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 for the Pharmacy Department

2025-2026

Introduction

The educational program is an integrated package of academic courses aimed at developing students' skills and preparing them for the job market. It is updated and evaluated annually through internal and external auditing processes. The academic program description is presented as a comprehensive summary that defines the program's objectives and core competencies. This description is prepared by the faculty under the supervision of scientific committees. The Academic Program Description Guide includes a detailed description of the program after being updated to align with the requirements of the Iraqi educational system. This includes the academic program description in both annual and semester-based systems, in addition to the generalized academic program description under the Bologna Process. We emphasize the importance of writing academic program and course descriptions to ensure the quality of the educational process.

Academic Program Description

The academic program description provides a concise summary of its vision, mission, and objectives, including a precise description of the intended learning outcomes based on clearly defined learning strategies.

Course Description

The course description provides a concise summary of the key features of the course and the expected learning outcomes that the student is expected to achieve, demonstrating whether they have made the most of the available learning opportunities. It is derived from the academic program description.

Program Vision

An ambitious image of the academic program's future—aiming to be advanced, inspiring, motivating, realistic, and achievable.

Program message

Program mission: It briefly explains the objectives and activities required to achieve them, and also identifies the program's development paths and directions.

Program objectives

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

Curriculum structure

Curriculum structure: All courses/subjects included in the academic program according to the approved learning system (semester, annual, Bologna track) whether required by (ministry, university, college, or scientific department) with the number of academic units.

Learning outcomes

Learning outcomes: A consistent set of knowledge, skills, and values acquired by the student after successfully completing the academic program. The learning outcomes for each course must be determined in a way that achieves the program's objectives.

Teaching and learning strategies

These are the strategies used by faculty members to develop student teaching and learning. They are plans followed to achieve learning objectives. In other words, they describe all classroom and extracurricular activities designed to achieve the program's learning outcomes.

Academic Program Description Form

University Name: Al-Furat Al-Awsat Technical University

Faculty or Institute: Kufa Technical Institute

Academic Department: Department of Pharmacy Technologies

Academic Program Name: Pharmacy Technical

Final Degree Name: Pharmacy Technical Diploma

Study System: Semester

Description Preparation Date: 22-2-2026

Description Completion Date: 22-2-2026

Signature

Department Head:

Assist. Prof. Dr. Mahmood Muhyi Fahad

Date: 22/2/2026

Signature

Assistant Scientific Dean

Assist. Prof. Dr. Ayad Muslim Hamza

Date: 22/2/2026

File Reviewed by the Quality Assurance and University Performance Unit

Quality Assurance Unit Director: Ch. Eng. Khulood M. Abdul Ali

Date:

Signature:

Approved by the Dean of the Technical Institute of Kufa

Prof. Dr. Atheer Kadhim Ibadi

1. Program vision
The Department of Pharmacy Technologies aims to be a leader in preparing and qualifying scientifically and practically competent pharmaceutical professionals, capable of providing distinguished and sustainable pharmaceutical and medical services. This is achieved by keeping pace with the latest scientific and technological advancements in the field of pharmacy, promoting scientific and applied research, and implementing sustainable pharmacy practices aligned with the Sustainable Development Goals (SDGs).

2. Program mission
The mission of the Pharmacy Technology Department is to develop distinguished national pharmaceutical technicians who work in close collaboration with the healthcare team to provide comprehensive, advanced, and focused pharmaceutical care to patients. The goal is to enhance quality of life and improve health outcomes by providing outstanding and sustainable pharmaceutical services.

3. Program objectives
The Department of Pharmacy Technology aims to graduate qualified and distinguished pharmaceutical technicians capable of working effectively in various fields, including clinical and pharmaceutical pharmacy, scientific research and development, continuing professional development, and collaboration with the healthcare and industrial sectors.

4 . Program accreditation
The application has been submitted for accreditation.

5. Other external influences
Pharmacists Syndicate, health centers, hospitals, community.

6- Program structure

Program structure	Number of Courses	Credit hours	Percentage	Note.
Institutional Requirements	9	20	%25	Basics for 1st,2nd stages
College Requirements	0	0	%0	Basics for 1st,2nd stages

Department Requirements	27	122	%75	Basics for 1st,2nd stages
Summer Training	-			Complete
Other	-			Free hours: Self-study - Guidance

7. Program Description

Credit hours		Course name	Course code	Year/Level
practical	theoretical			
4	2	Principles of Pharmacy	PHT111-50-C	First year/first semester
4	2	Fundamentals of Organic Chemistry	PHT112-50-C	
4	2	Analytical Chemistry	PHT113-50-C	
-	1	Medical terms	PHT114-50-C	
4	2	Microbiology	PHT115-50-C	
4	2	Principles of Physiology	PHT116-50-C	
-	2	Human rights and democracy	ATU13C	
1	1	Arabic language	ATU11C	
4	2	Pharmaceutical calculations	PHT121-50-C	First year/second semester
4	2	Organic Chemistry	PHT122-50-C	
4	2	Biochemistry	PHT123-50-C	
2	2	Physiology	PHT124-50-C	
2	2	Virology and parasites	PHT125-50-C	
-	2	Biostatistics	PHT126-50-C	
-	2	English language	ATU10C	
-	2	Computer applications	ATU12C	
3	2	Pharmaceutics	PHT211-50-C	Second year/first semester
3	2	Industrial principles	PHT212-50-C	
3	2	Principles of Pharmaceutical Chemistry	PHT213-50-C	
3	2	Principles of drug	PHT214-50-C	
2	2	Basics of therapeutic applications	PHT215-50-C	
2	2	Medicinal plants and natural products	PHT216-50-C	
-	2	Toxicology	PHT217-50-C	
-	2	Baath regime crimes in Iraq	ATU24C	
2		Research methodology	PHT219-50-C	
3	2	Industrial pharmacy	PHT221-50-C	Second year / second semester
3	2	Pharmaceutical Chemistry	PHT222-50-C	
3	2	Pharmaceutical Formulation	PHT223-50-C	
3	2	Pharmacology	PHT224-50-C	
2	2	Therapeutic applications	PHT225-50-C	

2	2	Pharmacognacy	PHT226-50-C	
-	2	Professional ethics	PHT227-50-C	
2	-	Research project	ATU25C	
1	1	computer applications	ATU217	
-	2	Arabic language	ATU218	

8. Expected learning outcomes of the program	
Learning outcomes	**A. Knowledge**
A1. Enabling the student to acquire knowledge in the basic subjects of medical and pharmaceutical sciences, including physiology, microbiology, viruses and parasites. A.2. Enabling the student to know the medications, their dosages, how they work and how to dispense them. A3. To provide the student with knowledge of the composition of chemical substances, methods of discovering, preparing, and diagnosing chemical pharmaceutical compounds, and linking the chemical composition of a drug to its pharmacological activity and mechanism of action. A4. The ability to read medical prescriptions, understand medical terminology, and prescribe the most appropriate treatment based on the diagnosis of the medical condition with minimal side effects, as well as understanding drug and disease interactions and their side effects and toxicity on the human body.	A1. Theoretical and practical knowledge of the basic and supporting disciplines of pharmacy. A2. Theoretical and practical knowledge of medicines and their uses. A3. Knowing the chemical composition of drugs, their mechanism of action and effectiveness. A4. Training on prescriptions and understanding drug interactions.
Education outcomes	**b. Skills**
B1. Enabling the student to the ability to link concepts and applied models to practical reality through Applying practical experiments in the laboratories and implementation of safety and security instructions during work Laboratory. B 2. Empowerment the Student from The ability to work in pharmaceutical laboratories, where the pharmacist or chemist assists in preparing medicines, supervising, following up and monitoring production lines, applying	B1. Conducting practical experiments in laboratories. B2. Preparing and monitoring medicines and implementing quality control in the laboratory. B3. Preparing pharmaceutical and clinical research and reports in English. B4. Practical application in private pharmacies and virtual pharmacies

quality control methods during the production of medicines and conducting laboratory preparations for examination or analysis. B3. Ability to conduct pharmaceutical research Clinical and proficient English language and computer use electronic. B4. Working efficiently in pharmacies with full knowledge of the specifics of dispensing medications, guiding patients on how to use them, and providing them with advice under the supervision of the pharmacist.	available in educational laboratories.
Learning outcomes	**C. Values**
A1. Evaluates and reinforces the student Professional ethics, dealing with patients, and the ability to demonstrate competence High professionalism in addition to commitment to personal appearance and behavior. A2. Empowering the childcore from working in a team spirit and using teamwork and leadership skills and creative. A3. Concern for human rights and citizenship.	A1. Commitment to professional ethics when dealing with various segments of society. A2. Promoting teamwork and creativity in the health sector. A3. Social and religious responsibility to perform work duties.

9. Teaching and learning strategies
1- Theoretical lectures using visual aids (Data Show(smart board) 2- Practical application of the concepts studied in specialized laboratories. 3- Seminars (students are assigned a topic within the curriculum to present and discuss). 4- Field visits (visit to hospitals and pharmaceutical laboratories) 5- Blended in-person and online learning for student activities via e-learning platforms. (Classroom). 6- Modern teaching methods, which include (the inductive method-Synthetic method-Analytical method-Presentation and explanation-Role playing-Dialogue and discussion-Problem solving-(Deductive method).

10. Evaluation methods
1- Evaluating students through the skill of presenting seminars and discussion groups to students. 2- Evaluating students by assigning them to invent simple laboratory devices and tools. 3- Evaluating students by organizing and managing scientific and cultural activities such as scientific festivals. 4- Homework. 5- Daily exams. 6. Midterm and final exams.

7. Graduation research.

11- Faculty

Faculty members

Faculty preparation		Special requirements/skills (if any)		Specialization		Academic rank
Adjunct	Lecturer			Specialization	General	
	1			Clinical Chemistry	Chemistry	Professor
	1			Sport education	Sport education	Professor
2	1			pharma	pharmacy	Assistant professor
	2			Organic Chemistry	Chemistry	Assistant professor
	1			Computer Engineering	Engineering	Assistant professor
	1			Animal physiology	Veterinary medicine	Assistant professor
	1			Microbiology	Biology	Assistant professor
	2			Physiology	Biology	Lecturer
	1			Parasites	Biology	Lecturer
3				Organic	chemistry	Lecturer
	1			Parasites	Biology	Lecturer
	1			Law	Law	Lecturer
	1			computer	Science	Lecturer
	3			Physiology	Biology	Assistant Lecturer
	1			Parasites	Biology	Assistant Lecturer
1	1			Bio Chemistry	Chemistry	Assistant Lecturer
	1			Microbiology	Biology	Assistant Lecturer
2	1			Organic	chemistry	Assistant Lecturer
2	1			Parma &toxic	pharmacy	Assistant Lecturer

	1			Clinical	pharmacy	Assistant Lecturer
2	1			Parma.	pharmacy	Assistant Lecturer
2	1			Computer	Computer Science	Assistant Lecturer
	1			Arabic	Arts	Assistant Lecturer
1	1			English	Arts	Assistant Lecturer

Professional development

Orientation of new faculty members

Preparing seminars and introductory courses for new teachers, and holding periodic meetings to familiarize them with the work contexts. Daily guidance, continuous follow-up, and giving advice and guidance. As in the following points:

1.Continuous Training: Providing ongoing training opportunities for faculty members t update their skills and expertise.

2. Professional development: Providing professional development programs for faculty members to improve their performance and develop their leadership skills.

3. Evaluation and Assessment: Evaluating and evaluating the performance of faculty members to improve the quality of education.

Orientation of new faculty members

1. Orientation Programs: Providing orientation programs for new faculty members to familiarize them with university policies and procedures.

2. Teaching Training: Providing teaching training to new faculty members to improve their teaching skills.

3. Support and Advice: Providing support and advice to new faculty members to improve their performance and develop their skills.

Professional development for faculty members

1-Continuing education through Search Scientific.

2- Contribute to holding a conference International Institute Annual of during the presentation of their work or supervising its organization.

3-Collaboration with healthcare institutions to stay Educational activities aimed at addressing gaps in Knowledge and skills.

4-Conducting free awareness campaigns on important topics that affect public health, such as: Drug abuse, autism, chronic and prevalent diseases, and patient education abou their treatments.

5- Training courses inside and outside the institution.

11. Acceptance Criteria

The admission criteria for the institute and the scientific department include the following:

1- Labor market requirements in the public and private sectors.
2- The academic accreditation program is available on the institute and department's website.
3- The student's great desire.
4- The student's average in the sixth grade of middle school.
5- Central acceptance from the Ministry of Higher Education and Scientific Research.
6- The presence of multiple channels for acceptance. It includes general admission, the distinguished channel for martyrs, and the parallel channel and foreign students.

12. The most important sources of information about the program

1- The website of the Ministry of Higher Education and Scientific Research.
2- The website of the Technical Institute / Kufa.
3- World Health Organization WHO
4- Textbooks and scientific bags.
5- Academic accreditation program.

13. Program Development Plan

1-Updating and developing curricula according to labor market requirements through the work of committees specialized in updating Curricula.
2-Conducting periodic surveys for beneficiaries, including students, the community, and employers in pharmacies. Hospitals and pharmaceutical factories around the message and objectives program and Curricula Academic, teaching and assessment methods.
3-Expanding the use of electronic technologies in teaching.
4-Openness to society and providing volunteer activities.
5-Directing students' research towards applied projects that address societal problems..

Skills Chart program

Required learning outcomes of the program													
Values			Skills				Knowledge				Essential or optional?	Course name	Course code	Year/Level
Part 3	Part 2	Part 1	B4	B3	B2	B1	A4	A3	A2	1A1				
	•	•	•	•	•	•		•	•	•	essential	Principles of Pharmacy	PHT111-50-C	First stage/semester the first
	•	•	•	•	•	•		•	•	•	essential	Basics of Organic Chemistry	PHT112-50-C	
	•	•	•	•	•	•		•	•	•	essential	Analytical Chemistry	PHT113-50-C	
•	•	•	•					•	•	•	essential	Medical terms	PHT114-50-C	
	•	•			•	•		•	•	•	essential	Microbiology	PHT115-50-C	
	•	•			•	•		•	•	•	essential	Principles of physiology	PHT116-50-C	
•	•	•			•	•		•	•	•	essential	Human rights and democracy	ATU13C	
		•			•			•	•	•	essential	Arabic language	ATU11C	

Required learning outcomes of the program													
Values			Skills				Knowledge				Essential or optional?	Course name	Course code	Year/Level
Part 3	Part 2	Part 1	B4	B3	B2	B1	A4	A3	A2	A1				
	•	•	•		•	•		•	•	•	essential	Pharmaceutical Calculations	PHT121-50-C	
	•	•	•		•	•		•		•	essential	Organic Chemistry	PHT122-50-C	
	•					•		•	•	•	essential	Biochemistry	PHT123-50-C	

	•					•		•	•	•	essential	Physiology	PHT124-50-C	First stage/semester For the second
	•				•	•		•	•	•	essential	Virology and parasites	PHT125-50-C	
				•				•	•	•	essential	Biostatistics	PHT126-50-C	
•	•	•				•		•	•	•	essential	English language	ATU10C	
•	•	•				•		•	•	•	essential	Computer applications	ATU12C	

Skills Chart program														
Required learning outcomes of the program														
values			Skills				Knowledge				Essential or optional?	Course name	Course code	Year/Level
Part 3	Part 2	Part 1	B4	B3	B2	B1	A4	A3	A2	A1				
	•	•	•		•	•		•	•	•	essential	Pharmaceutics	PHT211-50-C	Stage Two/Semester the first
	•	•	•		•	•		•	•	•	essential	Industrial principles	PHT212-50-C	
	•	•	•		•	•		•	•	•	essential	Principles of Pharmaceutical Chemistry	PHT213-50-C	
	•	•	•		•			•	•	•	essential	Principles of drugs	PHT214-50-C	
	•	•	•	•	•	•	•	•	•	•	essential	Basics of therapeutic applications	PHT215-50-C	
	•	•				•	•	•	•	•	essential	Medical plants and natural products	PHT216-50-C	
•	•	•						•	•	•	essential	toxicology	PHT217-50-C	
•	•	•		•	•			•	•	•	essential	Baath regime crimes	ATU24C	
•	•	•		•	•			•	•	•	essential	Research methodology	PHT219-50-C	
Required learning outcomes of the program														

values			Skills				Knowledge				Essential or optional?	Course name	Course code	Year/Level
Part 3	Part 2	Part 1	B4	B3	B2	B1	A4	A3	A2	A1				
	•	•	•		•	•		•	•	•	essential	Industrial pharmacy	PHT221-50-C	
	•	•	•		•	•		•	•	•	essential	Pharmaceutical Chemistry	PHT222-50-C	Stage Two/Semester the second
	•	•	•		•	•		•	•	•	essential	pharmaceutical formulations	PHT223-50-C	
	•	•	•		•			•	•	•	essential	Pharmacology	PHT224-50-C	
	•	•	•	•	•	•	•	•	•	•	essential	Therapeutic applications	PHT225-50-C	
	•	•				•	•	•	•	•	essential	Pharmacognacy	PHT226-50-C	
•	•	•						•	•	•	essential	Professional ethics	PHT227-50-C	
•	•	•		•	•			•	•	•	essential	Research project	ATU25C	
•	•	•		•	•			•	•	•	essential	computer applications	ATU22C	
•	•	•		•	•			•	•	•	essential	Arabic	ATU21C	

Al-Furat Al-Awsat Technical University

Kufa Technical Institute

Department of Pharmacy Technology

Course Description for the Academic Year 2025-2026

PRINCIPLES OF PHARMACY

Lecturer Name : Assis.L. Ola Sadiq Hassan

Academic title : Master

1. Course name
Principles of Pharmacy
2. Course code
PHT111-50-C
3. semester/year
First / First Year (2025-2026)
4. Date this description was prepared
22/2/2026
5. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
6. Number of study hours (total) / Number of units (total)
15 weeks / 6 units
7. Name of the course administrator (if more than one name is mentioned)
Lecturer name : Assis.L. Ola Sadiq Hassan Email: ola.sadeqsh@atu.edu.iq
8. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods)

1- Teaching and training students on the principles of pharmacy, history of drugs and their sources.
2- Teaching and training students on medical prescriptions, how to write them and interpret them.
3- Teaching and training students on methods of preparing medications used orally, nasally, ear-wise, etc., according to the medical prescription and calculating the dose for each patient.
4- Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
5- Allocating scientific visits to government and private health centers and hospitals.
6- Using modern laboratory equipment and educational screens.
7- Directing graduation research in an applied manner to solve societal problems.

9. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

10.Course outcomes

A.1. To be able to apply knowledge in the principles of pharmacy.	A. Knowledge and understanding
A.2. To be able to know and understand the professional and ethical responsibilities of the pharmacy profession.	
A.3. To be able to know how to prepare different pharmaceutical formulas.	
A.4. To be able to know the methods of storing and classifying medicines.	
B.1. Acquire the skill of preparation and installation methods and measuring systems.	b. Skills
B.2. Acquire the skill in diagnosing pharmaceutical compounds.	
B.3. Acquire the skill to maintain the stability of pharmaceutical compounds.	
B.4. Acquire the skill of dividing and using doses and times for patients.	
A.1. Training on how to handle medications.	C. Values
A.2. Training on basic drug formulations.	
A.3. Training on medication administration methods.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hours	week
Written tests Oral exams Presentation.	Direct method through lecture	Science of pharmacy, definitions Practical: General term in practical pharmaceuticals	- Knowledge, understanding, skills and values	6	1

Interviews and questionnaires	Scientific seminars on the topic.		Introducing and training students on the basic concepts and terminology of theoretical and practical pharmacy principles.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Weight and measures Practical: roman numerals	- Knowledge, understanding, skills and values Explain the weights, measures, and Roman numerals used in preparing pharmaceutical prescriptions. Gain skill in training students to use weights and measures in the pharmacy laboratory..	6	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Pharmaceutical dosage forms, aromatic water Practical: Seminar	-Knowledge, understanding, skills and values Training students on pharmaceutical formulas and explaining the concept of aromatic water. Division and use of doses and times in taking medications.	6	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Medical prescription Practical Routes of Administration	-Knowledge, understanding, skills and values Intensive training on prescriptions and medication administration methods, in addition to the practical aspect.	6	4
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Pharmaceutical technique Practical: Discussion	-Knowledge, understanding, skills and values Pharmaceutical technologies in drug purification and production.	6	5

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Solubility, solute and solvent Practical: Seminar	-Knowledge, understanding, skills and values Explain the terms solubility, solute and solvent.	6	6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drug formulation Practical: Cosolvent	-Knowledge, understanding, skills and values Pharmaceutical formulas, solubility aids	6	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drug stability Practical: Discussion	-Knowledge, understanding, skills and values Drug stability, its types and influencing factorsAndOn the stability of the drug.	6	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drug preservation Practical: Seminar	-Knowledge, understanding, skills and values Preservatives in medicine	6	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Quantities and Qualitative measurements, Patient instruction Practical: abbreviations	-Knowledge, understanding, skills and values Qualitative and quantitative measures, patient instructions, and abbreviations used in the prescription.	6	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Master formula, scaled formula Practical: Discussion	-Knowledge, understanding, skills and values Preparatory formulas	6	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture	Solubility and concentration Practical: Seminar	-Knowledge, understanding, skills and values Solubility and concentration	6	12

	Scientific seminars on the topic.				
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Solutions Practical Calculations	-Knowledge, understanding, skills and values Practical solutions and calculations.	6	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Vehicles Practical Practical: Discussion	-Knowledge, understanding, skills and values Active ingredient carriers.	6	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Suspensions Practical: Seminar	-Knowledge, understanding, skills and values Commentaries in addition to reinforcement seminars for the lecture.	6	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

	1-Required textbooks
1- Pharmaceutical calculations 13th edition, Howard C. Ansel., (2017). 2Introduction to pharmaceutical Calculations 4th Edition, Judith A Rees, Ian Smith and Jennie Watson, 2015. 3-"Textbook of Pharmaceutical Formulation" by Aulton, ME (2013). 4-Formulation of Pharmaceutical Dosage Forms" by Banker, G.S. (2015)	2- Main references (sources)

1- Pharmaceutical Formulation: A Review' by Kumar, A. et al. (2020) - Journal of Pharmaceutical Sciences 2- Formulation of Solid Dosage Forms' by Patel, R. et al. (2019) - Journal of Pharmacy and Pharmacology 3- Pharmaceutical Formulation: Challenges and Opportunities' by Singh, S. et al. (2018) - Journal of Pharmaceutical Research	3- Recommended books or references (magazines, reports, etc.)
https://www.nature.com/articles/131895e0 https://pmc.ncbi.nlm.nih.gov/articles/PMC1637007/	4- Electronic references, Internet sites.

Al-Furat Al-Awsat Technical University

Technical Institute / Kufa

Department of Pharmacy Technology

Course Description for the Academic Year 2025-2026

ORGANIC CHEMISTRY

Lecturer name: Assist. Prof. Dr. Manar Ghiath Abdul Muttalib

Academic Title: PhD

11. Course name
Fundamentals of Organic Chemistry
12. Course code
PHT112-50-C
13. semester/year
First / First Year (2025-2026)
14. Date this description was prepared
22/2/2026
15.Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
16.Number of study hours (total) / Number of units (total)
15 weeks / 6 units
17. Name of the course administrator (if more than one name is mentioned)

Lecturer Name: Dr. Manar Ghiath Abdul Muttalib Email: manar.alawi@atu.edu.iq

18. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods)

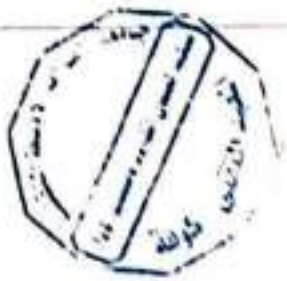
1- Teaching and training students on the basics of organic chemistry and its relation to the specialty of pharmacy.
2- Teaching and training students to prepare organic compounds used as treatments such as aspirin, paracetamol, etc.
3- Teaching and training students to use chemical compounds safely in preparing medicines.
4- Protecting the environment and health from the harmful effects of chemicals and reducing their risks.
5- Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
6- Allocating scientific visits to pharmaceutical production plants.
7- Using modern laboratory equipment and educational screens.
8- Directing graduation research in an applied manner to solve societal problems and present and develop new products.

19. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, inductive teaching, and self-study.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

20. Course outcomes

A.1. To be able to apply knowledge in the basics of organic chemistry.	A. Knowledge and understanding
A.2. To be able to know and understand the chemical composition of medicines.	
A.3. To be able to know how to prepare chemical compounds in pure form.	
A.4. To be able to identify the types of chemical compounds, functional groups, and reaction mechanisms.	
B.1. Acquire skill in safe preparation methods.	b. Skills
B.2. Acquire the skill of diagnosing chemical and pharmaceutical compounds using modern devices and old methods.	
b.3. Acquire skills in occupational safety procedures in the event of a spill of hazardous chemicals.	
B.4. Acquire skill in methods of purifying pharmaceutical chemical compounds.	
A.1. Training on how to handle chemical compounds.	C. Values
A2. Training on the chemical compositions of drugs and their effectiveness.	



A.3. Training on methods of purifying compounds and methods of separating them.					
Course structure					
Evaluation method	**Learning method**	**Name of unit or topic**	**Required learning outcomes**	**watches**	**week**
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Introduction to organic chemistry, organic compounds present in nature, pollution with organic compounds. Practical: Type of Glass ware (Laboratory equipment) and safety	-Knowledge, understanding, skills and values Introduction to organic chemistry through knowledge and understanding of organic compounds found in nature and contamination by organic compounds. Practical: Instruments, Glassware, and Laboratory Safety	6	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Hybridization, Methane, Ethylene, Acetylene Practical: Care & uses of balance	- Knowledge, understanding, skills and values Know and understand the methods of hybridization of organic hydrocarbon compounds such as methane, ethylene, and acetylene. Practical: Using the scale	6	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Hydrocarbons Classification alkane, alkenes, benzene example, Reaction, Nomenclature, properties Practical: Separation & purification of organic Compounds by (Filtration).	-Knowledge, understanding, skills and values Know and understand how to classify hydrocarbon compounds such as alkanes and alkenes, as well as their reactions, nomenclature, and properties. Practical: separation and purification by filtration.	6	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Alkynes, Example, Nomenclature, Properties and Reactions Practical: Separation & purification of organic compounds by (Extraction)	-Knowledge, understanding, skills and values Knowing and understanding alkyne compounds, in addition to examples, their names, and properties. Practical: separation and purification by extraction	6	4
Written tests Oral exams Presentation.	The direct method is through	Aromatic compound, Names, Polycyclic aromatic	-Knowledge, understanding, skills and values	6	5

Interviews and questionnaires	lectures and scientific seminars on the topic.	compound, Electrophilic aromatic substitutions. Practical: Crystallization & recrystallization	Knowledge and understanding of aromatic compounds and their nomenclature, in addition to polycyclic aromatic compounds, and the mechanism of electrophile substitution for cyclic compounds. Practically: crystallization and recrystallization		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Phenols, Synthesis, Reactions and Properties. Practical: Separation & purification of organic compounds by (sublimation	-Knowledge, understanding, skills and values Knowledge and understanding of phenolic compounds, including their preparation, reactions, and properties. Practical: separation and purification by sublimation	6	6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Alcohols, classification, properties and reactions. Practical: separation & purification of organic compounds by (Distillation	-Knowledge, understanding, skills and values Knowing and understanding alcohol compounds, as well as their classification, reactions, and properties. Practical: separation and purification by distillation	6	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Aldehyde's Classification, properties and reactions. Practical: Physical properties ; Determination of (melting – point)	-Knowledge, understanding, skills and values Knowing and understanding aldehyde compounds, as well as their properties and reactions. Practical: Physical properties, determination of melting point	6	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Ketones, classification, properties and reactions. Practical: Quiz & unknown	-Knowledge, understanding, skills and values Knowing and understanding ketone compounds, as well as their properties and reactions. Practically: Anonymous exam and test	6	9
Written tests Oral exams Presentation.	Direct method	Carboxylic acids, classification, properties and reactions.	-Knowledge, understanding, skills and values	6	10

Interviews and questionnaires	through lecture Scientific seminars on the topic.		Knowing and understanding carboxylic acids, as well as their properties and reactions.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Ester, Reactions and Properties. Practical: Determination of boiling point.	-Knowledge, understanding, skills and values Knowing and understanding esters, their properties and reactions. Practical: Determine the boiling point	6	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Ether, Nomenclature and properties. Practical: Quiz & unknown	-Knowledge, understanding, skills and values Knowledge and understanding of ether compounds, their properties and reactions. Practically: Anonymous exam and test	6	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	IR and UV, spectroscopy Practical: Quiz & unknown	-Knowledge, understanding, skills and values Knowledge and understanding of vehicle diagnostic methods, including nuclear magnetic resonance spectroscopy and infrared spectroscopy. Practically: Anonymous exam and test	6	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Heterocyclic compounds Practical: Quiz & unknown	-Knowledge, understanding, skills and values Know and understand the true heterogeneous compounds. Practically: Anonymous exam and test	6	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Stereochemistry Practical: Quiz & unknown	-Knowledge, understanding, skills and values Knowledge and understanding of the stereochemistry of organic compounds. Practically: Anonymous exam and test	6	15
Course Evaluation					

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.				
Final exam	**Mid exam**	**Homework**	**Classroom activities**	**Daily exams**
60%	25%	5%	5%	5%

Learning and teaching Resources	
	1-Required textbooks
Organic Chemistry (7th Ed.) By Robert T. Morrison and Robert N. Boyd and S. K. Bhattacharjee, (1990).	2- Main references (sources)
1- Organic Chemistry: An Overview" by David R. Dalton, Journal of Organic Chemistry, (2020). 2- "The Principles of Organic Chemistry" by Francis A. Carey, Journal of Chemical Education, (2019). 3- "Organic Chemistry: A Review of the Literature" by James P. Snyder, Journal of Organic Chemistry, (2018).	3- Recommended books or references (magazines, reports, etc.)
-1Advanced Organic Chemistry. Reactions and Synthesis, Ed4(Part B), Carey F., Sundberg R., Kluwer, (2000). 2- Organic chemistry, Ed5, Carey FA, MGH, (2004). -https://guides.hostos.cuny.edu/che120	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

ANALYTICAL CHEMISTRY

Lecturer Name: Assist. Prof. Dr. Mahmood M. Fahad

Academic Title: PhD

21. Course name
Analytical Chemistry
22. Course code
PHT113-50-C
23. semester/year
First / First Year (2025-2026)
24. Date this description was prepared
22/2/2026
25.Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
26.Number of study hours (total) / Number of units (total)
15 weeks / 6 units
27. Name of the course administrator (if more than one name is mentioned)
Lecturer name: Assist. Prof. Dr. Mahmood M. Fahad Email: Mahmood.mohy.iku@atu.edu.iq
28.Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods)
1- Teaching and training students on the basics of analytical chemistry and its relation to the specialty of pharmacy.

2- Teaching and training students on preparing chemical solutions, forming precipitates, titration methods, measuring weight, and solution acidity.
3- Teaching and training students to use chemical compounds safely in the fields of medicine and food industries.
4- Protecting the environment and health from the harmful effects of chemicals and reducing their risks to the environment.
5- Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
6- Allocating scientific visits to pharmaceutical production plants and central laboratories in universities.
7- Using modern laboratory equipment and educational screens.
8- Directing graduation research in an applied manner to solve societal problems and present and develop new products.

29.Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, inductive teaching, and self-study.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

30.Course outcomes

A.1. To be able to apply knowledge in the basics of analytical chemistry.	A. Knowledge and understanding
A.2. To be able to know and understand chemical devices, tools and equipment.	
A.3. To be able to know and understand the methods of qualitative and quantitative diagnosis of elements and their various applications in life.	
A.4. To be able to identify the types of chemical bonds, the laws of conservation of mass and energy, and their importance in the advancement of chemistry.	
B.1. Acquire skill in methods of preparing and diluting solutions in an accurate and simplified manner.	b. Skills
B.2. Acquire the skill of diagnosing chemical compounds using modern qualitative and quantitative methods and compare them with old methods.	
b.3. Acquire skills in occupational safety procedures in the event of a spill of hazardous chemicals.	
B.4. Acquire the skill of using the scale and the device pH ,Burette, viscosity and density.	
A.1. Training on how to deal with compounds and chemical reactions.	C. Values
A.2. Training on methods of calculating concentrations and preparing diluted solutions.	
C.3. Training in writing scientific reports in the laboratory.	

31. Course Structure					
Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	hours	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Introduction to analytical chemistry Atom, elements, compounds, Mixture. Practical: Laboratory equipments, cleaning of vessels, chemical dangers and reactions of cation.	-Knowledge, understanding, skills and values Knowing and understanding the principles of analytical chemistry and its important applications. The atom, its definition and components. Explaining the terms elements, compounds, and mixtures. Practical: Laboratory instruments, glassware cleaning, chemical hazards and cation reactions.	6	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Matter, energy, theory of atom. (Debroley equation). Practical: Unknown (cations), reactions of anions.	-Knowledge, understanding, skills and values Knowing and understanding matter, its states, and its chemical and physical properties, with examples from our daily lives. Define energy and its types, explain the law of conservation of energy and compare it with the law of conservation of matter, as well as atomic theories. Practical: Identifying unknown cations, reactions of anions	6	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Chemical bonds, covalent, ionic, coordination, hydrogen. Methods of analysis. Qualitative and quantitative, statistical, methods of quantitative analysis, errors in quantitative analysis Practical: Unknown (anions), balance uses, preparation of percentage composition solution	-Knowledge, understanding, skills and values Knowledge and understanding of chemical bonds: covalent, ionic, coordination, and hydrogen bonds. Qualitative and quantitative analysis methods and applications of analytical chemistry in various fields.	6	3

			Practical: Identify unknown anions, use of balance, preparation of solutions at required percentages.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Methods of expressing concentration of solution, Molar solution, normal solution, Preparation of molar solution, dilution, questions Practical: Preparation of solutions (molarity and normality)	-Knowledge, understanding, skills and values Knowing and understanding the methods of expressing concentration: molarity, normality, molality, and formality, and giving examples and problems on the mentioned topics. practically: Preparation of solutions (molar concentration and concentration)Normally	6	4
Written tests Oral exams Presentation. Interviews and questionnaires	The direct method is through lectures and scientific seminars on the topic.	Percentage composition, part per million. Chemical equilibrium, ionization, constant of water (PH and POH). Practical: Preparation of standard solution for iodine.	-Knowledge, understanding, skills and values Knowing and understanding the percentages of ingredients, Chemical equilibrium, its laws, ionization, ionization constant, and the pH scale (acidic or basic) practically: Prepare a solution standard for iodine	6	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Ionization of weak electrolytes Calculation of PH of weak acids and weak bases. Practical: Unknown.	-Knowledge, understanding, skills and values Knowing and understanding the ionization of weak electrolytes, calculating the pH of weak acids and bases. Practically: Anonymous sample	6	6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Calculation of buffer solutions Uses of buffer solutions. Practical: Oxidation-reduction-reaction-titration of Kmno4 with oxalic acid	-Knowledge, understanding, skills and values Know and understand the Buffer solutions and their importance.	6	7

			practically: Redox reaction betweenKMnO4 and oxalic acid by correction method.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Volumetric analysis, classification, standard solution, examples Neutralization reactions. Practical: Determination of Cu% in solution	-Knowledge, understanding, skills and values Knowing and understanding volumetric analysis and its classification, standard solutions of known concentration, and neutralization reactions. practically: Determine the percentage of copper (Cu) in solution	6	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Oxidation and reduction reactions. examples,Precipitation reactions. Practical: Unknown + examination.	-Knowledge, understanding, skills and values Knowing and understanding oxidation, reduction and precipitation reactions and how to compare them, with examples of reactions. Practically: anonymous sample and test.	6	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Indicators, reaction, properties, examples, reactions , properties , examples. Types of indicators. Practical: Determination of PH of hair shampoo-titration of weak acid with weak base.	-Knowledge, understanding, skills and values Knowing and understanding reagents and their importance, reactions and properties, giving examples, and discussing the types of reagents. practically: Determine the pH value (pH) for hair shampoo by Correction.	6	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Principles of colorimetry. Practical: Buffer solution and determine its value by PH-meter.	-Knowledge, understanding, skills and values Knowledge and understanding of colorimetry, which is used to describe the physical perception of human color. practically: Balanced solutions (Buffer) and	6	11

			determine the pH value using a pH meter.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Beer-Lambert law. Practical: Experiment about Buffer solution uses.	-Knowledge, understanding, skills and values Know and understand the Beer-Lambert law, which relates the transmittance of light through a material to the absorption coefficient and the distance light travels through the material, in addition to its important applications. Practical: An experiment on using the balanced solution (Buffer)	6	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Standard solution/calibration curve. Practical: Colorimetric analysis.	-Knowledge, understanding, skills and values Knowing and understanding standard solutions and their importance, in addition to the calibration curve used to determine the concentration of an unknown substance by comparing it with samples of known concentration. practically: Colorimetric analysisColorimetric analysis) which is used to measure the concentration of chemicals in solutions	6	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Spectrophotometric analysis: An introduction to optical methods of analysis. Practical: Spectrophotometer and determine the concentration of solutions by it.	-Knowledge, understanding, skills and values Knowledge and understanding of spectroscopic chemical analysis methods. practically: device Spectrophotometry and use it to determine the concentration of solutions..	6	14
Written tests Oral exams Presentation.	Direct method through lecture	Titration, How to classify titration. Types of titration, acid-	-Knowledge, understanding, skills and values Know and understand titration (rectification) and	6	15

Interviews and questionnaires	Scientific seminars on the topic.	base, comlexometric, redox, and precipitation titration. Practical: Unknown.	how to classify it as a direct and indirect method. Types of titration: acid.-Base and complexes, reduction and precipitation. Practically: An unknown sample.		

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

	1-Required textbooks
-Skoog, DA, & West, DM, Fundamentals of analytical chemistry (3rd ed.). Saunders College Publishing, (1982).. -Analytical Chemistry, 7th Edition byGary D. Christian, (2014). -A summary of solving problems in quantitative analytical chemistry-Prof. Dr. Munther Salim Abdul Latif 2016	2- Main references (sources)
1- Analytical Chemistry: An Overview" by Richard P. Buck, Journal of Analytical Chemistry, (2020). 2- "The Principles of Analytical Chemistry" by James W. Mitchell, Journal of Chemical Education, (2019). 3- "Analytical Chemistry: A Review of the Literature" by Peter C. Hauser, Journal of Analytical Chemistrymistry, (2018).	3- Recommended books or references (magazines, reports, etc.)
https://byjus.com/chemistry/analytical-chemistry/ https://link.springer.com/book/10.1007/978-3-662-66336-3	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

MEDICAL TERMINOLOGY

Lecturer Name: Assist. MSc. Nadia Abdel Hadi Abdel

Academic Title: Master

31. Course name
Medical terminology
32. Course code
PHT114-50-C
33. semester/year
First / First Year (2025-2026)
34. Date this description was prepared
22/2/2026
35.Available attendance forms
Theoretical lectures are held in person, in addition to communication with students viaClassroom
36.Number of study hours (total) / Number of units (total)
15 weeks / 1 unit
37. Name of the course administrator (if more than one name is mentioned)
Lecturer name: Assist. MSc. Nadia Abdel Hadi Abdel Amir Email: Kin.nad@atu.edu.iq
38.Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods)

1- Teaching and training students on medical terminology and its relation to the specialty of pharmacy.
2- Teaching and training students to pronounce medical and pharmaceutical terms correctly.
3- Teaching and training students on how to form medical terminology to express common diseases.
4- Teaching and training students to know the parts of the body and how they work.
5- Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
6- Allocating scientific visits to hospitals and health centers to practice medical terminology with health personnel.

39.Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, inductive teaching, and self-study.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

40.Course outcomes

A.1. To be able to apply knowledge in the use of medical terminology.	A. Knowledge and understanding
A.2. To be able to know and understand the body's systems, how they work, and the most important medical terms related to them.	
A.3. To be able to know and understand the roots of words and how they are formed.	
A.4. To be able to know and understand how to add prefixes, suffixes and embedded forms.	
B.1. Acquire skill in using prefixes and suffixes for medical terms.	b. Skills
B.2. Acquire the skill of identifying and expressing various body parts.Aln medical terms.	
B.3. Acquire the skill of giving examples for each medical term.	
B.4. Acquire the skill of how the body's systems work (skeletal, respiratory, nervous systems, etc.)	
A.1. Training on how to deal with medical terminology.	C. Values
A.2. Training to improve and master medical terminology.	
A.3. Training on communicating with healthcare personnel using medical terminology.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs	week
Written tests Oral exams Presentation.	Direct method	Introduction to Medical Terminology, Define and	-Knowledge, understanding, skills and values	1	1

Interviews and questionnaires	through lecture Scientific seminars on the topic.	historical of medical terminology	The ability to know and understand the basics of medical terminology, and to define and understand the origin of medical terms.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Basic Elements of a Medical Words, Word root Examples combining form.	-Knowledge, understanding, skills and values Know and understand the basic elements of medical words and identify the root word of a medical term.	1	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Common prefix and suffixes.	-Knowledge, understanding, skills and values Knowing and understanding the syllables added to the beginning and end of terms.	1	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Overview of Anatomy and Physiology	-Knowledge, understanding, skills and values Knowing and understanding the terms of physiology, anatomy, and different body structures.	1	4
Written tests Oral exams Presentation. Interviews and questionnaires	The direct method is through lectures and scientific seminars on the topic.	Anatomical Position, Body Planes and Body Cavities.	-Knowledge, understanding, skills and values Know and understand the anatomical directions and locations used to describe various body parts.	1	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Clinical, Radiologic, and Diagnostic Procedures.	-Knowledge, understanding, skills and values Knowledge and understanding of radiological and physical examination terminology.	1	6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Digestive System	-Knowledge, understanding, skills and values Know and understand the medical terminology of the digestive system to identify the most important organs and structures.	1	7
Written tests Oral exams	Direct method	Integumentary System	-Knowledge, understanding, skills and values	1	8

Presentation. Interviews and questionnaires	through lecture Scientific seminars on the topic.		Know and understand the medical terms for skin, body coverings, and the different layers of skin.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	The Musculoskeletal System	-Knowledge, understanding, skills and values Know and understand the medical terminology of the musculoskeletal system and how muscles and bones relate to each other.	1	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	The Reproductive System	-Knowledge, understanding, skills and values Knowing and understanding medical terms related to the reproductive system.	1	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	The Respiratory System	-Knowledge, understanding, skills and values Knowing and understanding the medical terminology of the respiratory system and the most important structures involved in the breathing process.	1	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	The Urinary System	-Knowledge, understanding, skills and values Knowing and understanding the medical terms related to the urinary system and the most important organs and tissues involved in the process of producing urine and its components.	1	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	The Cardiovascular System	-Knowledge, understanding, skills and values Know and understand the medical terminology of the cardiovascular system, its various structures, and how they relate to each other.	1	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture	Blood, Lymph and Immune	-Knowledge, understanding, skills and values Know and understand medical terms related to blood, immunity, the lymphatic	1	14

	Scientific seminars on the topic.		system, and the cells responsible for immunity.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	General medical terminology	-Knowledge, understanding, skills and values Know and understand general medical terminology including all the sections used to describe different medical conditions.	1	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
70%	15%	5%	5%	5%

Learning and teaching resources

	1-Required textbooks
Edward CC, A Short course in Medical Terminology; Latest edition; Lipincott Williams and Wilkins, (3 Ed.) (2013)	2- Main references (sources)
Gylys, BA, & Wedding, ME, Medical terminology systems: a body systems approach. F. A. Davis, (2017).	3- Recommended books or references (magazines, reports, etc.)
https://www.ucl.ac.uk/lapt/medterms.htm	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

MICROBIOLOGY

Lecturer name: Dr. Abbas Nasser Hussein

Academic Title: PhD

41. Course name
Microbiology
42. Course code
PHT115-50-C
43. semester/year
First / First Year (2025-2026)
44. Date this description was prepared
22/2/2026
45.Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
46.Number of study hours (total) / Number of units (total)
15 weeks /6lonliness
47. Name of the course administrator (if more than one name is mentioned)
Lecturer name: Dr. Abbas Nasser Hussein Email: Abbas.hussien@atu.edu.iq
48.Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.

1- Teaching and training students on Fundamentals of Microbiology and its relationship to the specialty of pharmacy.
2-Student diagnosis of diseases caused by bacteria, fungi and viruses.
3- Education and training students learn how to control and reduce microorganisms.
4- Teaching and training students on laboratory methods used in diagnosing microorganisms.
5- Protecting the environment and health from damage microscopic organisms and reduce its risks to the environment.
6- Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries at least 20%.
7- Allocating scientific visits to laboratories for hospitals and health centers.
8- Use of modern laboratory equipment and educational screens.
9- Directing graduation research in an applied manner to solve societal problems..

49.Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, inductive teaching, and self-study.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

50.Course outcomes

A.1. To be able to apply knowledge in diagnosing all types of microorganisms.	A. Knowledge and understanding
A.2. To be able to know and understand the methods of transmission and infection caused by germs, fungi and viruses.	
A.3. To be able to know and understand the types of microscopic organisms and their names.	
A.4. To be able to know and understand how to prevent these pathogens.	
B.1. Acquire the skill of diagnosing microorganisms.	b. Skills
B.2. Acquire the skill of using various devices such as (microscope - autoclave- incubator-etc)	
B.3. Acquire skill in the method of culturing and growing microorganisms.	
B.4. Gaining the skill of conducting antibiotic sensitivity tests.	
A.1. Apply knowledge in identifying virulence factors of organisms.	C. Values
A2. Apply knowledge to understand the mechanism of action of antibiotics.	
A.3. Apply knowledge and compare microscopic organisms in terms of their way of life.	

Course structure

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

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	History of microbiology Classification of microorganism, bacterial shape. Practical: Safety in lab, tools and instrument.	-Knowledge, understanding, skills and values The ability to know and understand the history of microbiology, how to classify microorganisms, and bacterial morphology.	6	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Anatomy of the bacterial cell, cell wall, flagella, plasma membrane, ribosomes, endospores. Practical: Smear preparation.	-Knowledge, understanding, skills and values The ability to know and understand how to dissect the bacterial cell, flagella, plasma membrane, and chromosomes, internal spores.	6	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Bacterial physiology and metabolism, growth, division, nutrition and other requirements like oxygen. Practical: Gram stain, Zeehil Nelson stain	-Knowledge, understanding, skills and values The ability to know and understand bacterial physiology, metabolism, growth, division, nutrition and other requirements such as oxygen.	6	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Sterilization and disinfection. Types of sterilization, preservative (The control of microbial growth), Immunization. Practical: Media preparation, types of culture media.	-Knowledge, understanding, skills and values Ability to know and understand sterilization, disinfection, types of sterilization, preservatives and immunity.	6	4
Written tests Oral exams Presentation. Interviews and questionnaires	The direct method is through lectures and scientific seminars on the topic.	Pathogenicity of bacteria, stages of infection. Practical: Sterilization, disinfection, preservatives.	-Knowledge, understanding, skills and values Ability to recognize and understand bacterial pathogenesis and stages of infection.	6	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture	Development of the disease, Virulence factor of bacteria Antibiotics, Mechanisms of antimicrobial action, Combination	-Knowledge, understanding, skills and values The ability to know and understand the disease development, virulence	6	6

	Scientific seminars on the topic.	of antibiotic therapy, synergism, antagonism, indifferences. Practical: Gram positive cocci, staphylococcus, streptococcus spp.	factors of bacteria, antibiotics and their mechanism of action, in addition to synergism and antagonism.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Bacterial groups and their diseases. Gram-positive cocci Staphylococcus aureus S. epidermidis, Streptococcus pyogenes, Strept. Pneumonia. Practical: Grynebacterium, mycobacterium	-Knowledge, understanding, skills and values The ability to recognize and understand bacterial groups and their diseases. Gram-positive cocci.	6	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Gram-positive bacilli Corynebacterium diphtheria. Mycobacterium tuberculosis, Clostridium peregrines. Clostridium tetani Practical: Anaerobic bacteria clostridium spp.	-Knowledge, understanding, skills and values Ability to recognize and understand Gram-positive bacilli, aerobic and anaerobic bacteria.	6	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Gram negative bacilli, E. coli. Salmonella spp. Shigella spp. Vibrio cholera. Practical: Gram negative cocci, bacilli, neisseria spp., haemophylus spp., pseudomonas spp, vibro.	-Knowledge, understanding, skills and values Ability to recognize and understand the characteristics and pathogenicity of Gram-negative enteric bacteria.	6	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Viruses, morphology, replication, Eukaryotic cell, Some humane pathogenic viruses, Hepatitis B virus, Rhinoviruses, HIV, Rabies, measles. Practical: Enteriobacteriacae.	-Knowledge, understanding, skills and values Knowledge and understanding of the structure and replication of human pathogenic viruses such as hepatitis, mumps, and rabies.	6	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Eukaryotic cell, cell components, cell division in Eukaryotes, mitosis, meiosis. Practical: Antibiotic sensitivity test.	-Knowledge, understanding, skills and values Know and understand cell division and meiosis in eukaryotic organisms.	6	11

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Trichomonas vaginalis), Blood parasite (Trypanosoma gambiense, Plasmodium) Tissue parasite (cutaneous leishmaniasis, Toxoplasma) Practical: Synergism, antagonism, indifference.	-Knowledge, understanding, skills and values The ability to know and understand the classification of parasites in terms of their way of life.	6	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	General characteristic, medical classification of fungi, T. rubrum. Aspergillus C. albicans, fungus drug contamination Practical: Phenol coefficient.	-Knowledge, understanding, skills and values The ability to know and understand the general characteristics of medicinal fungi and how to treat them.	6	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Parasitic Helminths (worms), general characteristics, blood tapeworms (Schistosoma mansoni), Intestinal tapeworms (Taenia Spp), Intestinal roundworms (Ascaris lumbricoides, Enterobius vermicularis) Practical: Mycology, classification and growth.	-Knowledge, understanding, skills and values The ability to know and understand parasitic worms, classify them, and study their general characteristics.	6	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	General Seminar about microorganism. Practical: Contamination of drugs.	-Knowledge, understanding, skills and values The ability to know and understand the classification of microorganisms, diagnose them, and determine the appropriate treatment for them.	6	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

Medical Microbiology" by Joseph C. Jawetz, Melnick & Adelberg's The 27th edition of this textbook was published in (2019).	1-Required textbooks
1- Microbiology: An Evolving Science" by Joan L. Slonczewski and John W. Foster (2017). 2- Microbiology: Principles and Explorations" by Jacquelyn G. Black (2015). 3- Brock Biology of Microorganisms" by Michael T. Madigan, John M. Martinko, and Jack Parker, 15th edition, (2018).	2- Main references (sources)
	3- Recommended books or references (magazines, reports, etc.)
	4- Electronic references, Internet sites.

