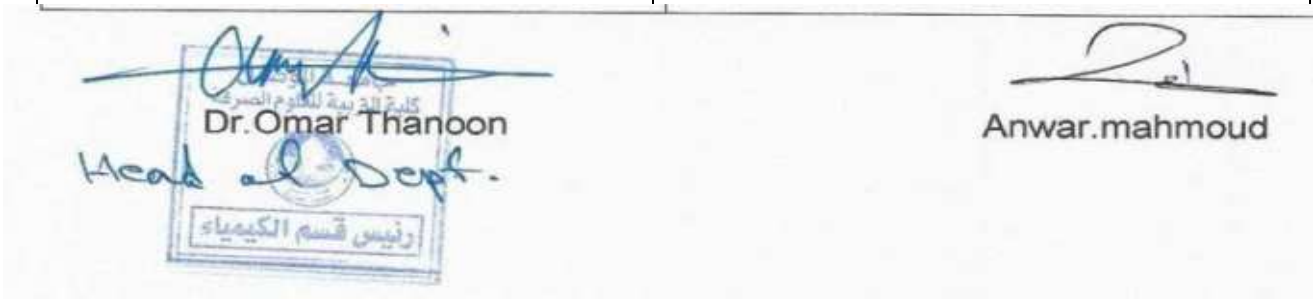
29	3	Perfume	Perfume	Lecture	Daily and oral exams and discussions
30	3	Alum	Alum	Lecture	Daily and oral exams and discussions

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: Inorganic chemistry اختياري رابع

2. Course Code: 4111

3. Semester / Year: 2024-2025

4. Description Preparation Date: 23\ 9\2024

5. Available Attendance Forms: In-person

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: Rana Ramzi Abed
Email: ranaalbustani@uomosul.edu.iq

8. Course Objectives

Course Objectives	1 - To remind the student of the importance of ligands and their role in the preparation of complexes. 2- The student should be familiar with the types of ligands according to the donation method and donor atoms. 3- The student should understand the coordination modes of ligands and the bonding methods with metals. 4- The student should be able to prepare organic ligands according to stand mechanisms. 5- Classifying ligands according to the functional group and naming them 6- Study the specific applications of the ligands under examination in medi and industrial fields. 7- Enabling the student to propose preparation methods for any type of lyophilized products Using new substitute materials.

9. Teaching and Learning Strategies

Strategy	Lectures are conducted in a face-to-face format, citing equations a reinforcing them with imag

	The colors of the prepared ligands and understanding the reason each col The method of continuous discussion with students while presenti the represented strategy and based on the informati Quoted from research and scientific books available on the intern Connecting what the student learns with daily life to prepare t student and enrich their knowledge base with relevant ide Related to the subject

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Introduction	In-	Oral
2	2	Understanding t	ligands	perso	question
3	2	meaning of	Classification	In-	Exam
4	2	lexicons	ligands	perso	Discussi
5	2	The student was	Nitrogenous	In-	Oral
6	2	able to classify	ligands	perso	question
7	2	them.	Semicarbazone	In-	Exam
8	2	Diagnosis of	Preparation a	perso	Discussi
9	2	nitrogenous	applications	In-	Oral
10	2	ligands	Enzymes	perso	question
11	2	Writing equatio	Preparation a	In-	Exam
12	2	that describe the	applications	perso	Discussi
13	2	reaction	Oxime	In-	Oral
14	2	Knowing its	derivatives	perso	question
15	2	applications and	Sulfurous ligar	In-	Exam
16	2	uses	Classification	perso	Discussi
17	2	The student shou	Preparation a	In-	Oral
18	2	know the	applications	perso	question
		enzymes.	Coronary ligar	In-	Exam
		To prepare them	Preparation a	perso	Discussi
		according to the	applications	In-	Oral
		standard	The method of	perso	question
		equations.	coordination	In-	Exam
		Identifying its	Multisubstitute	perso	Discussi
		types	ligands	In-	
		The student shou	Preparation a	perso	
		be able to identi	applications		
		the sulfur ligand	Its propert		
		To classify them	The style		
		according to the	harmony		
		donating atoms.			
		That the student			

		able to prepare i Identifying its types That the student able to prepare i The student shou understand the method of harmony. The student shou know the crown ligands. To understand th mechanism of it preparation. To understand it properties To distinguish th position of the metal in the coordination.			

