COURSE SPECIFICATION

This course description a program of organic pharmaceutical chemistry II aims to impart comprehensive knowledge and skills essential for drug discovery and development, emphasizing the translation of synthetic formulas into effective treatments. It focuses on pharmaceutical material preparation methods while ensuring a strong foundational base for students' professional success. Additionally, the curriculum incorporates essential skills like result analysis, document interpretation, and internet utilization, preparing students for further academic pursuits and professional endeavors.

1. Educational institution	Al-ayen Iraqi University - College of Pharmacy
2. College department/Center	Pharmaceutical chemistry
3. Course title/code	Organic pharmaceutical chemistry II **PH4102**
4. Modes of Attendance offered	Full-time and official attendance hours
5. Semester/Year	First semester 2023-2024
6. Credits (total)	45 hrs+30 hrs practical
7. Date of description form preparation//Revision of this specification	1/10/2023

8. Course Objectives

1- The goal is to teach the student how to discover and develop new drugs to treat diseases and the ability to translate the synthetic formula of the treatment into the expected effectiveness of this treatment or drug. In addition to focusing on the methods used to prepare some pharmaceutical materials.

2- Providing a solid foundation for the student to ensure a successful professional future

3- Providing the student with some basic skills that may be necessary for future studies, such as analyzing results and documents and using the Internet.

9. Learning Outcomes, Teaching, Learning and Assessment Method

A-Cognitive goals

A1- The study of pharmaceutical chemistry in general with regard to the discovered drugs and their relationship to the diseases they treat, along with the effect of the structural composition of those drugs on their pharmacological effectiveness.

A2- Study the metabolic pathway of some drugs and pharmaceutical drugs and methods of converting them into non-toxic, labile substances

To be excreted by the body.

A3- Study the biological effectiveness of these medications during the process of nutritional metabolism and their effect on the body.

A4- Study the structural composition of some drugs in a focused manner and know the effect of the groups that make up this compound and their relationship to the expected effectiveness of the treatment in addition to their relationship to the side effects of the treatment.

B-The skills goals special to the course

B 1. Discovering new medicines to treat various diseases.

B2. Studying the structural formula of the compound and its effect on the effectiveness of treatment.

B3.Methods of synthesis of some compounds with therapeutic efficacy.

B4. Acquire the skill of discovering and classifying drugs

Teaching and Learning Methods

Seminars - daily assignments - written exams

Assessment methods

Oral and written exams - scientific reports

C-Affective and value goals

C1- Knowing the methods of designing drugs and chemical compounds

C2- Knowledge of methods of laboratory synthesis of drugs and chemical compounds

C3- Learn the methods of laboratory analysis to know the composition of chemical compounds

C4- Preparing various medicines

Teaching and Learning Methods

-Providing the student with the basics and topics related to knowledge

-Clarification and explanation of study materials by the teaching staff

-Asking students to visit the library to obtain academic knowledge

-Request reports and seminars on the topics covered

Assessment methods

Oral and written exams

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

D1- Conducting scientific experiments

D2- Acquisition of skill in preparing medicines

D3-Giving confidence to the student by presenting scientific research

D4- Acquisition of the skill to identify and classify medicines

10. Theory Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1	3	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Cholinergic agents, cholinergic receptors and their subtypes.	1- Whiteboard and PowerPoint and data show presentation 2- Class discussion 3- Presentation of cases 4- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams	1- Short MCQs 2- Oral exam and direct questions in the class 3- Midterm exam 4- Final exam
2.	3	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Cholinergic agonists; stereochemistry and structure-activity relationships (SAR);		
3.	3	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	products; cholinesterase inhibitors.		
4	3	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Cholinergic Blocking Agent; Structure-activity Relationships (SAR); Solanaceous Alkaloid And Analogues.		
5.	3	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Synthetic Cholinergic Blocking Agents and Products; Ganglionic Blocking Agents (Neuromuscular Blocking Agents).		
6.	3	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Adrenergic agents (Adrenergic neurotransmitters); Adrenergic receptors; Drugs affecting Adrenergic neurotransmission; Sympathomimetic agents; Products.		
7.	3	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Sympathomimetic agents; Adrenergic receptor antagonists		
8.	3	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	CNS depressant; Benzodiazepines and related compounds;		

9.	3	1A,2A,3A,4A,1B,2B,3B,4B,1C ,2C,3C,4C,1D,2D,3D,4D	Barbiturates; CNS depressant with skeletal muscle relaxant properties; Antipsycotics; Anticonvulsants.		
10.	3	1A,2A,3A,4A,1B,2B,3B,4B,1C ,2C,3C,4C,1D,2D,3D,4D	Central Nervous system Stimulants: 1. Analeptics 2.Methylxanthines 3. Central sympathomimetic agents (Psychomotor stimulants) Structure activity relationship		
11.	3	1A,2A,3A,4A,1B,2B,3B,4B,1C ,2C,3C,4C,1D,2D,3D,4D	4.Antidepressants : 1. Monoamine Oxidase Inhibitors 2. Monoamine Reuptake Inhibitors 3. Selective Serotonin Reuptake Inhibitors 4. Selective Norepinephrine Reuptake Inhibitors		
12.	3	1A,2A,3A,4A,1B,2B,3B,4B,1C ,2C,3C,4C,1D,2D,3D,4D	Analgesic agents (SAR of morphine, SAR of meperidine type molecules; SAR of methadone type compounds; Nmethylbezomorphan s, antagonist type analgesics in benzomorphans).		
13.	3	1A,2A,3A,4A,1B,2B,3B,4B,1C ,2C,3C,4C,1D,2D,3D,4D	Analgesic receptors, endogenous opioids; Products; Antitusive agents		
14.	3	1A,2A,3A,4A,1B,2B,3B,4B,1C ,2C,3C,4C,1D,2D,3D,4D	Nonsteroidal Anti Inflammatory Drugs (NSAIDs)		
15.		1A,2A,3A,4A,1B,2B,3B,4B,1C ,2C,3C,4C,1D,2D,3D,4D	Steroidal and nonsteroidal hormones		

10. Laboratory Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Preparation of salicylic acid.	1- Whiteboard and PowerPoint and data show presentation 2- Class discussion 3- Presentation of cases	1- Short MCQs 2- Oral exam and direct questions in the class 3- Midterm exam 4- Final exam
2	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Re-crystallization of salicylic acid.		
3	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Synthesis of aspirin.		
4	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Re-crystallization of aspirin.		
5	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Assay of aspirin (known sample).		
6	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Assay of aspirin (unknown sample).		
7	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Preparation of nitrobenzene.		
8	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Preparation of aniline.		
9	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Preparation of acetanilide.		
10	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Re-crystallization of acetanilide.		
11	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Chlorosulfonation of acetanilide.		
12	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Amination of pchlorobenzene sulfonyl chloride.		
13	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Hydrolysis of pchlorobenzene sulfonyl chloride to sulfanilamide.		
14	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Assay of sulfa drugs (known sample).		
15	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Assay of sulfa drugs (unknown sample).		

11. Infrastructure	
Books Required reading	Wilson and Gisvold Textbook of Organic medicinal and Pharmaceutical chemistry, Delgado JN, Remers WA, (Eds); 12th ed, 2011.
Main references (sources)	Wilson and Gisvold Textbook of Organic medicinal and Pharmaceutical chemistry, Delgado JN, Remers WA, (Eds); 12th ed, 2011
Recommended books and references (scientific journals, reports…).	**The Organic Chemistry Of Drug Synthesis latest edition**
Electronic references, Internet sites…	**Website of Arabic and foreign universitoes**

12. Course development plan
-Continuous updating of the curriculum prescribed for students to serve the educational process **- Maintaining scientific sobriety through the use of valuable sources and international books**

COURSE SPECIFICATION

The Organic Pharmaceutical Chemistry III course provides students advanced in pharmacy studies with a deep understanding of the basic concepts and advanced applications in organic chemistry relevant to the pharmaceutical industry. The course covers advanced topics such as modern methods for manufacturing organic pharmaceutical compounds and advanced chemical analysis of those compounds. The course also focuses on organic reactions relevant to drug design and development, and encourages students to use modern technologies in pharmaceutical laboratories. The course aims to develop students' skills in advanced chemical analysis and understanding of drug manufacturing processes, enabling them to contribute to the pharmaceutical industry in an effective and sustainable way.

