

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



Academic Program and Course Description Guide

2025/2026

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: Al-Iraqia university

Faculty/Institute: education

Scientific Department: Chemistry

Academic or Professional Program Name: Chemistry teacher preparation
program in middle and secondary schools

Final Certificate Name: Bachelor of Education in General Chemistry

Academic System annual

Description Preparation Date: 1/10/2025

File Completion Date: 1/10/2025

the signature:



Dean Assistant for Scientific
Associate

Assist.Prof. Dr. Oday Hameed
date:

the signature:



Department head name:

Prof. Dr. Khalid Mahmood Hammadi date:

The file has already been checked

Quality Assurance and University Performance Division

Name of the Director of the Quality Assurance and University Performance
Division:

Date / /

The signature



The endorsement of the Brigadier General

1. Program Vision

The Department of Chemistry seeks to prepare male and female teachers according to a contemporary perspective in chemical sciences, who have the ability to contribute effectively to achieving a sober educational scientific reality capable of preparing a scientifically and educationally educated generation that draws from all chemical and environmental sciences.

2. Program Mission

Preparing and qualifying cadres with a right academic structure that contributes to the dissemination of science and knowledge in society and young people, especially to carry the scientific message to future generations, with an emphasis on scientific and educational aspects.

3. Program Objectives

The Department of Chemistry is one of the important departments that contribute to the preparation and development of scientific forces and work to achieve important aspects in the light of the central philosophy of the state, and the special educational objectives of the Department of Chemistry can be crystallized from the following:

The Department of Chemistry aims to raise students on the spirit of perseverance and self-confidence and to continue the sound scientific

method in the acquisition of science and its request and application to many joints of life.

Contribute to the preparation of many compounds that have been shown to be important as drugs or chemical fertilizers and pesticides manufactured as substitutes for natural materials and products or auxiliary agents of pharmaceutical importance

Study the physical and life processes of various systems leading to a better understanding of the nature and functioning of living organisms

4. Preparing an educational staff with high competencies in chemical sciences.

4. Program Accreditation

/

5. Other external influences

/

6. Expected learning outcomes of the program

Knowledge

Learning Outcomes 1	Learning Outcomes Statement 1
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Skills

Learning Outcomes 2	Learning Outcomes Statement 2
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Learning Outcomes 3	Learning Outcomes Statement 3
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Ethics

Learning Outcomes 4	Learning Outcomes Statement 4
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Learning Outcomes 5	Learning Outcomes Statement 5
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7. Teaching and Learning Strategies

Teaching and learning strategies and methods adopted in the implementation of the program in general.

8. Evaluation methods

Implemented at all stages of the program in general.

9. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer

Professional Development

Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.

Professional development of faculty members

Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

10. Acceptance Criterion

(Setting regulations related to enrollment in the college or institute, whether central admission or others)

11. The most important sources of information about the program
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State briefly the sources of information about the program.

12. Program Development Plan

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4

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

Course Description Form

1. Course Name:

2. Course Code:

3. Semester / Year:

4. Description Preparation Date:

5. Available Attendance Forms:

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

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

Name:

Email:

8. Course Objectives

Course Objectives

-
-
-

9. Teaching and Learning Strategies

Strategy

10. Course Structure

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

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Description of the academic program

This academic program description provides a requisite summary of the most important characteristics of the program and the learning outcomes expected of the student to achieve, proving whether he has made maximum use of the available opportunities. It is accompanied by a description of each course within the program

1. Educational institution	College of Education / Iraqi University
2. Scientific department center /	Chemistry
3. The name of the academic or professional program	Chemistry teacher preparation program in middle and secondary schools
4. The name of the final certificate	Bachelor of Education in General Chemistry
5. :Academic system Annual/courses/others	annual
6. Accredited Accreditation Program	Local (National Accreditation Standards for (Classification
7. other external influences	E-learning (through the use of the Edmodo platform), the electronic scientific library, the international .information network (the Internet)
8. The date the description was created	01/ 09 / 2025

9. Academic program objectives

- 1- Preparing students who are able to work in the sector of the Ministry of .Education as teachers of chemistry
- 2- Preparing students who are able to work in the government sector and the .private sector in the field of chemistry
- 3- Preparing students with the ability to conduct scientific research by paying attention to the research aspect based on the use of laboratory equipment for the purpose of providing graduates with applied skills in .the field of analytical chemistry and biochemistry
- 4- Qualifying students and empowering them with knowledge on the .practical and applied level in the field of specialization
- 5- Paying attention to scientific outputs to prepare a generation of qualified .chemistry teachers
- 6- Seeking to prepare graduates who have the ability to be creative and .innovative and keep pace with scientific development

10.Required program outcomes and methods of teaching, learning and assessment

A- Cognitive goals

A1- Preparing an educational cadre specialized in chemistry

A 2- The student should be familiar with the basic concepts in the fields of chemistry

A 3 - Understanding methods of preparing compounds and naming them A 4- Linking curricula with the reality of educational institutions

A5- Understanding of chemical standards

A6- Developing the student's capabilities and enabling him to obtain and raise knowledge and understand the chemical framework

b- The program's skill objectives:

B 1 - Make the student able to think logically

B 2 - Developing the student's skills in communication and the use of modern technologies in learning

B3 - Providing the student with the mental and intellectual ability and developing it in the specialization

B4 - Using modern laboratory equipment (available in the department) for scientific study (first course)

Methods of teaching and learning

1- Electronic lectures and conducting effective and direct discussions with .students through the use of the (meet) program 2- .Asking questions and opening dialogue with students 3- .Assign students to do some research 4 Using methodical books and modern resources on the Internet -
Evaluation modalities
1- Daily and monthly tests 2- semester exams 3- Student participation in the discussion lecture 4- Preparing weekly reports on the practical study in the laboratory (first (semester
C- Emotional and moral goals: A 1- Interaction during lectures by developing and supporting scientific discussion C 2 - daily reports and scientific research C 3- Asking students questions that require answers within a certain period of time
Methods of teaching and learning

Direct theoretical lectures through the (Meet) program and opening the door for open and direct discussions with students, in addition to recording the lectures .and uploading them to YouTube (e-learning for theoretical subjects) Practical study in the laboratory (for the first course) Using the virtual laboratory for the practical part (second course)
Evaluation modalities
1. Semester exams 2. Daily exams 3. Students' participation in the electronic lecture, their interaction, and electronic attendance recording 4. Preparing reports on the practical study in the laboratory (first course) 5. Short exams (COSE) and daily assignments (home work) for the practical part (second course)
D- The transferred general and qualifying skills other skills related to employability and personal development D1- Good preparation in all subjects using modern means D2 - Teaching the student how to develop creative and innovative thinking skills in the field of specialization D3 - Develop personal skills D4 - basic skills for communication and communication through (sports activities, educational guidance, conferences for the college, seminars for the (department, seminars to discuss student research
Methods of teaching and learning
1. Theoretical lectures 2. Practical study in the laboratory
Evaluation modalities
1. Semester exams 2. Daily exams and student participation in a lecture 3. Preparing reports on the practical study in the laboratory

11. Program structure				
The first stage	Course Name	hours		units
		Practical	theoretical	
	Theoretical inorganic chemistry	-	2	4
	organic chemistry	3	2	7
	Analytical chemistry	3	3	9
	biology	2	1	4
	Computer science	2	0	2
	mathematics	-	1	2
	Human rights and democracy	-	1	2
	Educational psychology	-	2	4
	English	-	2	4
	The foundations of education	-	2	4
	Arabic	-	2	4
	Chemical safety and security		2	2
	Islamic culture	-	1	-
	the total	10	21	48

The second stage	Course Name	hours		units
		Practical	theoretical	
	Inorganic chemistry	3	2	7
	organic chemistry	3	2	7
	Analytical chemistry	3	2	7
	Physical chemistry	3	3	9
	Computer science	2	0	2
	mathematics	-	1	2
	Developmental Psychology	-	2	4
	Secondary education and educational management	-	2	4
	Scientific miracle	-	1	-
	Crime the		1	2
	English	-	2	4
	the total	14	18	48

The third stage	Course Name	hours		units
		Practical	theoretical	
	Coordination Chemistry	3	2	7
	organic chemistry	3	2	7
	industrial chemistry	-	2	4
	Physical chemistry	3	2	7
	Biochemistry	3	2	7
	Teaching curricula and methods	2	1	4
	Counseling and mental health	-	2	4
	Foundations of scientific research	-	2	4
	elective	-	2	4
	Theoretical English	-	2	4
	the total	14	19	52

