

Course Description Form/ Stage 3

1. Course Name:	
Pharmaceutical Technology II	
2. Course Code:	
452 CpCp2	
3. Semester / Year:	
2023-2024 – 2 nd semester	
4. Description Preparation Date:	
Feb 26, 2024	
5. Available Attendance Forms:	
on campus	
6. Number of Credit Hours (Total) / Number of Units (Total):	
4	
7. Course administrator's name (mention all, if more than one name)	
Name: Hanan Jalal Kassab, Kawther Khalid Ahmed, Kawthar.joudi@copharm.uobaghdad.edu.iq Lab instructors Lecturer: Zahraa Muhsin Lecturer: Zainab Issa Assist Lecturer: Roaa AbdulHammed	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • Knowledge • Understand the theoretical bases for the technology of preparing emulsion, powder, capsule, and semisolid dosage forms with respect to their raw materials, compositions, methods of preparation, stability, storage and uses. • Learn and practice skills required for extemporaneous compounding of powder, capsule and semisolid dosage forms • Differentiate between the different liquid dosage forms with regards to their physical. properties, appearance, methods of preparation, suitability for a given drug compound, and stability. • Select the appropriate liquid dosage form for a drug compound. • Differentiate the different solid and semisolid dosage forms applicable for extemporaneous compounding • Identify causes of drug incompatibilities in drug dispensing and compounding. • Skills • Mixing and preparation od powder and capsule dosage form in extemporaneous compounding • Mixing and preparation of semisolid dosage forms in extemporaneous compounding

	<ul style="list-style-type: none"> • Identify incompatibilities in drug admixture • proper use of basic instruments and glass wares commonly used in extemporaneous compounding • Attitude • practice the role of pharmacist in providing safe and effective medication • employ knowledge and skills learned to provide alternatives when needed • proper use of resources
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9. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none"> ○ In class lectures ○ Group discussions ○ Pre-class assignments ○ demonstrations ○ Hands on experience with laboratory work simulating compounding
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	4 lecture + 2 lab	<ul style="list-style-type: none"> • Define the pharmaceutical emulsions • Distinguish between the different types of pharmaceutical emulsions based on their physical state • Differentiate between the different types of pharmaceutical emulsions based on their intended uses. • Compare and contrast emulsification theories: surface tension, oriented wedge, and Interfacial film. • Compare and contrast various types of emulsifying agents • Identify the methods and techniques employed in 	Emulsion	Lectures Lab work Group discussions	Oral exam Summative exam Technical skills evaluation

		<p>preparing of stable pharmaceutical emulsions.</p> <ul style="list-style-type: none"> • Identify the factors that affect the stability of emulsion, such as temperature and environmental conditions. 			
2 -3	3 lecture + 2 lab	<ul style="list-style-type: none"> • Compare and contrast various suppository and insert, in terms of physical appearance, size and shape • Describe the advantages of suppositories and inserts. • Identify and explain physiologic factors that influence the drug absorption from rectal suppository administration • Identify and explain the physicochemical factors of the drug and suppository/insert base as these influence absorption • Compare and contrast the various classes of suppository bases • Describe the three methods of suppository preparation 	Suppositories and Inserts	Lectures Lab work Group discussions	Oral exam quiz Summative exam Technical skills evaluation
3-4	5 lecture + 4 lab	<p>Differentiate between the various types of semisolid bases on the basis of physical and chemical properties. List the criteria for the selection of a semisolid</p>	Semi-solid dosage forms	Lectures Lab work Group discussions	Oral exam Summative exam Technical skills evaluation

		<p>base to treat a topical affliction.</p> <p>Describe the methods to incorporate (an) active ingredient(s) into a semisolid base.</p> <p>Explain the difference between an ointment, a cream, and a gel.</p> <ul style="list-style-type: none"> • Compare and contrast an ophthalmic ointment base and a topical ointment base for application to the skin. 			
5 - 6	4 lecture + 2 lab	<p>Differentiate a powder from a granule.</p> <p>Explain how a drug's powder particle size influences the pharmaceutical dosage forms which will be used to administer it.</p> <p>Define micrometrics, the angle of repose, levigation, spatulation, and trituration.</p> <p>Compare and contrast the various types of medicated powders, e.g., bulk, divided.</p> <p>Provide examples of medicated powders used in prescription and nonprescription products</p>	Powders and Granules	Lectures Lab work Group discussions	Oral exam quiz Summative exam Technical evaluation
6 - 7	3 lecture +	Differentiate between hard and soft gelatin capsule.	Capsule	Lectures	Oral exam quiz Summative exam

	2 lab	<p>Understand the advantages and disadvantages of each type of capsule</p> <p>Identify the excipients used for both type of capsules</p> <p>Recognize the compendial requirement of capsules</p> <p>Understand the appropriate method for compounding and packaging and storage of capsules</p>		<p>Lab work</p> <p>Group discussions</p>	<p>Technical skills evaluation</p>
7-8-		Mid term exam			
9-10	4 lecture + 2 lab	<p>Define aerosols</p> <p>Understand the types and applications of aerosols</p> <p>Identify the main advantage of aerosols</p> <p>Define foams</p> <p>Explore the types and applications of foams</p> <p>Identify the main advantage of foams</p> <p>Differentiate between aerosols and foams</p>	Aerosols and foam	<p>Lectures</p> <p>Demonstration</p> <p>Group discussion</p>	<p>Oral exam</p> <p>quiz</p> <p>Summative exam</p>
11-12	5 lecture + 2 lab	<p>This topic discusses the drug interactions from a physicochemical rather than a pharmacological or pharmacodynamic viewpoint.</p> <p>Sometimes the interaction is beneficial and sometimes not. In reading this topic, you should</p>	<p>Physicochemical drug interactions and incompatibilities</p>	<p>Lectures</p> <p>Demonstration</p> <p>Group discussion</p> <p>Case stud</p>	<p>Oral exam</p> <p>quiz</p> <p>Summative exam</p>