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Technical Institute / Kufa

Department of Pharmacy Technology

Course Description for the Academic Year 2025-2026

PRINCIPLES OF PHYSIOLOGY

Lecturer name: Assist. MSc. Nadia Abdel Hadi Abdel

Academic Title: Master

51. Course name
Principles of physiology
52. Course code
PHT116-50-C
53. semester/year
First / First Year (2025-2026)
54. Date this description was prepared
22/2/2026
55.Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom and YouTube channel
56.Number of study hours (total) / Number of units (total)
15 weeks /6lonliness
57. Name of the course administrator (if more than one name is mentioned)
Lecturer name: Assist. MSc. Nadia Abdel Hadi Abdel Amir Email: Kin.nad@atu.edu.iq
58.Course objectives with Updated strategic objectives as a result of scientific development and progress in learning and teaching methods.
1- Teaching and training students on principles of organ functions and its relationship to the specialty of pharmacy.

2-Teaching and training students to understand the mechanisms by which different parts of the body are connected to each other.
3- Education and training Students understand the physical laws of how body parts work.
4- Teaching and training students to understand the role of each organ in life and its optimal performance.
4-Teaching and training students to understand the relationship between physiology and various sciences, especially pharmacology.
5- Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries at least 20%.
6- Allocating scientific visits to laboratories for hospitals and health centers.
7- Using modern laboratory equipment and educational screens.
8- Directing graduation research in an applied manner to solve societal problems..

59.Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, inductive teaching, and self-study.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

60.Course outcomes

A.1. To be able to apply knowledge to infer the mechanisms of action of some organs and tissues.	A. Knowledge and understanding
A.2. To be able to know and understand the physical and chemical laws by which it operates.	
A.3. To be able to know and understanding the mechanisms that maintain internal balance in the body.	
A.4. To be able to recognize and understand the diagnosis of dysfunction in tissue and organ.	
B.1. Acquire the skill to work in the field of different blood specialties.	b. Skills
B.2. Acquire skill in using the microscope and other laboratory equipment.	
b.3. Acquire skill in the ability to describe the structure and function of different organs.	
B.4. Acquire skill in the ability to use physiological concepts to solve problems.	
A.1. Training on Appreciate the importance of understanding organ functions in maintaining health.	C. Values
A.2. Training on Appreciate the importance of scientific research in understanding organ functions.	
C.3. Training on The ability to apply ethical values in scientific research and medicine.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Body systems. Its functions, Blood smear. Blood, Plasma: their functions. Practical: The microscope, structures and uses	The ability to know and understand the body's systems, composition, blood, plasma, and their functions.	6	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Anemia deficiency of iron, Vit., B12, blood cells, types and functions Practical: Making and staining of blood film	The ability to know and understand Types of anemia, their causes, and contributing factors, in addition to the types and functions of blood cells.	6	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Blood clotting. its factors and sites. Plasma proteins. its functions Practical: Smearing and staining blood film	The ability to know and understand the various mechanisms of blood clotting and the role of platelets in the clotting process.	6	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Cardiovascular system, blood grouping. Erythroblastosis. Heart muscles, physiology of the heart. Practical: The enumeration of red blood cells	The ability to know and understand the mechanism of the heart, types of blood vessels, the source of cardiac electricity, systemic and pulmonary circulation, and the importance of the cellular exchange process.	6	4
Written tests Oral exams Presentation. Interviews and questionnaires	The direct method is through lectures and scientific seminars on the topic.	Blood circulation, blood to body tissues. Blood pressure, pulse. Practical: The enumeration of red blood cells	The ability to know and understand the concept of blood pressure, control of blood pressure nervously and hormonally, the importance of controlling blood pressure and the influencing factors.	6	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Factors affecting heart rate. Respiratory system, structural and function Practical: The enumeration of white blood cells	The ability to know and understand the importance of the respiratory system in the body, its mechanism of action, methods of regulating breathing, and the factors affecting breathing.	6	6

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Lung volume, estimation. Spirometer. Hypoxia. Anoxia. its types Practical: Differential count	The ability to know and understand lung volumes, the importance of ventilation, and measuring lung volumes.	6	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Effects of hypoxia respiratory centers. Central and peripheral nervous system Practical: Estimation of hemoglobin	The ability to know and understand the impact lack of oxygen stimulates the respiratory centers in the brain., Hypoxia affects the respiratory centers in the medulla oblongata., Lack of oxygen leads to a change in the activity of neurons in the brain., Lack of oxygen leads to a change in peripheral nerve activity..	6	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Nerve. its function & physiology. Autonomic nervous system. Practical: Identification of blood grouping	The ability to know and understand the nerves and their functions, neurophysiology, the autonomic nervous system, the sympathetic nervous system, and the parasympathetic nervous system.	6	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Central nervous system. Cerebellum function and body balance. Practical: Identification of blood grouping	The ability to know and understand the parts of the central nervous system and its role in managing the various functions of the body.	6	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Physiology of digestion. steps of digestion. Accessory organs of digestive system. pancreas function Practical: The erythrocyte sedimentation rate	The ability to know and understand the parts of the digestive system, the mechanism of action of the digestive organs and the importance of the subsequent organs.	6	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Digestive system. function of each part. Non digestive function of the pancreas, diabetes mellitus. Practical: Bleeding and clotting time	The ability to recognize and understand the types of secretions from the digestive system, the importance of digestive enzymes, and the role of the pancreas in digestion and hormonal regulation.	6	12

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Urinary tract system function of each part. Urination. Practical: The determining of body temperature	The ability to know and understand the parts of the urinary system, the functional unit, the mechanism of the kidneys, the role of the kidneys in the body, the process of urine production and waste excretion.	6	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Endocrine system, glands, Function, Function of endocrine hormones. Practical: Tracing of the pulse	The ability to know and understand the types of endocrine glands, their importance, types, and the function of each type, and the role of different hormones in regulating body functions.	6	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Temperature regulation. Hypothermia. Frostbite Hyperthermia, heat stroke. Practical: Heart sound	The ability to know and understand the importance of temperature, methods of temperature regulation,Frostbite, Heat stroke is a condition characterized by a sharp rise in body temperature.	6	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

	1-Required textbooks
Guyton, A.C., & Hall, J.E. Textbook of Medical Physiology Philadelphia, PA: Saunders, 13th ed., (2019).	2- Main references (sources)
1.Physiology: An Integrated Approach" by Dee Unglaub Silverthorn (2019). 2. "Guyton and Hall Textbook of Medical Physiology" by John E. Hall (2019). 3. "Berne and Levy Physiology" by Bruce M. Koeppen and Bruce A. Stanton (2018).	3- Recommended books or references (magazines, reports, etc.)
1. Physiology of the Human Body" by John E. Hall, Journal of Physiology, (2019).2. "The Physiology of Exercise" by William D. McArdle and Frank I. Katch, Journal of Applied Physiology, (2018).	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

HUMAN RIGHTS AND DEMOCRACY

Lecturer name: Dr. Zaid Hamza Musa

Academic Title: PhD

61. Course name
Human rights and democracy
62. Course code
ATU13C
63. semester/year
First / First Year (2025-2026)
64. Date this description was prepared
22/2/2026
65.Available attendance forms
Theoretical lectures are held in person, in addition to communication with students via Classroom
66.Number of study hours (total) / Number of units (total)
15 weeks / 2 units
67. Name of the course administrator (if more than one name is mentioned)
Lecturer name: Dr. Zaid Hamza Musa Email: zaid.hamza.iku@atu.edu.iq
68.Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.

1- Teaching students to duties and concepts of cultural, social, economic and democratic human rights.
2-Teaching students to know the constitutional duties of citizens, freedoms, and guaranteeing their rights.
3- Education students are exposed to international laws and rights and are developing students' knowledge of non-governmental organizations such as the Red Cross, Amnesty International, Human Rights Watch, and other organizations.
4- Teaching students about elections, their types, and examples of successful elections in developed countries.
5- Teaching students about public freedoms such as freedom of education, press, work and women.
6-Holding cultural seminars with lectures by specialists in law and human rights.
7- Developing and updating human rights and democracy curricula annually, with international curricula developing by no less than 20%.

69.Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, inductive teaching, and self-study.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

70.Course outcomes

A.1. To be able to know and understand human rights in contemporary and modern history and divine laws.	A. Knowledge and understanding
A.2. To be able to know and understand non-governmental organizations such as the Red Cross, Amnesty International, and others.	
A.3. To be able to know and understand the economic, cultural and social human rights in the Iraqi constitutions.	
A.4. To be able to know and understand public freedoms such as freedom of the press, education, ownership, women, assembly, etc.	
B.1. Acquire skill in election procedures and types.	b. Skills
B.2. Acquire skill in international laws and Iraqi constitutions.	
b.3. Acquiring skill in the various freedoms of the individual and society.	
B.4. Gaining skill in laws that contribute to building society.	
A.1. Contributing to building society in a legal manner that guarantees the individual's rights.	C. Values
A.2. A community culture to express freedoms, rights and duties.	
A.3. Community culture of learning about international and regional organizations and their role in preserving individual and societal guarantees.	

Course structure					
Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	human rights-Definition-Its goals-Human rights in ancient civilizations-Human rights in heavenly laws.	Apply knowledge, understanding and values in the indicated topics.	2	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Human Rights in Contemporary and Modern History (International Recognition of Human Rights since World War I-Regional recognition of human rights: the European Convention on Human Rights 1969-African Charter on Human Rights 1981 - Arab Charter on Human Rights 1994.	Apply knowledge, understanding and values in the indicated topics.	2	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	NGOs and human rights (ICRC-Amnesty International-Human Rights Watch-National human rights organizations.	Apply knowledge, understanding and values in the indicated topics.	2	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Human Rights in Iraqi Constitutions: Between Theory and Reality - The Relationship between Human Rights and Public Freedoms in: Universal Declaration of Human Rights. • Regional charters and national constitutions.	Apply knowledge, understanding and values in the indicated topics.	2	4
Written tests Oral exams Presentation. Interviews and questionnaires	The direct method is through lectures and scientific seminars on the topic.	Economic, social and cultural human rights - Civil and political human rights-Modern Human Rights: Realities in Development-The right to a clean environment-The right to solidarity-The right to religion.	Apply knowledge, understanding and values in the indicated topics.	2	5

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Guarantees of respect and protection of human rights at the national level-Guarantees in the Constitution and Laws-Guarantees in the principle of the rule of law-Guarantees in Constitutional Oversight - Guarantees in Freedom of the Press and Public Opinion-The role of non-governmental organizations in respecting and protecting human rights at the international level: • The role of the United Nations and its specialized agencies in providing guarantees. • The role of regional organizations (the Arab League-European Union-African Union-Organization of American States-ASEAN organization.	Apply knowledge, understanding and values in the indicated topics.	2	6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	General Theories of Liberties: The Origin of Rights and Liberties-The legislator's position on public rights and freedoms-Use of the term public freedoms.	Apply knowledge, understanding and values in the indicated topics.	2	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Regulating public freedoms-The historical development of the concept of equality-Modern development of the idea of equality-gender equality-Equality between individuals according to their beliefs and race before public authorities.	Apply knowledge, understanding and values in the indicated topics.	2	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Freedom to learn-freedom of the press-freedom of assembly-Freedom of association-freedom of work-Right to ownership.	Apply knowledge, understanding and values in the indicated topics.	2	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	freedom of trade and industry-Freedom, security and a sense of reassurance-Freedom of movement-Women's freedom.	Apply knowledge, understanding and values in the indicated topics.	2	10

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Scientific and technological progress and public freedoms are the future of public freedoms.	Apply knowledge, understanding and values in the indicated topics.	2	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	The crime of genocide.	Apply knowledge, understanding and values in the indicated topics.	2	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Democracy, its characteristics and types.	Apply knowledge, understanding and values in the indicated topics.	2	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Elections definition and types	Apply knowledge, understanding and values in the indicated topics.	2	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Contemporary political systems.	Apply knowledge, understanding and values in the indicated topics.	6 2	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
70%	15%	5%	5%	5%

Learning and teaching resources

Ministry of Education and Scientific Research curricula for the subject of human rights.	1-Required textbooks

'Human Rights: A Very Short Introduction' by Andrew Clapham, Oxford University Press, (2015).	2- Main references (sources)
1- The Evolution of Human Rights" by Louis Henkin, Journal of International Law and Politics, Vol. 32, No. 3, (2000). 2- "Human Rights and International Law" by Antonio Cassese, Journal of International Law and Politics, Vol. 33, No. 1,(2001). 3- "The Protection of Human Rights in International Law" by Dinah Shelton, Journal of International Law and Politics, Vol. 35, No. 2, (2003).	3- Recommended books or references (magazines, reports, etc.)
1.United Nations Human Rights: A website with information about human rights and international laws. 2.Human Rights Watch: A website containing reports on human rights around the world. 3.Amnesty International: A website with information about human rights and related issues.	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

COMPUTER APPLICATIONS 1

Lecturer name: Assist. Prof.Dr. Mohammed Mahdi

Academic Title: PhD.

71. Course name
Computer Applications 1
72. Course code
ATU12C
73. semester/year
First / First Year (2025-2026)
74. Date this description was prepared
22/2/2026
75.Available attendance forms
Theoretical lectures are held in person, in addition to communication with students viaClassroom
76.Number of study hours (total) / Number of units (total)
15 weeks / 2 units
77. Name of the course administrator (if more than one name is mentioned)
Lecturer name: Assist. Prof.Dr. Mohammed Mahdi Email: Kuh.muh2@atu..com
78.Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.
1- Teaching and training students on computers, Internet principles, and computer components.

2-Teaching and training students on the practical use of Office programs at the Computer Technology Center.
3- Education and training Students learn about types of computers, their components, main parts and units.
4- Teaching and training students on systems software, programming languages and systems, and application software.
4-Educating and training students on types of viruses, how to avoid viruses, and methods of protection.
5- Developing and updating curricula scientifically on an annual basis..
6- Directing graduation research in an applied manner to solve societal problems..

79.Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, inductive teaching, and self-study.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

80.Course outcomes

A.1. To be able to know and understand the basic components of a computer, such as the processor, memory, and hard drive.	A. Knowledge and understanding
A.2. To be able to know and understand Different types of software and applications, such as office software, educational software, and entertainment software..	
A.3. To be able to know and understand Use office programs such as Microsoft Office, Google Docs, and other programs.	
A.4. To be able to know and understand Using the Internet to research, communicate, and access information.	
B.1. Acquire the skill to turn on and off the device and use the mouse and keyboard.	b. Skills
B.2. Acquire the skill to deal with harmful computer viruses.	
B.3. Acquire skills in using the Internet and its wide applications.	
B.4. Gaining skill in basic system information and use of databases.	
A.1. Training on using computers in a practical and easy way on the job and to innovate new solutions.	C. Values
A2. Training on the use of pharmaceutical and chemical computer programs, including: chemoffice, Mestronova.	
A.3. Training on the use of computer applications for the benefit of society and continuing education.	

81. Course Structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Introduction to computer: Concept of Hardware and Software with their components.	Knowledge, understanding and practical side For the topics referred to	2	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Introduction to computer: Concept computing, Date and Information, Application of Information Connecting input-output devices, and peripherals to CPU.	Knowledge, understanding and practical side of the topics referred to	2	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Computer Components: Computer Portions, Hardware parts, IO Units.	Knowledge, understanding and practical side of the topics referred to	2	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Computer Components (Cont.): Memory Types: Volatile and Non-Volatile Memory Secondary Storage.	Knowledge, understanding and practical side	2	4
Written tests Oral exams Presentation. Interviews and questionnaires	The direct method is through lectures and scientific seminars on the topic.	Computer Components (Cont.): CPU Components: Control Unit (CU), Arithmetic Logic unit (ALU) and Registers.	Knowledge, understanding and practical side of computer components,	2	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Computer Components (Cont.): Computer Ports, Personal Computer (Features and Types).	Knowledge, understanding and practical side For the topics referred to	2	6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Operating System and Graphical User Interface GUI, Operating System, Basics of Common Operating Systems, The User Interface, Using Mouse Techniques.	Knowledge, understanding and practical side of the topics referred to	2	7

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Operating System and Graphical User Interface GUI(Cont.): Use of Common Icons, Status Bar, Using Menu and Menu-selection.	Knowledge, understanding and practical side For the topics referred to	2	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Operating System and Graphical User Interface GUI(Cont.)Concept of Folders and Directories, Opening and closing of different Windows, Creating Short cuts.	Knowledge, understanding and practical side of the topics referred to	2	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Operating System and Graphical User Interface GUI (Cont(.: Customization and Personalization of GUIs, Accessibility Features in GUIs, User Experience(UX).	Knowledge, understanding and practical side of the topics referred to	2	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Word Processing: Word Processing Basics, Basic Features of Word Processors, Opening and Closing of documents.	Knowledge, understanding and practical side of the topics referred to	2	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.				
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Word Processing (Cont.) Text Creation and Manipulation, Formatting Text and Paragraphs, Using Templates for Document Creation.	Knowledge, understanding and practical side of the topics referred to	2	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture	Word Processing (Cont.): Creation and Managing Tables, Utilizing Style and Themes.	Knowledge, understanding and practical side of the topics referred to	2	13

	Scientific seminars on the topic.				
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Word Processing (Cont.): Spell Check and Grammar Tools, Using Headers and Footers.	Knowledge, understanding and practical side of the topics referred to	2	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Spread Sheet: Introduction to Spreadsheet Software, Creating and Formatting worksheets.	Knowledge, understanding and practical side of the topics referred to	2	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

Computer Applications Curricula from the Ministry of Higher Education and Scientific Research.	1–Required textbooks
	2– Main references (sources)
"Introduction to Computer Applications" by Gary B. Shelly and Misty E. Vermaat, A textbook covering the basics of computer applications, (2018).	3– Recommended books or references (magazines, reports, etc.)
1– "Computer Applications" by Peter Norton, A comprehensive textbook covering all essential topics in computer applications, (2020). 2– "Computer Science: An Overview" by J. Glenn Brookshear, A textbook providing a broad introduction to computer science, (2019).	4– Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

PHARMACEUTICAL CALCULATIONS

Lecturer name: Assist. L. Ola Sadiq Hassan

Academic Title: Master

81. Course name
Pharmaceutical Calculations
82. Course code
PHT121-50-C
83. semester/year
Second / First Year (2025-2026)
84. Date this description was prepared
22/2/2026
85.Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
86.Number of study hours (total) / Number of units (total)
15 weeks / 6 units
87. Name of the course administrator (if more than one name is mentioned)
Lecturer name : Assist. L. Ola Sadiq Hassan Email: ola.sadeqsh@atu.edu.iq
88.Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.

1- Teaching and training students on: Understand the basic concepts of ratios and proportions in pharmaceutical calculations.
2- Teaching and training students on: Apply basic concepts of pharmaceutical calculations in practical situations, such as calculating pharmaceutical doses, preparing pharmaceutical solutions.
3- Teaching and training students on concepts volume percent by volume, weight percent by weight, power ratio, error ratio.
4-Promote self-assessment and lifelong learning among students in the pharmaceutical accounting course.
5-Enhancing cooperation and communication among students in solving problems related to pharmaceutical accounting.
6- Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
7- Allocating scientific visits to government and private health centers and hospitals.
8- Using technology in learning pharmaceutical accounting, such as using computer programs to analyze pharmaceutical data.
9- Directing graduation research in an applied manner to solve societal problems.

89.Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

90.Course outcomes

A.1. To be able Understand the basic concepts of pharmaceutical calculations, such as ratios and proportions, concentration and preparation, volume percent by volume, and weight percent by weight.	A. Knowledge and understanding
A.2. To be able to understand basic concepts of pharmaceutical calculations in practical situations, such as calculating pharmaceutical doses, preparing pharmaceutical solutions.	
A.3. To be able to critical and analytical thinking in solving problems related to pharmaceutical accounting.	
A.4. To be able to Learn about modern methods and techniques in pharmaceutical accounting.	
B.1. Acquire skill in Perform pharmaceutical calculations accurately and quickly.	b. Skills
B.2. Acquire skill in Pharmaceutical data analysis and interpretation of results.	
b.3. Acquire skill in Communicate effectively with colleagues and satisfied on topics related to pharmaceutical accounts.	
B.4. Acquire skill in use of technology in pharmaceutical accounting, such as computer software and medical machines.	

A.1. Training on Commitment to accuracy and respect in conducting pharmaceutical calculations	C. Values
A.2. Training on Respecting patient rights and privacy regarding pharmacy accounts	
C.3. Training on Take full responsibility for pharmaceutical accounts and achieving professional standards.	

Course structure					
Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Careless calculations cost lives Practical: Demonstration of different glass wares and equipment used in the field of pharmacy	- Knowledge, understanding, skills and values It is clear the importance of accuracy in pharmaceutical calculations and its impact on patients' lives, in addition to providing a practical presentation on various glassware and equipment.-Enhance students' understanding of the importance of pharmaceutical accuracy and techniques.	6	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Units of measure Practical: Pharmaceutical measurements.	- Knowledge, understanding, skills and values It is clear standard units of measurement used in pharmacy, such as milligrams, milliliters, etc. Students are trained to accurately use pharmaceutical devices and equipment.	6	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Ratios and proportions Practical: Volume measurements	-Knowledge, understanding, skills and values Basic concepts of ratios and proportions, such as calculating ratios and proportions between components. Students are trained to use pharmaceutical devices and equipment to accurately measure volumes..	6	3 & 4
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Multi-dose vials Practical: Preparation of aromatic waters Preparation of simple solutions.	-Knowledge, understanding, skills and values Clarification How to deal with Bottles Multi-dose, and how to prepare simple pharmaceutical solutions, such as aromatic waters and simple solutions. These concepts are applied practically by preparing these	6	5 & 6

			solutions in the laboratory. Pharmaceuticals.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Concentration and dilution Practical:Reducing and enlarging prescription contents.	-Knowledge, understanding, skills and values YCovers the concepts of concentration and dilution in pharmacy, and how they are applied to modifying prescription contents. These concepts are applied practically through laboratory experiments aimed at diluting or concentrating prescription contents.	6	7 & 8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Percentage volume-in-volume Practical: Percentages in calculating prescription contents.	-Knowledge, understanding, skills and values Covers how to calculate volume percentages in pharmacy and how to apply them to calculating the contents of prescriptions. These concepts are applied practically by calculating percentages in prescriptions and determining the quantities of required ingredients.	6	9 & 10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Percentage weight-in-weight Practical: Stock solutions and dilution technique during dispensing technique	-Knowledge, understanding, skills and values This course covers how to calculate weight-by-weight percentages in pharmacy, how to apply them in the preparation of basic solutions, and the dilution technique used during filling techniques. These concepts are applied practically through the preparation of basic solutions and dilution techniques in the laboratory.	6	11 & 12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Ratio strength	-Knowledge, understanding, skills and values Covers how to calculate the ratio strength in pharmacy, which expresses the ratio of the active ingredient to the other ingredients in a medication. These concepts are applied practically by calculating the ratio strength in prescriptions and determining the required quantities of ingredients.	6	13
Written tests Oral exams	Direct method	Percent of error	-Knowledge, understanding, skills and values	6	14

Presentation. Interviews and questionnaires	through lecture Scientific seminars on the topic.		Covers how to calculate the margin of error in pharmacy, which expresses the difference between the actual value and the required value for a given quantity of medication. These concepts are applied practically by calculating the margin of error in prescriptions and determining the required accuracy..		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Apothecary system	-Knowledge, understanding, skills and values This course covers the apothecary system, an ancient system used in pharmacy to measure weights and volumes. These concepts are applied practically through an understanding of the standard units used in the apothecary system..	6	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

	1-Required textbooks
1- Pharmaceutical calculations 13th edition, Howard C. Ansel., (2017). 2Introduction to pharmaceutical Calculations 4th Edition, Judith A Rees, Ian Smith and Jennie Watson, (2015). 3-"Textbook of Pharmaceutical Formulation" by Aulton, ME (2013). 4-Formulation of Pharmaceutical Dosage Forms" by Banker, G.S. (2015).	2- Main references (sources)
1- Pharmaceutical Formulation: A Review" by Kumar, A. et al., Journal of Pharmaceutical Sciences, (2020). 2- Formulation of Solid Dosage Forms" by Patel, R. et al., Journal of Pharmacy and Pharmacology, (2019). 3- Pharmaceutical Formulation: Challenges and Opportunities" by Singh, S. et al., Journal of Pharmaceutical Research, (2018).	3- Recommended books or references (magazines, reports, etc.)
https://www.nature.com/articles/131895e0 https://pmc.ncbi.nlm.nih.gov/articles/PMC1637007/	4- Electronic references, Internet sites.