The fourth stage	Course Name	hours		units
		Practical	theoretical	
	Theoretical instrumental analysis	3	3	9
	Spectral organic diagnostics	2	3	7
	industrial chemistry	2	3	7
	Quantum chemistry	2	-	4
	Biochemistry	2	-	4
	Measurement and calendar	2	-	4
	View and apply	1	2	4
	research project	-	3	2
	elective	2	-	4
	the total	18	14	45

12.Planning for personal development
Developing students' abilities to possess educational and practical values and the ability to plan in advance, enabling them to set the required goals in light of the available capabilities, in addition to enabling them to use modern technologies in the process of teaching and learning, and making them loving their work in the future .and sincere in its performance
13.Admission criteria (setting up regulations related to joining a college or institute)
Central admission
14.The most important sources of information about the program
1- .Textbooks and help books 2- .Use of the Internet 3- .Using data show and using power point

				Learning outcomes required from the programme															
year/level	Course Code	Course Name	Basic um optional	Knowledge and understanding				Subject-specific skills				thinking skills				General and transferable skills (or) other skills related to employability and personal development			
				A 1	A 2	A 3	A 4	B 1	B 2	B 3	B 4	C 1	C 2	C 3	C 4	D 1	D 2	D 3	D4
the first		Inorganic chemistry organic chemistry Analytical chemistry biology Computer science mathematics Human rights and democracy Educational	Basic	√	√	√	√	√	√	√		√	√	√		√	√	√	√

		psychology English The foundations of education Arabic Islamic culture																	
the second		Inorganic chemistry organic chemistry Analytical chemistry Physical chemistry Computer science mathematics Developmental Psychology	Basic	√	√	√	√	√	√	√		√	√	√		√	√	√	√

		Secondary education and educational administration Scientific miracle English																	
the third		Coordination Chemistry organic chemistry industrial chemistry Physical chemistry Biochemistry Teaching curricula and methods Counseling and mental health Foundations of	Basic elective	√	√	√	√	√	√	√		√	√	√		√	√	√	√

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TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Knowing the composition of the atom, knowing the periodic properties of the elements, distinguishing between the types of bonds that connect atoms with each other, explaining the periodic table of the elements and its periodic characteristics, explaining the distribution of electrons within atoms, explaining how the atoms are linked among themselves.

1. Teaching Institution	College of Education
2. University Department/Centre	Department of Chemistry
3. Course title/code	Inorganic chemistry
4. Modes of Attendance offered	Interview
5. Semester/Year	First stage
6. Number of hours tuition (total)	60 theoretical hours
7. Date of production/revision of this specification	1/ 09 / 2025
8. Aims of the Course	
1- Introducing students to the importance of inorganic compounds in terms of uses in the industrial and pharmaceutical fields	
2- Graduating teaching cadres familiar with the basics of chemistry and various disciplines and their scientific applications, and raising students' efficiency practically.	
3- The cadres should be able to teach chemistry in middle and middle schools and be able to apply the basics of chemistry in a laboratory.	
9. Learning Outcomes, Teaching ,Learning and Assessment Methode	

A- Cognitive goals .

A1- The student will know how to bond and form compounds

A2- That the student recognizes the concept of chemical reactions and how they occur

A 3- That the student distinguish the types of vehicles

A 4- The student will know the types of interactions

B. The skills goals special to the course. B1 - The ability to distinguish between types of vehicles

B2 - the ability to identify differences and chemical diagnosis

B3 - the ability to understand chemical reactions

Teaching and Learning Methods

Lectures, discussion and assigning students to work papers on the course topics

Assessment methods

1- Semester exams

2- Daily exams and students' participation in the electronic lecture by answering the questions posed

C. Affective and value goals A 1- The direct style through interaction during the lectures

C 2 - daily reports

C 3 - scientific research

D. General and rehabilitative transferred skills(other skills relevant to employability and personal development)

D1- Following up the scientific developments in the methods of analysis.

D2- Participation in conferences and skills transfer through joint seminars.

D3 - Increasing the student's self-confidence

D4- The student's acquisition of some language skills, whether Arabic or English

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1,2	4		Structure of the Atom, Blackbody Radiation - The Principle of Inaccuracy	Lecture and discussion	Assignments and tests
3,4,5,6	8		Photoelectric effect, electromagnetic radiation Rutherford's theory - Bohr's theory, periodic table - electronic arrangement	Lecture and discussion	Assignments and tests
7,8,9,10	8		Energy levels - atomic orbitals, atomic and ionic radii - electronic affinity - ionization energy - electronegativity - blocking	Lecture and discussion	Assignments and tests
11,12	2		Quantum numbers - Pauli principle - Term symbols for atoms and ions in their stable state - Hybridization	Lecture and discussion	Assignments and tests
13,14	2		Types of Hybridization - Lewis Symbol - Resonance	Lecture and discussion	Assignments and tests
15-18	8		linear particles - particles of plane triangle shape	Lecture and discussion	Assignments and tests
19-21	6		Tetrahedral and Planar Square Molecules Molecules with Trigonometric	Lecture and discussion	Assignments and tests

			Dipyramidal Shape		
22-24	8		Ionic bond Covalent bond Covalent bond Metal bond	Lecture and discussion	Assignments and tests
25-28	8		Hydrogen bonding - van der Waals forces Crystal lattice structure	Lecture and discussion	Assignments and tests

11. Infrastructure	
1. Books Required reading:	modern inorganic chemistry (the first part, written by Dr. Bassem Al-Saadi, the first stage)
2. Main references (sources)	inorganic chemistry (Huh), modern inorganic chemistry (the first part, written by Dr. Bassem Al-Saadi, the first stage)
A- Recommended books and references (scientific journals, reports...).	
B-Electronic references, Internet sites...	Google Scholar, Wikipedia
12. The development of the curriculum plan	
1- Using modern teaching methods according to the nature of the subject.	
2- Developing the content of the course through deletion, addition and replacement	
3- Using modern teaching aids.	

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This course description provides a necessary summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, demonstrating whether he has made the most of the available learning opportunities. It must be linked to the program description.

1. Teaching Institution	
2. University Department/Centre	Aliraqia University / chemistry
3. Course title/code	Organic Chemistry/ Phase I/Ch 101
4. Modes of Attendance offered	Daily
5. Semester/Year	Year
6. Number of hours tuition (total)	64 theoretical study hours/ 96 practical study hours
7. Date of production/revision of this specification	1/ 09 / 2025
8. Aims of the Course	
1- Introducing students to the importance of organic compounds in terms of uses in the industrial and pharmaceutical fields	
2- Graduating teaching cadres familiar with the basics of chemistry and various disciplines and their scientific applications, and raising students' efficiency practically.	
3- The cadres should be able to teach chemistry in middle and middle schools and be able to apply the basics of chemistry in a laboratory.	
4- Emphasis on the applied aspect, linking it to life, and keeping pace with scientific development using analyzes with the latest technology	
5- Developing students' skills	

9• Learning Outcomes, Teaching ,Learning and Assessment Method

A- Cognitive goals.

A1- Preparing an educational cadre specialized in chemistry

A 2- The student should be familiar with the basic concepts in the fields of chemistry

A 3 - Understanding methods of preparing compounds and naming them

A 4- Linking curricula with the reality of educational institutions

A5- Understanding of chemical standards

A6- Developing the student's capabilities and enabling him to obtain and raise knowledge and understand the chemical framework

B. The skills goals special to the course.

B1 - The ability to distinguish between types of vehicles

B2 - the ability to identify differences and chemical diagnosis

B3 - the ability to understand chemical reactions

Teaching and Learning Methods

Lectures, discussion and assigning students to work papers on the course topics

Assessment methods

1-Quarterly exams

2- Daily exams and students' participation in the electronic lecture by answering the questions posed

3- Preparing special reports on practical laboratories

C. Affective and value goals

C 1- The direct style through interaction during the lectures

C 2 - daily reports

C 3 - scientific research

D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)

D1- Following up the scientific developments in the methods of analysis.

D2- Participation in conferences and skills transfer through joint seminars.