1. Educational institution	Alayen Iraqi University - College of Pharmacy
2. College department/Center	Pharmaceutical chemistry
3. Course title/code	Organic pharmaceutical chemistry III **PH4202**
4. Modes of Attendance offered	Full-time and official attendance hours
5. Semester/Year	Second semester 2023-2024
6. Credits (total)	45 hrs+30 hrs practical
7. Date of description form preparation//Revision of this specification	1/10/2023

8. Course Objectives

1- The goal is to teach the student how to discover and develop new drugs to treat diseases and the ability to translate the synthetic formula of the treatment into the expected effectiveness of this treatment or drug. In addition to focusing on the methods used to prepare some pharmaceutical materials.

2- Providing a solid foundation for the student to ensure a successful professional

future

3- Providing the student with some basic skills that may be necessary for future studies, such as analyzing results and documents and using the Internet.

9. Learning Outcomes, Teaching, Learning and Assessment Method

A-Cognitive goals

A1- The study of pharmaceutical chemistry in general with regard to the discovered drugs and their relationship to the diseases they treat, along with the effect of the structural composition of those drugs on their pharmacological effectiveness.

A2- Study the metabolic pathway of some drugs and pharmaceutical drugs and methods of converting them into non-toxic, labile substances
To be excreted by the body.

A3- Study the biological effectiveness of these medications during the process of nutritional metabolism and their effect on the body.

A4- Study the structural composition of some drugs in a focused manner and know the effect of the groups that make up this compound and their relationship to the expected effectiveness of the treatment in addition to their relationship to the side effects of the treatment.

B-The skills goals special to the course

B1-Acquisition of skill in preparing compounds and medicines
B2-Acquire skill in using different methods in manufacturing and preparing medicines
B3-Acquiring the skill in how to deal with chemical compounds
B4- Gaining the skill in writing scientific reports

Teaching and Learning Methods

Seminars - daily assignments - written exams

Assessment methods

Oral and written exams - scientific reports

C-Affective and value goals

C1- Knowing the methods of designing drugs and chemical compounds
C2- Knowledge of methods of laboratory synthesis of drugs and chemical compounds
C3- Learn the methods of laboratory analysis to know the composition of chemical compounds
C4- Preparing various medicines

Teaching and Learning Methods

-Providing the student with the basics and topics related to knowledge
-Clarification and explanation of study materials by the teaching staff
-Asking students to visit the library to obtain academic knowledge
-Request reports and seminars on the topics covered

Assessment methods

Oral and written exams

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

D1- Conducting scientific experiments

D2- Acquisition of skill in preparing medicines
D3-Giving confidence to the student by presenting scientific research
D4- Acquisition of the skill to identify and classify medicines

10. Theory Course Structure

Week	Hrs	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1	3	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	β-Lactam antibiotics (Penicillins); Mechanism of action of Penicillins; Development of *Beta* lactam; SAR; Reactions of Penicillins with Electrophiles	1- Whiteboard and PowerPoint and data show presentation 2- Class discussion	1- Short MCQs 2- Oral exam and direct questions in the class 3- Midterm exam 4- Final exam
2	3	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Broad spectrum penicillins; Reactions of Penicillins with Nucleophiles; Reactions of Penicillins with Electrophiles; Acid sensitivity of penicillins		
3	3	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Bioavailability: Acid Stability of Penicillins; Penicillins: Oral & Broad Spectrum Activity; The mode of Bacterial resistance; □-Lactamases inhibitors; Clavulanic acid.		
4	3	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Cephalosporins; Cephalosporins Functional groups (Pharmacophore); SAR of Cephalosporins; Mechanism of inhibiting transpeptidase (PBP): Mechanism of action of cephalosporin		
5	3	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	First generation cephalosporins; Second generation cephalosporins; 3rd generation cephalosporins; 4th Generation cephalosporins; 5th generation		

			cephalosporin; Carbapenems ; Monobactams		
6	3	1A,2A,3A,4A,1B,2B,3B ,4B,1C,2C,3C,4C,1D,2D ,3D,4D	Antibacterial Sulfonamides (Sulfa Drugs); (chemistry, nomenclature, mechanism of action, resistance, toxicity, side effects, metabolism, protein binding, distribution and SAR).		
7	3	1A,2A,3A,4A,1B,2B,3B ,4B,1C,2C,3C,4C,1D,2D ,3D,4D	Sulfonamides; products; Sulfones.		
8	3	1A,2A,3A,4A,1B,2B,3B ,4B,1C,2C,3C,4C,1D,2D ,3D,4D	Aminoglycosides; Chemistry of Aminoglycoside; SAR of aminoglycosides; products; Tetracyclines.		
9	3	1A,2A,3A,4A,1B,2B,3B ,4B,1C,2C,3C,4C,1D,2D ,3D,4D	Macrolides, Lincosamine, chloramphenicol and Quinolones		
10	3	1A,2A,3A,4A,1B,2B,3B ,4B,1C,2C,3C,4C,1D,2D ,3D,4D	Antiviral agents (properties of viruses, viral classification, products).		
11	3	1A,2A,3A,4A,1B,2B,3B ,4B,1C,2C,3C,4C,1D,2D ,3D,4D	Antineoplastic agents (Alkylating Agents)		
12	3	1A,2A,3A,4A,1B,2B,3B ,4B,1C,2C,3C,4C,1D,2D ,3D,4D	Antineoplastic agents (Antimetabolites)		
13	3	1A,2A,3A,4A,1B,2B,3B ,4B,1C,2C,3C,4C,1D,2D ,3D,4D	Anticancer Antibiotics (Plant products)		
14	3	1A,2A,3A,4A,1B,2B,3B ,4B,1C,2C,3C,4C,1D,2D ,3D,4D	Anticancer Antibiotics (Protein kinase inhibitors, Miscellaneous)		
15	3	1A,2A,3A,4A,1B,2B,3B ,4B,1C,2C,3C,4C,1D,2D ,3D,4D	Hormones and related compounds; Future antineoplastic agents; Monoclonal antibodies; Gene therapy of cancer.		

10. Laboratory Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Cannizaro reaction (part I).	1- Whiteboard and PowerPoint and data show presentation 2- Class discussion	1- Short MCQs 2- Oral exam and direct questions in the class 3- Midterm exam 4- Final exam
2	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Cannizaro reaction (part II).		
3	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Re-crystallization of benzoic acid.		
4.	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Assay of ascorbic acid (known sample).		
5.	2	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Assay of ascorbic acid (unknown sample).		
6-7	4	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Synthesis of Phenol.		
8	2	1A,2A,3A,4A,1B,2B,3B,4B, 1C,2C,3C,4C,1D,2D,3D,4D	Assay of phenol (known sample		
9-10	4	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Assay of phenol (unknown sample).		
11-12	4	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Synthesis of chlorbutanol.		
13-14	4	1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D	Synthesis of paracetamol.		
15			Final exam		

11. Infrastructure	
Books Required reading	Wilson and Gisvold Textbook of Organic medicinal and Pharmaceutical chemistry, Delgado JN, Remers WA, (Eds); 12th ed, 2011
Main references (sources)	Wilson and Gisvold Textbook of Organic medicinal and Pharmaceutical chemistry, Delgado JN, Remers WA, (Eds); 12th ed, 2011
Recommended books and references (scientific journals, reports…).	The Organic Chemistry Of Drug Synthesis
Electronic references, Internet sites…	**Websites of Arabic and foreign universities**

12. Course development plan
-Continuous updating of the curriculum prescribed for students to serve the educational process **- Maintaining scientific sobriety through the use of valuable sources and international books**

COURSE SPECIFICATION

This course is intended to help pharmacists provide better care to patients, and focus on communication skills necessary to establish trust, empathize with patients' concerns, effectively educate them about their medications, and ensure their adherence to treatment plans. Additionally, it aims to enhance pharmacists' ability to actively listen to patients, address any questions or misunderstandings they may have, and collaborate with other healthcare professionals to deliver comprehensive and patient-centered care.

1. Educational institution	Alayen Iraqi University - College of Pharmacy
2. College department/Center	Clinical pharmacy
3. Course title/code	Communication skills/PH4206
4. Modes of Attendance offered	Full-time and official attendance hours
5. Semester/Year	Second semester 2023-2024
6. Credits (total)	2 hr x 15 weeks = 30 hrs
7. Date of description form preparation//Revision of this specification	1/10/2023

8. Course Objectives

1. Enable the graduating student to communicate effectively with patients and utilize all available means of communication with both patients and physicians throughout the medical treatment process.
2. Empower the graduating student to educate patients regarding the medications they are using, including providing them with the given medication instructions, and overcoming any difficulties or obstacles hindering the delivery of these instructions to them.