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Technical Institute / Kufa

Department of Pharmacy Technology

Course Description for the Academic Year 2025-2026

ORGANIC CHEMISTRY

Lecturer name: Assist. Prof. Dr. Manar Ghiath Abdul Muttalib

Academic Title : PhD

91. Course name
Organic Chemistry
92. Course code
PHT122-50-C
93. semester/year
Second / First Year (2025-2026)
94. Date this description was prepared
22/2/2026
95.Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
96.Number of study hours (total) / Number of units (total)
15 weeks / 6 units
97. Name of the course administrator (if more than one name is mentioned)
Lecturer name : Dr. Manar Ghiath Abdul Muttalib Email: manar.alawi@atu.edu.iq
98.Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods)
1- Teaching and training students on the basic concepts of organic chemistry and its relation to the specialty of pharmacy. 2- Teaching and training students on the detection of organic compounds such as aldehydes, ketones, alcohols and esters.

3- Teaching and training students to use organic molecules safely in the preparation of medicines.
4- Protecting the environment and health from the harmful effects of chemicals and reducing their risks.
5- Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
6- Allocating scientific visits to pharmaceutical production plants.
7- Using modern laboratory equipment and educational screens.
8- Directing graduation research in an applied manner to solve societal problems and present and develop new products.

99.Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

100. Course outcomes

A.1. To be able to understand the basic concepts in organic chemistry.	A. Knowledge and understanding
A.2. To be able to understanding the chemical structure of organic molecules.	
A.3. To be able to know chemical reactions and processes that occur in organic compounds.	
A.4. To be able to know The role of organic chemistry in drug design and development.	
B.1. Acquire skill in analysis and determination of the chemical structure of organic compounds.	b. Skills
B.2. Acquire the skill of detecting organic compounds using modern devices and practical methods.	
b.3. Acquire skill in Application of organic chemistry concepts in the field of pharmacy.	
B.4. Acquire skill in analysis and evaluation of organic chemical information in the context of pharmacy.	
A.1. Training on how to handle organic compounds.	C. Values
A.2. Training on Continue to learn and update in the field of organic chemistry.	
C.3. Training on The great importance of organic chemistry in the development of medicines and healthcare.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams	Direct method	Organic halogen compound (Alky/halide) Structure;	-knowledge, understanding, skills, and values	6	1

Presentation. Interviews and questionnaires	through lecture Scientific seminars on the topic.	Nomenclature; physical & chemical properties. Practical: Determination of solubility of organic compounds Quiz & unknown	clarificationOrganohalogen compounds (alkyl halides) and features of Physics and the Chemical, such as solubility in organic solvents and interaction with other compounds		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Preparation & uses; reactions. Nucleophilic substitution. Practical: Reaction & identification of alcohols. Quiz & unknown	- Knowledge, understanding, skills and values Preparation of alkyl halide compounds, their applications, and reactions, including nucleophilic substitution..	6	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Alcohol; structure & nomenclature preparation; reaction; uses in pharmacy. Practical: Reactions & identification of aldehydes. Quiz & unknown	-Knowledge, understanding, skills and values Clarification alcohol at and use it in pharmacy in the preparation of many medicines and preparations.	6	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Aldehydes & ketones ; structure nomenclature Practical: Reaction & identification of Ketones. Quiz & unknown.	-Knowledge, understanding, skills and values Clarification aldehydes and ketones with assigning specific names to each compound based on its chemical structure..	6	4
Written tests Oral exams Presentation. Interviews and questionnaires	The direct method is through lectures and scientific seminars on the topic.	Aldehydes & ketones preparation method & reaction Practical: Reaction & identification of aliphatic Carboxylic acid. Quiz & unknown.	-Knowledge, understanding, skills and values Preparation clarification Aldehydes and ketones through various routes such as oxidation and hydrolysis, and her entry in chemical reactions such as condensation, decomposition, and nucleophilic reactions.	6	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Carboxylic acid <s derivatives structure; nomenclature preparation methods& its reaction; uses in pharmacy. Practical:	-Knowledge, understanding, skills and values Clarification carboxylic acid and its derivatives and prepare it through various methods such as oxidation and hydrolysis, and react in chemical reactions such as condensation and	6	6

			decomposition, And use it inPharmacy in the preparation of many medicines and preparations.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Amin; structure; nomenclature physical properties ; Basicity of Amin Practical: Reaction & identification of aromatic carboxylic acid. Quiz & unknown.	-Knowledge, understanding, skills and values Clarification amines and features of the Physical properties such as solubility and viscosity,	6	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Preparation & reaction of amine uses in pharmacy. Practical: Identification of phenols	-Knowledge, understanding, skills and values Preparation clarificationThrough various methods such as the reaction between ammonia and halogens,And her entryin chemical reactions such as the reaction with acids and alkyls,And also use itin pharmacy, it is used to prepare many medicines and preparations, such as narcotic and anti-allergy drugs.	6	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Aromatic diazonium salt; structure nomenclature; preparation & reactions, the Uses Practical: Identification of esters.	-Knowledge, understanding, skills and values Clarification Aromatic diazonium salts And prepare it Through nitrification reaction and use it in the preparation of dyes, pigments and chemicals others.	6	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Ethers; structure; nomenclature physical and chemical properties reactions Practical: Quiz & unknown.	-Knowledge, understanding, skills and values to prepare ethers and some of the Physics and the Chemical in addition to its interactions.	6	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Ester; structure; nomenclature; reaction, reaction Practical: Identification of aromatic Hydrocarbons (Benzene) Quiz & unknown	-Knowledge, understanding, skills and values Clarification Esters And enter it in chemical reactions such as reaction with acids and bases and	6	11

			reaction with organic solvents.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Mererceptons ; Thiols (sulfur organic compound). Practical: Identification of ether.	-Knowledge, understanding, skills and values Clarification Mercaptans or thiols (SH),And its various properties and interactions.	6	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Structure ; reaction mercaptons Practical: Quiz & unknown	-Knowledge, understanding, skills and values Mercaptans introduction in chemical reactions such as reaction with acids to form thioester compounds, and reaction with halogens to form	6	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Heterocyclic compounds structure; Nomenclature Physical and chemical properties. Practical: Identification of amines	-Knowledge, understanding, skills and values clarification Heterocyclic compounds contain a heterocyclic ring, have a specific structure and arrangement, and have different physical and chemical properties.	6	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Heterocyclic compounds five membered rings; six member ring; structure; reaction. Practical: Quiz & unknown	-Knowledge, understanding, skills and values clarification Heterocyclic compounds include pentagonal and hexagonal rings and undergo various chemical reactions.	6	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

	1-Required textbooks
Organic Chemistry, By Robert T. Morrison and Robert N. Boyd and S. K. Bhattacharjee, 7th Ed., (2019).	2- Main references (sources)

1- Organic Chemistry: An Overview" by David R. Dalton, Journal of Organic Chemistry, (2020). 2- "The Principles of Organic Chemistry" by Francis A. Carey, Journal of Chemical Education, (2019). 3- "Organic Chemistry: A Review of the Literature" by James P. Snyder, Journal of Organic Chemistry, (2018).	3- Recommended books or references (magazines, reports, etc.)
-1Advanced Organic Chemistry. Reactions and Synthesis, Ed4(Part B), Carey F., Sundberg R., Kluwer 2000. 2- Organic chemistry, Ed5, Carey FA, MGH, (2004). -https: guides.hostos.cuny.edu che120	4- Electronic references, Internet sites.

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Department of Pharmacy Technology

Course Description for the Academic Year 2025-2026

BIOCHEMISTRY

Lecturer name: Assist. Prof. Dr. Mahmood M. Fahad

Academic Title: PhD

101.Course name
Biochemistry
102.Course code
PHT123-50-C
103.semester/year
Second / First Year (2025-2026)
104.Date this description was prepared
22/2/2026
105. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
106. Number of study hours (total) / Number of units (total)
15 weeks / 6 units
107. Name of the course administrator (if more than one name is mentioned)
Lecturer name: Assist. Prof. Dr. Mahmood M. Fahad Email:mahmood.mohe.iku@atu.edu.iq
108. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.
1- Teaching and training students on the basic concepts of biochemistry and its relation to the specialty of pharmacy.

2- Teaching and training students on: Vital functions in the body.
3- Teaching and training students on: Understanding the mechanisms of biochemical reactions.
4- Develop critical and analytical thinking skills in solving biochemical problems.
5- Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
6- Allocating scientific visits to central laboratories in universities and hospitals.
7- Using modern laboratory equipment and educational screens.
8- Directing graduation research in an applied manner to solve societal problems and present and develop new products.

109. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

110. Course outcomes

A.1. To be able to apply knowledge in the basics of biochemistry.	A. Knowledge and understanding
A.2. To be able to know and understand chemical devices, tools and equipment.	
A.3. To be able to know and understand the chemical composition and properties of carbohydrates, amino acids, proteins, enzymes, and vitamins.	
A.4. To be able to know and Understanding vital functions and biological interactions for this particles in the body.	
B.1. Acquire skill in Scientific research skills in the field of biochemistry.	b. Skills
B.2. Acquire the skill to detect carbohydrates, proteins and amino acids in the laboratory.	
B.3. Acquire the skill in using the equipment and devices used in biochemistry.	
B.4. Acquire skill in Analysis and explanation skills Results biochemistry	
A.1. Training on how to handle biological particles and reactions.	C. Values
A2. Training on various methods of detecting the above molecules.	
C.3. Training in writing scientific reports in the laboratory and Appreciation for scientific and technological progress.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture	Biochemistry-Define-Importance.	-Knowledge, understanding, skills and values Introduction to the basic concepts of biochemistry, its importance and applications.	6	1

	Scientific seminars on the topic.	Practical: Carbohydrates-classification-properties-monosaccharide reaction.			
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Carbohydrates-Define-Classification-Properties- Monosaccharides-Define-Properties-reactions. Practical:Unknown (discussion).	-Knowledge, understanding, skills and values Definition, classification, and chemical and physical properties of carbohydrates. Definition of monosaccharides, their chemical structure, properties, and reactions.	6	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Disaccharides-Define-Types-Properties-chemical reactions. Polysaccharides-Define-Types-Properties-Chemical reactions and Reports. Practical: Disaccharides-reaction.	-Knowledge, understanding, skills and values Definition of disaccharides, their types, chemical composition, properties, and chemical reactions. Definition of polysaccharides, their types, chemical properties, and reactions.	6	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Metabolism of carbohydrates Practical:Unknown, discussion-reports.	-Knowledge, understanding, skills and values Clarification also, Digestion, absorption, metabolism, and cellular respiration.	6	4
Written tests Oral exams Presentation. Interviews and questionnaires	The direct method is through lectures and scientific seminars on the topic.	Lipids-Define-classification-Fatty acids-classification-properties. Practical: Polysaccharides-reaction	-Knowledge, understanding, skills and values Definition of fats, their classification, chemical composition, fatty acids, their classification, their properties.	6	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Hydrations-rancidity-iodine number-saponification-metabolism of fat. Practical: Unknown, discussion-reports.	-Knowledge, understanding, skills and values Clarification of the concepts referred to.	6	6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture	Proteins-define-classification-properties.	-Knowledge, understanding, skills and values Definition, classification and properties of proteins.	6	7

	Scientific seminars on the topic.	Practical: Lipids-classification-fatty acids-hydrogenation.			
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Amino acids-define-classification-properties-chemical reaction Practical: Determination of iodine No. and soapification.	-Knowledge, understanding, skills and values Definition of amino acids, their classification, properties and chemical reactions.	6	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Metabolism of proteins and amino acids. Practical: Proteins-classification of amino acids-properties, reaction.	-Knowledge, understanding, skills and values Metabolism of protein molecules and amino acids.	6	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Nucleic acids-nucleic proteins-reports. Practical: Amino acids properties, reaction-testing and reports.	-Knowledge, understanding, skills and values Definition of nucleic acids and nucleoproteins and their properties.	6	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Enzymes-define-classification-properties-chemical reactions-enzymes inhibitors Practical: Nucleic acid-nucleic proteins-discussion.	-Knowledge, understanding, skills and values Definition of enzymes, their classification, properties, chemical reactions, and enzyme inhibitors.	6	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Hormones-define-classification-properties-proteins hormone-functions. Practical: Enzymes and inhibitors-discussion	-Knowledge, understanding, skills and values Definition of hormones, their classification, properties, and functions.	6	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Non protein hormones-classification. Practical: Hormones-properties, types, discussion, reports	-Knowledge, understanding, skills and values Definition and classification of non-protein hormones.	6	13
Written tests Oral exams Presentation.	Direct method through lecture	Vitamins-Types-properties-vitamin soluble in water.	-Knowledge, understanding, skills and values Definition of vitamins and their properties, and water-	6	14

Interviews and questionnaires	Scientific seminars on the topic.	Practical: Vitamins-types.	soluble fats and their properties.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Vitamins soluble in fat-types-properties. Practical: Examination	-Knowledge, understanding, skills and values Fat-soluble fats and their properties.	6	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

	1-Required textbooks
- Lippincott's Biochemistry, Denise R. Ferrier, Pamela C. Champe, Wolters Kluwer, 8 ed., (2021).	2- Main references (sources)
1. "Lehninger Principles of Biochemistry" David L. Nelson, Michael M. Cox. 8ED., (2020). 2. "Biochemistry" Jeremy M. Berg, John L. Tymoczko, Lubert Stryer, 8 Ed., (2019). 3. "Harper's Biochemistry" Robert K. Murray, David K. Granner, Peter A. Mayes, 30 ed., (2019). 4. "Biochemistry: The Molecular Basis of Life" James R. McKee, Robert W. Crawford, 7ED, (2017).	3- Recommended books or references (magazines, reports, etc.)
1.Journal of Biological Chemistry (JBC) - DOI: 10.1016/j.jbc 2. Biochemistry - DOI: 10.1021/bi. 3. Nature Chemical Biology - DOI: 10.1038/nchembio. 4. Cell Metabolism - DOI: 10.1016/j.cmet.	4- Electronic references, Internet sites.

Al-Furat Al-Awsat Technical University

Technical Institute / Kufa

Department of Pharmacy Technology

Course Description for the Academic Year 2025-2026

VIROLOG AND PARASITES

Lecturer name: Dr. Abbas Nasser Hussein

Academic Title : PhD

111.Course name
VIROLOG AND PARASITES
112.Course code
PHT125-50-C
113.semester/year
Second/First Year (2025-2026)
114.Date this description was prepared
22/2/2026
115. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
116. Number of study hours (total) / Number of units (total)
15 weeks /4 unit
117. Name of the course administrator (if more than one name is mentioned)
Lecturer name: Dr. Abbas Nasser Hussein Email: Abbas.hussien@atu.edu.iq
118. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.
1- Teaching and training students on Fundamentals of Microbiology and its relationship to the specialty of pharmacy.

2-Student diagnosis of diseases caused by bacteria, fungi and viruses.
3- Education and training Students learn how to control and reduce microorganisms.
4- Teaching and training students on laboratory methods used in diagnosing microorganisms.
4- Protecting the environment and health from damages microscopic organisms and reduce its risks to the environment.
5- Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries at least 20%.
6- Allocating scientific visits to laboratories for hospitals and health centers.
7- Using modern laboratory equipment and educational screens.
8- Directing graduation research in an applied manner to solve societal problems..

119. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

120. Course outcomes

A.1. To be able to apply knowledge in diagnosing all types of microorganisms.	A. Knowledge and understanding
A.2. To be able to know and understand the methods of transmission and infection caused by germs, fungi and viruses.	
A.3. To be able to know and understand the types of microscopic organisms and their names.	
A.4. To be able to know and understand how to prevent these pathogens.	
B.1. Acquire the skill of diagnosing microorganisms.	b. Skills
B.2. Acquire the skill of using various devices such as (microscope - autoclave-incubator-etc)	
B.3. Acquire skill in the method of culturing and growing microorganisms.	
B.4. Gaining the skill of conducting antibiotic sensitivity tests.	
A.1. Apply knowledge in identifying virulence factors of organisms.	C. Values
A2. Apply knowledge to understand the mechanism of action of antibiotics.	
A.3. Apply knowledge and compare microscopic organisms in terms of their way of life.	

Course structure

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

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Introduction to virology, virus structure, classification, viral replication. Practical: Microbiological safety cabinet	-Knowledge, understanding, skills and values Introduction to virology, the structural composition of viruses, their classification, and virus replication.	4	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Antivirals and vaccines Practical: Electron microscope	-Knowledge, understanding, skills and values Virus control and vaccination against viruses and the importance of viral control and vaccination.	4	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	DNA enveloped viruses (Herpes simplex virus) Cytomegalovirus, Varicella-Zoster virus Practical: Tissue culture	-Knowledge, understanding, skills and values herpes simplex virus and Cytomegalovirus and Varicella-zoster virus	4	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	DNA non envelop viruses (Human Papilloma virus, Adenovirus) Practical: Embryonated egg	-Knowledge, understanding, skills and values human papillomavirus and Adenovirus and Properties of non-enveloped viruses	4	4
Written tests Oral exams Presentation. Interviews and questionnaires	The direct method is through lectures and scientific seminars on the topic.	Mumps, measles, Rubella Practical: Lab animals	-Knowledge, understanding, skills and values Measles, rubella, rubella and the importance of vaccination.	4	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Influenza, Coronavirus, Rota Practical: Serological diagnosis	-Knowledge, understanding, skills and values Flu and Corona virus and Rotavirus and the importance of prevention.	4	6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Hepatitis viruses, HIV Practical: Immuno chromatography	-Knowledge, understanding, skills and values Hepatitis viruses and HIV.	4	7

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Introduction to Parasitology, classification, antiparasitics drugs Practical: PCR	-Knowledge, understanding, skills and values Introduction to parasites and their classification antiparasitic drugs the importance of parasitology	4	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Entamoeba histolytica, Giardia lamblia Practical: Entamoeba histolytica, Giardia lamblia	-Knowledge, understanding, skills and values tissue-lytic amoeba and Giardia flukes and The importance of prevention	4	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Trichomonas vaginalis, Leishmania Practical: Trichomonas vaginalis, Leishmania	-Knowledge, understanding, skills and values Trichomoniasis and Leishmaniasis and the importance of prevention and treatment	4	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Plasmodium, Toxoplasma gondii Practical: Plasmodium, Toxoplasma gondii	-Knowledge, understanding, skills and values Plasmodium Malaria-causing and Toxoplasma gondii and The importance of prevention and treatment	4	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Nematodes (Enterobius vermicularis, Ascaris lumbricoides) Practical: Enterobius vermicularis, Ascaris lumbricoides	-Knowledge, understanding, skills and values Tapeworm and domestic threadworm and large tapeworm and The importance of prevention and treatment.	4	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Trematodes (Schistosoma spp) Practical: Schistosoma spp	-Knowledge, understanding, skills and values Trematodes Tapeworm parasites that cause infection in various tissues. Schistosoma And its types It is a tapeworm parasite that causes schistosomiasis.	4	13

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Cestodes Echinococcus granulosus (hydatid cyst) Practical: Echinococcus granulosus (hydatid cyst)	-Knowledge, understanding, skills and values Cystodes They are tapeworm parasites that cause infection in the intestines. Echinococcus granulosus is a tapeworm parasite that causes hydatid cyst disease. Hydatid cyst.	4	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Taenia saginata Taenia solium Practical: Taenia saginata Taenia solium	-Knowledge, understanding, skills and values Tinea saginata is a tapeworm parasite that causes tinea saginata. Tinea solium It is a tapeworm parasite that causes taeniasis.	4	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

Medical Microbiology" by Joseph C. Jawetz, Melnick & Adelberg's, The 27th edition of this textbook was published in (2019).	1-Required textbooks
1- Microbiology: An Evolving Science" by Joan L. Slonczewski and John W. Foster (2017). 2- Microbiology: Principles and Explorations" by Jacquelyn G. Black (2015). 3- Brock Biology of Microorganisms" by Michael T. Madigan, John M. Martinko, and Jack Parker, 15th edition, (2018).	2- Main references (sources)
	3- Recommended books or references (magazines, reports, etc.)
	4- Electronic references, Internet sites.

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Technical Institute / Kufa

Department of Pharmacy Technology

Course Description for the Academic Year 2025-2026

PHYSIOLOGY

Lecturer name: Asst. MSc. Nadia Abdel Hadi

Academic Title: Master's

121.Course name
Physiology
122.Course code
PHT124-50-C
123.semester/year
Second / First Year (2024-2025)
124.Date this description was prepared
22/2/2026
125. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom and YouTube channel
126. Number of study hours (total) / Number of units (total)
15 weeks / 4 units
127. Name of the course administrator (if more than one name is mentioned)
Lecturer name: Assist. MSc. Nadia Abdel Hadi Abdel Amir Email: Kin.nad@atu.edu.iq
128. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.
1- Teaching and training students on physiology conceptsAnd its relationship to the specialty of pharmacy.

2-Teaching and training students to understand the mechanisms by which different body parts, systems, and glands are connected to each other.
3- Education and trainingStudents understand the physical laws of how vital body organs work.
4- Teaching and training students to understand the role of each organ in life and its optimal performance.
4-Teaching and training students to understand the importance of endocrine glands in producing hormones and controlling body functions.
5- Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries at least 20%.
6- Allocating scientific visits to laboratories for hospitals and health centers.
7- Using modern laboratory equipment and educational screens.
8- Directing graduation research in an applied manner to solve societal problems..

129. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

130. Course outcomes

A.1. To be able to apply knowledge to infer the mechanisms of action of some organs and tissues.	A. Knowledge and understanding
A.2. To be able to know and understand describe the structure of the central and peripheral nervous systems	
A.3. To be able to know and Understanding the functions of the nervous system in controlling movement, balance, and vital functions	
A.4. To be able to know and understand the importance of the nervous system involuntary in function control involuntary	
B.1. Acquire skill in describe the importance of the kidneys in filtering blood and producing urine.	b. Skills
B.2. Acquire skill in using the microscope and other laboratory equipment.	
b.3. Acquire skill in the ability to a description muscle functions in producing movement and controlling balance.	
B.4. Acquire skill in the ability to use physiological concepts to solve problems.	
A.1. Training on the importance of the nervous system in controlling body functions.	C. Values
A.2. Training on Appreciate the importance of scientific research in understanding organ functions.	
C.3. Training on The ability to apply ethical values in scientific researchand medical fields.	