D3 - Increasing the student's self-confidence

D4- The student's acquisition of some language skills, whether Arabic or English

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-2	10		General principles in the construction and arrangement of the electronic hybridization of the carbon atom	Lecture and discussion	Assignments and tests
3-4-5-6	20		Chemical bonds, acids and bases, and the phenomenon of resins	=	=
7-8-9-10	20		Alkanes and cycloalkanes	=	=
11-12	10		Alkenes	=	=
13-14	10		Alkynes	=	=
15-18-19	20		Aromatic hydrocarbons and their properties	=	=
21-22-24	20		Alkyl halides	=	=
25-28	20		Benzene, its construction, preparation, naming its derivatives	=	=

11. Infrastructure

1. Books Required reading:	Foundations of organic chemistry (Dr. Muhammad Nizar, first and second stage)
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2. Main references (sources)	Foundations of Organic Chemistry (Dr. Muhammad Nizar), Organic Chemistry (Morrison), Principles of Organic Chemistry (John McCurry), Mechanism of Chemical Reactions (Khaled Mahmoud Dawood)
A- Recommended books and references (scientific journals, reports...).	Fundamentals of organic chemistry, transitional chemistry 2016
B-Electronic references, Internet sites...	Wikipedia ,Google Scholar

2. The development of the curriculum plan

- 1- Familiarity with all that is new and innovative in teaching and learning strategies
- 2- Benefiting from the developments in the results of scientific research in the field of developments in quantum theories
- 3- Applying some modern teaching strategies- Applying some modern teaching strategies
Using modern teaching methods according to the nature of the subject.
- 4- Developing the content of the course through deletion, addition and replacement
- 5- Using modern teaching aids.

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Iraqia university
2. University Department/Centre	College of education \ computer dept.
3. Course title/code	Mathematics
4. Modes of Attendance offered	In attendance
5. Semester/Year	Yearly
6. Number of hours tuition (total)	2h weekly
7. Date of production/revision of this specification	12/ 09 / 2024
8. Aims of the Course	
Study mathematics concepts and its relation with the subjects of computer science	

9• Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals . A1. Preparing Fadien students to work in the Ministry of Education sector as computer teachers.

A2. 2- Preparing students who are able to work in the government sector and the private sector in computer majors.

A3. The number of students who have the ability to conduct scientific research through interest in the research aspect based on the use of computers for the purpose of providing graduates with applied skills in the field of computers.

A4. Qualifying students and empowering them with knowledge on the practical and applied levels in the field of specialization.

A5. Paying attention to scientific outputs to prepare a generation of qualified computer teachers.

A6 . Seeking to prepare graduates who have the ability to be creative and innovative and keep pace with scientific development.

B. The skills goals special to the course.

B 1 - Make the student able to think logically.

B2. Developing the student's skills in communication and the use of modern technologies in learning

B3. Providing the student with the mental and intellectual ability and developing it in the specialization

B4 - Using modern laboratory equipment (available in the department) for scientific study (first course)

Teaching and Learning Methods

1- Direct lectures and conducting effective and direct discussions with students.

2- Asking questions and opening dialogue with students

Assessment methods

1- Daily and monthly tests

2- Semester exams

3- Student participation in the discussion lecture

C. Affective and value goals

Interaction during lectures by developing and supporting scientific discussions

Asking students questions that require answers within a certain period of time

Teaching and Learning Methods

Direct theoretical lectures through direct communication in the lecture and opening the door for open and direct discussions with students, in addition to recording the lectures and uploading them to YouTube (e-learning for theoretical subjects).

Assessment methods

Semester exams

Daily exams

Short exams (CUSE) and daily assignments (home work)

D. General and rehabilitative transferred skills(other skills relevant to employability and personal development)

D1. D1- Good preparation in all subjects using modern means

D2. Teaching the student how to develop creative and innovative thinking skills in the field of specialization

D3. Develop personal skills

D4. basic skills for communication and communication through (sports activities, educational guidance, conferences for the college, seminars for the department, seminars to discuss student research)

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2		Functions		
2	2		Domain		
3	2		Range		
4	2		Graph sketch		
5	2		Limits		
6	2		Continuity		
7	2		Differentiation		
8	2		Differentiation		
9	2		Integrals		
10	2		Integrals		
11	2		Integrals		
12	2		Exam 1		
13	2		Exam 2		
14	2		Exam 3		
15	2		Review		

11. Infrastructure	
1. Books Required reading:	Mathematic for 1 st stage collage
2. Main references (sources)	Calculus THOMAS 11th edition
A- Recommended books and references (scientific journals, reports...).	
B-Electronic references, Internet sites...	
12. The development of the curriculum plan	

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Iraqia university
2. University Department/Centre	College of education \ computer dept.
3. Course title/code	Mathematics
4. Modes of Attendance offered	In attendance
5. Semester/Year	Yearly
6. Number of hours tuition (total)	2h weekly
7. Date of production/revision of this specification	1/ 09 / 2025
8. Aims of the Course	
Study mathematics concepts and its relation with the subjects of computer science	
9. Learning Outcomes, Teaching ,Learning and Assessment Method	

A- Cognitive goals . A1. Preparing Fadien students to work in the Ministry of Education sector as computer teachers.

A2. 2- Preparing students who are able to work in the government sector and the private sector in computer majors.

A3. The number of students who have the ability to conduct scientific research through interest in the research aspect based on the use of computers for the purpose of providing graduates with applied skills in the field of computers.

A4. Qualifying students and empowering them with knowledge on the practical and applied levels in the field of specialization.

A5. Paying attention to scientific outputs to prepare a generation of qualified computer teachers.

A6 . Seeking to prepare graduates who have the ability to be creative and innovative and keep pace with scientific development.

B. The skills goals special to the course.

B 1 - Make the student able to think logically.

B2. Developing the student's skills in communication and the use of modern technologies in learning

B3. Providing the student with the mental and intellectual ability and developing it in the specialization

B4 - Using modern laboratory equipment (available in the department) for scientific study (first course)

Teaching and Learning Methods

1- Direct lectures and conducting effective and direct discussions with students.

2- Asking questions and opening dialogue with students

Assessment methods

1- Daily and monthly tests

2- Semester exams

3- Student participation in the discussion lecture

C. Affective and value goals

Interaction during lectures by developing and supporting scientific discussions

Asking students questions that require answers within a certain period of time

Teaching and Learning Methods

Direct theoretical lectures through direct communication in the lecture and opening the door for open and direct discussions with students, in addition to recording the lectures and uploading them to YouTube (e-learning for theoretical subjects).

Assessment methods

Semester exams

Daily exams

Short exams (CUSE) and daily assignments (home work)

D. General and rehabilitative transferred skills(other skills relevant to employability and personal development)

D1. D1- Good preparation in all subjects using modern means

D2. Teaching the student how to develop creative and innovative thinking skills in the field of specialization

D3. Develop personal skills

D4. basic skills for communication and communication through (sports activities, educational guidance, conferences for the college, seminars for the department, seminars to discuss student research)

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2		Review for 1 st stage		
2	2		Derivatives		
3	2		Application on Derivatives		
4	2		High order derivatives		
5	2		Integrals 1		
6	2		Integrals2		
7	2		Integrals 3		
8	2		Integrals 4		
9	2		Integrals 5		
10	2		Integrals 6		
11	2		Matrix		
12	2		Mateix		
13	2		Exam		
14	2		Exam 2		
15	2		Review		

11. Infrastructure	
1. Books Required reading:	Mathematic for 1 st stage collage
2. Main references (sources)	Calculus THOMAS 11th edition
A- Recommended books and references (scientific journals, reports...).	
B-Electronic references, Internet sites...	
12. The development of the curriculum plan	

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This course description provides a necessary summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, demonstrating whether he has made the most of the available learning opportunities. It must be linked to the program description.

1. Teaching Institution	
2. University Department/Centre	Aliraqia University / chemistry
3. Course title/code	Organic Chemistry/ Phase I/Ch 101
4. Modes of Attendance offered	Daily
5. Semester/Year	Year
6. Number of hours tuition (total)	64 theoretical study hours/ 96 practical study hours
7. Date of production/revision of this specification	1/ 09 / 2025
8. Aims of the Course	
1- Introducing students to the importance of organic compounds in terms of uses in the industrial and pharmaceutical fields	
2- Graduating teaching cadres familiar with the basics of chemistry and various disciplines and their scientific applications, and raising students' efficiency practically.	
3- The cadres should be able to teach chemistry in middle and middle schools and be able to apply the basics of chemistry in a laboratory.	
4- Emphasis on the applied aspect, linking it to life, and keeping pace with scientific development using analyzes with the latest technology	
5- Developing students' skills	

9- Learning Outcomes, Teaching ,Learning and Assessment Method

B- Cognitive goals.

A1- Preparing an educational cadre specialized in chemistry

A 2- The student should be familiar with the basic concepts in the fields of chemistry

A 3 - Understanding methods of preparing compounds and naming them

A 4- Linking curricula with the reality of educational institutions

A5- Understanding of chemical standards

A6- Developing the student's capabilities and enabling him to obtain and raise knowledge and understand the chemical framework

B. The skills goals special to the course.

B1 - The ability to distinguish between types of vehicles

B2 - the ability to identify differences and chemical diagnosis

B3 - the ability to understand chemical reactions

Teaching and Learning Methods

Lectures, discussion and assigning students to work papers on the course topics

Assessment methods

1-Quarterly exams

2- Daily exams and students' participation in the electronic lecture by answering the questions posed

3- Preparing special reports on practical laboratories

C. Affective and value goals

C 1- The direct style through interaction during the lectures

C 2 - daily reports

C 3 - scientific research

D. General and rehabilitative transferred skills(other skills relevant to employability and personal development)

D1- Following up the scientific developments in the methods of analysis.