11. Course Evaluation

15% daily grades, 25% midterm exam, 60% final exam = 100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Inorganic Chemistry Dr. Issam Saloumi
Main references (sources)	comprehensive coordination chemistry
Recommended books and references (scientific journals, reports…)	net
Electronic References, Websites	net

Name and Signature
of Department or Branch He
Asst. Prof. Dr. Omar Thanoon Ali

Name and Signature
of Curriculum Administrato
Asst. Prof. Dr Rana Ramzi Abdul

Course Description Form

University: Mosul College: Education college for pure science

Department or Branch. Chemistry

1. Course Name:

Industrial chemistry

2. Course Code:

EDCH24 M4061

3. Semester / Year:

2024-2025

4. Description Preparation Date:

21-03-2024

5. Available Attendance Forms:

attendance

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

60 hours\ 7 units

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

Name: Assistant prof. Dr. Ahmed Ghaleb Al-Azzawi.
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 diffe classifications.** **3- Description of different types of polymers, t specifications and applications.** **4- Describe the techniques and mechanisms used to prod 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 t 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	Unit or subject name	Learning method	Evaluation

		Outcomes			method
1	2	Introduction to polym	Introduction to polymers	Discussion using different methods of and Internet	Oral exam
2	2	Nomenclature of polyme	Nomenclature of polymers	Brainstorming using multiple methods	Complete assignment
3	2	Advantages of polymers	Advantages of polymers	Cooperative education using multiple methods	Discussion
4	2	Classification of polymers	Classification of polymer	Brainstorming using multiple methods	Oral exam
5	2	Thermoplastics	Thermoplastics	Discussion using different methods of and Internet	Complete assignment
6	2	Thermosetting	Thermosetting	Brainstorming using multiple methods	Discussion
7	2	Rubber types	Rubber types	Cooperative education using multiple methods	Oral exam
8	2	Fiber classification	Fiber classification	Brainstorming using multiple methods	Complete assignment
9	2	Classification of fibers	Classification of dyes	Discussion using different methods of and Internet	Discussion
10	2	Types of polymerizat processes	Types of polymerizat processes	Cooperative education using multiple methods	Oral exam
11	2	Mechanisms polymerization processe	Mechanisms polymerization processe	Brainstorming using multiple methods	Complete assignment
12	2	Condensation and addition polymerization	Condensation and addition polymerization	Discussion using different methods of and Internet	Discussion
13	2	Daily exam	Daily exam		
14	2	Semester exam	Semester exam		
15		Mid exam	Mid exam		
16		Training students	Training students		
17		Training students	Training students		
18		Training students	Training students		
19		Training students	Training students		

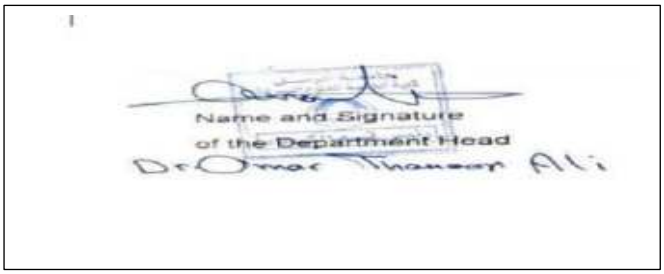
20		Training students	Training students		
21		Training students	Training students		
22		Training students	Training students		
23	2	Properties of condensing polymers	Properties of condensing polymers	Cooperative education using multiple methods	Discussion
24	2	Types of condensation polymers	Types of condensation polymers	Discussion using different methods of and Internet	Oral exam
25	2	Polymeric fibres	Polymeric fibres	Brainstorming using multiple methods	Complete assignment
26	2	Types of fiber	Types of fiber	Cooperative education using multiple methods	Discussion
27	2	Fiber preparation methods	Fiber preparation methods	Brainstorming using multiple methods	Oral exam
28	2	Detergents and soap	Detergents and soap	Discussion using different methods of and Internet	Discussion
29	2	Semester exam	Semester exam		
30		Final exam	Final exam		