9. Learning Outcomes, Teaching, Learning and Assessment Method

E. Cognitive goals

1. To be able to communicate with the patient and medical staff during the treatment stages.
2. To be able to educate the patient regarding the medications given to him.
3. To be able to overcome the difficulties and obstacles that hinder communication and drug education for patients and medical staff participating in the treatment stages.
4. To be able to educate the patient regarding medications.
5. Enabling students to acquire and understand communication skills.

F. The skills goals special to the course

1. Increase students' communication skills with patients and medical staff during the treatment stages.
2. Increase students' drug education skills for patients.
3. Increase students' skills in making the right decisions in giving correct drug consultations to patients and overcoming all obstacles that hinder the process of communication and drug education for patients, and cooperating with the medical staff participating in the treatment stages.
4. Enable the students to acquire skills for self-learning to acquire new information, skills and knowledge.
5. Enable the students to acquire the skills of dialogue, discussion, listening to others and respecting their opinions.

Teaching and Learning Methods

1- PowerPoint and Multimedia presentation
2- Class discussion
3- Presentation of cases
4- Handouts
5- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams

Assessment methods

1- Short MCQs
2- Oral exam and direct questions in the class
3- Midterm exam
4- Electronic exams on the electronic platform
5- Final exam

G. Affective and value goals

1- Adhere to the highest standards of ethical and professional behavior in all aspects of treatment decision-making and patient care.
2- Demonstrating commitment to patient safety.
3- Evidence-based practice.
4- Respect the patient’s autonomy and preferences.
5- Collaborate effectively with other healthcare professionals for the best interest of the patient.

Teaching and Learning Methods

1- Case studies
2- Discussions

3- Lectures
4- Training and interaction in the hospital and community pharmacy
5- Assignments
6- PowerPoint presentation

Assessment methods

13. Observing students' interaction with patients
14. Case-based scenarios
15. Homework
16. Electronic MCQs on the electronic platform
17. Mid-term exam
18. Final exam

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

1. Raising students on ethical and professional work.
2. Developing students' sense of responsibility during the period of study and work.
3. Supporting medication and pharmacy practice culture among students and community members.
4. Enhancing the spirit of cooperation and teamwork among students.

10. Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1.	2	A1, A2, A3, B1, B2, B3, C1, C3, D1, D2	Patient-centered communication in pharmacy practice	1- Whiteboard and PowerPoint and data show presentation 2- Class discussion 3- Presentation of cases 4- Handouts 5- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams	1- Short MCQs 2- Oral exam and direct questions in the class 3- Midterm exam 4- Electronic exams on the electronic platform 5- Final exam
2.	2	A1, A2, A3, B1, B2, B3, C1, C3, C4, C5 D1, D2, D4, D5	Principles and basics of interpersonal communication		
3.	2	A1, A2, A3, B1, B2, B3, C1, C3, D1, D2	Nonverbal communication		
4.	2	A1, A2, A3, B1, B2, B3, C1, C3, C4, C5 D1, D2, D4, D5	Barriers to communication		
5.	2	A1, A2, A3, B1, B2, B3, C1, C3, C4, C5 D1, D2, D4, D5	Listen and respond sympathetically during communication		
6.	2	A1, A2, A3, B1, B2, B3, C1, C3, C4, C5 D1, D2, D4, D5	Determination		
7.	2	A1, A2, A3, B1, B2, B3, C1, C3, C4, C5 D1, D2, D4, D5	Interview and evaluation		
8.	2	A1, A2, A3, B1, B2, B3, C1, C2, C3, C4, C5 D1, D2, D4, D5	Helping patients to manage treatment regimens		
9.	2	A1, A2, A3, B1, B2, B3, C1, C3, C4, C5 D1, D2, D4, D5	Patient consultation, counseling list, discussion point by point, counseling scenario		
10.	2	A1, A2, A3, B1, B2, B3, C1, C2, C3, D1, D2	Medication safety and communication skills		
11	2	A1, A2, A3, B1, B2, B3, C1, C3, C4, C5 D1, D2, D4, D5	Strategies to meet special needs		
12	2	A1, A2, A3, B1, B2, B3, C1, C3, D1, D2	Communicate with children and the elderly about treatments		
13	2	A1, A2, A3, B1, B2, B3, C1, C3, D1, D2	Communication and cooperation skills among medical professionals		
14	2	A1, A2, A3, B1, B2, B3, C1, C3, D1, D2	Electronic communication in health care		
15	2	A1, A2, A3, B1, B2, B3, C1, C3, D1, D2	Ethical behavior when communicating with patients		

11. Infrastructure	
Books Required reading	Robert S. Beardsley, (ed.); Communication Skills in Pharmacy Practice, the latest edition
Main references (sources)	Robert S. Beardsley, (ed.); Communication Skills in Pharmacy Practice, the latest edition
Recommended books and references (scientific journals, reports…).	
Electronic references, Internet sites…	

12. Course development plan
There are proposals on incorporating interactive role-playing exercises and simulated patient scenarios and integrating real-world communication challenges faced in pharmacy settings, which will provide hands-on practice opportunities for students to hone their communication skills.

COURSE SPECIFICATION

Clinical Pharmacy I course is designed to provide pharmacy students with comprehensive knowledge and practical skills related to non-prescription medications. Throughout the course, students will explore various categories of OTC medications, including analgesics, antipyretics, cough and cold remedies, gastrointestinal agents, dermatological products, dietary supplements, and others. Emphasis will be placed on patient counselling, product selection, proper dosing, potential adverse effects, drug interactions, and when to refer patients for further evaluation by a healthcare professional.

1. Educational institution	Alayen Iraqi University - College of Pharmacy
2. College department/Center	Clinical pharmacy
3. Course title/code	Clinical Pharmacy 1/PH4103
4. Modes of Attendance offered	Full-time and official attendance hours
5. Semester/Year	First semester 2023-2024
6. Credits (total)	2 hr x 15 weeks = 30 hrs
7. Date of description form preparation//Revision of this specification	1/10/2023

8. Course Objectives

1. After completing the course, the student must acquire sufficient knowledge of the concepts of the main skills of pharmaceutical care services, basic skills in practicing pharmacy for various purposes and developing treatment plans for chronic diseases
2. Providing students with the knowledge and skills necessary to make evidence-based treatment decisions in real clinical situations
3. Promote a deep understanding of drug interactions, doses, and monitoring parameters to achieve the best therapeutic results.
4. Instill the importance of individualizing treatment plans according to the needs of each individual patient, taking into account factors such as age, chronic diseases, and lifestyle.
5. Develop the ability to critically evaluate clinical data, identify medication-related

problems, and suggest appropriate interventions.
6. To learn about recent research and guidelines related to diseases to ensure that students are always aware of the latest developments in this field.

9. Learning Outcomes, Teaching, Learning and Assessment Method

A. Cognitive goals

1. Understand the basic concepts and knowledge in each of the clinical pharmacy areas involved.
2. Analysis of diseases and health conditions related to each topic of clinical pharmacy.
3. Understand the relationships between medications, biological factors, and environmental factors associated with each health condition.
4. Evaluate scientific evidence and recent research related to treatments and drug interactions in the context of the selected topics.

B. The skills goals special to the course

1. Apply pharmaceutical concepts and clinical information in determining the most effective and safe treatments for each health condition.
2. Use effective communication with patients and other medical teams to ensure appropriate pharmaceutical care is provided.
3. Develop skills for critical analysis of scientific research and clinical evidence to make appropriate pharmaceutical decisions.
4. Develop the ability to guide and educate patients on the use of medications and avoid harmful interactions and potential side effects.
5. Increasing drug education skills for patients
6. Increase the skills of making the right decisions in giving correct drug consultations to patients and overcoming all Obstacles that hinder the process of communication and drug education for patients and cooperation with the medical staff involved in therapeutic stages.
7. Enabling students to learn how to dispense medication to patients
8. Enabling students to acquire medication preparation skills according to medical conditions diagnosed by a doctor
9. Enabling students to possess the skills of preparing pharmaceutical doses
10. Enabling students to possess the skills to diagnose medical errors in the use and dispensing of medications

Teaching and Learning Methods

1- PowerPoint and Multimedia presentation
2- Class discussion
3- Presentation of cases
4- Handouts
5- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams

Assessment methods

1- Short MCQs
2- Oral exam and direct questions in the class
3- Midterm exam
4- Electronic exams on the electronic platform
5- Final exam

C. Affective and value goals

1. Promoting awareness of the importance of empathy and understanding in providing pharmaceutical care and dealing with humanitarian patients.
2. Increase pharmaceutical ethical values such as honesty, integrity, respect, and fairness in the pharmacist's interactions with patients and other medical teams.
3. Encouraging evidence-based values and critical thinking in pharmaceutical decision-making to follow up-to-date scientific research.
4. Enhancing awareness of the importance of the various social responsibilities of the pharmacist in providing high-quality health care.
5. Promoting awareness of the importance of maintaining patients' privacy and confidentiality of their health information and their legal obligations related to this aspect.
6. Encouraging the development of effective communication capabilities and cooperation within the diverse medical specialties.
7. Promoting awareness of the importance of achieving a balance between the work of the pharmacist to obtain personal light on the emotional and psychological.