D2- Participation in conferences and skills transfer through joint seminars.

D3 - Increasing the student's self-confidence

D4- The student's acquisition of some language skills, whether Arabic or English

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-2	10		Alcohols	Lecture and discussion	Assignments and tests
3-6	20		phenols	=	=
7-8	20		Ethers	=	=
9-10	10		Epoxides	=	=
11-13	10		Aldehydes	=	=
14-16	20		Ketones	=	=
17	20		exam	=	=
18-21	20		Carboxylic acid	=	=
22-25			derivatives Carboxylic acid		
26-29			amines		
30			exam		

11. Infrastructure	
1. Books Required reading:	Organic chemistry Morrison and Boyd
2. Main references (sources)	
A- Recommended books and references (scientific journals, reports...).	Organic Chemistry By Graham and Selmi
B-Electronic references, Internet sites...	Organic chemistry Francis Carey
2. The development of the curriculum plan	
1- Familiarity with all that is new and innovative in teaching and learning strategies 2- Benefiting from the developments in the results of scientific research in the field of developments in quantum theories 3- Applying some modern teaching strategies- Applying some modern teaching strategies Using modern teaching methods according to the nature of the subject. 4- Developing the content of the course through deletion, addition and replacement 5- Using modern teaching aids.	

Description form sample

Description form

Knowing the periodic properties of the elements of the periodic table, and studying the elements of the two categories S and P, which are called the elements represented from the first group to the eighth group in the periodic table, knowing the electronic arrangement of each element in it, its compounds, methods of preparation and their uses.

AL-Iraqia University - College of Education	1. The educational institution
Chemistry	2. Scientific Department / Center
Inorganic Chemistry / Stage II	3. Course name/code
Built-in attendance	4. Attendance forms available
2025/2026	5. The semester/year
٦٠ theoretical hours + 90 practical hours	6. Number of study hours (total)
1/9/2025	7. The date this description was prepared
8. Course objectives	
1- Introducing students to the importance of inorganic compounds in terms of uses in the industrial and pharmaceutical fields 2- Graduating teaching cadres familiar with the basics of inorganic chemistry and its scientific applications and raising students' efficiency practically. 3- Emphasizing on the practical aspect and linking it to life, keeping abreast of scientific development using analyzes with the latest technology, and developing students' skills.	
9- Course outcomes and methods of teaching, learning and assessment	

A- Knowledge goals A1- If the student gets to know how to interconnected atoms and the formation of vehicles A2- The student knows the concept of chemical reactions and how they occurred A3- That the student distinguishes the types of vehicles A4- The student knows the types of interactions and the conditions of interaction
B - The soft skills objectives of the course. B1 - The ability to distinguish between types of vehicles B2 - the ability to identify differences and chemical diagnosis B3 - the ability to understand chemical reactions
Methods of teaching and learning
Lectures, discussion and assigning students to work papers on the course topics
Evaluation modalities
1- Quarterly exams ٢- Daily exams and students' participation in the electronic lecture by answering the questions posed ٣- Preparing special reports on practical laboratories
C- Emotional and value goals C 1- Thinking about the Creator, Glory be to Him, and the laws of the universe that He created C 2 - Emphasis on cooperation through teamwork in preparing scientific reports
D - Transferred general and qualifying skills (other skills related to employability and personal development). D1- Self-realization and development by reaching the best results through learning and laboratory experiments. D2- The ability to work in the laboratory by dealing with materials, tools and methods of work D3- Possess the ability to explain with its various tools and methods of learning. D4- Possessing scientific and educational personality and training to give meaningful scientific lectures and the ability to train skills.

10. Course structure					
Assessment Method	Teaching Method	Unit / Course or Topic Name	Required Learning Outcomes	Hours	Week
Assignments and tests	Lecture and discussion	The periodic table, its categories and properties		۱۰	۲-۱
=	Lecture, discussion and lab	Hydrogen properties, compounds and methods of preparation		۵	۳
=	=	Elements of the first group, their properties, methods of preparation, and their compounds		۲۰	۷-۶-۵-۴
=	=	The elements of the second group, their properties, methods of preparation and their compounds		۲۰	۱۱-۱۰-۹-۸
=	=	Elements of the third group, their properties, methods of preparation, and their compounds		۲۰	۱۵-۱۴-۱۳-۱۲
=	=	Elements of the fourth group, their properties, methods of preparation, and their compounds		۲۰	۱۹-۱۸-۱۷-۱۶
=	=	Elements of the sixth group, their properties, methods of preparation, and their compounds		۲۰	۲۳-۲۲-۲۱-۲۰
=	=	Elements of the seventh group,		۲۰	۲۷-۲۶-۲۵-۲۴

		their properties, methods of preparation, and their compounds			
=	=	The elements of the eighth group, their properties, methods of preparation, and their compounds		۲۰	۳۰-۲۹-۲۸

11. Infrastructure	
Chemistry of the elements represented	۱- The required textbooks
Inorganic Chemistry (HUHEY)	۲- main references (sources)
	Recommended books and references (scientific journals, reports, ...)
	B- Electronic references, websites...

12. Course development plan
1- Using modern teaching methods according to the nature of the subject. 2- Developing the content of the course through deletion, addition and replacement 3- Use of modern teaching aids.

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This course description provides a necessary summary of the most important characteristics of the course for organic chemistry and the expected learning outcomes for the student to achieve, demonstrating whether he has made the most of the available learning opportunities and must be linked to the program description.

1. Teaching Institution	Iraqi University - College of Education
2. University Department/Centre	Chemistry
3. Course title/code	Organic chemistry- third class
4. Modes of Attendance offered	Attendance in the classroom
5. Semester/Year	2025/2026
6. Number of hours tuition (total)	60 hours' theory + 90 hours' practical lab
7. Date of production/revision of this specification	1/ 09 / 2025
8. Aims of the Course	
1- Introducing students to the basic concepts of natural phenomena associated with organic compounds, active intermediates, and uses in the industrial and pharmaceutical fields.	
2- Enabling the student to propose different organic reaction mechanisms.	
3- Graduating teaching cadres familiar with the basics of chemistry and various specializations and their scientific applications, and raising students' efficiency	

practically.

4- Developing students' skills

5- That the cadres be able to teach the subject of chemistry sciences in intermediate and preparatory schools and be able to apply the basics of chemistry sciences in a laboratory.

6- Emphasis on the applied aspect, linking it to life, and keeping pace with scientific development using analyzes with the latest technology.

9• Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals.

B- 1-To familiarize the student with the organic acids and bases

2- To familiarize the student with the concept of intermediates in organic reactions and how they occur

3- That the student distinguishes the different types of reactions mechanics of organic compounds.

B. The skills goals special to the course.

1- The ability to distinguish between types of vehicles

2 - the ability to identify differences and chemical diagnosis

3 - the ability to understand chemical reactions

Teaching and Learning Methods

1- In-class lectures.

2- Discussion and asking mental questions

3- Assigning the students to complete the homework for the prescribed subject.

Assessment methods

1- Semester exams

2- Daily exams

3- Monthly exams

4- Preparing special reports for practical laboratories

C. Affective and value goals

1- Direct style through interaction during lectures

2- Daily reports

3- Scientific research

Teaching and Learning Methods

1- Direct style through interaction during lectures

2- Daily reports

3- Scientific research

Assessment methods

1- Direct style through interaction during lectures

2- Daily reports

3- Scientific research

D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)

- 1- Good preparation in all subjects with modern means
- 2- Teaching the student how to develop creative and innovative thinking skills in the field of specialization
- 3- Developing personal skills
- 4- Basic skills for communication and communication through (sports activities, educational guidance, and seminars for the department, seminars to discuss student research)

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-2	10		General principles in organic chemistry and the phenomenon of induction and resonance		
			organic intermediates		
٦-٥-٤-٣	٢٠		organic intermediates		
١٠-٩-٨-٧	٢٠		Migration to atoms with electron deficiency		
١٢-١١	١٠		Migration to atoms with electron deficiency		
١٤-١٣	١٠		Unsaturated alpha-beta carbonyl		

			compounds		
١٨-١٥	٢٠		Alpha-beta unsaturated carbonyl compounds and aminons		
٢١-١٩	١٥				
٢٤-٢٢	١٥				
٢٨-٢٥	٢٠				

11. Infrastructure	
1. Books Required reading:	Fundamentals of organic chemistry (Dr. Muhammad Nizar, third stage)
2. Main references (sources)	
A- Recommended books and references (scientific journals, reports...).	Foundations of organic chemistry (Dr. Muhammad Nizar), chemistry
B-Electronic references, Internet sites	Chemical Reactions Mechanism (Khaled Mahmoud Dawood)
12. The development of the curriculum plan	
1- Using modern teaching methods according to the nature of the subject.	
2- Developing the content of the course through deletion, addition and replacement	
3- Using modern teaching aids	

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Iraqi University - College of Education
2. University Department/Centre	chemistry
3. Course title/code	Chemistry
4. Modes of Attendance offered	Physical chemistry- third class
5. Semester/Year	Attendance in the classroom
6. Number of hours tuition (total)	60 hours' theory + 90 hours' practical lab
7. Date of production/revision of this specification	2025/2026
8. Aims of the Course	

9. Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals .

1-To familiarize the student with the basic of kinatic chemistry

2- To familiarize the student with the concept of reaction and how they occur

3- That the student the different types of order of reactions .

B. The skills goals special to the course.

1- The ability to distinguish between types of reactions

2 - the ability to identify differences and chemical diagnosis

3 - the ability to understand chemical reactions

Teaching and Learning Methods

1- In-class lectures.

2- Discussion and asking mental questions

3- Assigning the students to complete the homework for the prescribed subject.

Assessment methods

Semester exams

2- Daily exams

3- Monthly exams

4- Preparing special reports for practical laboratories

Teaching and Learning Methods

- Direct style through interaction during lectures

- Daily reports

- Scientific research

D. General and rehabilitative transferred skills(other skills relevant to employability and personal development)

1- Good preparation in all subjects with modern means

2- Teaching the student how to develop creative and innovative thinking skills in the field of specialization

3- Developing personal skills

4- Basic skills for communication and communication through (sports activities, educational guidance, and seminars for the department, seminars to discuss student research)

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	10		Kinetics, chemical reaction rate, chemical reaction mechanics. The general speed of the reaction. Issues	Lecture and discussion	Assignments and tests
2	10		The law of mass action, parity order, reaction molecule, difference between reaction order and reaction molecule, pseudo-order	=	=
3	10		Zero-order interaction, zero-order half-life, equation graphs, first order, finding the half-life equation, math problems	=	=
4	10		The imaginary rank. Derivation of the half-integral equation, the ternary equation. Equation 5/2. additional questions	=	=
5	5		Second order reactions, the half-life time, the integral equation. The third place is the possibility of the second for the second place. The differential modifier for the second order	=	=
6	30		Table of all mattress	=	=

			laws. Velocity laws in terms of molecular pressures		
=7	10		Methods for finding the order of the reaction method of trial and error compensation. My statement. by the half-life time.	=	=
8	5		differential method. separation method	=	=
9	15		Kinetics of complex reactions Finding the reaction rate in terms of the composition of the substance. Finding the reaction rate in terms of substance consumption. types of complex interactions	=	=
10-11	10		Study the kinetics of complex reactions. Finding differential and integral equations / successive reactions. reflexive interactions. The chain reaction includes initiation. the growth . finished	=	=
12	5		The mechanism of chemical reactions. Study of secondary interactions. speed limit step. The second approximation is the case of regularity or stability	=	=
13	10		The effect of temperature on reaction rate. Erinos	=	=

			reliability. A theoretical method to find the Arrhenus equation. Practical way to find the frequency factor		
14	5		Exponential form of the Erinus equation. activation energy. Solved examples	=	=
15	15		chapter exam	=	=
Second course					
1-2	10		Theories of reaction speed. Collision theory. Active complex theory / Lundman and Henshold theory. How does a monomolecular reaction occur? At low pressures and high pressures		
3	10		activated complex. Exothermic and endothermic reactions. Number of activated complexes. transitional energy. vibration energy. thermodynamic equilibrium constant		
4	10		How to calculate retail functions. Calculate degrees of freedom. monoatomic diatomic. polyatomic		
5	10		Calculation of thermodynamic functions. Arnick equation. An equation that relates free energy with		

			enthalpy and entropy		
6-7	5		Failure of the collision theory of kinetic reactions in solutions. Effect of solute/electrochemistry. viscosity. similar shipments. different shipments. international units. Non-international units. Boazley's law		
8	30		Methods for measuring viscosity. Liquid flow rate method, Ostwald method, using a viscometer		
9-10	10		Methods for measuring viscosity. The falling ball method. The effect of temperature on viscosity In two degrees Moaan / electric potential. electric current		
11	5		Resistance . Except the electric charge. Qat . Conductors conductors and ohms. electrical conductivity		
12	15		Electrocardiogram. Semiconductors, metallic conductors, and electrolytic conductors		
13	10		resistivity. electrical conductivity. units. connectivity. molar conductivity. conductivity		

			measurement. Finite molar conductivity. Kohlroch's rule. Specific molar conductivity		
14	5		Methods for measuring kappa. The effect of temperature on conductivity. The effect of solvent on conductivity. Finding the dissolution product constant for sparsely soluble salts. Find the thickness of the ionic atmosphere. Onzaker-Debye equation		
15	10		Second semester exam		

11. Infrastructure	
1. Books Required reading:	Physical chemistry /atkins
2. Main references (sources)	
A- Recommended books and references (scientific journals, reports...).	
B-Electronic references, Internet sites...	
12. The development of the curriculum plan	

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This course description provides a necessary summary of the most important characteristics of the course for biochemistry and the expected learning outcomes for the student to achieve, demonstrating whether he has made the most of the available learning opportunities and must be linked to the program description.

1. Teaching Institution	Iraqi University - College of Education
2. University Department/Centre	Chemistry
3. Course title/code	Biochemistry- third class
4. Modes of Attendance offered	Attendance in the classroom
5. Semester/Year	2025/2026
6. Number of hours tuition (total)	60 hours' theory + 90 hours' practical lab
7. Date of production/revision of this specification	1/9/2025
8. Aims of the Course	
1- Introducing students to the basic concepts of biomolecules (Carbohydrates, amino acids, proteins, fatty acids, nucleic acids, enzymes, hormones and vitamins).	
2- Graduating teaching staff familiar with the basics of biochemistry and various specializations and their scientific applications, and raising students' efficiency practically.	
3- Emphasis on the applied aspect, linking it to life, and keeping pace with scientific development using analyzes with the latest technology.	

9• Learning Outcomes, Teaching ,Learning and Assessment Method

C- Cognitive goals.

D- 1-To familiarize the student with the biomolecules and their reactions in bio systems

2- To familiarize the student with the laboratory tests for (quantity and quality) determined biomolecules.

B. The skills goals special to the course.

1- The ability to distinguish between types of vehicles

2 - the ability to identify differences and chemical diagnosis

3 - the ability to understand chemical reactions

Teaching and Learning Methods

1- In-class lectures.

2- Discussion and asking mental questions

3- Assigning the students to complete the homework for the prescribed subject.

Assessment methods

1- Semester exams

2- Daily exams

3- Monthly exams

4- Preparing special reports for practical laboratories

C. Affective and value goals

1- Direct style through interaction during lectures

2- Daily reports

3- Scientific research

Teaching and Learning Methods

4- Direct style through interaction during lectures

5- Daily reports

6- Scientific research

Assessment methods

1- Direct style through interaction during lectures

2- Daily reports

3- Scientific research

- D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)
- 1- Good preparation in all subjects with modern means
 - 2- Teaching the student how to develop creative and innovative thinking skills in the field of specialization
 - 3- Developing personal skills
 - 4- Basic skills for communication and communication through (sports activities, educational guidance, and seminars for the department, seminars to discuss student research)

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
١			Introduction in biochemistry		
٢			Introduction to the chemistry of living cells		
٣			Introduction to carbohydrates, structures, types,		
٤			Monosaccharides, Optical properties, cyclic form		
٥			Some examples of most important monosaccharides and their derivatives		
٦			Oligosaccharides and polysaccharides		
٧			Introduction to lipids (definition, biological functions, types etc.		
٨			Simple lipids, conjugated lipids (classification) and structures		
٩			Derivative lipids and fatty acids		