Course structure					
Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Nervous system, define, parts of nervous system, functions Practical: The erythrocyte sedimentation rate	The ability to know and understand the structure of the nervous system, its parts, and its functions in controlling body functions.	4	1 & 2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Nerves, synapses, neurotransmitters Practical: Bleeding and clotting time	The ability to know and understand the role of nerves, neurons, and neurotransmitters in transmitting nerve signals and controlling body functions.	4	3 & 4
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Autonomic nervous system, functions, receptors Practical: The determining of body temperature Tracing of the pulse	The ability to know and understand the functions of the autonomic nervous system and its receptors in controlling involuntary functions such as breathing, heart, and digestion.	4	5 & 6
Written tests Oral exams Presentation. Interviews and questionnaires	The direct method is through lectures and scientific seminars on the topic.	Blood pressure Practical: Heart sound	The ability to know and understand blood pressure concepts, causes, and effects on general health.	4	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Urinary system, structures, functions Practical: Measurement of blood pressure	The ability to know and understand the structure of the urinary system and its main parts, such as the kidneys, bladder, and ureters, as well as its functions in filtering blood, producing urine, and excreting it from the body.	4	8 & 9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Regulation functions of the kidneys Practical: The effect of exercises on blood pressure	The ability to know and understandThe kidneys function to regulate acid-base balance, blood pressure, and fluid and electrolyte levels in the body.	4	10

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Muscles, type, functions, contraction Practical: The electrocardiogram The spirometer and its uses in the measurement of respiratory volume	The ability to know and understand the types of different muscles, such as skeletal muscles, muscular muscles, and cardiac muscles, as well as their functions in producing movement, controlling balance, and controlling vital functions, in addition to explaining the process of muscle contraction.	4	11 & 12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Endocrine glands, types, functions Practical: Systems and parts of the human body Demonstration of natural bones	The ability to know and understandDifferent types of endocrine glands such as the pituitary gland, thyroid gland, and adrenal gland, as well as their functions in producing hormones and controlling various body functions such as growth, development, metabolism, and acid-base balance.	4	13 & 14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Regulation of body temperature Practical: The uses of national statement and posters	The ability to know and understand Mechanisms of body temperature control, including the role of the nervous, endocrine, and other physiological systems in maintaining a stable body temperature.	4	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

	1-Required textbooks
Guyton, AC, & Hall, JE, Textbook of Medical Physiology (13th ed.). Philadelphia, PA: Saunders, (2019).	2- Main references (sources)
1."Physiology: An Integrated Approach" by Dee Unglaub Silverthorn (2019).	3- Recommended books or references (magazines, reports, etc.)

2. "Guyton and Hall Textbook of Medical Physiology" by John E. Hall (2019). 3. "Berne and Levy Physiology" by Bruce M. Koeppen and Bruce A. Stanton (2018).	
1. "Physiology of the Human Body" by John E. Hall, Journal of Physiology, (2019). 2. "The Physiology of Exercise" by William D. McArdle and Frank I. Katch, Journal of Applied Physiology, (2018).	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

BIOSTATISTICS

Lecturer name: Abdel Nasser Ahmed Al-Sayed

Academic Title: Master

131.Course name
Medical terms
132.Course code
PHT126-50-C
133.semester/year
Second/First Year (2024-2025)
134.Date this description was prepared
22/2/2026
135. Available attendance forms
Theoretical lectures are held in person, in addition to communication with students viaClassroom
136. Number of study hours (total) / Number of units (total)
15 weeks / 2 units
137. Name of the course administrator (if more than one name is mentioned)
Lecturer name: MSc. Abdel Nasser Ahmed El Sayed Email: Kin.nad@atu.edu.iq
138. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods)
1- Enabling the student to: Understand basic statistical concepts such as mean and standard deviation.

2- Enabling the student to understanding statistical methods such as statistical tests and statistical analysis of data.
3- Enabling the student to understanding the applications of statistics in biology and public health.
4-Design and analysis of clinical trials to evaluate the efficacy and safety of drugs.
5-Analyze pharmaceutical data to determine relationships between variables.
6-Using statistical methods to improve pharmaceutical manufacturing processes.
7-Analyzing pharmaceutical data to identify factors that influence treatment response.
8-Develop statistical models to improve clinical trial design.
9-Using statistics in decision making in the field of pharmacy and pharmaceutical industry.
10- Developing and updating the academic curricula scientifically on an annual basis, in line with the curricula of medically advanced countries, by no less than 20%.

139. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

140. Course outcomes

A.1. To be able to understand Statistical methods such as statistical tests and statistical data analysis.	A. Knowledge and understanding
A.2. To be able to understand basic statistical concepts such as mean and standard deviation..	
A.3. To be able to understand Applications of statistics in biology and public health.	
A.4. To be able to analysis of biological and health data using statistical methods.	
B.1. Acquire skill in analysis of biological and health data using statistical methods.	b. Skills
B.2. Acquire skill in design biological and health experiments and analyze the resulting data.	
B.3. Skill acquisition Interpreting statistical results in the context of biology and public health.	
B.4. Acquire skill in use of modern statistical software such as: R or Python for biological data analysis.	
A.1. Training on Critical and analytical thinking in biological and health data analysis.	C. Values
A.2. Training on accuracy and objectivity in presenting statistical results.	
C.3. Training to respect the results of for statistical data after applying it correctly.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams	Direct method through lecture	Definition of statistics-Data collection methods-Display	-Knowledge, understanding, skills and values	2	1

Presentation. Interviews and questionnaires	Scientific seminars on the topic.	and describe statistical data- Preparing a questionnaire (unclassified data)	For the topics referred to.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Representing frequency distributions (grouped data)- Display table (frequency distribution table)	-Knowledge, understanding, skills and values For the topics referred to.	2	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Graphic display-iterative runway-recurrence curve-repetitive polygon	-Knowledge, understanding, skills and values For the topics referred to.	2	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Measures of central tendency-arithmetic mean	-Knowledge, understanding, skills and values For the topics referred to.	2	4
Written tests Oral exams Presentation. Interviews and questionnaires	The direct method is through lectures and scientific seminars on the topic.	The mediator-The loom	-Knowledge, understanding, skills and values For the topics referred to.	2	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Introduction to Sampling Theory-Its meaning and reasons for choosing it	-Knowledge, understanding, skills and values For the topics referred to.	2	6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Vital statistics-ratio and rate-Mortality statistics.	-Knowledge, understanding, skills and values For the topics referred to.	2	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Fertility statistics	-Knowledge, understanding, skills and values For the topics referred to.	2	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Disease statistics-Life table	-Knowledge, understanding, skills and values For the topics referred to.	2	9
Written tests Oral exams Presentation.	Direct method through lecture	Definition of health statistics and its sources	-Knowledge, understanding, skills and values For the topics referred to.	2	10

Interviews and questionnaires	Scientific seminars on the topic.				
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Fields covered by health statistics	-Knowledge, understanding, skills and values For the topics referred to.	2	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Statistics of causes of death (medical certificate)-the reason-death-death certificate)	-Knowledge, understanding, skills and values For the topics referred to.	2	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Health facilities statistics	-Knowledge, understanding, skills and values For the topics referred to.	2	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Rates and percentages for hospitals and patients-Treatment days-Length of stay (average days of stay)	-Knowledge, understanding, skills and values For the topics referred to.	2	14
Written tests Oral exams Presentation. Interviews and questionnaires	The direct method is through lectures and scientific seminars on the topic.	Household occupancy rate - income rate	-Knowledge, understanding, skills and values . For the topics referred to.	6 2	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
70%	15%	5%	5%	5%

Learning and teaching resources

W. Dixon and F. Massey – Introduction to statistics Analysis. (1957).	1-Required textbooks
-1Biostatistics: A Foundation for Analysis in the Health Sciences" Wayne W. Daniel (2013).	2- Main references (sources)

-2 Biostatistics: A Methodology for the Health Sciences' Gerald van Belle, Lloyd D. Fisher, and Patrick J. Heagerty (2012(. 3- Essential Biostatistics for Public Healt, Michael D. Pagano and Kimberlee Gauvreau (2015).	
Statistics in Medicine Journal of Biopharmaceutical Statistics	3- Recommended books or references (magazines, reports, etc.)
	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

ENGLISH LANGUAGE

Lecturer name: Huda Abdul-Ridha Musa

Academic Title : Master

141. Course name
English language
142. Course code
ATU10C
143. semester/year
Second/First Year (2025-2026)
144. Date this description was prepared
22/2/2025
145. Available attendance forms
Theoretical lectures are held in person, in addition to communication with students via Classroom
146. Number of study hours (total) / Number of units (total)
15 weeks / 2 units
147. Name of the course administrator (if more than one name is mentioned)
Lecturer name: Huda Abdul Redha Musa Email: Kin.nad@atu.edu.iq
148. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods)
1. Developing English language skills for student score in the field of pharmaceutical technology. 2. Enhancing the ability to understand and comprehend scientific and technical texts in the field of pharmacy.

3. Improve writing and translation skills in English in the field of pharmacy.
4. Developing research and analysis skills in English in the field of pharmacy.
5. Improve the ability to express scientific ideas and concepts in English in the field of pharmacy.
6. Enhance the ability to communicate effectively with colleagues and supervisors in English in the field of pharmacy.
7. Developing conversation and discussion skills in English in the field of pharmacy.
8- Developing and updating the curricula scientifically on an annual basis, in line with the curricula of medically advanced countries, by no less than 20%.

149. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

150. Course outcomes

A.1. To be able to Enhance the ability to understand and comprehend scientific and technical texts in the field of pharmacy.	A. Knowledge and understanding
A.2. To be able to Improve your English writing and translation skills.	
A.3. To be able to Developing research and analysis skills in English.	
A.4. To be able to Improve the ability to express scientific ideas and concepts in English.	
B.1. Acquire skill in Listening and understanding scientific and technical texts.	b. Skills
B.2. Acquire skill in Writing and translation in English.	
b.3. Acquire skill in Research and analysis in English.	
B.4. Acquire skill in Skills for expressing scientific ideas and concepts in English.	
A.1. Training on Critical and analytical thinking in biological and health data analysis.	C. Values
A.2. Training on Accuracy and objectivity in providing information.	
C.3. Training on Respect for different cultures and languages.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Introduction to Grammar and Sentence Structure	-Knowledge, understanding, skills and values For the topics referred to.	2	1
Written tests Oral exams Presentation.	Direct method through lecture	Parts of Speech: Nouns, Pronouns, and Articles	-Knowledge, understanding, skills and values For the topics referred to.	2	2

Interviews and questionnaires	Scientific seminars on the topic.				
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Parts of Speech: Verbs and Verb Tenses (Present, Past, Future)	-Knowledge, understanding, skills and values For the topics referred to.	2	3
Written tests Oral exams Presentation. Interviews and questionnaires	The direct method is through lectures and scientific seminars on the topic.	Parts of Speech: Adjectives and Adverbs	-Knowledge, understanding, skills and values For the topics referred to.	2	4
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Parts of Speech: Prepositions and Conjunctions	-Knowledge, understanding, skills and values For the topics referred to.	2	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Sentence Types and Sentence Structure (Simple, Compound, Complex)	-Knowledge, understanding, skills and values For the topics referred to.	2	6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Subject-Verb Agreement and Common Errors	-Knowledge, understanding, skills and values For the topics referred to.	2	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Modals and Auxiliary Verbs (Can, Could, May, Must, etc).	-Knowledge, understanding, skills and values For the topics referred to.	2	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Passive Voice and Active Voice	-Knowledge, understanding, skills and values For the topics referred to.	2	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Direct and Indirect Speech (Reported Speech(	-Knowledge, understanding, skills and values For the topics referred to.	2	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Conditional Sentences (Zero, First, Second, Third)	-Knowledge, understanding, skills and values For the topics referred to.	2	11
Written tests Oral exams Presentation.	Direct method through lecture	Relative Clauses and Defining vs. Non-Defining Clauses	-Knowledge, understanding, skills and values	2	12

Interviews and questionnaires	Scientific seminars on the topic.		For the topics referred to.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Gerunds and Infinitives (Verb Patterns)	-Knowledge, understanding, skills and values For the topics referred to.	2	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Phrasal Verbs and Common Idiomatic Expressions	-Knowledge, understanding, skills and values For the topics referred to.	2	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Common Grammatical Errors and Final Review	-Knowledge, understanding, skills and values . For the topics referred to.	2	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
70%	15%	5%	5%	5%

Learning and teaching resources

	1-Required textbooks
1- English Grammar in Use" by Raymond Murphy (2019). 2- English Vocabulary in Use" by Michael Swan and Catherine Walter (2020). 3- Cambridge Advanced Learner's Dictionary" by Michael Swan and William R. Brookes (2020(. 4- Oxford Advanced Learner's Dictionary" by AS Hornby and AP Cowie (2019). 5- English for Specific Purposes" by John Swales and Christine Feak (2018).	2- Main references (sources)
	3- Recommended books or references (magazines, reports, etc.)
	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

ARABIC LANGUAGE

Lecturer name: Abu Dhar Muhammad Najm

Academic Title : Master

151.Course name
Arabic language
152.Course code
ATU12C
153.semester/year
Second/First Year (2025-2026)
154.Date this description was prepared
22/2/2026
155. Available attendance forms
Theoretical lectures are held in person, in addition to communication with students viaClassroom
156. Number of study hours (total) / Number of units (total)
15 weeks / 2 units
157. Name of the course administrator (if more than one name is mentioned)
Lecturer name: Abu Dhar Muhammad Najm Email: Kin.nad@atu.edu.iq
158. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods)
1.Developing students' Arabic language skills 2. Enhancing the ability to understand and comprehend scientific and technical texts..

3. Improving writing and translation skills in the Arabic language.
4. Developing research and analysis skills in the Arabic language in the field of pharmacy.
5. Improving the ability to express scientific ideas and concepts in the Arabic language..
6Providing students with the Arabic language skills necessary for effective communication in the field of pharmacy.
7. To enhance the ability to analyze and criticize scientific and technical texts in the field of pharmacy.
8. Developing skills to express scientific ideas and concepts in the Arabic language..
9. To improve the ability to work effectively in a multicultural learning environment in the field of pharmacy.
10.Enhancing the ability to continuously learn and update knowledge in the field of pharmacy.
11. Developing and updating the academic curricula scientifically on an annual basis, in line with the curricula of medically advanced countries, by no less than 20%.

159. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

160. Course outcomes

A.1. To be able to developing Arabic language skills for students in the field of pharmaceutical technology.	A. Knowledge and understanding
A.2. To be able to understanding and comprehending scientific and technical texts in the field of pharmacy.	
A.3. To be able to Improving writing and translation skills in Arabic in the field of pharmacy.	
A.4. To be able to developing research and analysis skills in Arabic in the field of pharmacy.	
B.1. Acquire skill in listening and understanding scientific and technical texts.	b. Skills
B.2. Acquire skill in writing and translation in Arabic	
b.3. Acquire skill in research and Analysis in Language Arabic.	
B.4. Acquire skill in skills for expressing scientific ideas and concepts in the language Arabic.	
A.1. Training on Critical and analytical thinking in biological and health data analysis.	C. Values
A.2. Training on accuracy and objectivity in providing information.	
C.3. Training on respect for different cultures and languages.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Introduction to linguistic errors-The closed(ت) and the open (ت)	-Knowledge, understanding, skills and values For the topics referred to.	2	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Rules for writing the extended and shortened alif - solar and lunar letters	-Knowledge, understanding, skills and values For the topics referred to.	2	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	(ض) and (ظ)	-Knowledge, understanding, skills and values For the topics referred to.	2	3
Written tests Oral exams Presentation. Interviews and questionnaires	The direct method is through lectures and scientific seminars on the topic.	Writing (أ)	-Knowledge, understanding, skills and values For the topics referred to.	2	4
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	punctuation marks	-Knowledge, understanding, skills and values For the topics referred to.	2	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Noun, verb, and the difference between them	-Knowledge, understanding, skills and values For the topics referred to.	2	6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Effects	-Knowledge, understanding, skills and values For the topics referred to.	2	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	number	-Knowledge, understanding, skills and values For the topics referred to.	2	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Common language errors applications	-Knowledge, understanding, skills and values For the topics referred to.	2	9
Written tests Oral exams Presentation.	Direct method through lecture	Common language errors applications	-Knowledge, understanding, skills and values For the topics referred to.	2	10

Interviews and questionnaires	Scientific seminars on the topic.				
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Noon and Tanween-Meanings of prepositions	-Knowledge, understanding, skills and values For the topics referred to.	2	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Formal aspects of administrative discourse	-Knowledge, understanding, skills and values For the topics referred to.	2	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	The language of administrative discourse	-Knowledge, understanding, skills and values For the topics referred to.	2	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	The language of administrative discourse	-Knowledge, understanding, skills and values For the topics referred to.	2	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Examples of administrative correspondence	-Knowledge, understanding, skills and values . For the topics referred to.	6 2	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
70%	15%	5%	5%	5%

Learning and teaching resources

General Arabic Language Textbook for Technical Universities, by Dr. Safaa Kazim Makki and Dr. Lama Muhammad Younis	1-Required textbooks
1-'Clear Grammar' by Muhammad Abdullah Al-Najjar (2019) 2-'Arabic for All' by Muhammad Ali Ahmad (2020)	2- Main references (sources)

	3- Recommended books or references (magazines, reports, etc.)
1- 'Reading and Writing' by Ahmed Mohamed El-Hawfi (2018) 2- 'Arabic Texts' by Muhammad Abdullah Al-Najjar (2019) 3- 'The Arabic Language in the Twenty-First Century' by Muhammad Ali Ahmad (2020)	4- Electronic references, Internet sites.

Al-Furat Al-Awsat Technical University

Technical Institute / Kufa

Department of Pharmacy Technology

Course Description for the Academic Year 2025-2026

PHARMACEUTICS

Lecturer name: MSc. Mohammad Kamil Abbod

Academic Title: Master

161.Course name
Pharmaceutics
162.Course code
PHT211-50-C
163.semester/year
First/Second Year (2025-2026)
164.Date this description was prepared
22/2/2026
165. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
166. Number of study hours (total) / Number of units (total)
15 weeks / 5 units
167. Name of the course administrator (if more than one name is mentioned)
Lecturer name :MSc. Mohamed Kamel Aboud Email: alizahraamuslim@gmail.com
168. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods)
1. Understand the principles of pharmaceutical dosage form design. 2. Enhance the ability to prepare and analyze pure pharmaceutical substance in dosage form.

3. Develop analytical and critical thinking skills in the field of pharmacology.
4. Study the relationship between the active ingredient and other additives in pharmaceutical dosage forms.
5.Understanding the principles of pharmaceutical preparation of syrup.and capsulesPills and suppositories.
6.Learn methods of chemical and biological analysis of pharmaceutical dosage forms.
7. Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
8. Allocating scientific visits to government and private health centers and hospitals.
9. Use of modern laboratory equipment and educational screens.
10. Directing graduation research in an applied manner to solve societal problems.

169. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

170. Course outcomes

A.1. To be able to apply knowledge in the basics of pharmacology.	A. Knowledge and understanding
A.2. To be able to understand the compatibility between the active ingredient and the additives of medicines.	
A.3. To be able to know how to prepare different pharmaceutical formulas.	
A.4. To be able to understand the pharmaceutical form of medications and how to administer them.	
B.1. Acquire skill in methods of preparation and formulation of pharmaceutical materials.	b. Skills
B.2. Acquire skill inDesign of pharmaceutical dosage forms.	
B.3. Acquire the skill to maintain the stability of pharmaceutical compounds.	
B.4. Acquire the skill of dividing and using doses and times for patients.	
A.1. Training on how to handle medications.	C. Values
A.2. Training on basic drug formulations.	
A.3. Contributing to and improving health care.	

11. Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Introduction, Medical prescription Definition, parts of prescription Practical: Weights & Volumes used in the pharmacy Lab. The measuring containers used in the laboratory	- Knowledge, understanding, skills and values Introduction to the definition of a prescription and its parts. Weights and volumes in the pharmacy laboratory.	5	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Solutions, definition, benefit of solutions Dissolution, Stability, Coloring and flavoring Practical: Isotonic Solution of Sodium chloride glucose Saline Solution	- Knowledge, understanding, skills and values Definition of solutions and the benefits of diluting solutions, stability, color and flavor Preparation of isotonic solutions	5	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Ointments and GEL, definition, using, benefit, Methods of preparation, types, classification according to the method of preparation Practical: Strong Solution of Iodine, Weak Solution of Iodine, Aqueous Iodine Solution, Solution of Balsam of toluene, Simple ointment, Paraffin ointment	-Knowledge, understanding, skills and values Ointments and gels, definition, uses and benefits, methods of preparation, types and classification according to the methods of preparation. to prepare: Strong iodine solution Weak iodine solution Aqueous iodine solution Toluene solution - Simple ointment Paraffin ointment	5	3 & 4
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Eye ointment, types with examples Practical: Ointment of wool alcohol, hydrous ointment	-Knowledge, understanding, skills and values Eye ointment, types with examples. Alcohol wool ointment - Water ointment (water ointment)	5	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Suppositories, definition, using, benefit, examples Practical: Zinc & castor oil ointment, Salicylic acid ointment	-Knowledge, understanding, skills and values Definition of suppositories, uses and benefits with examples. to prepareZinc and castor oil ointment	5	6

			Salicylic acid ointment		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Suppository bases, types, displacement value, examples with Calculation Practical: Boric acid ointment, hydrocortison ointment, Rose water ointment, Hydro cortisone eye ointment, Sulfa – Cetamide eye ointment	-Knowledge, understanding, skills and values The basic material for suppositories, their types, and displacement value, with examples and applications. to prepare: Boric acid ointment Hydrocortisone ointment Rose water ointment Hydrocortisone eye ointment Sulfacetamide eye ointment	5	7 & 8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Classification of Suppositories , types , uses , Method of preparation , Lubrication of the mold Practical: Suppositories, (Tannic acid, Resorcinol & Zinc oxide) Suppository	-Knowledge, understanding, skills and values Classification of suppositories, their types, uses, preparation methods, and lubrication of molds to prepare: Modified tablets (tannic acid, resorcinol, and zinc oxide)	5	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Capsules, definition, types, therapeutic uses Practical: Chloral hydrate Suppository, phenol sup, Glycerine Suppository BP, gelato – glycerine Supp. BP	-Knowledge, understanding, skills and values Definition of capsule, its types and medical uses Preparing suppositories Modi chloral hydrate tablet - Modi phenol disc Moody Glycerin Tablet (British) Moody Gelato-Glycerin Disc (British)	5	10 & 11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Medical tablets , types , Methods of preparation , granulation & granulating agent , Binders , disintegrating agent Coloring & flavoring agents , examples Practical: Capsules, parts of capsules, Method of preparation, (Demonstration), Medical tablets, Method of	-Knowledge, understanding, skills and values Medicinal pills, their types, preparation methods, agglomeration and agglomerating agents, binding agents and disintegrating agents. Potassium bromide tablets Aspirin pills	5	12 & 13

		preparation of pot. Bromide, Aspirin, flavored soda. Bicarbonate as Lozenges	- Bicarbonate of soda tablets such as lemon tablets		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Standardization of medical tablets Practical: Tinctures, Belladonna tinture, concentrated camphor tinture	-Knowledge, understanding, skills and values Medical grain standards, to prepare: Belladonna alcohol Concentrated camphor alcohol	5	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Tinctures, definition, uses, classification with examples Practical: Examination	-Knowledge, understanding, skills and values Alcohols (tannins)With classification and examples	5	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

1- Pharmaceutical calculations 13th edition, Howard C. Ansel., (2017). 2Introduction to pharmaceutical Calculations 4th Edition, Judith A Rees, Ian Smith and Jennie Watson, (2015). 3-"Textbook of Pharmaceutical Formulation" by Aulton, ME (2013). 4-Formulation of Pharmaceutical Dosage Forms" by Banker, G.S. (2015).	1-Required textbooks
1- Pharmaceutical Formulation: A Review" by Kumar, A. et al. (2020) - Journal of Pharmaceutical Sciences 2- Formulation of Solid Dosage Forms" by Patel, R. et al. (2019) - Journal of Pharmacy and Pharmacology	2- Main references (sources)

3- Pharmaceutical Formulation: Challenges and Opportunities' by Singh, S. et al. (2018) - Journal of Pharmaceutical Research	
https://www.nature.com/articles/131895e0 https://pmc.ncbi.nlm.nih.gov/articles/PMC1637007/	3- Recommended books or references (magazines, reports, etc.)
	4- Electronic references, Internet sites.

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Department of Pharmacy Technology

Course Description for the Academic Year 2025-2026

INDUSTRIAL PRINCIPLES

Lecturer name: Dr. Ahmed Hassan Khdair

Academic Title: PhD

171.Course name
Industrial Principles
172.Course code
PHT212-50-C
173.semester/year
First/Second Year (2025-2026)
174.Date this description was prepared
22/2/2026
175. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
176. Number of study hours (total) / Number of units (total)
15 weeks / 5 units
177. Name of the course administrator (if more than one name is mentioned)
Lecturer name : Dr. Ahmed Hassan Khdair Email: Ahmedhasaan@imu.edu.iq
178. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.
1.Understanding the Pharmaceutical Industry: Understanding the fundamentals and processes used in the pharmaceutical industry.