Teaching and Learning Methods

1- Case studies
2- Discussions
3- Lectures
4- Assignments
5- PowerPoint.
7- Hospital training.

Assessment methods

1. Case-based scenarios
2. Theoretical and practical exams

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

1- Determine the appropriate medication for a single or multiple medical condition.
2- Determine the appropriate medications used to manage individual or multiple clinical conditions (treating the patient as a whole and not as a single disease).
3- Demonstrate the ability to communicate verbally and in writing
4- Choosing the appropriate medication for the studied diseases according to their causes and pathophysiology.
5- Engage effectively in a range of independent roles and discuss in an important way. Produce coherent reports in accordance with professional standards; Deliver high-quality oral presentations and other presentations.
6- Solve problems and design treatment plans and timetables to achieve goals on time.

10. Theory Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1.	2	A1, B2, B4, C6, D3	An Introduction to Community Pharmacy	1- Whiteboard and PowerPoint and data show presentation 2- Class discussion 3- Presentation of cases 4- Handouts 5- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams	1- Short MCQs 2- Oral exam and direct questions in the class 3- Midterm exam 4- Electronic exams on the electronic platform 5- Final exam
2.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Respiratory problems		
3.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	GIT problems		
4.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Childcare practice		
5.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Skin diseases		
6.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Women's health		
7.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	CNS problems		
8.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Eye problems		
9.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	ENT problem		
10.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Oral health		
11	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Obesity and body control weight		
12	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Pain and disorders of the musculoskeletal system		
13	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Nicotine replacement therapy		
14	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Nutritional supplements		
15	2		Revision		

10. Laboratory Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1.	2	A1, B2, B4, C6, C6, D3	Communication with patients.	1- Whiteboard and PowerPoint and data show presentation 2- Class discussion 3- Presentation of cases 4- Handouts 3- Cases	1- Short MCQs 2- Oral exam and direct questions in the class 3- Midterm exam 4- Electronic exams on the electronic platform 5- Final exam
2.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Respiratory system in practice (part I): Cough.		
3.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Respiratory system in practice (part II): Common cold		
4.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	G.I.T system in practice (part I): Constipation.		
5.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	G.I.T system in practice (part II): Diarrhea and IBS.		
6.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	GIT system in practice (part III): GERD& indigestion.		
7.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Skin conditions in practice (part I): Hair loss; cold sore and athlete's foot.		
8.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Skin conditions in practice (part II): Dandruff, Eczema and mouth ulcer.		
9.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Skin conditions in practice (part III): warts and scabies		
10.	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Pediatrics in practice: Oral thrush; colic; pinworm and napkin rash.		
11	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	Minor eye disorders in practice.		
12	2	A1,A2, A3, B1, B4, B5, B6, B7, B8, B9, B10, C1, C2, C4, C5, D1, D2	CNS system: Insomnia, motion sickness, obesity and nicotine replacement therapy (NRT).		
13	2	A4, B1, B3, C3	Drug Information sources for pharmacist.		

11. Infrastructure	
Books Required reading	ALISON BLENKINSOPP, PAUL PAXTON(eds), Symptoms in the Pharmacy. A Guide to the Management of Common Illness, 8th.edition Lor waterfield, Community Pharmacy Hand Book
Main references (sources)	ALISON BLENKINSOPP, PAUL PAXTON(eds), Symptoms in the Pharmacy. A Guide to the Management of Common Illness, 8th.edition Lor waterfield, Community Pharmacy Hand Book
Recommended books and references (scientific journals, reports…).	Journal of Clinical pharmacy and therapeutics International journal of clinical pharmacy
Electronic references, Internet sites…	UpToDate Internet

12. Course development plan
Using the round table system in the laboratory. Increase access to paid programs, Lexicomp, up-to-date, Micromedex. Introducing OSCE.

COURSE SPECIFICATION

Clinical Pharmacy II is a foundational course designed to introduce pharmacy students to the fundamental principles of pharmacotherapy and their application in patient care. Throughout the course, students will explore the rational use of medications for the management of common acute and chronic diseases across various patient populations. Emphasis will be placed on medication selection, dosing considerations, therapeutic monitoring, and patient counselling.

1. Educational institution	Alayen Iraqi University - College of Pharmacy
2. College department/Center	Clinical pharmacy
3. Course title/code	Clinical Pharmacy II/PH4203
4. Modes of Attendance offered	Full-time and official attendance hours
5. Semester/Year	Second semester 2023-2024
6. Credits (total)	2 hr x 15 weeks = 30 hrs
7. Date of description form preparation//Revision of this specification	1/10/2023

8. Course Objectives

1. After completing the course, the student must acquire sufficient knowledge of the concepts of the main skills of pharmaceutical care services, basic skills in practicing pharmacy for various purposes and developing treatment plans for chronic diseases
2. Providing students with the knowledge and skills necessary to make evidence-based treatment decisions in real clinical situations
3. Promote a deep understanding of drug interactions, doses, and monitoring parameters to achieve the best therapeutic results.
4. Instill the importance of individualizing treatment plans according to the needs of each individual patient, taking into account factors such as age, chronic diseases, and lifestyle.
5. Develop the ability to critically evaluate clinical data, identify medication-related problems, and suggest appropriate interventions.
6. To learn about recent research and guidelines related to diseases to ensure that students are always aware of the latest developments in this field.

9. Learning Outcomes, Teaching, Learning and Assessment Method

A. Cognitive goals

1. Identify the basic principles of pharmaceutical care for disorders of the cardiovascular system (IHD, HF), hematological disorders (anemia), asthma, COPD, DM, PUD, tuberculosis, infective meningitis, respiratory tract infection, GIT infections, gout and hyperuricemia, RA, OA, osteoporosis, infective endocarditis, surgical antibiotic prophylaxis, UTI.

2. Describe the different classes of medications used to treat disorders of the cardiovascular system (IHD, HF), hematological disorders (anemia), asthma, COPD, DM, PUD, tuberculosis, infective meningitis, respiratory tract infection, GIT infections, gout and hyperuricemia, RA, OA, osteoporosis, infective endocarditis, surgical antibiotic prophylaxis, UTI.

3. Describe the mechanism of action, therapeutic uses, and doses of these different classes.

4. Critically evaluate clinical data, taking into account factors such as patient history, disease state, and treatment options to optimize drug therapy and patient outcomes.

5. Utilize current evidence-based guidelines to guide treatment decision-making and adapt to evolving medical practices.

6. To be able to communicate with the patient and the medical staff during the treatment stages.

7. To be able to educate the patient regarding the medications given to them.

B. The skills goals special to the course

1. Conduct comprehensive patient evaluations to make appropriate treatment decisions.
2. Demonstrates proficiency in administering medication regimens, including dosage adjustments, monitoring, and patient education.
3. Guiding patients on the safe and effective use of medications.
4. Develop and implement a therapeutic evaluation plan for patient follow-up.

Teaching and Learning Methods

1- PowerPoint and Multimedia presentation
2- Class discussion
3- Presentation of cases
4- Handouts
5- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams

Assessment methods

1- Short MCQs
2- Oral exam and direct questions in the class
3- Midterm exam
4- Electronic exams on the electronic platform
5- Final exam

C. Affective and value goals

1. Promoting awareness of the importance of empathy and understanding in providing pharmaceutical care and dealing with humanitarian patients.

2. Increase pharmaceutical ethical values such as honesty, integrity, respect, and fairness in the pharmacist's interactions with patients and other medical teams.
3. Encouraging evidence-based values and critical thinking in pharmaceutical decision-making to follow up-to-date scientific research.
4. Enhancing awareness of the importance of the various social responsibilities of the pharmacist in providing high-quality health care.
5. Promoting awareness of the importance of maintaining patients' privacy and confidentiality of their health information and their legal obligations related to this aspect.
6. Encouraging the development of effective communication capabilities and cooperation within the diverse medical specialties.
7. Promoting awareness of the importance of achieving a balance between the work of the pharmacist to obtain personal light on the emotional and psychological.