۱۰			Steroids, cholesterol, terpenes.		
۱۱					
۱۲			Introduction to amino acids types structures, functions..etc.		
۱۳			Peptides, Formation of peptide bond, sequence of amino acids ...etc,		
۱۵-۱۴			Separation and diagnosis of amino acids		
۱۶			Introduction to proteins, general structures, biological functions, classification,		
۱۷			Proteins in plasma, separation and diagnosis of proteins		
۱۸			Introduction to enzymes , active side, theories of interaction between active site and substrate, some examples of important enzymes in body and their biological functions		
۱۹			Classification of enzymes and commission numbers, effects of enzyme and substrate concentrations, temperature and pH on speed of enzyme reactions		
۲۰			Enzyme kinetics, Michaelis-menten equation K_m , V , v_{max} , K_{cat} lineweavwe-burk plot and some mathematical examples		
۲۱			Activation and inhibition of enzymes Types of Inhibition and K_i , Isoenzymes and allosteric enzymes		

٢٢			Introduction to Nitrogen bases, nucleosides, properties, nucleotides , biological functions		
٢٤-٢٣			Nucleic acids, DNA, RNA		
٢٥			Introduction to hormones, classification, biological functions, endocrine system, regulation of hormone secretions and second messengers		
٢٦			Hypothalamus, thyroid , adrenal, pancreas, sexual hormones and their biological functions		
٢٧			Introduction to Vitamins classification, biological functions		
٢٨			Vitamins soluble in water		
٢٩			Vitamins soluble in lipid		
٣٠			Introduction to biological energy ATP, ADP....ec		

11. Infrastructure	
1. Books Required reading:	Fundamentals of organic chemistry (Dr. Muhammad Nizar, third stage)
2. Main references (sources)	
A- Recommended books and references (scientific journals, reports...).	Foundations of organic chemistry (Dr. Muhammad Nizar), chemistry
B-Electronic references, Internet sites	Chemical Reactions Mechanism (Khaled Mahmoud Dawood)
12. The development of the curriculum plan	
1- Using modern teaching methods according to the nature of the subject.	
2- Developing the content of the course through deletion, addition and replacement	
3- Using modern teaching aids	

Course description form

Course description

Knowledge of the elements of the periodic table in its four categories and the transitional elements in particular for the first, second and third series and their properties, knowledge of coordination compounds and the theories that explain them, methods of preparing coordination complexes, the mechanics required to prepare complexes, term symbols and electronic spectra, stability of complexes and factors affecting them.

AL-Iraqi University - College of Education	9. The educational institution
Chemistry	10. Scientific Department / Center
Coordination Chemistry	11. Course name/code
Built-in attendance	12. Attendance forms available
2025/2026	13. Season/year
60 theoretical hours + 90 practical hours	14. Number of study hours (total)
1/ 09 / 2025	15. The date this description was prepared
16. Course objectives	
1- Introducing students to the importance of coordination compounds in terms of preparation and uses in the industrial and pharmaceutical fields 2- Graduating teaching cadres familiar with the basics of coordination chemistry and raising students' efficiency in practice 3- The cadres should be able to teach chemistry in intermediate and preparatory schools and be able to apply the basics of chemistry in a laboratory. 4- Emphasizing on the applied side and linking it to life, keeping abreast of scientific development using analyzes with the latest technology, and developing students' skills	

13. Course Outcomes and Methods of Teaching, Learning and Assessment

A- Cognitive goals A1- The student will be familiar with the properties of transitional elements and the idea of a coordination compound A 2- That the student recognizes the concept of complexes and the theories that explain coordination compounds A 3- The student should know how to prepare coordination compounds A 4- That the student recognizes the interpretation of the appearance of colors in the harmonic complexes through their various spectra A 5- That the student learn to explain the stability of coordination complexes
B - The soft skills objectives of the course. B1 - The ability to distinguish between types of coordination compounds B2 - the ability to identify differences in colors and methods of chemical diagnosis B3 - the ability to understand the appropriate method in the preparation of coordination compounds
Methods of teaching and learning
Lectures, discussion and assigning students to work papers on the course topics
Evaluation modalities
2- Quarterly exams ٢- Daily exams and students' participation in the electronic lecture by answering the questions posed ٣- Preparing special reports on practical laboratories
C- Emotional and value goals C 1- Thinking about the Creator, Glory be to Him, and the laws of the universe that He created C 2 - Emphasis on cooperation through teamwork in preparing scientific reports
D - Transferred general and qualifying skills (other skills related to employability and personal development). D1 - Following up on scientific developments in methods of analysis and diagnosis. D2- Participation in conferences and skills transfer through joint seminars. D3 - Increasing the student's self-confidence D4- The student's acquisition of some language skills, whether Arabic or English

14. Course structure					
Assessment Method	Teaching Method	Unit / Course or Topic Name	Required Learning Outcomes	Hours	Week
Assignments and tests	Lecture and discussion	The periodic table, its categories, properties, and transition elements		۱۰	۲-۱
=	Lecture, discussion and lab	Historically, coordination compounds, types of ligands and complexes		۱۰	۴-۳
=	=	Harmony numbers and forms of compounds		۵	۵
=	=	Theories that explain coordination compounds such as Werner's theory, series, valence bond theory, crystal field theory, and molecular orbital theory		۳۰	-۱۰-۹-۸-۷-۶ ۱۱
=	=	The stability of complexes and their rules		۱۰	۱۳-۱۲
=	=	Isomers and their types		۵	۱۴
=	=	Quantum numbers, term symbols, and Russell-Sanders states		۱۵	۱۷-۱۶-۱۵
=	=	Selection rules and the electromagnetic spectrum		۱۰	۱۹-۱۸
=	=	Problems and Solutions		۵	۲۰

=	=	Spectra d1-d10		10	٢٢-٢١
=	=	Spectra of the ligand and its associated ion		٥	٢٣
=	=	Preparation of complexes		15	٢٦-٢٥-٢٤
=	=	Complex preparation mechanics		٥	٢٧
=	=	Oracle schemas		١٥	٣٠-٢٩-٢٨

15. Infrastructure

Transition element chemistry	١- The required textbooks
Inorganic Chemistry (HUHEY)	٢- المراجع الرئيسية (المصادر)
	Recommended books and references (scientific journals, reports, ...)
	B- Electronic references, websites...

16. Course development plan

4- Using modern teaching methods according to the nature of the subject. 5- Developing the content of the course through deletion, addition and replacement 6- Use of modern teaching aids.

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Iraqi University - College of Education
2. University Department/Centre	Chemistry
3. Course title/code	Spectral organic diagnosis - the fourth stage
4. Modes of Attendance offered	Attendance study
5. Semester/Year	2025/2026
6. Number of hours tuition (total)	52 theoretical hours + 52 practical hours
7. Date of production/revision of this specification	1/ 09 / 2025
8. Aims of the Course	
Identifying and diagnosing unknown organic compounds by studying their IR, H-NMR, UV spectra, as well as by conducting experiments and laboratory tests for them.	

9• Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals.

A1. The student will be familiar with methods of organic diagnosis of compounds

A2- The student learns the many different ways to diagnose compounds by means of spectra

A3- Understanding and knowing the red shift and the blue shift

A 4 - Know the chemical displacement of compounds

A5- Knowing how to calculate the value of J- coupling.

B. The skills goals special to the course.

B1. The student can skillfully solve issues related to spectra and methods of compound identification scientifically and practically

B2 - The student will be able to distinguish between active groups in compounds and their places of appearance

B3 - The student will be able to distinguish between the aggregates that lead to chemical displacement and the factors affecting the location of the bundles.

Teaching and Learning Methods

1- Lectures

2- Using the board

3- The use of laboratory materials and measuring devices

Assessment methods

1- Daily exams

2- Monthly exams

3- Quarterly exams

C. Affective and value goals C1 -Use the method of dialogue between the student and the professor

C 2 - Use the discussion method

C 3- Preparing reports

Teaching and Learning Methods

1- Lectures

2- Using the board

3- The use of laboratory materials and measuring devices

Assessment methods

1- Daily exams

2- Monthly exams

3- Quarterly exams

D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)

D1- The student can learn the profession of teaching

D2 - Positive thinking and employing the acquired knowledge

D3 - The student has the ability to deal with parties outside the college and train with them.