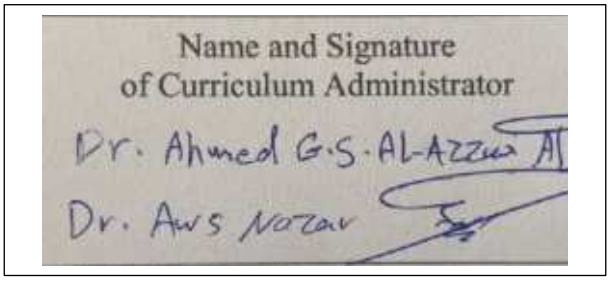
12.Course Evaluation

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

University: Mosul College: Education for pure science
Department or Branch:Chemistry

1. Course Name and Stage: **4th Class, Quantum Chemistry**

2. Course Code: 403

3. Semester / Year: 1/9/2024-30/6/2025

4. Description Preparation Date: 1/9/2024

5. Available Attendance Forms: **Class Attendance**

6. Number of Credit Hours (Total) / Number of Units (Total) 12/2

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

Name: **Prof Assis, Dr. Zaheda Ahmed Najim**
Email: zahedahmed@uomosul.edu.iq

8. Course Objectives

Subject Objectives	1. Some basic concepts and foundations of Class mechanics 2. Coordinate systems, complex numbers, acceptable w functions, Newton's law of motion 3. Reasons of quantum mechanics appearance. 4. Black body radiation, the photoelectric effect, spectral li of atoms, Rutherford-Bohr model of atoms 5. Basics of quantum mechanics 6. Assumptions of quantum mechanics, orthogonality 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.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	1	An overview of quantum mechanics	Some basic concepts t foundations of Classical mechanics	Lecture in class	Daily and monthly examinations
2.	1	The difference between coordinate systems and complex number	Coordinate systems, complex numbers	Lecture in class	Daily and monthly examinations
3.	1	Types of influences and the concept of function	Effects, acceptable wa functions, acceptable wavelength	Lecture in class	Daily and monthly examinations
4.	1	Newton's laws of motio	Newton's law of motic	Lecture in class	Daily and monthly examinations
5.	1	Causes and consequenc	Reasons for the emergence of quantum mechanic	Lecture in class	Daily and monthly examinations
6.	1	Explaining some physic phenomena and applications of quantum mechanics	Black body radiation, photoelectric effect	Lecture in class	Daily and monthly examinations
7.	1	Explaining some physic phenomena and applications of quantum mechanics	Spectral lines of atom	Lecture in class	Daily and monthly examinations
8.	1	Explaining some physic phenomena and applications of quantum mechanics	Rutherford-Bohr mod of atoms	Lecture in class	Daily and monthly examinations
9.	1	Overview	Foundations of quantu mechanics	Lecture in class	Daily and monthly examinations
10.	1	The concept of quantum mechanics	Quantum mechanical hypotheses	Lecture in class	Daily and monthly examinations
11.	1	The basics of the Schrödinger equation an its mathematical derivat	Orthogonality, symmetry and Schrödinger equation	Lecture in class	Daily and monthly examinations
12.	1	Applications of the Schrödinger equation by explaining the phenome of particles in a box and harmonic oscillators	A particle in a box and a harmonic vibrat	Lecture in class	Daily and monthly examinations

11. Course Evaluation and Marks
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation2.5 mark , daily oral 2.5 mark monthly, or written exams, reports 2.5 mark , mid.exam.12.5 mark, final exam.30 mark total 50 mark + 50 mark for physical spectrua... etc

12. Learning and Teaching Resources	
Required textbooks (curricular books 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
Percentage of Curriculum update	5%

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم الكيمياء

Name and Signature

of Curriculum Administrator

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Dr. Omar T. Ali