Teaching and Learning Methods

1- Case studies
2- Discussions
3- Lectures
4- Assignments
5- PowerPoint.
7- Hospital training.

Assessment methods

3. Case-based scenarios
4. Theoretical and practical exams

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

1- Determine the appropriate medication for a single or multiple medical condition.
2- Determine the appropriate medications used to manage individual or multiple clinical conditions (treating the patient as a whole and not as a single disease).
3- Demonstrate the ability to communicate verbally and in writing
4- Choosing the appropriate medication for the studied diseases according to their causes and pathophysiology.
5- Engage effectively in a range of independent roles and discuss in an important way. Produce coherent reports in accordance with professional standards; Deliver high-quality oral presentations and other presentations.
6- Solve problems and design treatment plans and timetables to achieve goals on time.

10. Theory Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1.	1	A1, A2, A3, B1, B2, B3, C1, D1	Introduction	1- Whiteboard and PowerPoint and data show presentation 2- Class discussion 3- Presentation of cases 4- Handouts 5- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams	1- Short MCQs 2- Oral exam and direct questions in the class 3- Midterm exam 4- Electronic exams on the electronic platform 5- Final exam
2.	1	A1, A2, A3, B1, B2, B3, C1, C2, C3, D1, D2, D3	Patient's care		
3.	2	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Hematological problems		
4.	2	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Hypertension		
5.	1	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Angina		
6.	2	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Heart failure		
7.	1	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Peripheral vascular disease		
8.	2	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Asthma		
9.	2	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	COPD		
10.	2	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	DM		
11	2	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Peptic ulcer		
12	1	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Tuberculosis		
13	1	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Meningitis		
14	2	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Respiratory infection		
15	1	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	GIT infection		
16	2	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Rheumatoid arthritis		
17	1	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Osteoporosis		
18	1	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Endocarditis		
19	1	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Preoperative antibiotics		
20	1	A, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	UTI		

10. Laboratory Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1.	2	A3, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Drugs for anemia and related disorders	1- Whiteboard and PowerPoint and data show presentation 2- Class discussion 3- Presentation of cases 4- Handouts 4- Cases	1- Short MCQs 2- Oral exam and direct questions in the class 3- Midterm exam 4- Electronic exams on the electronic platform 5- Final exam
2.	2	A3, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Cardiovascular drugs in practice (part I & II)		
3.	2	A3, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Drugs for asthma and COPD & Antimicrobial drugs in practice (part I): B-lactam, tetracyclines and aminoglycosides		
4.	2	A3, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Antimicrobial drugs in practice (part II): macrolide, sulphonamides, quinolones, and other miscellaneous antibiotics		
5.	2	A3, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Antimicrobial drugs in practice (part III): antivirals and antifungals		
6.	2	A3, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Drugs for endocrine system (part I): DM		
7.	2	A3, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Drugs for endocrine system (part II): thyroid disorders, corticosteroids, and hormons used in gynecological disorders		
8.	2	A3, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Drugs acting on CNS: (antimigraine drugs, analgesics and antiemetics) and mucoskeletal disorders: NSAID, bisphosphonates		
9.	2	A3, A7, B1, B2, B3, B4, D1, D2, D3, D4, D5, D6	Drugs for GIT disorders: peptic ulcer disease and IBD & Drugs for ENT and skin disorders		

11. Infrastructure	
Books Required reading	1- Barbara G.Wells & Joseph T. Diriro, Pharmacotherapy handbook 11th Edittion. 2- Chisholm-Burns, Marie A., Patrick M. Malone, Terry L. Schwinghammer, Jill M. Kolesar, Barbara G. Wells, and Joseph T. DiPiro. Pharmacotherapy principles & practice. 6th edition. Roger Walker, Clive Edwards (eds), Clinical Pharmacy & Therapeutics
Main references (sources)	1- Barbara G.Wells & Joseph T. Diriro, Pharmacotherapy handbook 11th Edittion. 2- Chisholm-Burns, Marie A., Patrick M. Malone, Terry L. Schwinghammer, Jill M. Kolesar, Barbara G. Wells, and Joseph T. DiPiro. Pharmacotherapy principles & practice. 6th edition 3. Pharmacotherapy casebook: a patient focused approach,Mcgraw Hill) 4- Roger Walker, Clive Edwards (eds), Clinical Pharmacy & Therapeutics 6th edition.
Recommended books and references (scientific journals, reports…).	Journal of Clinical pharmacy and therapeutics International journal of clinical pharmacy
Electronic references, Internet sites…	UpToDate Internet

12. Course development plan
Using the round table system in the laboratory. Increase access to paid programs, Lexicomp, up-to-date, Micromedex. Introducing OSCE.

COURSE SPECIFICATION

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

1. Educational institution	**Al-ayen Iraqi University - College of Pharmacy**
2. College department/Center	**Pharmacy / Clinical laboratory science**
3. Course title/code	**Public health / Theory-PH4105**
4. Modes of Attendance offered	**Full-time and official attendance hours**
5. Semester/Year	**Second semester 2023-2024**
6. Credits (total)	**2 hr x 15 weeks = 30 hrs**
7. Date of description form preparation//Revision of this specification	**1/10/2023**
8. Course Objectives ***Learn pharmacy students about the diseases (causes, diagnosis, control), and prepare the student to understand the body defense against infection through studying the vaccines** ***To obtain an insight in the various aspects of the pharmacy practice. The practice of pharmacy face wide range of challenges that the student need to be acquainted with and introduced to and be familiar with rational approach to solve them this course is an introductory course to the fourth who already have a glimpse of some aspects of pharmacy practice**	

9. Learning Outcomes, Teaching, Learning and Assessment Method

E. Cognitive goals **At the end of the course, students are expected to be able:** **1- To understand the diseases according to body system.** **2- To understand the causes of infectious disease.** **3- To diagnose and control the disease.**
F. The skills goals special to the course **The skills goals special to the program.** **1 - Theoretical application on practical experiences** **2 - Use of the devices by the student** **3 - Action Posters multiple topics**
Teaching and Learning Methods **1- Theory lectures** **2-Educational laboratories** **3-Scientific reports** **4-Desk Research**
Assessment methods **1- Mid-term and final exams** **2.Oral exams and laboratory research** **3.Visit the botanical garden** **4.Use of scientific equipment**
G. Affective and value goals **C1- Using modern methods of presenting lectures in the form of slides** **C2 - Video clips and illustrations** **C3 -Connecting chemical Albaaloger ideas and terms that are comprehensible to the student** **Use information from a variety of sources including scientific journals**
Teaching and Learning Methods **-Seminars** **- daily assignments** **- written exams**
Assessment methods **4. Oral and written exams and writing reports on practical experiences.**
H. General and rehabilitative transferred skills (other skills relevant to employability and personal development) **1. planning and implementation of laboratory experiments using chemical equipment and apparatuses** **2. analyze, interpret and evaluate experimental data and make a quantitative assessment of the mistakes in the experimental measurements** **3. The application of computer programs for the analysis of experimental data and writing scientific reports**

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	A1, A2, A3, B1, B2, B3, C1, C3, D1, D2, D3	-Introduction: the Scope and Concerns of Public Health.	1- Whiteboard and PowerPoint and data show presentation 2- Class discussion 3- Presentation of cases 4- Handouts 5- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams	1- Short MCQs 2- Oral exam and direct questions in the class 3- Midterm exam 4- Electronic exams on the electronic platform 5- Final exam
2	2	A1, A2, A3, B1	Epidemiology & Population Screening.		
3	2	A1, A2, A3, B1, B2, B3, C1, C3, D1, D2	- Prevention & Control of Disease (preventive medicine).		
4	2	A1, A2, A3, B1, B2, B3, C1, C3, D1, D2, D3	-Health Insurance (Organization of Health Services).		
5	2	A1, A2, A3, B1, B2, B3, C1, C3, D1, D2,	- Communicable Diseases (Transmission of Infection Acquired Through the Gastro-intestinal Tract).		
6	2	A1, A2, A3, B1, B2, B3, C1, C3, D1, D2,	- Control of Infection Acquired Through the GIT.		
7	2	A1, A2, A3, B1, B2, B3, C1, C3, D1, D2,	- Transmission & Control of Infection Acquired Through the Mucous		
8	2	A1, A2, A3, B1, B2, B3, C1, C3, , D1, D2,	- Transmission of Air- borne Infections.		
9	2	A1, A2, A3, B1, B2, B3, C1, C3, D1, D2	- control of Air- borne Infections.		
10	2	A1, A2, A3, B1, B2, B3, C1, C3, D1, D2,	- Non- Communicable Diseases (Chronic Disease, Public Mental Health).		