2. Working in pharmaceutical laboratories: Learn the techniques and methods used in pharmaceutical laboratories.
3. Medication Handling: Understanding how to handle medications safely and effectively.
4. Diverse Industries: Learn how to manufacture different types of Pills, capsules, ointments, cream, etc.
5. Enhance the ability to prepare and analyze pure pharmaceutical substance in dosage form.
6. Develop analytical and critical thinking skills in the field of industrial pharmacy.
7. Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
8. Allocating scientific visits to private and governmental pharmaceutical centers and laboratories.
9. Use of modern laboratory equipment and educational screens.
10. Directing graduation research in an applied manner to solve societal problems.

179. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

180. Course outcomes

A.1. To be able to apply knowledge in the basics of industrial pharmacy.	A. Knowledge and understanding
A.2. To be able to Understand the principles and fundamentals of the pharmaceutical industry.	
A.3. To be able toLearn about the processes and technologies used in the pharmaceutical industry.	
A.4. To be able to Identify the materials and products used in the pharmaceutical industry..	
B.1. Acquire skill in methods of preparation and formulation of pharmaceutical materials.	b. Skills
B.2. Acquire skill in design of pharmaceutical dosage forms.	
b.3. Acquire skill in how to handle medications safely and effectively.	
B.4. Acquire skill in how to handle equipment and machinery used in pharmaceutical industries.	
A.1. Training on how to handle medications.	C. Values
A.2. Preparing qualified graduates to work in the pharmaceutical industries.	
A.3. To contribute to improving public health by providing safe and effective medicines and pharmaceutical preparations.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Definition, development processes. Practical compounding, packaging, pharmaceutical department. Practical: Industrial pharmacy Definition and department industrial pharmacy, size reduction.	- Knowledge, understanding, skills and values Introduction and definition of the principles of pharmacy and pharmaceutical industry and Development, manufacturing and analysis processes if Practical applications such as size reduction, pharmaceutical manufacturing and pharmaceutical analysis.	5	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Introduction to pharmaceutical processes, large scale production, accuracy, economy Reasons behind large scale production. Size reduction, units of pharmaceutical industry, heat transfer, mass transfer. Practical: Classification of mills and crushers.	- Knowledge, understanding, skills and values Introduction to Pharmaceutical Operations Pharmaceutical processes involve large-scale production, precision, and economy, where size reduction plays a significant role. Pharmaceutical industrial units include heat conversion, mass transfer, and the practical classification of mills and crushers.	5	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Particle size, definition particle size- distribution and analysis. Practical: Classification of mills and crushers.	-Knowledge, understanding, skills and values Particle size is an important parameter in the pharmaceutical industry, indicating the size distribution and actual size of the particles. Practical classification of mills and crushers helps determine the required particle size.	5	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture	Size reduction, energy needed for Size reduction, methods of Size reduction. Practical: Size separation.	-Knowledge, understanding, skills and values Explains the importance of downsizing in the pharmaceutical industry	5	4

	Scientific seminars on the topic.		and its various methods, and highlights The importance of applying size separation to achieve accurate results.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Sieving-mechanical sieving. Practical: Extraction.	-Knowledge, understanding, skills and values ExplainsScreening and extraction processes in the pharmaceutical industry. Screening is the process of separating particles by size, while extraction is the process of separating components based on chemical or physical properties.	5	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Mixing- types of mixing. Practical: Definition, methods of extraction.	-Knowledge, understanding, skills and values ExplainsThe mixing process in the pharmaceutical industry, including different types of mixing. It also explains the extraction process and various methods for separating components using solvents.	5	6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Types of mixtures Practical: Drying.	-Knowledge, understanding, skills and values Mixing types include:Types of...BitesDifferent such as uniform and non-uniform mixtures.dryingit is the process of removing moisture from materials, and is used in the pharmaceutical industry to improve stability and quality.	5	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Liquid and powder mixing, powder presentation. Practical: Evaporation.	-Knowledge, understanding, skills and values Liquid and powder mixing and powder dispensing techniques are discussed. It also explains the evaporation process and its importance in the pharmaceutical industry for	5	8

			preparing solutions and creams.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Mechanical power mixing. Practical: Mixing.	-Knowledge, understanding, skills and values Mechanical mixing involves the use of mechanical equipment to mix materials. Practical mixing involves the application of various mixing techniques in a laboratory or factory to prepare pharmaceutical products.	5	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Semisolid mixing Practical: Tablet dosage form.	-Knowledge, understanding, skills and values Semi-solid mixing involves mixing semi-solid materials such as creams and lotions. Pill dosage form preparation involves preparing pharmaceutical tablets by pressing, mixing, and shaping to achieve the desired shape and composition.	5	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Equipments used in mixing and their uses Practical: Tablet dosage form.	-Knowledge, understanding, skills and values Equipment used in mixing includes mechanical mixers, static mixers, and pneumatic mixers. These equipments are used to mix pharmaceutical materials to prepare various dosage forms, such as tablets, capsules, and creams.	5	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Evaporation, factors affecting on evaporation. Practical: Evaluation of tablets.	-Knowledge, understanding, skills and values It covers topics related to the pharmaceutical industry, such as mixing techniques, evaporation, and dosage form evaluation. It also includes details on the equipment used in mixing and the effect of various factors on	5	12

			evaporation.alsoit aims to provide general information about pharmaceutical operations.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Filtration, properties and factors affecting filtration Practical: Dissolution rate	-Knowledge, understanding, skills and values The concept of filtration in the pharmaceutical industry, including the characteristics and factors affecting the filtration process, also covers the topic of dissolution rate and its importance in determining drug efficacy.	5	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Extraction, theory of extraction, methods of extraction. Drying for liquids, suspension, solid materials. Practical: Dissolution rate	-Knowledge, understanding, skills and values Concepts of extraction and dehydration in the pharmaceutical industry, including extraction theory, different extraction methods, and dehydration to improve the quality of pharmaceutical materials	5	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Solid dosage forms, steps of manufacturing tablets by single and multi-punches Machine. Practical: Disintegration rate.	-Knowledge, understanding, skills and values The steps involved in manufacturing solid dosage forms, such as tablets and pills, using single- and multiple-dip machines. It also covers the topic of disintegration rate and its importance in determining drug efficacy.	5	15

Course Evaluation				
The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.				
Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources	
1- 1- Industrial Pharmacy, Roop k. khar, s.p. vyas, Farhan j. Ahmed, Gaurav jain. (1986).	1-Required textbooks

2-Pharmaceutical Manufacturing Handbook' by James Swarbrick (2017(. 3-'Industrial Pharmaceutical Technology' by John Staniforth (2016).	
1. Journal of Pharmaceutical Sciences (ISSN: 0022-3549, published since 1912) 2. International Journal of Pharmaceutics (ISSN: 0378-5173, published since, (1978) 3. Journal of Pharmacy and Pharmacology (ISSN: 0022-3575, published since. (1927)	2- Main references (sources)
	3- Recommended books or references (magazines, reports, etc.)
	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

PRINCIPLES OF PHARMACEUTICAL CHEMISTRY

Lecturer name: Ali Jain Saker

Academic Title: Master

181.Course name
Principles of Pharmaceutical Chemistry
182.Course code
PHT213-50-C
183.semester/year
First/Second Year (2024-2025)
184.Date this description was prepared
22/2/2026
185. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
186. Number of study hours (total) / Number of units (total)
15 weeks / 5 units
187. Name of the course administrator (if more than one name is mentioned)
Lecturer name : Ali Jain Saker Email: alialhussainy1991@gmail.com
188. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.

1.RecognitionOn the chemical compositions of drugs.
2. Identify the functional groups effective in pharmaceutical treatments.
3. Identify groups that have therapeutic toxicity and seek to reduce their toxicity by replacing or adding groups.
4.Enhancing the ability to prepare new pharmaceutical derivatives from raw materials and their identification using modern methods.
6Using advanced technology in analysis and preparation. In the field of pharmaceutical chemistry.
7.Understanding the chemical interactions of drugs with the body.
8Continuous development of methods and techniques used in pharmaceutical chemistry.
9. Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
10. Allocating scientific visits to private and governmental pharmaceutical centers and laboratories.
11. Use of modern laboratory equipment and educational screens.
12. Directing graduation research and experimental studies in an applied manner to solve societal problems.

189. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

190. Course outcomes

A.1. To be able to apply knowledge in the basics of pharmaceutical chemistry.	A. Knowledge and understanding
A.2. To be able to Understanding the chemical structures of drugs.	
A.3. To be able to understand the relationship between chemical structure and biological activity.	
A.4. To be able to understand the mechanisms of chemical reactions.	
B.1. Acquire skill in methods of preparation and formulation of pharmaceutical materials.	b. Skills
B.2. Acquire skill in design development and diagnosis of pharmaceutical treatments.	
b.3. Acquire skill in how to use of chemical equipment.	
B.4. Acquire skill in how to interpretation of chemical results.	
A.1. Training on how to prepare pharmaceutical treatments accurately.	C. Values
A.2. Preparing qualified graduates to work in pharmaceutical laboratories and factories.	

A.3. To contribute to improving public health by providing safe and effective medicines and pharmaceutical preparations.					
Course structure					
Evaluation method	**Learning method**	**Name of unit or topic**	**Required learning outcomes**	**Hrs.**	**week**
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Definitions: introduction of inorganic pharmacopoeia, organic pharmacopoeia Practical: Solution, preparation of solution percentage, parts-per million, Dilution and concentration	- Knowledge, understanding, skills and values Pharmacopoeia definitions and their practical applications in solution preparation and concentration. This includes preparing solutions by percentage, parts per million, dilution, and concentration.	5	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Physico-chemical properties and biological activity of human body Practical: Normality, Milli equivalent.	- Knowledge, understanding, skills and values Explains the physicochemical properties and biological activity of the human body. This includes practical applications of standardization and parabolic inclination.	5	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Study of the physico-chemical properties and the pharmacological activity of Analgesic Agents Practical: Analgesic Agents	-Knowledge, understanding, skills and values Study of the physicochemical properties and pharmacological activity of painkillers. 1Preparation and analysis of pain suppressants. 2. Study the physicochemical properties of painkillers. 3. Study of the pharmacological activity of pain inhibitors.	5	3 & 4
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Sedative-Hypnotics drugs Practical: Sedative-hypnotics drugs	-Knowledge, understanding, skills and values Study of sedative-hypnotic drugs and their practical applications. Practical applications:	5	5 & 6

			1. Preparation and analysis of sedative-hypnotic drugs. 2. Study the physicochemical properties of these drugs. 3. Study the pharmacological activity of these drugs.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Cholinergic and Antispasmodics, Antiepileptic drugs Practical: Cholinergics and Antispasmodics, Antiepileptic drugs	-Knowledge, understanding, skills and values The study of cholinergic, anticonvulsant, and antiepileptic drugs. Practical applications include the preparation, analysis, and characterization of these drugs.	5	7 & 8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Central nervous system stimulants Practical: Tranquilizing Agents, Anticonvulsant drugs Analeptics, purines, cholinergic agents	-Knowledge, understanding, skills and values Study of central nervous system stimulants and their practical applications. Practical applications include sedatives, anticonvulsants, stimulants, and cholinergic drugs.	5	9 & 10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Cardiovascular Agents Practical: Cardiovascular Agents, Antihypertensive Agents Anti hyper cholesteric drugs	-Knowledge, understanding, skills and values Study of cardiovascular drugs and their practical applications. Practical applications include antihypertensive and anti-cholesterol drugs.	5	11 & 12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Anti-infective Agents Practical: Anti- infective Agents Antibacterial Agents, Antiprotozoal agents, Ant tubercular agents, Antifungal Agents	-Knowledge, understanding, skills and values The study of anti-infective drugs and their practical applications. Practical applications include antibacterial, antiparasitic, anti-whooping cough, and antifungal drugs.	5	13 & 14
Written tests Oral exams Presentation.	Direct method through lecture	Local and Topical drugs Antifungal, Antibacterial	-Knowledge, understanding, skills and values The study of topical and skin-based medications and	5	15

Interviews and questionnaires	Scientific seminars on the topic.	Practical: Antiscabious and Antipedicular agents Anthelmintic	their practical applications. Practical applications include antifungal, antibacterial, anti-lice, anti-flea, and anti-parasitic worm medications.		

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

	1-Required textbooks
1- Essentials of Pharmaceutical Chemistry, Donald Cairns, Pharmaceutical Presss, (2008). 2- Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry, John M. Beale, John Block, 12th Edition, (2011). 3-Pharmaceutical and medicinal chemistry, David G Watson, Churchill Livingstone, (2011).	2- Main references (sources)
1- Medicinal Chemistry Research (MCR) 2-Current Medicinal Chemistry (CMC) -3Pharmaceutical Research (PR) 4- Journal of Medicinal Chemistry Letters (JMCL)	3- Recommended books or references (magazines, reports, etc.)
	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

PRINCIPLES OF DRUGS

Lecturer name: Dr. Lafta Fayez Kadhim

Academic Title: PhD

191.Course name
Principles of drugs
192.Course code
PHT214-50-C
193.semester/year
First/Second Year (2025-2026)
194.Date this description was prepared
22/2/2026
195. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
196. Number of study hours (total) / Number of units (total)
15 weeks / 5 units
197. Name of the course administrator (if more than one name is mentioned)
Lecturer name :Dr. Lafta Fayez Kadhim Email: sajad.lstta@gmail.com
198. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.
1.acquisitionA comprehensive understanding of the fundamentals of pharmacology and pharmacokinetics, including basic concepts and research methods. 2. Analyze how the drug works in the body, including the mechanism of action and drug interactions.

3. Study effects pharmacokinetics and side effects of drugs.
4. Understand how medicines are used to treat diseases, including their mechanism of action and clinical uses.
5. Analyzing the mechanism of action of drugs in the body, including biochemical and biophysical effects.
6.acquisitionComprehensive knowledge of the pharmacological uses of medications, including clinical guidelines and therapeutic directions.
7. Understanding effects side effects and warnings, including potential adverse effects and drug interactions.
8. Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
9. Allocating scientific visits to private and governmental pharmaceutical centers and laboratories.
10. Use of modern laboratory equipment and educational screens.
11. Directing graduation research and experimental studies in an applied manner to solve societal problems.

199. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

200. Course outcomes

A.1. To be able to understand the basic concepts of pharmacology.	A. Knowledge and understanding
A.2. To be able to understanding how the drug works in the body.	
A.3. To be able to perception effects pharmacokinetics and side effects of drugs.	
A.4. To be able to understand pharmaceutical uses of drugs.	
B.1. Acquire skill in analyzing how a drug works in the body.	b. Skills
B.2. Acquire skill in analysis of drug interactions and side effects.	
b.3. Acquire skill in pharmacokinetic data analysis and interpretation.	
B.4. Acquire skill in identify solutions to pharmaceutical issues.	
A.1. Training on how to information analysis and evaluation.	C. Values
A.2. Evaluation of drug efficacy and safety.	
A.3. To contribute to improving public health by providing safe and effective medicines and pharmaceutical preparations.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	General aspects of pharmacology , General definitions -Drug- Dose. Methods & drugs administration , Classification and naming & drugs Practical: Route of drug administration - oral route -I/V, I/M, I/P, SC	- Knowledge, understanding, skills and values General aspects of pharmacology General Definitions - Medication - Dosage Methods of giving medications classificationAnd namingpharmaceutical	5	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Pharmacodynamics:- Drug – receptor interaction Pharmacokinetic:- Absorption – Distribution – Metabolism Excretion Practical: Discussion Seminars.	- Knowledge, understanding, skills and values DynamicAndPharmaceutical Drug interactions with receptors Pharmacokinetics Absorption - Distribution - Metabolism - ExcretionFor medicines	5	2 & 3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drugs acting on autonomic N.system Neurotransmitters and their receptors cholinergic drugs Cholinergic blocking agents: Ganglionic blocking agent Neuromuscular blocking agent Practical: Absorption and excretion of drugs (Iodine and Salicylate) Discussions	-Knowledge, understanding, skills and values Drugs that act on the autonomic nervous system Neurotransmitters and their receptors Cholinergic drugs Cholevin nerve blockers Ganglion blockers neuromuscular blockers	5	4 & 5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Adrenegic drugs Adrenergic blocking agents:- blocking agent blocking agent Practical: Seminars	-Knowledge, understanding, skills and values Adrenergic drugs Adrenergic blockers alpha-adrenergic receptor blockers Beta-adrenergic receptor blockers	5	6

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drugs acting on central nervous system Depression of CNS:- Benzodiazepines-Barbituate Hypnotics-alcohol Practical: Drugs antagonism Morphine and Nalorphine Curare – Physostigmine	-Knowledge, understanding, skills and values Drugs that act on the central nervous system central nervous system depressants benzadiazepine - barbutorate Sleeping pills - alcohol	5	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Analgesics:- a)Narcotic or opioid analgesic b)Non-steroidal anti-inflammatory, antipyretic analgesics Practical: Discussions	-Knowledge, understanding, skills and values Painkillers A-narcotic analgesics for-Nonsteroidal anti-inflammatory and antipyretic analgesics	5	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	CNS stimulants Practical: Seminars	-Knowledge, understanding, skills and values central nervous system stimulants	5	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Anesthetics:-General anesthesia Local anesthesia Practical: Effects of parasympathetic Drug on glandular secretions	-Knowledge, understanding, skills and values Anesthesia medications General anesthesia medications local anesthetics	5	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drugs acting on Respiratory system:- Expectorants- Antitussives-Bronchodilators Practical: Discussions	-Knowledge, understanding, skills and values Medicines that act on the respiratory system expectorants bronchodilators	5	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drugs acting on gastrointestinal tract:- Antacids- Antidiarrheal- cathartics and laxatives-Antiemetic	-Knowledge, understanding, skills and values Drugs that act on the gastrointestinal tract Antacids - Antidiarrheals	5	12

		Practical: Seminars	Laxatives - Antiemetics		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drugs acting on urinary system Diuretic drugs Classification-Mechanisms of action Practical: Evaluation of analgesics	-Knowledge, understanding, skills and values Drugs that act on the urinary system Diuretics Classification - How it works	5	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drugs used in cardiovascular system:- -Cardiac glycosides: Digitalis -Antiarrhythmic drugs -Anti-anginal drugs Practical: Discussion	-Knowledge, understanding, skills and values Drugs used in the cardiovascular system Cardiac closides - digbals Cardiovascular inhibitors Antianginal drugs	5	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Antihypertensive drugs vasodilators -Drugs that affect hemostasis -anticonvulsant Practical: Seminars	-Knowledge, understanding, skills and values blood pressure lowering agents Vasodilators Drugs affecting pulmonary balance anticoagulants	5	15

Course Evaluation				
The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.				
Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources	
	1-Required textbooks
1- Introduction to Clinical Pharmacology, Edmunds MW, (2005). 2- Basic & Clinical Pharmacology, BertramKatzung, LANGE Basic Science. (2006). 3- Introduction in Clinical Pharmacology, Sally S. Roach, Lippincott Williams & Wilkins, 7th edition, (2003).	2- Main references (sources)

1- Molecular Pharmacology (MP) 2-Journal of Pharmacological Sciences (JPS) -3Pharmacological Research (PR) 4-European Journal of Clinical Pharmacology (EJCP) 5-Clinical Pharmacology and Therapeutics (CPT)	3- Recommended books or references (magazines, reports, etc.)
	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

BASICS OF THERAPEUTIC APPLICATIONS

Lecturer name: Assist. Prof.Dr. Nawal Abed Hashim

Academic Title: PhD.

201.Course name
Basics of therapeutic applications
202.Course code
PHT215-50-C
203.semester/year
First/Second Year (2025-2026)
204.Date this description was prepared
22/2/2026
205. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
206. Number of study hours (total) / Number of units (total)
15 weeks /4Units
207. Name of the course administrator (if more than one name is mentioned)
Lecturer name: Assist. Prof.Dr. Nawal Abed Hashim Email: alhamdinawal@gmail.com
208. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.

1. Linking theoretical and scientific concepts to practical applications in various healthcare settings, including hospitals, factories, and private pharmacies, to enhance a comprehensive understanding of therapeutic applications.
2. Understanding the principles of using medications according for trade names, including drug nomenclature, drug classification, and drug interactions, to enhance efficiency in pharmaceutical practice.
3.acquisitionComprehensive knowledge of packaging, registration, ordering, and storage methods for medicines, including pharmaceutical procedures and regulations, to ensure quality and drug safety.
4. Understand storage conditions, expiration dates, and handling of expired medications, including pharmaceutical procedures and regulations, to ensure quality and drug safety.
5. Learn to write information about medication packaging, including medication directions and medication warnings, to promote effective communication between doctors, patients, and pharmacists.
6. Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
7. Allocating scientific visits to private and governmental pharmaceutical centers and laboratories.
8. Use of modern laboratory equipment and educational screens.
9. Directing graduation research and experimental studies in an applied manner to solve societal problems.

209. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

210. Course outcomes

A.1. To be able to know the theoretical and scientific concepts of therapeutic applications.	A. Knowledge and understanding
A.2. To be able to understanding the principles of using medications according to brand names.	
A.3. Acquisition comprehensive knowledge of methods for filling, registering, ordering, and storing medicines..	
A.4.Understand storage conditions, expiration dates, and handling of expired medications.	
B.1. Acquire the skill to determine specific medications for medical conditions.	b. Skills
B.2. Acquire the skill to control the doses of drugs used in therapeutic applications.	

b.3. Acquire skill inHow to apply information writing skills about pharmaceutical packaging.	
B.4. Acquire skill in identify solutions to pharmaceutical issues.	
A.1. Training on Collaborative skills in working with doctors, patients, and pharmacists.	C. Values
A.2. Evaluation of drug efficacy and safety.	
A.3. To contribute to improving public health by providing safe and effective medicines and pharmaceutical preparations.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drugs affecting gastrointestinal system, antacid, carminative, emetics and antiemetic, laxative and antidiarrheal drugs.	- Knowledge, understanding, skills and values Medications that affect the digestive system include antacids, emetics, laxatives, and antidiarrheals. These medications play an important role in the treatment of digestive diseases and require a thorough understanding of their mechanisms of action and side effects.	4	1-3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Visit to private or official pharmacy, report about the present drugs	- Knowledge, understanding, skills and values Report of a visit to a private pharmacy.	4	4
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drugs affecting urinary tract system, diuretic, natural enuresis.	-Knowledge, understanding, skills and values Medications that affect the urinary system include diuretics and physiotherapy medications for bedwetting, which improve bladder function and increase urine production. These drugs play an important role in the treatment of urinary tract diseases and require a thorough understanding of	4	5 & 6

			their mechanisms of action and side effects.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Visit to library of institute with report about diuretics	-Knowledge, understanding, skills and values Report of a visit to the Institute's library the introduction	4	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drugs affecting cardiovascular system, antianginal drugs, antihypertensive and hypotensive drugs, vasodilator and vasoconstrictor drugs	-Knowledge, understanding, skills and values ADrugs that affect the cardiovascular system include antianginal, antihypertensive, antihypertensive, vasodilating, and vasoconstricting drugs. These drugs play an important role in the treatment of cardiovascular diseases and require a deep understanding of their mechanisms of action and side effects.	4	8-10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Searching the medical sites in the internet	-Knowledge, understanding, skills and values Example of how to search medical websites on the Internet.	4	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drugs affecting the respiratory system, blockers, bronchodilators, respiratory stimulants and anticonvulsants.	-Knowledge, understanding, skills and values Drugs that affect the respiratory system include antimuscarinics, bronchodilators, respiratory stimulants, and anticonvulsants. These drugs play an important role in the treatment of respiratory diseases and require a deep understanding of their mechanisms of action and side effects.	4	12-15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources	
	1-Required textbooks
1- Introduction to Clinical Pharmacology, Edmunds MW, (2005). 2- Basic & Clinical Pharmacology, BertramKatzung, LANGE Basic Science. (2006). 3- Introduction in Clinical Pharmacology, Sally S. Roach, Lippincott Williams & Wilkins, 7th edition, (2003).	2- Main references (sources)
1- Molecular Pharmacology (MP) 2-Journal of Pharmacological Sciences (JPS) -3Pharmacological Research (PR) 4-European Journal of Clinical Pharmacology (EJCP) 5-Clinical Pharmacology and Therapeutics (CPT)	3- Recommended books or references (magazines, reports, etc.)
	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

MEDICAL PLANTS AND NATURAL PRODUCTS

Lecturer name: Assist. Prof. Makarm Hashim Mohammed

Academic Title: Master

211.Course name
Medicinal plants and natural products
212.Course code
PHT216-50-C
213.semester/year
First/Second Year (2025-2026)
214.Date this description was prepared
22/2/2026
215. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
216. Number of study hours (total) / Number of units (total)
15 weeks /4Units
217. Name of the course administrator (if more than one name is mentioned)
Lecturer Name: Assist. Prof. Dr. Nawal Abed Hashim Email: alhamdinawal@gmail.com
218. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.
1Identify the different groups of crude drugs: Distinguish crude drugs according to their sources, such as plants, animals, and minerals.