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2 theoretical + 2 practical	IR spectroscopy	introduction		
2	2 theoretical + 2 practical	IR	Factors affecting the locations of packages		
3	2 theoretical + 2 practical	IR	Factors affecting the locations of packages		
4	2 theoretical + 2 practical	IR	Factors affecting the locations of packages		
5	2 theoretical + 2 practical	IR	Factors affecting the locations of packages		
6	2 theoretical + 2 practical	IR	Factors affecting the locations of packages		
7	2 theoretical + 2 practical	IR	Factors affecting the locations of packages		
8	2 theoretical + 2 practical	IR	Factors affecting the locations of packages		
9	2 theoretical + 2 practical	IR	Factors affecting the locations of packages		
10	2 theoretical + 2 practical	IR	Analysis and interpretation of IR spectra		

11	2 theoretical + 2 practical	IR	Analysis and interpretation of IR spectra		
12	2 theoretical + 2 practical	NMR	theory		
13	2 theoretical + 2 practical	NMR	magnetic core		
14	2 theoretical + 2 practical	NMR	chemical shift		
15	2 theoretical + 2 practical	NMR	Factors affecting displacement		
16	2 theoretical + 2 practical	NMR	J-J value Analysis and interpretation of NMR spectra		
17	2 theoretical + 2 practical	UV spectrum	introduction		
18	2 theoretical + 2 practical	UV	absorption mechanism		
19	2 theoretical + 2 practical	UV	Factors affecting beam locations		
20	2 theoretical + 2 practical	UV	Wood –world rules		

11. Infrastructure	
1. Books Required reading:	Identification of organic compounds. The author's name is George Yonathan Sarkis
2. Main references (sources)	
A- Recommended books and references (scientific journals, reports...).	
B-Electronic references, Internet sites...	Internet, report and researches
12. The development of the curriculum plan	
Work to keep pace with the scientific development regarding the above-mentioned course in other countries, as well as adopting modern books related to it	

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

In this fourth stage course, students will have six hours learning each week. The students will complete this course within 32 weeks. This course focuses on the principles of instrumental and quantitative analysis. At the end of the course, the student becomes fully aware of some methods of electrochemical analysis such as measurement of conductivity, potential difference, polarization, spectroscopy, colorimetric analysis and other isolation methods, the use of tools and the application of the rules of thin layer chromatography (thin layer chromatography) and high-performance liquid chromatography (high-performance liquid chromatography). And gas chromatography (gas chromatography) in addition to applying the basic concepts in quantitative analysis of known substances and then examining their content. At the beginning of each lecture, the desired objectives are explained in detail, and at the end a special session is held to train on what has been studied previously, which is considered necessary in evaluating the student.

1. Teaching Institution	College of Education
2. University Department/Centre	Department of Chemistry
3. Course title/code	Analysis Chemistry CHE406
4. Modes of Attendance offered	Interview
5. Semester/Year	Fourth stage
6. Number of hours tuition (total)	96 theoretical hours + 96 practical laboratory hours
7. Date of production/revision of this specification	1/ 09 / 2025
8. Aims of the Course	
Learn spectral and optical methods, atomic absorption and electrical methods as a tool in chemical analysis.	
Realizing the scientific and economic advantages of automated analysis methods.	
Teaching the student the automatic analysis and what are the most important methods	

used in the analysis, the theoretical and practical scientific concept of the basics of the automatic and how to use the advanced automated laboratory devices in the completion of the analyzes and the mechanism of the work of these devices and the most important applications and devices.

Teaching and educating students on all the necessary and necessary information related to the subject of automatic analysis, which qualifies them to work and research in all areas of analytical and research chemistry.

9• Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals .

A1. Enabling students to obtain knowledge and understanding of the concept of automatic analysis

A2. Enabling students to obtain knowledge and understanding of the most important methods of automatic analysis

A3. Enable students to obtain knowledge and understanding of the working mechanism and components of the most modern automatic devices and methods of operation.

A4. Enabling students to obtain knowledge and understanding of practical experiments of applications and automated analytics.

B. The skills goals special to the course.

B1. Knowledge skills - Remembering.

B2. Memory and analysis skills

B3. Use and development skills

Teaching and Learning Methods

- Lecture method and the use of the interactive whiteboard

Explanation and clarification

- Providing students with the basics and additional topics related to the outputs of thinking and automatic chemical analysis.

- Forming discussion groups during the lectures to discuss topics of automatic analysis that require thinking and analysis.

Asking students a set of reflective questions during lectures such as what, how and why for specific topics.

- Giving students homework that requires self-explanations in causal ways.

Assessment methods

Practical tests

- Theoretical tests

- Reports and studies

- Daily exams with self-resolved questions

- Specific grades with homework.

C. Affective and value goals

- Enable students to solve problems related to the intellectual framework of automatic analysis.

Enable students to know how to solve research problems through the use of automatic devices.

- Enabling students to solve problems related to analytical and applied chemistry through the use of automated analyzes in English.

Teaching and Learning Methods

D. General and rehabilitative transferred skills(other skills relevant to employability and personal development)

10. Course Structure

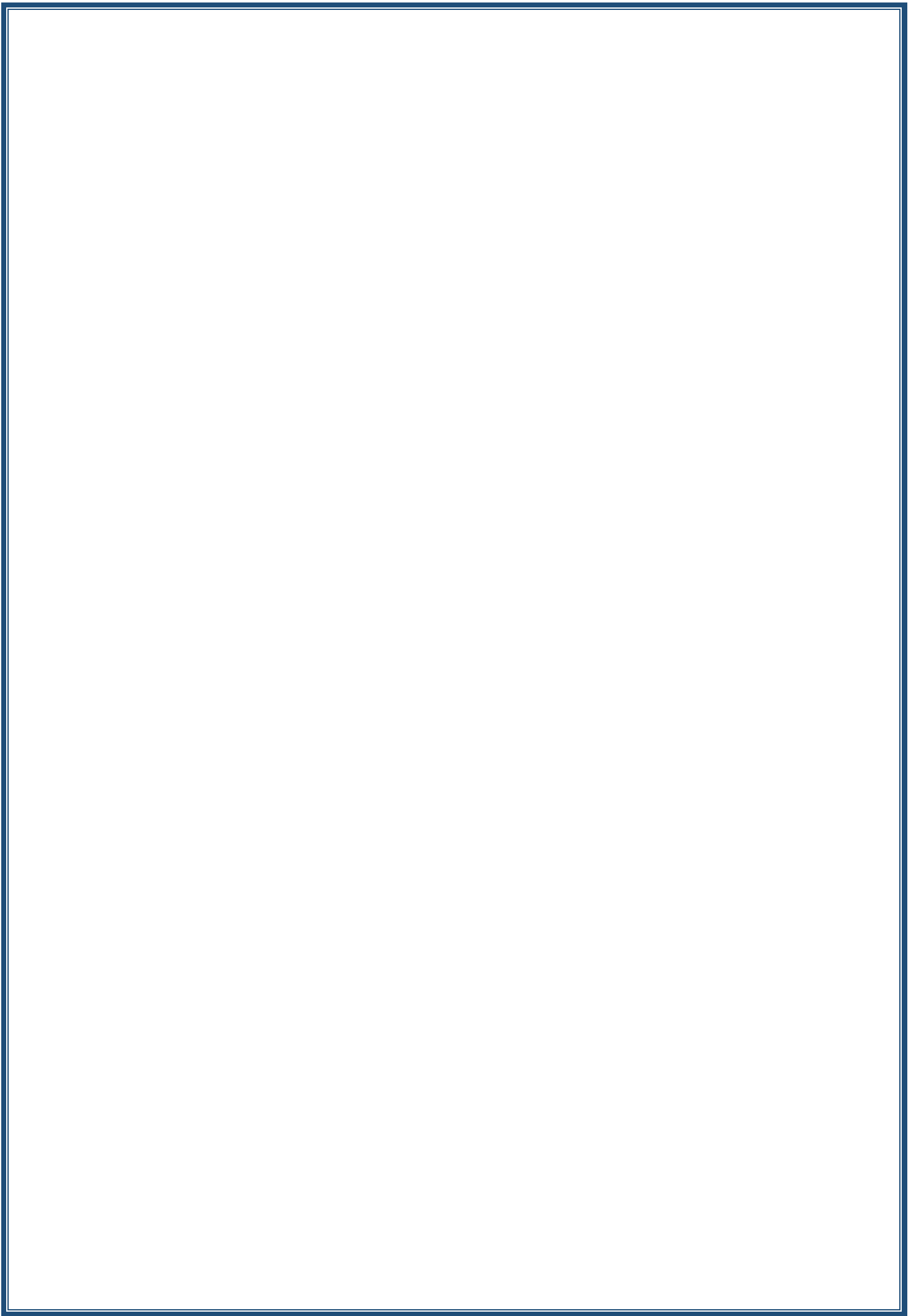
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	6	automatic analysis	introduction to automatic analysis and the most important methods	whiteboard and data show	Daily exams Homework and monthly exams
2	6	electrolysis	Electrolysis and what are its types and analysis mechanisms	whiteboard and data show	Daily exams Homework and monthly exams
3	6	selective electrodes	Selective electrodes, their types, the most important applications, and what are the pros and cons	whiteboard and data show	Daily exams Homework and monthly exams
4	6	polarography	polarography, its types, what is the mercury pole, the train, what are the types of current in polarography, the most important applications	whiteboard and data show	Daily exams Homework and monthly exams
5	6	voltometry Analysis	voltometry Analysis by voltometry and its most important applications	whiteboard and data show	Daily exams Homework and monthly exams
6	6	combative methods	the combative strategies, their types, applications and components of the combative cells	whiteboard and data show	Daily exams Homework and monthly exams
7	6	amperometric analysis	types of amperometric rectifications, how to perform rectification calculations, the most important applications	whiteboard and data show	Daily exams Homework and monthly exams
8	6	First exam	- first semester	whiteboard and data show	Daily exams Homework and monthly exams
9	6	Coulometric	Coulometric	whiteboard and	Daily exams