11. Infrastructure	
Books Required reading	**1. AIDS and Accusation by Paul Farmer.** **2. The Invisible Cure by Helen Epstein.** **3. The Healing of America by T. R. ...** **4. Flu by Gina Kolata.** **5. Betrayal of Trust by Laurie Garrett.** **6. Introduction to Public Health by Mary-Jane Schneider.**
Main references (sources)	**Flu by Gina Kolata.** **Betrayal of Trust by Laurie Garrett.** **Introduction to Public Health by Mary-Jane Schneider.**
Recommended books and references (scientific journals, reports…).	**The Invisible Cure by Helen Epstein.** **The Healing of America**
Electronic references, Internet sites…	**Periodicals, Web Sites, …. etc** **http://www.health science l.com**

12. Course development plan
-Suggesting and discussing new topics **-Some of the curriculum vocabulary has been changed in a simple way to keep pace with modern scientific developments** **-Conducting seminars and seminars within the branch to present modern scientific topics**

The coarse deals with the physical and chemical properties of drug substance, dosage form and the biological effectiveness of the drug or drug product upon administration, including drug availability in the human or animal body from a given dosage form. The pharmacokinetic part of the coarse deals with the time-coarse of the drug in the biological system, and quantification of drug concentration pattern in normal subjects and in certain disease states

1. Educational institution	Alayen Iraqi University - College of Pharmacy
2. College department/Center	pharmaceutics
3. Course title/code	Biopharmaceutics PH4104
4. Modes of Attendance offered	Full-time and official attendance hours
5. Semester/Year	first semester 2023-2024
6. Credits (total)	30 hr theory & 30 hr practical/ semester
7. Date of description form preparation//Revision of this specification	1/10/2023

8. Course Objectives

Explain the basis of drug movement in the body according to one or two compartments, and the pharmaceutical and biological factors that affect the absorption of the drug, its distribution inside the body, and its excretion from the body when taken orally. Explanation of the drug dissolution process from drug doses and the physical and chemical factors affecting them. The movement of the drug in the body when taken intravenously in a single dose or a continuous intravenous feeding.Drug bioavailability and how to calculate it, depending on the drug concentration in the blood and the area it shows in the blood in the gra

9. Learning Outcomes, Teaching, Learning, and Assessment Method

1- Explaining the basics of drug kinetics in the body according to one or two compartments, and pharmaceutical and biological factors Affecting the absorption of the drug, its distribution within the body, and its excretion from the body when taken orally

2. Explaining the drug dissolution process, including drug doses and the physical and chemical factors affecting it

3. Drug kinetics in the body when taken intravenously as a single dose or as continuous intravenous nutrition.

Explain the kinetics of the drug after multiple doses.

The bioavailability of drugs and how to calculate it depends on the concentration of the drug in the blood and the area in which it appears in the blood

Charts.

Being able to calculate the half-life of eliminating a drug from the body and many parameters using mathematical equations and graphs

A- Cognitive goals

1-Enabling students to learn about the physical properties of medicines and how to evaluate them in the laboratory

2 -Enabling students to become familiar with the mechanism of drug absorption inside the body and the factors affecting them

3 -Enabling students to achieve and understand the difference between a single compartment

and a multi-compartment model

4 -Enabling students to acquire and understand drug bioavailability calculations

5 -Enabling students to obtain and understand the link between drugs and protein

6- Enabling students to acquire and understand the mechanism of drug disposal from the body

B- The skills goals special to the course

1 -Enable students to acquire the skills of drawing the standard curve of drugs

2 -Enabling students to acquire the skills of laboratory drug evaluation

3 -Enabling students to acquire the skills of studying aspirin degradation in the laboratory

4- Enabling students to acquire the skills of calculating the storage age of aspirin

Teaching and Learning Methods

1- Multimedia lectures
2- Group discussion
3- Workshops and seminars
4- Presentation of cases
5- Power Point presentation

Assessment methods

1- Short tests
2- Oral exam and direct questions
3- Mid-term exam
4- Final exam

C- Affective and value goals

1 . Educating students on professional humanitarian work and promoting and consolidating professional and ethical values upon students to practice the profession of pharmacist

2 . Educating students on a culture of integrity and combating corruption in all its forms 3 . Training students to respect the rights of the beneficiaries of their profession, their culture, religion, gender, and ethnicity, and training students to respect the freedom of thought, expression, and creativity among others. 4 . Developing students 'sense of sense of responsibility during the study period and work and enhancing the spirit of cooperation and teamwork among the students. 5 . Supports the pharmaceutical culture when students and members of society
Teaching and Learning Methods 1- Group discussions 2- Small group tasks 3- Power Point presentation
Assessment methods 1- Homework 2- Role-playing scenarios
D- General and rehabilitative transferred skills (other skills relevant to employability and personal development) **D1- Using sources from the Internet** **D2 - Conducting a research study**

10. Theory Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1.	2	A4,B3,B5,C4,D1,D3,D4	Introduction to the biopharmacy: Introduce the students to many definitions related to the biopharmacy	Lectures Discussion Data show	Written and oral exams and direct questions
2.	2	A4,B3,B5,C4,D1,D3,D4	Biopharmaceutics standards: Drug absorption and its mechanism		
3.	2	A4,B3,B5,C4,D1,D3,D4	Absorption kinetics: Factors effect absorption		
4.	2	A4,B3,B5,C4,D1,D3,D4	Physicochemical factors effect on absorption: Effect of dru and different additives		
5.	2	A4,B3,B5,C4,D1,D3,D4	Physicochemical factors effect on absorption: Effect of different additives on different dosage forms		
6.	2	A4,B3,B5,C4,D1,D3,D4	One compartment system: The one comp model for oral and intravenous injections		
7.	2	A4,B3,B5,C4,D1,D3,D4	Multi-compartment system: Two-compartment model for oral and intravenous doses		
8.	2	A4,B3,B5,C4,D1,D3,D4	Oral absorption kinetic: The zero and first oral absorption kinetic		
9.	2	A4,B3,B5,C4,D1,D3,D4	Multiple oral Dosage kinetic: How to reach a plateau		
10.	2	A4,B3,B5,C4,D1,D3,D4	Nonlinear kinetics: Reasons for nonlinear Absorption metabolism		
11	2	A4,B3,B5,C4,D1,D3,D4	Different bio availabilities: Bio availability and equivalences		
12	2	A4,B3,B5,C4,D1,D3,D4	Elimination via liver and kidney; Theories of drug Elimination through kidney		

			and liver		
13	2	A4,B3,B5,C4,D1,D3,D4	Protein kinetics: How proteins bind to receptors		
14	2	A4,B3,B5,C4,D1,D3,D4	Dose adjustment in renal failure patient: Rules to adjust doses in renal failure		

10. Laboratory Course Structure					
Week	**Hrs.**	**ILOs**	**Unit/Module or Topic Title**	**Teaching methods**	**Assessment methods**
1	2	A4,B3,B5,C4,D1,D3,D4	Preparation of calibration curve of salicylic acid.	Lectures Discussion Data show	Written and oral exams and direct questions
2	2	A4,B3,B5,C4,D1,D3,D4	In vitro evaluation of bulk laxative		
3	2	A4,B3,B5,C4,D1,D3,D4	In vitro evaluation of antacids.		
4-5	4	A4,B3,B5,C4,D1,D3,D4	Dissolution of tablets.		
6	2		Review and tutorial		
7-8	4	A4,B3,B5,C4,D1,D3,D4	Determination of pharmacokinetic parameters from CP-time by residual method.		
9-10	4	A4,B3,B5,C4,D1,D3,D4	Determination of pharmacokinetic parameters from CP-time by trapezoidal method.		
11-12	4	A4,B3,B5,C4,D1,D3,D4	Determination of pharmacokinetic parameters from urine excretion samples.		
13-14	4	A4,B3,B5,C4,D1,D3,D4	Hydrolysis of aspirin in buffer pH 6.8.		
15	2	Review and tutorial	Review and tutorial		

11. Infrastructure	
Books Required reading	Shargel L., Yu AB., (Eds). Applied Biopharmaceutics and Pharmacokinetics
Main references (sources)	Aulton's Pharmaceutics: The Design and Manufacture of Medicines, 3rd ed. Michael E. Aulton (Author) Churchill
Recommended books and references (scientific journals, reports…).	**Aulton's Pharmaceutics: The Design and Manufacture of Medicines, 3ed Michael E. Aulton (Author). Churchill, Livingstone- Elsevier**
Electronic references, Internet sites…	

12. Course development plan
Development of buffer capacity in the lab experiment

The subject aim to teach pharmacy students the steps and lines upon which the preformulation processing of pharmaceutical dosage forms. This fundamental coarse provide the required principles to integrate knowledge of Pharmaceutical Technology in preformulation of perfect dosage form.