2. Identification of active ingredients: Identification of the active ingredients in crude drugs, such as alkaloids, glycosides, and essential oils.
3. Preparation Methods: Understand the methods of preparing raw drugs, such as distillation, extraction, and drying.
4. Uses: Understanding the uses of raw drugs in treatment, such as treating various diseases.
5. Medicinal Plant Categories: Understanding medicinal plant categories, such as anti-inflammatory plants, antibacterial plants.
6. Active ingredients: Identify the active ingredients in medicinal plants.
7. Extraction Methods: Understanding the methods of extracting active ingredients from medicinal plants.
8. Side Effects and Toxicity: Understanding the side effects and toxicity of medicinal plants.
9. Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
10. Use of modern laboratory equipment and educational screens.
11. Directing graduation research and experimental studies in an applied manner to solve societal problems.

219. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

220. Course outcomes

A.1. To be able to knowledge of theoretical and scientific concepts for medicinal plants and natural products.	A. Knowledge and understanding
A.2. To be able on the identification of different raw drugs.	
A.3. To be able to understanding active ingredients and preparation methods.	
A.4. Ability to use raw drugs in treatment	
B.1. Acquire skill in analysis of information on raw drugs and medicinal plants.	b. Skills
B.2. Acquire skill in classification of raw drugs and medicinal plants according to their sources and active ingredients.	
b.3. Acquire skill in Application of information about raw drugs and medicinal plants in treatment.	
B.4. Acquire skill in Evaluation of side effects and toxicity of crude drugs and medicinal plants.	
A.1. Training on Understand the scientific concepts underlying raw drugs and medicinal plants.	C. Values

A.2. Training to understand the economic value of raw drugs and medicinal plants in the pharmaceutical and medical industries.
A.3. Training on Understanding the health benefits of raw drugs and medicinal plants in prevention and treatment.

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Introduction and definition of pharmacognosy. Practical: Microscope:	- Knowledge, understanding, skills and values Introduction and definition of crude drugsAnd its history The practical part aims to teach students how to use a microscope to study the fine structures of plants and animals.	4	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Collection and preparation of medicinal plants, methods of collection, drying and Methods of drying, storage and conditions of storage. Practical: Microscopic evaluation of drugs	- Knowledge, understanding, skills and values Covers methods of collecting and preparing medicinal plants, including methods of collection, drying, and storage. These concepts are applied practically through the microscopic evaluation of drugs.	4	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Classification of medicinal plants: .1 Chemical classification 2. Biological classification .3 Alpha-beta classification 4. Pharmacological classification 5.Taxonomical classification Practical: Plant cell	-Knowledge, understanding, skills and values It covers the classification of medicinal plants using various methods, including chemical, biological, alpha-beta, pharmacological, and taxonomic classification.	4	3

			These concepts are applied practically through the study of the plant cell.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Evaluation of medicinal plants which includes: 1.Physical evaluation 2.Chemical evaluation 3. Pharmacological evaluation 4. Sensory evaluation 5. Microscopic evaluation 6. Chromatography Practical: cell contents	-Knowledge, understanding, skills and values This topic covers the evaluation of medicinal plants using various methods, including physical, chemical, pharmaceutical, sensory, microscopic, and chromatographic evaluation. Practically:Cell content study	4	4
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Carbohydrates and drugs containing carbohydrates. a. Introduction about the medicinal plants which contain carbohydrates. b. Classification of carbohydrates. c. Synthesis of carbohydrates in plants. d. Medicinal plants which contain carbohydrates and their medical uses. e. Preparation, purification and isolation of carbohydrates from the plants. f. Mucilage and gums Practical: Calcium oxalate crystals: a. Their shapes. b. Microscopic study for calcium oxalate crystals:	-Knowledge, understanding, skills and values Carbohydrates and medicines containing carbohydrates, including carbohydrate classification in plants, medicinal plants containing carbohydrates and their medicinal uses. Practically:Study of calcium oxalate crystals and their components	4	5-7

		c. Chemo microscopic tests for calcium oxalate crystals.			
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	The glycosides and the plant containing glycosides. a. Definition of glycosides. b. Extraction, isolation and purification of glycosides. c. Classification of glycosides. d. Examples for drugs belong to each class of glycosides and their medical uses. Practical: Tissues sclerenchyma. a. Microscopic study for fibres. b. Microscopic study for stone cells. The vessels. a. Microscopic study of vessels.	-Knowledge, understanding, skills and values Glycosides and plants containing glycosides, including definition of glycosides, their extraction, isolation, purification, classification, examples of drugs belonging to each glycoside class and their medicinal uses. practically:The study of plant tissues, such as fibers, stone cells, and blood vessels	4	8-10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Tannins: a. Definition of tannins. b. Their properties. c. Classification of tannins. d. Examples for drugs belong to each class of tannins. e. The general and medical uses of tannins. Practical: Carbohydrates: a. General test for carbohydrates. b. Tests for reducing sugars.	-Knowledge, understanding, skills and values Tannins, including their definition, properties, classification, examples of medicines belonging to each tannin class, and their medical and general uses. practically: Conducting chemical tests to analyze carbohydrates, such as the general carbohydrate test, the reducing sugars test, and the test to distinguish between	4	11

		c. Tests for distinguishing between monosaccharides and disaccharides. d. Tests for distinguishing between ketone and aldehyde.	monosaccharides and disaccharides.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Lipids: a. Definition of lipids. b. Types of lipids. c. Comparison between fats, fixed oils and waxes. d. Methods of preparation and isolation of lipids e. Example for each type of lipids and their pharmaceutical and medical uses Practical: Hydrolysis of sucrose and starch. Hydrolysis of cellulose.	-Knowledge, understanding, skills and values Lipids, including their definition, types, comparison between fats, fixed oils, and waxes, methods of their preparation and isolation, examples of each type of lipid, and their pharmaceutical and medical uses. practically:Hydrolysis experiments on sucrose, starch and cellulose.	4	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Resins and balsams: a. Definition of resins and balsams. b. Plants containing resins and balsams. Practical: Methods of extraction. Methods of isolation Chromatography, types of chromatography and mechanism of chromatography.	-Knowledge, understanding, skills and values Resins and palmates, including their definition, plants containing them, and methods of extraction and isolation. practically:Conduct experiments in extraction methods, isolation of components, and chromatography, including types of chromatography and their mechanisms.	4	13 & 14

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Volatile oils: a. Definition of volatile oils. b. General properties of volatile oils. c. Their general and medical uses. d. Their methods of preparation. e. Classification of volatile oils with examples for drugs containing volatile oils. Practical: Paper chromatography.	-Knowledge, understanding, skills and values Essential oils, including their definition, general properties, general and medicinal uses, methods of preparation, and classification, with examples of medicines containing essential oils. practically:Conducting an experiment in paper chromatography.	4	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

	1-Required textbooks
1.Pharmacognosy, by Claus and Tyler, 5th Edition, (1999). 2.Pharmacognosy, by V, Tyler, Lyun R, Bredy and Janes E. Robbers, 7 Edition, (1976). 3. Pharmacognosy, by Tease and Evans, 5th Edition. T Bailieve, T. London, (1978). Medical Drugs Dr. Ali Al-Shamaa 1989. A Brief Introduction to Pharmacology, Thani Mustafa (Revised Edition). Practical Drugs Binder, Pharmacist Zahraa Al-Janabi (1990	2- Main references (sources)
	3- Recommended books or references (magazines, reports, etc.)
	4- Electronic references, Internet sites.

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Department of Pharmacy Technology

Course Description for the Academic Year 2025-2026

TOXICOLOGY

Lecturer name: MSc. Ali jain skar

Academic Title: Master

221.Course name
Toxicology
222.Course code
PHT217-50-C
223.semester/year
First/Second Year (2025-2026)
224.Date this description was prepared
22/2/2026
225. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
226. Number of study hours (total) / Number of units (total)
15 weeks / 2 units
227. Name of the course administrator (if more than one name is mentioned)
Lecturer name : MSc. Ali jain skar Email: alhamdinawal@gmail.com
228. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.

1- Understand the principles of toxins and the mechanisms by which toxins work.
2- Analysis of the mechanisms of action of toxins and their effects on the body.
3- Design strategies for dealing with poisonings and how to treat them.
4- Application of toxicology concepts in the field of pharmacy and public health.
5- Analysis and evaluation of scientific evidence related to toxins.
6- Develop research and analysis skills in the field of toxicology.
7- Enhance the ability to think critically and solve creative problems related to toxins.
8. Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
9. Use of modern laboratory equipment and educational screens.
10. Directing graduation research and experimental studies in an applied manner to solve societal problems.

229. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

230. Course outcomes

A.1. To be able to understand the principles of toxins and the mechanisms by which they work.	A. Knowledge and understanding
A.2. To be able on knowing the different types of toxins and their effects on the body.	
A.3. To be able to Understanding the mechanisms of action of toxins and their effects on organs different.	
A.4. To be able to Knowing the ways of exposure to toxins and their effects on health.	
B.1. Acquire skill in Analysis of the mechanisms of action of toxins and their effects on the body.	b. Skills
B.2. Acquire skill in design strategies for dealing with and treating poisonings.	
b.3. Acquire skill in Analysis and evaluation of scientific evidence related to toxins.	
B.4. Acquire skill in Developing research and analytical skills in the field of toxicology.	
A.1. Training on Commitment to ethical standards in handling toxins.	C. Values
A.2. Training on Concern for public health and safety.	
A.3.Training on commitment to continuous development in the field of toxicology.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Introduction to toxicology, terms and classification of toxic materials	- Knowledge, understanding, skills and values Introduction to toxicology and the meaning of toxins, andTypestoxins theDifferent depending on their source and properties.	2	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Principles of toxicology	- Knowledge, understanding, skills and values The basic principles of toxicology include that dose determines action, toxicity is the result of an interaction between a toxin and an organism, toxicity varies with dose, time, route, individual, and species, and results in both short- and long-term effects.	2	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Mechanism of toxicology, principles of treatment of poisoning, types of antidotes	-Knowledge, understanding, skills and values Mechanisms of action of toxins, principles of poisoning treatment, and types of antidotes.	2	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Disposition of toxicants, absorption, distribution, biotransformation and excretion	-Knowledge, understanding, skills and values The main stages that a toxin goes through in the body, which determine its impact and how dangerous it is.	2	4
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture	Toxic agents, pesticides, heavy metals, solvents and vapors.	-Knowledge, understanding, skills and values Some examples of toxic agents that can affect	2	5

	Scientific seminars on the topic.		public health and the environment.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drugs poisoning, NSAIDS, barbiturates, benzodiazepam.	-Knowledge, understanding, skills and values Some examples of medications that can cause poisoning if taken in high doses or incorrectly.	2	6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Antidepressant, nicotine, alcohol poisoning	-Knowledge, understanding, skills and values Some examples of medications and substances that can cause poisoning if taken in high doses or incorrectly.	2	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Cyanide, CO and CO2 poisoning	-Knowledge, understanding, skills and values Some examples of medications and substances that can cause poisoning if taken in high doses or incorrectly.	2	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Anticholinergic drugs poisoning.	-Knowledge, understanding, skills and values It refers to someInformation on anticholinergic drug poisoning.	2	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Radiations and radioactive materials	-Knowledge, understanding, skills and values ARadiation and radioactive materials can cause damage to living cells, leading to diseases such as cancer and genetic damage. Prevention and treatment include removing radioactive materials from the body, providing life	2	10

			support, and radiation therapy.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Environmental toxicology, air pollution, smoke, smog	-Knowledge, understanding, skills and values Environmental toxicity includes air pollution from smoke and smog, which leads to health problems such as asthma and bronchitis. Air pollution can lead to long-term health effects, such as an increased risk of cancer and heart disease.	2	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Foods poisoning, bacterial poisoning, aflatoxin and mushroom	-Knowledge, understanding, skills and values Food poisoning occurs as a result of eating foods contaminated with bacteria, fungi, or poisonous mushrooms, leading to health problems such as nausea, vomiting, and hepatitis.	2	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Occupational toxicology.	-Knowledge, understanding, skills and values Occupational toxicity is exposure to chemicals in the workplace, leading to health effects such as asthma, skin diseases, and cancer.	2	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drugs toxicity during pregnancy.	-Knowledge, understanding, skills and values TToxicity of medications during pregnancy can lead to birth defects or permanent injury to the fetus, and health problems for the mother.	2	14

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Chemicals carcinogenesis.	-Knowledge, understanding, skills and values Chemical carcinogenesis is the process that leads to cancer formation as a result of exposure to chemicals such as benzene and formaldehyde.	2	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
70%	15%	5%	5%	5%

Learning and teaching resources

	1-Required textbooks
1- A textbook of modern toxicology, 3rd ed, Ernest Hodgson, John Wiley, (2004). 2- The Principles of Toxicology, 2nd ed., Phillip L. Williams, Robert C. James, Stephen M. Roberts, Wiley-Interscience, (2000). 3- Poisoning and Toxicology Handbook, 4th ed., Leikin, Lexi, (2007).	2- Main references (sources)
1-Toxicology and Chemistry 2-Biological Toxicology 3-Journal of Toxicology and Environmental Health. 4-Toxicological Sciences 5- Chemical Research in Toxicology	3- Recommended books or references (magazines, reports, etc.)
	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

BAATH REGIME CRIMES IN IRAQ

Lecturer name: Dr. Zaid Hamza Musa

Academic Title : PhD

231.Course name
Baath regime crimes in Iraq
232.Course code
ATU24C
233.semester/year
First/Second Year (2025-2026)
234.Date this description was prepared
22/2/2026
235. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
236. Number of study hours (total) / Number of units (total)
15 weeks / 2 units
237. Name of the course administrator (if more than one name is mentioned)
Lecturer name : Dr. Zaid Hamza Musa Email: zaid.hmaza.iku@atu.edu.iq
238. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.
1. Understanding the History of the Ba'ath Regime in Iraq: A study of the history of the Ba'ath Regime in Iraq and its effects on the Iraqi people.

2. Understanding the crimes of the Baath regime: Studying the crimes of the Baath regime in Iraq, such as genocide, torture, and premeditated murder.
3. Analyzing the causes of the crimes of the Baath regime: Analyzing the causes of the crimes of the Baath regime in Iraq, such as political, economic, and social policies.
4. Studying the effects of the Baath regime's crimes on the Iraqi people: Studying the effects of the Baath regime's crimes on the Iraqi people, such as the psychological, social, and economic effects.
5. Understanding the role of international law in prosecuting the crimes of the Baath regime: Studying the role of international law in prosecuting the crimes of the Baath regime in Iraq, such as the role of the International Criminal Court.
6. Analysis of other experiences in prosecuting crimes against humanity: Analysis of other experiences in prosecuting crimes against humanity, such as the experience of prosecuting war crimes in the former Yugoslavia.
7. Developing research and analytical skills: Developing research and analytical skills in the field of Baath regime crimes in Iraq.

239. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

240. Course outcomes

A.1. To be able to knowing the history of the Baath regime in Iraq.	A. Knowledge and understanding
A.2. To be able on knowledge of the policies and ideas of the Baath regime.	
A.3. To be able to Knowing the crimes of the Baath regime against humanity.	
A.4. To be able to Understanding the effects of the Ba'ath regime's crimes on the Iraqi people.	
B.1. Acquire skill in developing discussion and debate skills.	b. Skills
b.2. Acquire the skill of developing general cultural information.	
b.3. Acquire skill in Iraq's history and suffering.	
b.4. To enable students to acquire the skill to distinguish crimes and human rights violations.	
A.1. Training on Promoting human and democratic values	C. Values
A.2. Training on Promoting legal values and justice.	
A.3.Training on Promoting moral and national values.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Crimes of the Ba'ath regime according to the Iraqi High Criminal Court Law of 2005 The concept of crimes and their types Definition of crime in language and terminology	- Knowledge, understanding, skills and values of the subjects referred to.	2	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Crime sections Crimes of the Ba'ath regime as documented by the Iraqi Supreme Criminal Court Law of 2005	- Knowledge, understanding, skills and values of the subjects referred to.	2	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Types of international crimes Decisions issued by the Supreme Criminal Court	- Knowledge, understanding, skills and values of the subjects referred to.	2	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Psychological and social crimes and their effects	- Knowledge, understanding, skills and values of the subjects referred to.	2	4
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	social crimes-militarization of society-The Baath regime's position on religion	- Knowledge, understanding, skills and values of the subjects referred to.	2	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Violations of Iraqi laws Images of political and military human rights violations by the Ba'ath regime	- Knowledge, understanding, skills and values of the subjects referred to.	2	6

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Some decisions on the political and military violations of the Baath regime	- Knowledge, understanding, skills and values of the subjects referred to.	2	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Baath regime prisons and detention centers	- Knowledge, understanding, skills and values of the subjects referred to.	2	8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Environmental crimes of the Baath regime in Iraq	- Knowledge, understanding, skills and values of the subjects referred to.	2	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	War pollution, radioactivity, and mine explosions	- Knowledge, understanding, skills and values of the subjects referred to.	2	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Destruction of cities and villages scorched earth policy	- Knowledge, understanding, skills and values of the subjects referred to.	2	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	draining the marshes bulldozing palm groves and trees	- Knowledge, understanding, skills and values of the subjects referred to.	2	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Mass grave crimes	- Knowledge, understanding, skills and values of the subjects referred to.	2	13

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	The latest mass graves and genocide committed by the Baath regime	- Knowledge, understanding, skills and values of the subjects referred to.	2	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Chronological classification of genocide graves in Iraq	- Knowledge, understanding, skills and values of the subjects referred to.	2	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
70%	15%	5%	5%	5%

Learning and teaching resources

	1-Required textbooks
Ministry of Higher Education and Scientific Research curriculum for second-year students	2- Main references (sources)
	3- Recommended books or references (magazines, reports, etc.)
Human rights websites.	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

INDUSTRIAL PHARMACY

Lecturer name: Dr. Ahmed hassan

Academic qualification: PhD

241.Course name
Industrial Pharmacy
242.Course code
PHT221-50-C
243.semester/year
Second / Second Year (2025-2026)
244.Date this description was prepared
22/2/2026
245. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
246. Number of study hours (total) / Number of units (total)
15 weeks / 5 units
247. Name of the course administrator (if more than one name is mentioned)
Lecturer name : Dr. Ahmed hassan Khdair Email: Ahmedhasaan@jmu.edu.iq
248. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.
1.Understanding the Pharmaceutical Industry: Understanding the fundamentals and processes used in the pharmaceutical industry.

2. Working in pharmaceutical laboratories: Learn the techniques and methods used in pharmaceutical laboratories.
3. Medication Handling: Understanding how to handle medications safely and effectively.
4. Diverse Industries: Learn how to manufacture different types of Pills, capsules, ointments, creams, etc.
5. Enhance the ability to prepare and analyze pure pharmaceutical substance in dosage form.
6Develop analytical and critical thinking skills in the field of pharmacist and industrial.
7. Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
8. Allocating scientific visits to private and governmental pharmaceutical centers and laboratories.
9. Use of modern laboratory equipment and educational screens.
10. Directing graduation research in an applied manner to solve societal problems.

249. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.

250. Course outcomes

A.1. To be able to apply knowledge in the basics of industrial pharmacy.	A. Knowledge and understanding
A.2. To be able to Understand the principles and fundamentals of the pharmaceutical industry.	
A.3. To be able to learn about the processes and technologies used in the pharmaceutical industry.	
A.4. To be able to identify the materials and products used in the pharmaceutical industry..	
B.1. Acquire skill in methods of preparation and formulation of pharmaceutical materials.	b. Skills
B.2. Acquire skill in design of pharmaceutical dosage forms.	
b.3. Acquire skill in how to handle medications safely and effectively.	
B.4. Acquire skill in how to handle equipment and machinery used in pharmaceutical industries.	
A.1. Training on how to handle medications.	C. Values
A.2. Preparing qualified graduates to work in the pharmaceutical industries.	
A.3. To contribute to improving public health by providing safe and effective medicines and pharmaceutical preparations.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture	Solid dosage forms, steps of manufacturing tablets by single and multi-punches machine.	- Knowledge, understanding, skills and values Preparation of medicines in solid forms such as	5	1-4

	Scientific seminars on the topic.	Preparation materials for tablets, granulation, dry and wet granulation. Basic components of tablets, diluents, binders and others.	tablets and capsules. The steps of tablet manufacturing include single and multiple pounding machines, material preparation, dry and wet agglomeration, and basic tablet components such as diluents and binders..		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Packaging, evaluation of tablets. Capsules, materials used in capsules preparation, steps of preparation, machines	- Knowledge, understanding, skills and values Packaging and evaluation of pills, and preparation of capsules from materials such as gelatin, including the steps of preparing the shell, filling the contents, and closing the shell using specialized machines.	5	5 & 6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Used and packaging.	-Knowledge, understanding, skills and values Solid medications such as tablets and capsules are used to treat various conditions and require proper packaging to protect the product from external influences and provide product information.	5	7 & 8
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Suppositories, basic of the base, uses. Liquid dosage forms, factors affecting liquid dosage form, parenteral preparations	-Knowledge, understanding, skills and values Suppositories are used to treat skin and gastrointestinal conditions, and liquid doses are affected by factors such as viscosity and surface tension. Intravenous preparations are administered intravenously to treat acute illnesses and	5	9-11

			provide intravenous nutrition.		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	manufacturing steps and their quality control	-Knowledge, understanding, skills and values Manufacturing and Quality Control Steps Manufacturing steps include material preparation, agglomeration, pressing, and packaging. Quality control includes raw material inspection, process monitoring, and final product inspection.	5	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Emulsions, their preparation and phases. phases determination	-Knowledge, understanding, skills and values Emulsions are mixtures of two immiscible liquids, consisting of an aqueous phase and an oily phase. The phases are identified by examining color, density, and chemical composition.	5	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Suspensions, preparation and quality control of them. Antibiotics, methods of isolation of antibiotics. Antibiotics produced by fungi, quality control of antibiotics. Methods of production of effective antibiotics.	-Knowledge, understanding, skills and values Suspension solutions require careful preparation and quality control. Antibiotics are extracted from fungi and bacteria and require quality control to ensure their potency and purity.	5	14 & 15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

1- Industrial Pharmacy, Roop k. khar, s.p. vyas, Farhan j. Ahmed, Gaurav jain, (1986). 2-Pharmaceutical Manufacturing Handbook' by James Swarbrick (2017(. 3-'Industrial Pharmaceutical Technology' by John Staniforth (2016(.	1-Required textbooks
1. Journal of Pharmaceutical Sciences (ISSN: 0022-3549, published since , (1912) 2. International Journal of Pharmaceutics (ISSN: 0378-5173, published since, (1978) 3. Journal of Pharmacy and Pharmacology (ISSN: 0022-3575, published since, (1927)	2- Main references (sources)
	3- Recommended books or references (magazines, reports, etc.)
	4- Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

PHARMACEUTICAL CHEMISTRY

Lecturer name: Ali Jain Saker

Academic Title: Master

251.Course name
Pharmaceutical Chemistry
252.Course code
PHT222-50-C
253.semester/year
Second / Second Year (2025-2026)
254.Date this description was prepared
22/2/2026
255. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
256. Number of study hours (total) / Number of units (total)
15 weeks / 5 units
257. Name of the course administrator (if more than one name is mentioned)
Lecturer name : Ali Jain Saker Email: alialhussainy1991@gmail.com
258. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.
1.RecognitionOn the chemical compositions of drugs.

2. Identify the functional groups effective in pharmaceutical treatments.
3. Identify groups that have therapeutic toxicity and seek to reduce their toxicity by replacing or adding groups.
4.Enhancing the ability to prepare new pharmaceutical derivatives from raw materials and their identification using modern methods.
6.Using advanced technology in analysis and preparation. In the field of Pharmaceutical chemistry.
7.Understanding the chemical interactions of drugs with the body.
8Continuous development of methods and techniques used in pharmaceutical chemistry.
9. Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
10. Allocating scientific visits to private and governmental pharmaceutical centers and laboratories.
11. Use of modern laboratory equipment and educational screens.
12. Directing graduation research and experimental studies in an applied manner to solve societal problems.

259. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

260. Course outcomes

A.1. To be able to apply knowledge in the basics of pharmaceutical chemistry.	A. Knowledge and understanding
A.2. To be able to Understanding the chemical structures of drugs.	
A.3. To be able to understand the relationship between chemical structure and biological activity.	
A.4. To be able to understand the mechanisms of chemical reactions.	
B.1. Acquire skill in methods of preparation and formulation of pharmaceutical materials.	b. Skills
B.2. Acquire skill in design development and diagnosis of pharmaceutical treatments.	
b.3. Acquire skill in how to use of chemical equipment.	
B.4. Acquire skill in how to Interpretation of chemical results.	
A.1. Training on how to prepare pharmaceutical treatments accurately.	C. Values
A.2. Preparing qualified graduates to work in pharmaceutical laboratories and factories.	

A.3. To contribute to improving public health by providing safe and effective medicines and pharmaceutical preparations.					
Course structure					
Evaluation method	**Learning method**	**Name of unit or topic**	**Required learning outcomes**	**Hrs.**	**week**
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Antibacterial Antibiotics {penicillins, cephalosporins, aminoglycosides, tetracyclines, macrolides} Practical: Synthesis of organic compounds by different approaches involving (3 experiments) {a. oxidation b. reduction c. nitratrion }	- Knowledge, understanding, skills and values Antibacterials (antibiotics): These include penicillins, cephalosporins, aminoglycosides, tetracyclines, and macrolides. Practical: Preparation of organic compounds using different methods (3 experiments) including oxidation, hydrolysis, and addition reactions	5	1-3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drugs Acting On Renal System {ACE-inhibitors, angiotensin 2 receptor blockers, renin inhibitors, aldosterone antagosnists} Practical: Preparation and standardization of 0.1N KMnO4 (known sample) Preparation and standardization of 0.1N KMno4 (quiz and unknown).	- Knowledge, understanding, skills and values Drugs that affect the kidney system Prepare an unknown sample with a test	5	4 & 5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Cardiovascular Agents {antianginal agents and vasodilators, antihypertensive agents, anticoagulants} Practical: Hydrolysis of p-chlorobenzene sulfonyl chloride to sulfanilamide Assay of paracetamol	-Knowledge, understanding, skills and values Cardiovascular agents: These include anti-anginal and vasodilators, antihypertensive agents, and anticoagulants. Practical: Hydrolysis of a compound ParaChlorobenzenesulfonyl chloride to sulfanilamide, quantitative analysis of paracetamol.	5	6 & 7

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Synthetic Hypoglycemic Agents {sulfonylureas, nonsulfonylureas-metaglinides, biguanide} Practical: Assay of ciprofloxacin, Assay of metronidazole	-Knowledge, understanding, skills and values Synthetic hypoglycemic agents: sulfonylureas, metaglinides, biguanides. Practical: Quantitative analysis of ciprofloxacin and metronidazole.	5	8 & 9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Anticonvulsants {barbiturates, hydrantoins, oxazolidinediones, succinimides} Practical: Assay of isonicotinic acid hydrazide	-Knowledge, understanding, skills and values Anticonvulsants: barbiturates, hydantoins, oxazolidinediones, succinimides. Practical: Quantitative analysis of isonicotinic acid hydrazide.	5	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Steroid Hormones And Therapeutically Related Compounds {steroid biosynthesis, sex hormones, androgens } Practical: Assay of chlorpheniramine maleate	-Knowledge, understanding, skills and values Steroid hormones: bioactive steroids, sex hormones, androgens. Practical: Quantitative analysis of the malate salt of chlorpheniramine.	5	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Histamine And Autohistaminic Agents Practical: Assay of hydrogen peroxide solution (known sample)	-Knowledge, understanding, skills and values Histamine and antihistamines. Practical: Quantitative analysis of hydrogen peroxide.	5	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Diuretics {carbonic anhydrase inhibitors, loop diuretics, thiazide diuretics, potassium sparing diuretics, miscellaneous diuretics} Practical: Assay of hydrogen peroxide solution (quiz and unknown sample)	-Knowledge, understanding, skills and values Diuretics: include carbonic anhydrase inhibitors, loop diuretics, thiazides, potassium-sparing diuretics, and various. Practical: Quantitative analysis of hydrogen peroxide (unknown sample and test).	5	13

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Vitamins{ water saluble vitamins, fat soluble vitamins} Practical: Assay of tetracycline	-Knowledge, understanding, skills and values Vitamins: water soluble,Repentantin fat. Practical: Quantitative analysis of tetracycline.	5	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Proteins, Enzymes And Peptide Hormones {protein and proteinlike compounds, enzyme, hormones} Practical: Determination of partition coefficient of for any two drugs	-Knowledge, understanding, skills and values Proteins, enzymes, and peptide hormones: proteins, enzymes, hormones. Practical: Determine the distribution coefficient for two properties.	5	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

	1–Required textbooks
1- Essentials of Pharmaceutical Chemistry, Donald Cairns, Pharmaceutical Presss, (2008). 2- Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry, John M. Beale, John Block, 12th Edition, (2011). 3-Pharmaceutical and medicinal chemistry, David G Watson, Churchill Livingstone, (2011).	2– Main references (sources)
1- Medicinal Chemistry Research (MCR) 2-Current Medicinal Chemistry (CMC) -3Pharmaceutical Research (PR) 4- Journal of Medicinal Chemistry Letters (JMCL)	3– Recommended books or references (magazines, reports, etc.)
	4– Electronic references, Internet sites.

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Course Description for the Academic Year 2025-2026

PHARMACEUTICAL FORMULATIONS

Lecturer name: MSc. Mohammad Kamil Abbod

Academic qualification: Master

261. Course name
Pharmaceutical Formulations
262. Course code
PHT223-50-C
263. semester/year
Second/Second Year (2025-2026)
264. Date this description was prepared
22/2/2026
265. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
266. Number of study hours (total) / Number of units (total)
15 weeks / 5 units
267. Name of the course administrator (if more than one name is mentioned)
Lecturer name : MSc. Mohamed Kamel Abbod Email: alizahraamuslim@gmail.com
268. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods)
1. Understand the principles of pharmaceutical dosage form design. 2. Enhance the ability to prepare and analyze pure pharmaceutical substance in dosage form.

3. Develop analytical and critical thinking skills in the field of pharmacology.
4. Study the relationship between the active ingredient and other additives in pharmaceutical dosage forms.
5. Understanding the principles of pharmaceutical preparation of syrup, capsules, Pills and suppositories.
6. Learn methods of chemical and biological analysis of pharmaceutical dosage forms.
7. Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
8. Allocating scientific visits to government and private health centers and hospitals.
9. Use of modern laboratory equipment and educational screens.
10. Directing graduation research in an applied manner to solve societal problems.

269. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

270. Course outcomes

A.1. To be able to apply knowledge in the basics of pharmacology.	A. Knowledge and understanding
A.2. To be able to understand the compatibility between the active ingredient and the additives of medicines.	
A.3. To be able to know how to prepare different pharmaceutical formulas.	
A.4. To be able to understand the pharmaceutical form of medications and how to administer them.	
B.1. Acquire skill in methods of preparation and formulation of pharmaceutical materials.	b. Skills
B.2. Acquire skill in design of pharmaceutical dosage forms.	
B.3. Acquire the skill to maintain the stability of pharmaceutical compounds.	
B.4. Acquire the skill of dividing and using doses and times for patients.	
A.1. Training on how to handle medications.	C. Values
A.2. Training on basic drug formulations.	
A.3. Contributing to and improving health care.	

11. Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams Presentation.	Direct method	Medical Drops; Eye drops, nasal drops and ear drops.	- Knowledge, understanding, skills and values	5	1 &

Interviews and questionnaires	through lecture Scientific seminars on the topic.	Practical: Drops Eye drops, Zinc Sulphate eye drops, Sulfa – cetamide eye drops. Nasal drops, Menthol nasal drop ear drops, Boric acid – Alcohol ear drops, Sod. Bicarb ear drops	Medical drops include eye, nose, and ear drops, and are used to treat diseases of these areas. Practically: Eye drops such as zinc sulfate and sulfacetamide, nasal drops such as menthol, and ear drops such as boric acid-alcohol and sodium bicarbonate are used to treat eye, nose, and ear conditions.		2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Acrosols definition and examples Practical: Medical injections, types, Method of preparation, (Demonstration)	- Knowledge, understanding, skills and values Identification enhanced medicines examples of improved medications. practically: Practical medical injections include types of injections, preparation methods and application.	5	3
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Medical injections, definition, uses, types, classification with examples Practical: Suspensions	-Knowledge, understanding, skills and values identificationmedical injectionsIts uses, types of medical injections, examples. Practically: preparing the suspension with an active ingredient.	5	4 & 5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Powders and granules Practical: Emulsions	-Knowledge, understanding, skills and values Medicines in the form of powders or granules Practically: emulsions	5	6 & 7

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Suspensions; Definition, types and preparation Collodion, pyroxylin collodion, salicylic acid collodion	-Knowledge, understanding, skills and values Definition of the Suspensions;, types of Suspension;, and how to prepare them. practically: Pyroxylin collodion, Collodion Salicylic acid	5	8 & 9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Emulsions; definition and types Practical: Incompatibility of sod. Salicylate and sod. Benzoate with acids	-Knowledge, understanding, skills and values Definition of emulsions, their types practically: Avoid mixing sodium salicylate and Al don't like it sodium benzoate with acids to prevent unwanted chemical reactions. These reactions can lead to the formation of toxic compounds.	5	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Collodions, definition, Methods of preparation examples Practical: Incompatibility of Borax with glycerin in the presence of sod. Bicarbonate	-Knowledge, understanding, skills and values Identification collodion Methods of preparing collodion, and examples of them. practically: incompatibility Avoid mixing Between borax and glycerin in the presence of sodium bicarbonate	5	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Alcohols, definition, types, examples Practical: Incompatibility of Sod. Bicarbonate or pot. Bicarb with Soluble Ca+ or Mg+ Salts	-Knowledge, understanding, skills and values Definition of alcohols, their types and examples. practically: Incompatibility of sodium or potassium bicarbonate with	5	12

			soluble calcium or magnesium salts		
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Incompatibility, definition, types of incompatibility with examples Practical: Powders	-Knowledge, understanding, skills and values Definition of incompatibility, its types and examples. Practical: preparing the powder.	5	13
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	The phenomena of incompatibility, general methods for treating incompatibility Practical: Effervescent granules	-Knowledge, understanding, skills and values Incompatibility is a phenomenon that occurs when two or more materials are mixed together, resulting in undesirable chemical or physical reactions. Incompatibility can be addressed by using substitutes, changing the pH, adding stabilizers, or using special techniques. Practically: Effervescent granules	5	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Incompatibility of Alkaloidal Substances, Incompatibility of Sod. Salicylate & Sod. Benzoate with other reactant substances Co2 formation as a result of incompatibility with examples Practical: Review, Examination	-Knowledge, understanding, skills and values Incompatibilities between alkaloids can occur when they are mixed with other substances, leading to undesirable chemical reactions. Incompatibilities between sodium bicarbonate, salicylates, and benzoates can result in changes in color, consistency, and precipitation. Practical: review and exam.	5	15

Course Evaluation				
The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.				
Final exam	Mid Exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources	
1- Pharmaceutical calculations 13th edition, Howard C. Ansel., (2017). 2- Introduction to pharmaceutical calculations 4th Edition, Judith A Rees, Ian Smith and Jennie Watson, (2015). 3-"Textbook of Pharmaceutical Formulation" by Aulton, ME (2013). 4-Formulation of Pharmaceutical Dosage Forms" by Banker, G.S. (2015).	1-Required textbooks
1- Pharmaceutical Formulation: A Review" by Kumar, A. et al., Journal of Pharmaceutical Sciences, (2020). 2- Formulation of Solid Dosage Forms" by Patel, R. et al., Journal of Pharmacy and Pharmacology, (2019). 3- Pharmaceutical Formulation: Challenges and Opportunities" by Singh, S. et al., Journal of Pharmaceutical Research, (2018).	2- Main references (sources)
https://www.nature.com/articles/131895e0 https://pmc.ncbi.nlm.nih.gov/articles/PMC1637007/	3- Recommended books or references (magazines, reports, etc.)
	4- Electronic references, Internet sites.

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Department of Pharmacy Technology

Course Description for the Academic Year 2025-2026

PHARMACOLOGY

Lecture name: Dr. Lafta Fayez Kadhim

Academic Title: PhD

271.Course name
Pharmacology
272.Course code
PHT224-50-C
273.semester/year
Second / Second Year (2025-2026)
274.Date this description was prepared
22/2/2026
275. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
276. Number of study hours (total) / Number of units (total)
15 weeks / 5 units
277. Name of the course administrator (if more than one name is mentioned)
Lecture name :Dr. Lafta Fayez Kadhim Email: sajad.Istta@gmail.com
278. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.
1.acquisitionA comprehensive understanding of the fundamentals of pharmacology, including basic concepts and research methods.

2. Analyze how the drug works in the body, including the mechanism of action and drug interactions.
3. StudyEffectsPharmacokinetics and side effects of drugs.
4. Understand how medicines are used to treat diseases, including their mechanism of action and clinical uses.
5. Analyzing the mechanism of action of drugs in the body, including biochemical and biophysical effects.
6.acquisitionComprehensive knowledge of the pharmacological uses of medications, including clinical guidelines and therapeutic directions.
7. UnderstandingEffectsSide effects and warnings, including potential adverse effects and drug interactions.
8. Developing and updating the curricula scientifically on an annual basis in line with the curricula of medically advanced countries.
9. Allocating scientific visits to private and governmental pharmaceutical centers and laboratories.
10. Use of modern laboratory equipment and educational screens.
11. Directing graduation research and experimental studies in an applied manner to solve societal problems.

279. Teaching and learning strategies

- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching.
- Using e-learning technology to enhance learning.
- Applying active and collaborative learning methods.
- Using modern scientific research tools.
- Enhancing communication and cooperation skills among students.
- Applying the concepts of blended learning and problem-based learning.

280. Course outcomes

A.1. To be able to know the basic concepts for pharmacology.	A. Knowledge and understanding
A.2. To be able to understanding how the drug works in the body.	
A.3. To be able to perception effects pharmacokinetics and side effects of drugs.	
A.4. To be able to understand pharmaceutical uses of drugs.	
B.1. Acquire skill in analyzing how a drug works in the body.	b. Skills
B.2. Acquire skill in analysis of drug interactions and side effects.	
b.3. Acquire skill in pharmacokinetic data analysis and interpretation.	
B.4. Acquire skill in identify solutions to pharmaceutical issues.	
A.1. Training on how to information analysis and evaluation.	C. Values
A.2. Evaluation of drug efficacy and safety.	
A.3. To contribute to improving public health by providing safe and effective medicines and pharmaceutical preparations.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	Hrs.	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Autacoids:- -Histamine and histamine antagonists -Serotonin and prostaglandins	- Knowledge, understanding, skills and values Self-medication Histamine and its antihistamines Serotonin and prostaglandin	5	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Vitamins:- Water soluble vitamins Fat soluble vitamins.	- Knowledge, understanding, skills and values vitamins water-soluble vitamins fat-soluble vitamins	5	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Drugs influence: metabolic and functions -Insulin and hypoglycaemic agents -Adrenal steroids -Thyroid hormones and antithyroid drugs -Vasopressin and oxytocin	-Knowledge, understanding, skills and values Drugs affecting metabolism and endocrine functions Insulin and hypoglycemic drugs Adrenergic steroids Thyroid hormones and their antagonists Anti-Lysogenic Hormone	5	3 & 4
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	-Anterior pituitary gonadotrpins and sex hormones- oral contraceptive pills -Drugs used in gout treatment	-Knowledge, understanding, skills and values Anterior pituitary hormones and sex hormones birth control pills Medications used to treat gout	5	5 & 6

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Introduction to chemotherapy. -mechanism of antibiotics action. Antibiotics: -classification-uses -sulfonamides, antiviral. -antifungal drugs	-Knowledge, understanding, skills and values Introduction to chemical treatment How antibiotics work antibiotics Classification - Uses Predecessor One Amidat Antivirals -Antifungals	5	7-9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	-Drugs used to treat amebiasis and other intestinal protozoal infections -anthelmintics drugs	-Knowledge, understanding, skills and values Medicines used to treat amoebic dysentery Bacillus and other intestinal infections Antiworms	5	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Chemotherapy of neoplastic diseases	-Knowledge, understanding, skills and values Chemotherapy for cancerous tumors	5	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Principle of immunopharmacology	-Knowledge, understanding, skills and values Fundamentals of Immunopharmacology	5	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Poison and antidotes -metal poisoning -plant poisoning. -general principle of poisons treatment.	-Knowledge, understanding, skills and values Poisons and Antidotes metal poisoning poisonous plant poisoning General basics of poisoning treatment	5	13 & 14
Written tests Oral exams Presentation.	Direct method through lecture	Drugs interactions	-Knowledge, understanding, skills and values Drug interactions	5	15

Interviews and questionnaires	Scientific seminars on the topic.				

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
60%	25%	5%	5%	5%

Learning and teaching resources

	1-Required textbooks
1- Introduction to Clinical Pharmacology, Edmunds MW, (2005). 2- Basic & Clinical Pharmacology, BertramKatzung, LANGE Basic Science. (2006). 3- Introduction in Clinical Pharmacology, Sally S. Roach, Lippincott Williams & Wilkins, 7th edition, (2003).	2- Main references (sources)
1- Molecular Pharmacology (MP) 2-Journal of Pharmacological Sciences (JPS) -3Pharmacological Research (PR) 4-European Journal of Clinical Pharmacology (EJCP) 5-Clinical Pharmacology and Therapeutics (CPT)	3- Recommended books or references (magazines, reports, etc.)
	4- Electronic references, Internet sites.

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Department of Pharmacy Technology

Course Description for the Academic Year 2025-2026

PROFESSIONAL ETHICS

Lecture name: Assist. Prof. Nadia Abed A-Hadi

Academic Title: Master

301.Course name
Professional ethics
302.Course code
PHT227-50-C
303.semester/year
Second / Second Year (2025-2026)
304.Date this description was prepared
22/2/2026
305. Available attendance forms
Theoretical and practical lectures in person, in addition to communication with students via Classroom
306. Number of study hours (total) / Number of units (total)
15 weeks / 2 units

307. Name of the course administrator (If more than one name is mentioned)	
the name : Assist. Prof. Nadia Abed A-Hadi Email: Kin.nad@atu.edu.iq	
308. Course objectives with updated strategic objectives as a result of scientific development and progress in learning and teaching methods.	
1.Promoting moral values: Promoting moral values professional the doctor has Core 2.Learn the basic etiquette of behavior professional for medical professionals. 3. Promote professional responsibility and commitment to ethical standards in professional practice. 4.Develop ethical decision-making skills and problem-solving ability for professionalism. 5. To enhance awareness of ethical and legal issues related to professional practice. 6.Developing the ability to think critically and analytically in solving problems professional. 7.Update the content of the article to reflect recent developments in the field. 8.Use of modern educational technologies such as e-learning and distance learning. 9. It includes Practical examples and real-life applications to enhance student understanding by for ethical concepts professional. 10Encourage discussion and debate among students by enhance their ethical decision-making skills professional. 11.Evaluation of student performance core periodically to improve the quality of education.	
309. Teaching and learning strategies	
- Encourage students to actively participate in lectures, open discussions, and solve exercises, in addition to using various teaching methods, including brainstorming strategies, practical field training, and inductive teaching. - Using e-learning technology to enhance learning. - Applying active and collaborative learning methods. - Using modern scientific research tools. - Enhancing communication and cooperation skills among students. - Applying the concepts of blended learning and problem-based learning.	
310. Course outcomes	
A.1. To be able to knowledge ethical concepts and values that govern professional practice.	A. Knowledge and understanding
A.2. To be able on Knowledge of the laws and regulations governing professional practice.	
A.3. To be able to Know the ethical issues you may encounter in professional practice.	
A.4. To be able to understand Practical applications of ethical concepts in professional practice.	
B.1. Acquire the skill in developing ethical decision-making skills in professional practice.	b. Skills
B.2. Acquire skill in develop effective communication skills with colleagues and clients in solving problems professional	

b.3. Acquire skill in development Critical analysis skills in problem solving professional	
B.4. Students acquire the skill in ethical values in professional practice.	
A.1. Training on Enhance the impact implications for ethical decisions in professional practice.	C. Values
A.2. Training on Strengthening Professional responsibility and commitment to ethical standards in professional practice.	
A.3.Training on Strengthening Respect for the law and regulations governing professional practice.	

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watc hes	week
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Principles of professional ethics in the stages of civilizational development -Principles of professional ethics in Arab-Islamic civilization -Etiquette of dealing with patients in hospitals, from ancient times until now	- Knowledge, understanding, skills and values of the subjects referred to.	2	1
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Professional behavior - definition - concept - practical applications - relationship between employees and their supervisors	- Knowledge, understanding, skills and values of the subjects referred to.	2	2
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Basic professional ethics -Characteristics of professional ethics as a guide and a guide to behavior -How to employ professional ethics from the wave position for individual behavior, emotions, and ability to make appropriate decisions	- Knowledge, understanding, skills and values of the subjects referred to.	2	3
Written tests Oral exams Presentation.	Direct method through lecture	-Characteristics and attributes of medical workers -	- Knowledge, understanding, skills and values of the subjects referred to.	2	4

Interviews and questionnaires	Scientific seminars on the topic.	appearance, behavior, and commitment -The patient's moral and legal rights -Dealing with the patient's behaviorand his companions			
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Behavioral patterns: human, interactive, and collective Definition - Nature - Motives - Interpretations	- Knowledge, understanding, skills and values of the subjects referred to.	2	5
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Linguistic and non-linguistic communication methods Definition - Types - Effects - Designing Successful Methods How communication methods affect behavior, the art of listening, and how to train on it, with practical examples.	- Knowledge, understanding, skills and values of the subjects referred to.	2	6
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Behavioral trends and tendencies Definition - Classification - Factors affecting it - Methods of its occurrence Values, customs and traditions Definition - Classification - Factors affecting it - Methods of its occurrence	- Knowledge, understanding, skills and values of the subjects referred to.	2	7
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Personality types and how to deal with them Definition of personality - its types - its relationships a personalityand its manifestations	- Knowledge, understanding, skills and values of the subjects referred to.	2	8

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Conditions for embodying mental health Definition - Factors affecting it - Prevention - Patient	- Knowledge, understanding, skills and values of the subjects referred to.	2	9
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	The role of mental healthwith diseases Professional compatibility requirementsYAnd relationshiphwork-relatedTo him- Understood - and conditionsh	- Knowledge, understanding, skills and values of the subjects referred to.	2	10
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Patient behavior - Receiving and dealing with patientshAnd maintaining professional secrets - Setting appointments for required procedures - Maintaining the patient's eyebrows	- Knowledge, understanding, skills and values of the subjects referred to.	2	11
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Behavioral handling of medical devices and equipment Daily review of devices, tools and solutions RequirementsAnd prepare itFor daily work, maintenance and upkeep to preserve and prepare medicinesNecessaryTo work and manage it well	- Knowledge, understanding, skills and values of the subjects referred to.	2	12
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Occupational safety	- Knowledge, understanding, skills and values of the subjects referred to.	2	13

Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Prevention of occupational hazards and accidents Prevention of pollution risksbacterial And the Sinai and radioactive Preventing infection risksFor diseasesContagious and mast	- Knowledge, understanding, skills and values of the subjects referred to.	2	14
Written tests Oral exams Presentation. Interviews and questionnaires	Direct method through lecture Scientific seminars on the topic.	Avoid wrong practicesinField of work ApplicationsinProfessional behaviorY	- Knowledge, understanding, skills and values of the subjects referred to.	2	15

Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Final exam	Mid exam	Homework	Classroom activities	Daily exams
70%	15%	5%	5%	5%

Learning and teaching resources

1- AFor safety at work - D.Hekmat Jamil - 1983 - Ministry of Culture and Information. 2-Heat and its impact on workers' health - D.Hikmat Jamil - 1980 - Arab Institute of Culture	1-Required textbooks
Code of Professional Ethics for Nurses and Midwives in Iraq, Hassan, Abdul Mahdi Abdul Redha.	2- Main references (sources)
	3- Recommended books or references (magazines, reports, etc.)
Professional Ethics Websites	4- Electronic references, Internet sites.