		methods	explanations, cell components, and the most important applications	data show	Homework and monthly exams
10	6	conductive analyzes	conductive corrections, conductive calculations, types and components of conductivity	whiteboard and data show	Daily exams Homework and monthly exams
11	6	spectral methods Spectroscopic	spectral methods Spectroscopic methods and their types and the interaction of the spectrum	whiteboard and data show	Daily exams Homework and monthly exams
12	6	UV-VIS analysis	UV-VIS analysis methods - Violet and Visible spectra and the most important devices	whiteboard and data show	Daily exams Homework and monthly exams
13	6	UV-VIS analysis	UV-VIS analysis methods - Violet and Visible spectra and the most important devices	whiteboard and data show	Daily exams Homework and monthly exams
14	6	IR	infrared analysis, the most important devices used, work mechanisms and components, and the most important applications	whiteboard and data show	Daily exams Homework and monthly exams
15	6	IR	infrared analysis, the most important devices used, work mechanisms and components, and the most important applications	whiteboard and data show	Daily exams Homework and monthly exams
16	6	Second exam	first semester	whiteboard and data show	Daily exams Homework and monthly exams
17	6	methods of fluorination and phosphorylation	The phenomenon of phosphorylation and fluorination and the most important principles and how it occurs	whiteboard and data show	Daily exams Homework and monthly exams
18	6	nephylometric and turbidity methods	Analysis using the phenomenon of light scattering and turbidity and the most important applications	whiteboard and data show	Daily exams Homework and monthly exams
19	6	analysis using	analysis using luster	whiteboard and	Daily exams

		luster	Chemical luster, its types and its most important applications	data show	Homework and monthly exams
20	6	atomic absorption methods Analysis	using atomic absorption and the most important devices and their components	whiteboard and data show	Daily exams Homework and monthly exams
21	6	atomic emission methods Analysis	using atomic emission and the most important devices and their components	whiteboard and data show	Daily exams Homework and monthly exams
22	6	atomic absorption applications	The most important applications for analysis using atomic absorption	whiteboard and data show	Daily exams Homework and monthly exams
23	6	applications of atomic emission	The most important applications for analysis using atomic absorption	whiteboard and data show	Daily exams Homework and monthly exams
24	6	First Exam	Second Semester	whiteboard and data show	Daily exams Homework and monthly exams
25	6	X-ray analysis technique	using the X-ray technique, and what are the most important principles, analysis method, applications	whiteboard and data show	Daily exams Homework and monthly exams
26	6	CHN analysis	CHN analysis technique using and what are the most important CHN techniques, the foundations and the analysis method	whiteboard and data show	Daily exams Homework and monthly exams
27	6	ICP analysis	ICP analysis technique using the ICP technique and what are the most important principles, analysis method, applications	whiteboard and data show	Daily exams Homework and monthly exams
28	6	FIA analysis	FIA analysis technique, using the FIA technique, and what are the most important foundations, analysis method, applications	whiteboard and data show	Daily exams Homework and monthly exams
29	6	Laser	Laser and what is the most important technology of Laser, the foundations and	whiteboard and data show	Daily exams Homework and monthly exams

			method of analysis and applications		
30	6	SEM	the analysis technique using SEM and what is the most important SEM	whiteboard and data show	Daily exams Homework and monthly exams
31	6	Second exam	- Second semester	whiteboard and data show	Daily exams Homework and monthly exams

11. Infrastructure	
1. Books Required reading:	Fundamentals of Analytical- Chemistry, Douglas A. Skoog and Donald M. West Eight Edition
2. Main references (sources)	Analytical Chemistry 1- Gary Christian Sixth Edition 2- Chemical Analysis, Modern Instrumentation Methods and Techniques, Francis Rouessac and Annick Rouessac Second Edition 3: Modern Analytical Chemistry, David Harvey
A- Recommended books and references (scientific journals, reports...).	
B-Electronic references, Internet sites...	
12. The development of the curriculum plan	
Familiarity with all that is innovative and new in teaching and learning strategies. Benefiting from the latest scientific research results in the field of developments in automatic analysis techniques. Applying some modern teaching strategies.	



TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	College of Education
2. University Department/Centre	Department of Chemistry
3. Course title/code	Industrial chemistry
4. Modes of Attendance offered	Interview
5. Semester/Year	Fourth stage
6. Number of hours tuition (total)	96 theoretical hours
7. Date of production/revision of this specification	1/ 09 / 2025

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	12		Industrial chemistry Introduction, some industrial processes, and some industrial chemical terms	Lecture and discussion	Assignments and tests
2	24		Polymers / degree of polymerization / polymerization process / classification of polymers	=	=
3	24		Nomenclature of polymers / nomenclature based on polymer sources / nomenclature of polymers resulting from condensation and addition / copolymer nomenclature / global system	=	=
4	12		Determination of repeating unit configuration/molecular forces in polymers	=	=
5	12		Molecular weight of polymers / Methods for determination of molecular weights / Types of molecular weights / Thermal transformation states in polymer molecules	=	=
6	12		Glass temperature / physical properties of the polymer / crystallinity and melting point / crystallization theories	=	=
7	12		Methods for measuring	=	=

			the crystal melting point TM in polymers / Factors affecting the crystal melting point		
8	12		Polymerization processes / Polymerization systems and conditions / Block polymerization / Solution polymerization / Heterogeneous polymerization / Suspension polymerization / Emulsion polymerization	=	=
9	12		Classification of polymerization reactions / stages of polymer formation / addition polymerization / condensation polymerization	=	=
10	12		Free Radical Polymerization / Positive Ionic Polymerization / Negative Ionic Polymerization / Coordination Polymerization	=	=
11	12		Mechanics of coordination polymerization / polymeric isomers / polymerization reactions	=	=
12	12		Double bonding reactions / resins / phenol formaldehyde / resol / tovolac / plastic	=	=
13	12		Wrought plastics / Physical properties of plastics / Mechanism of	=	=

			action of plasticizers on plastics / Grease theory / Mountain theory		
14	12		Stabilizers / Thermogenic Stabilizers / Optical Stabilizers / Antioxidants	=	=
15	12		chapter test		
Second course					
1	12		The most important plastic industries / the polyethylene industry / the high-density and low-density polyethylene industry / the PVC and p.p industry and Zuckler - Nata factors		
2	24		Synthetic rubber / rubber vulcanization / fillers / inhibitors / antioxidants /		
3	24		The most important types of synthetic rubber / butadiene rubber / styrene-butadiene rubber (SBR).		
4	12		Fiber industry / synthetic fibers / natural fibers / protein fibers / cellulosic fibers		
5	12		Artificial silk (viscose) / steps to manufacture artificial silk / the difference between fibers and threads / the most important industrial fibers		
6	12		Dyes / dyes / pakment / causes of color - theory and wt / chromophore groups / oxochrome groups / the most important factors that		

			increase the intensity of color		
7	12		The method based on the chemical composition / the method based on the use of acid dyes / basic dyes / basin dyes		
8	12		Dyeing process theory / ionic forces / covalent bonds / hydrogen bonds / dyeing processes		
9	12		Factors affecting dyeing processes / dye manufacturing / preparation of azo dyes		
10	12		Endoid Dyes / Xanthine Dyes / Fluorescein Eosin		
11	12		Paper industry / raw materials for the paper industry in Iraq / pulp production processes		
12	12		Sugar Industry / Sugar Extraction / Processing / Raw Sugar Refining Industry		
13	12		Oil industry / Some properties of fats and oils / Composition of some industrial oils / Some industrial methods for oil industry		
14	12		Soap industry / detergent industry / types of soap / substitutes for soap / surface activity / detergent powder		
15	12		Chapter two test		

11. Infrastructure	
1. Books Required reading:	
2. Main references (sources)	
A- Recommended books and references (scientific journals, reports...).	
B-Electronic references, Internet sites...	
12. The development of the curriculum plan	