1. Educational institution	Alayen Iraqi University - College of Pharmacy
2. College department/Center	pharmaceutics
3. Course title/code	Industrial pharmacy 1/ PH4205
4. Modes of Attendance offered	Full-time and official attendance hours
5. Semester/Year	second semester 2023-2024
6. Credits (total)	45 hr theory & 30 hr practical/ semester
7. Date of description form preparation//Revision of this specification	1/10/2023

8. Course Objectives

Be able to know various principles of pharmaceutical processing, solid mixing, fluid mixing, mixing mechanisms, and equipment. Be able to contrast between different types of mills and the milling application in pharmacy, in addition to size measurement of particles and the factors affecting milling. Besides the selection of milling techniques. Be able to describe drying and humidity measurements also classification of dryers and theories of drying. Have obtained hands-on experience in pharmaceutical requirements to obtain sterile products.

In practical: Help students to start designing different pharmaceutical dosage forms through

knowing pre-formulation, preliminary evaluation, bulk characterization, solubility and stability analysis

9. Learning Outcomes, Teaching, Learning, and Assessment Method

1- To be able to know the different principles of drug processing, mixing of solids, and mixing of liquids, Mechanisms, and equipment for mixing

2-To be able to differentiate between different types of grinders and apply grinding in pharmacy, in addition, To measuring the particle size and influencing factors for grinding them. In addition to a set of grinding techniques.

3- To be able to describe drying, measure humidity, classify dryers, and dry theories.

4-Obtain experience in pharmaceutical requirements to obtain sterile products. In addition to the decision in development Production, processing, and quality control.

5-Providing different solutions for purifying pharmaceutical products by knowing the methods required for filters And sterilization operations.

6-Obtaining benefits from the presence of various sterilization and evaluation mechanisms to verify the validity of the disposal kinetics Microbial.

7- Helping the student to start designing various pharmaceutical forms through knowledge of pre-preparation and initial evaluation Solubility and stability analysis

A- Cognitive goals

A- Cognitive objectives.

1. Enabling students to identify the types of drug dosages available in the market.

2. Enable students to learn how to manufacture effervescent granules and their advantages as pharmaceutical doses.

3. Enable students to identify the flow properties of pharmaceutical molecules.

4. Enabling students to learn about density calculations and thus know the flow of pharmaceutical molecules.

5. Enabling students to identify the necessary characteristics of the drug and additives before manufacturing.

6. Enabling students to learn about the manufacture of long-term pharmaceutical doses

B- The skills goals special to the course

1 - Enabling students to acquire skills in manufacturing effervescent granules
2 - Enabling students to acquire the skills of measuring powder flow
3 - Enabling students to acquire the skills of calculating the density necessary for powder flow
4- Enabling students to possess the skills of manufacturing long-term pharmaceutical doses

Teaching and Learning Methods

1- Multimedia lectures
2- Group discussion
3- Power Point presentation

Assessment methods

1- Short tests
2- Oral exam and direct questions
3- Mid-term exam
4- Final exam

C- Affective and value goals

1- Adhere to the highest standards of ethical conduct and professional conduct in all aspects of therapeutic decision-making and patient care.
2- Demonstrating commitment to patient safety.
3- Evidence-based practice.
4- Respect the patient's autonomy and preferences.
5- Collaborate effectively with other health care professionals.

Teaching and Learning Methods

1- Group discussions

2- Small group tasks 3- Power Point presentation
Assessment methods 1- Theoretical and practical exams 2- Case-based scenarios
D- General and rehabilitative transferred skills (other skills relevant to employability and personal development) **D1- Using sources from the Internet** **D2 - Conducting a research study**

10. Theory Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1.	3	A2,A3,B2,B4,C3,D1,D3,D4	Sterilization: Describe Different sterilization ways and equipment required	Lectures Discussion Data show	Written and oral exams and direct questions
2.	3	A2,A3,B2,B4,C3,D1,D3,D4	Preformulation part 1: Steps required changing an active ingredient into a suitable dosage form		
3.	3	A2,A3,B2,B4,C3,D1,D3,D4	Preformulation part 2: Solubility and stability of active ingredient in its chosen dosage form		
4.	3	A2,A3,B2,B4,C3,D1,D3,D4	Clarification and Filtration part 1: Factors affecting Filtration processes		
5.	3	A2,A3,B2,B4,C3,D1,D3,D4	Clarification and Filtration part 1: Selection of suitable filter media for suitable filtration process		
6.	3	A2,A3,B2,B4,C3,D1,D3,D4	Milling part 1: Describe milling size distribution and its measurement		
7.	3	A2,A3,B2,B4,C3,D1,D3,D4	Milling part 2: Theory of milling, milling equipment, types of milling, and mechanisms of size reduction		
8.	3	A2,A3,B2,B4,C3,D1,D3,D4	Milling part 3: Factors influence milling and selection of mill		
9.	3	A2,A3,B2,B4,C3,D1,D3,D4	Mixing part 1: Fluid mixing and their mechanisms and mixer selection		
10.	3	A2,A3,B2,B4,C3,D1,D3,D4	Mixing part 2: Solid mixing and their mixing		
11	3	A2,A3,B2,B4,C3,D1,D3,D4	Mixing part 3: Equipment mixing and mixer selection		
12	3	A2,A3,B2,B4,C3,D1,D3,D4	Drying par 1: Definition of drying, Purposes of drying,		

			Psychrometry and Theory of drying		
13	3	A2,A3,B2,B4,C3,D1,D3,D4	Drying part 2: Behavior of solids during drying and classification of dryers		
14	3	A2,A3,B2,B4,C3,D1,D3,D4	Sterile product part 1: Product development, solvents, nonaqueous Solvents, and solutes		
15	3	A2,A3,B2,B4,C3,D1,D3,D4	Sterile product part 2: Containers, filling procedures and packaging		

10. Laboratory Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1	2	A2,A3,B2,B4,C3,D1,D3,D4	Introduction in industrial pharmacy and pre-formulation.	Lectures Discussion Data show	Written and oral exams and direct questions
2-3	4	A2,A3,B2,B4,C3,D1,D3,D4	Effervescent granules: Preparation and characterization		
4-5	4	A2,A3,B2,B4,C3,D1,D3,D4	Effervescent granules: flow properties and rheology of granules.		
6-7	4	A2,A3,B2,B4,C3,D1,D3,D4	Tablet dosage form: Preparation and characterization.		
8	2	A2,A3,B2,B4,C3,D1,D3,D4	Review and tutorial		
9-10	4	A2,A3,B2,B4,C3,D1,D3,D4	Tablet dosage form		
11	2	A2,A3,B2,B4,C3,D1,D3,D4	Tablet dosage form: Preparation of children's aspirin by wet granulation method.		
12-13	4	A2,A3,B2,B4,C3,D1,D3,D4	Tablet dosage form: Sustained release dosage forms: Preparation and characterization		
14	2	A2,A3,B2,B4,C3,D1,D3,D4	Tablet dosage form: Coating techniques of tablets.		
15	2	Review and tutorial	Review and tutorial		

11. Infrastructure	
Books Required reading	Leon Lachman, "The Theory and practice of industrial pharmacy"
Main references (sources)	Aulton's Pharmaceutics: The Design and Manufacture of Medicines, 3ed Michael E. Aulton (Author). Churchill, Livingstone- Elsevier
Recommended books and references (scientific journals, reports…).	
Electronic references, Internet sites…	

12. Course development plan
1- replacement of some tests due to lack of equipment 2- Study the drug content in pills using ultraviolet light analysis – 3- Capsule evaluation . 4- Study drug hydrolysis using USP dissolution device and apply it to different types of pills and draw them using an excel program

COURSE SPECIFICATION

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

1. Educational institution	Alayen Iraqi University - College of Pharmacy
2. College department/Center	Pharmacology & Toxicology
3. Course title/code	Pharmacology II/ PH4101 Pharmacology III/ PH4201
4. Modes of Attendance offered	Full-time and official attendance hours
5. Semester/Year	First and second semester 2023-2024
6. Credits (total)	2 hr x 15 weeks = 30 hrs
7. Date of description form preparation//Revision of this specification	1/10/2023
8. Course Objectives	
2. The current course enables students to study types of medications, their uses, adverse effects of drugs, drug-drug interactions and interactions of drugs with body functions.	

9. Learning Outcomes, Teaching, Learning and Assessment Method

E. Cognitive goals

1. Identify the main concepts in pharmacokinetics such as absorption, distribution, metabolism, and excretion.
2. Study the Pharmacodynamics of drugs
3. study adverse effects of drugs and drug-drug interactions

F. The skills goals special to the course

1. Empowering students to possess skills in conducting scientific experiments.
2. Empowering students to possess skills in dialogue, discussion and listening to others.

Teaching and Learning Methods

1- PowerPoint and Multimedia presentation
2- Class discussion
5- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams

Assessment methods

1- Short MCQs
2- Oral exam and direct questions in the class
3- Midterm exam
4- Electronic exams on the electronic platform
5- Final exam

G. Affective and value goals

1- Adhere to the highest standards of ethical and professional behavior in all aspects of treatment decision-making and patient care.
2- Evidence-based practice.
3- Collaborate effectively with other healthcare professionals for the best interest of the patient.

Teaching and Learning Methods

1- Lectures
2- PowerPoint presentation
3. Labs

Assessment methods

Theoretical and practical exams

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

1. Presentation of seminars.
2. Developing students' sense of responsibility during the period of study and work.
3. Graduates project
4. Enhancing the spirit of cooperation and teamwork among students.

10. Theory Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Introduction to nervous system	1- Whiteboard and PowerPoint and data show presentation 2- Class discussion 3- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams	1- Short MCQs 2- Oral exam and direct questions in the class 3- Midterm exam 4- Electronic exams on the electronic platform 5- Final exam
2.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Anxiolytic drugs		
3.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Antidepressant drugs		
4.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Anti-schizophrenia drugs		
5.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Anaesthetic drugs		
6.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Central analgesic drugs		
7.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Antiparkinson drugs		
8.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Anti-seizure drugs		
9.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Antihypertensive agents		
10.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Drugs for congestive heart failure		
11	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Angina drugs		
12	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Hypercholesterolemia drugs		
13	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Antiarrhythmic agents		
14	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Anticoagulant agents		

10. Theory Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Drugs of pituitary gland	1- Whiteboard and PowerPoint and data show presentation 2- Class discussion 3- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams	1- Short MCQs 2- Oral exam and direct questions in the class 3- Midterm exam 4- Electronic exams on the electronic platform 5- Final exam
2.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Antidiabetic drugs (insulin)		
3.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Oral hypoglycemic agents		
4.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Drugs of adrenal gland		
5.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	The gonadal hormones and inhibitors		
6.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Autacoids and autacoid antagonists		
7.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	NSAIDS and other anti inflammatory agents		
8.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Drugs used in erejectile dysfunction		
9.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Drugs used in osteoporosis		
10.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Drugs used in the management of obesity		
11.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Cancer chemotherapy		
12.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Anticancer drugs		
13.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Immunosupressants		
14.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Hormones of the thyroid gland		
15.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Drugs for anemia		

11. Infrastructure	
Books Required reading	Lippencott's pharmacology, last edition
Main references (sources)	Lippencott's pharmacology, last edition
Recommended books and references (scientific journals, reports…).	
Electronic references, Internet sites…	

COURSE SPECIFICATION

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

1. Educational institution	Alayen Iraqi University - College of Pharmacy
2. College department/Center	Pharmacology & Toxicology
3. Course title/code	Toxicology\PH4204
4. Modes of Attendance offered	Full-time and official attendance hours
5. Semester/Year	Second semester 2023-2024
6. Credits (total)	2 hr x 15 weeks = 30 hrs
7. Date of description form preparation//Revision of this specification	1/10/2023
8. Course Objectives	
3. The current course enables students to study toxicology of various body systems , toxicokinetics and mechanism of toxicity of drugs and toxicant agents.	

9. Learning Outcomes, Teaching, Learning and Assessment Method

I. Cognitive goals

1. Identify the main concepts in toxicokinetics such as absorption, distribution, metabolism, and excretion.
2. Study the toxicodynamics of drugs and toxicant agents
3. study toxic effects of drugs

J. The skills goals special to the course

1. Empowering students to possess skills in conducting scientific experiments.
2. Empowering students to possess skills in dialogue, discussion and listening to others.

Teaching and Learning Methods

1- PowerPoint and Multimedia presentation
2- Class discussion
5- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams

Assessment methods

1- Short MCQs
2- Oral exam and direct questions in the class
3- Midterm exam
4- Electronic exams on the electronic platform
5- Final exam

K. Affective and value goals

1- Adhere to the highest standards of ethical and professional behavior in all aspects of treatment decision-making and patient care.
2- Evidence-based practice.
3- Collaborate effectively with other healthcare professionals for the best interest of the patient.

Teaching and Learning Methods

1- Lectures
2- PowerPoint presentation
3. Labs

Assessment methods

Theoretical and practical exams

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

1. Presentation of seminars.
2. Developing students' sense of responsibility during the period of study and work.
3. Graduates project
4. Enhancing the spirit of cooperation and teamwork among students

10. Theory Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1.	2	A1,A2,A3,A4,B1,B2,B3,B4, B5,C1,C2,C3,C4,D1,D3,D4, D5	Introduction of toxicology	1- Whiteboard and PowerPoint and data show presentation 2- Class discussion 3- Presentation of cases 4- Handouts 5- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams	1- Short MCQs 2- Oral exam and direct questions in the class 3- Midterm exam 4- Electronic exams on the electronic platform 5- Final exam
2.	2	A1,A2,A3,A4,B1,B2,B3,B4,B 5,C1,C2,C3,C4,D1,D3,D4,D5	Introduction of toxicology		
3.	2	A1,A2,A3,A4,B1,B2,B3,B4, B5,C1,C2,C3,C4,D1,D3,D4, D5	Hepatotoxicity		
4.	2	A1,A2,A3,A4,B1,B2,B3,B4,B 5,C1,C2,C3,C4,D1,D3,D4,D5	Toxicology of respiratory system		
5.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5, C1,C2,C3,C4,D1,D3,D4,D5	Renal toxicity		
6.	2	A1,A2,A3,A4,B1,B2,B3,B4,B 5,C1,C2,C3,C4,D1,D3,D4,D5	Haematotoxicity		
7.	2	A1,A2,A3,A4,B1,B2,B3,B4, B5,C1,C2,C3,C4,D1,D3,D4, D5	Toxicology of the nervous system		
8.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5, C1,C2,C3,C4,D1,D3,D4,D5	Metals toxicity		
9.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5, C1,C2,C3,C4,D1,D3,D4,D5	Pesticides		
10.	2	A1,A2,A3,A4,B1,B2,B3,B4,B 5,C1,C2,C3,C4,D1,D3,D4,D5	Food poisoning		
11	2	A1,A2,A3,A4,B1,B2,B3,B4,B5, C1,C2,C3,C4,D1,D3,D4,D5	Air pollutants		
12	2	A1,A2,A3,A4,B1,B2,B3,B4,B5, C1,C2,C3,C4,D1,D3,D4,D5	Radiological toxicity		

10. Laboratory Course Structure

Week	Hrs.	ILOs	Unit/Module or Topic Title	Teaching methods	Assessment methods
1.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	General introduction to practical toxicology	1- Whiteboard and PowerPoint and data show presentation 2- Class discussion 3- Reports	1- Short MCQs 2- Oral exam and direct questions in the class 3- Midterm exam 4- Electronic exams on the electronic platform 5- Final exam
2.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Acute toxicity study, determination of LD50		
3.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Acute toxicity on liver		
4.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Nicotine toxicity		
5.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Pesticide toxicity		
6.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Metal toxicity		
7.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Blood toxicity		
8.	2	A1,A2,A3,A4,B1,B2,B3,B4,B5,C1,C2,C3,C4,D1,D3,D4,D5	Drug induced toxicity		

11. Infrastructure	
Books Required reading	Casarett and Doull's toxicology: The Basic Science of Poisons
Main references (sources)	Casarett and Doull's toxicology: The Basic Science of Poisons
Recommended books and references (scientific journals, reports…).	
Electronic references, Internet sites…	

12. Course development plan
Not available