		<p>appreciate that there are several causes of interactions and incompatibilities, which include:</p> <ul style="list-style-type: none"> ● pH effects ● Change of solvent ● Cation_–_anion interactions ● Salting-out and salting-in ● Chelation ● Ion-exchange interactions ● Adsorption to excipients and containers 			
13-15		Final exam			
11. Course Evaluation					
20% lab work (5% oral exams, 10% technique, 5% quizzes), 15% mid-term exam, 5% daily work, in-class quizzes, 60% final exam					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Ansel's Pharmaceutical Dosage Forms and Drug Delivery System Eleventh Edition		
Main references (sources)					
Recommended books and references (scientific journals, reports...)			Physiochemical Principles of Pharmacy Alexander T Florence, David Attwood 4th Edition Chapter 10 (2006) 5th Edition Chapter 11(2011)		
Electronic References, Websites			Drugs.com USPNF.com		

1. Course Name:					
Pharmacy Ethics					
2. Course Code:					
455 CpCs					
3. Semester / Year:					
2 nd semester/ Third					
4. Description Preparation Date:					
17/ Feb. 2024					
5. Available Attendance Forms:					
On campus					
6. Number of Credit Hours (Total) / Number of Units (Total)					
1 Hour /1 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Assist Prof.: Zinah Mudhafar Anwer					
Email: zina.ahmed@copharm.uobaghdad.edu.iq					
8. Course Objectives					
Course Objectives		The course will provides an overview of ethical issues facing practicing pharmacists in order to enable the student to understand the basic concepts of ethics which formulate the relationship of pharmacist with the patient, colleges, and other health personnel in order to deliver his pharmaceutical services in good way...			
9. Teaching and Learning Strategies					
Strategy		Enable students to understand ethical issues and common ethical dilemma which may face pharmacists in the pharmacy, hospital, and community.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	History and definition of ethics in pharmacy	Introduction to Pharmacy Ethics (Theoretical considerations).	Power point lecture	Quiz
2	1	Principals of code of pharmacy ethics	Code of Ethics for Pharmacists	Power point lecture	Quiz

3	2	Definitions and examples about ethical considerations	Common Ethical Considerations in Pharmaceutical Care Practice (Beneficence, Autonomy, Honesty, Informed Consent, Confidentiality, Fidelity).	Power point lecture	Quiz
4	1	Definitions and examples about ethical considerations	Other ethical considerations	Power point lecture	Quiz
5	2	How to build good Interprofessional considerations	Interprofessional Relations.	Power point lecture	Quiz
6	1	Types of ethical decisions	Making ethical decisions.	Power point lecture	Quiz
7	1	Understand how ethics play an important role before making a research	Ethical issues related to clinical pharmacy research.	Power point lecture	Quiz
8	1	Definition of misuse and abuse, prevention, treatment and complications	Preventing misuse of medicines.	Power point lecture	Quiz
9	3	1-Apply ethical considerations on some clinical cases. 2-The main ethical dilemma in clinical cases.	Case studies in pharmacy ethics.	Power point lecture	Quiz

Course Evaluation .

Theoretical midterm exam (25%), Quizzes (2%) , and attendance (3%), and the end semester exam will be assessed for 70% of the final mark

Learning and Teaching Resources .

Required textbooks (curricular books, if any)	Robert J. Cipolle, Linda M. Strand, Peter C. Morley. Pharmaceutical Care Practice: The Clinician's Guide.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	1- Course notes in medical ethics and law 2- Compelling_Ethical_Challenges_in_Critical_Care_and_Emergency_Medicine
Electronic References, Websites	Review articles

13.Course Name:	
Biochemistry I	
14.Course Code:	
334 CIPy1	
15.Semester / Year:	
First/Third	
16.Description Preparation Date:	
29/2/2024	
17.Available Attendance Forms:	
In-person attendance	
18.Number of Credit Hours (Total) / Number of Units (Total)	
5/4	
19.Course administrator's name (mention all, if more than one name)	
Dr. Ali A. Kasim	ali.qasem@copharm.uobaghdad.edu.iq
Dr. Senaa S. Amin	sena.khedr@copharm.uobaghdad.edu.iq
Dr. Zahraa M.A. Naji	zahraa.naji@copharm.uobaghdad.edu.iq
Dr. Amnah A. Abd	amna.a@copharm.uobaghdad.edu.iq
Dr. Ali S. Salman	ali.salman@copharm.uobaghdad.edu.iq
Wasan G. Hussein	wasn.hussein@copharm.uobaghdad.edu.iq
20.Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • Providing students with the principles of important biological molecules and preparation of metabolism of these molecules.

	<ul style="list-style-type: none"> • Providing students with the necessary technical skills in biochemistry.
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21. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none"> • Presentation and recitation • Interactive discussions • Brainstorming • Research and induction
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22. Course Structure

Week	Hours	Required Learning Outcomes	Unit	Learning method	Evaluation method
1	3	Familiarity with what biochemistry studies and the description of important macromolecules.	Biological molecules: An introduction	Lectures; Discussions and Reports	Exam and classroom activities
2	3	Structure, classification, properties, and forms of amino acids.	Amino Acids	=	=
3	3	Chemical reactions, zwitterion, titration equation and calculation of the isoelectric pH, non-proteogenic amino acids, and clinical importance	Amino Acids	=	=
4	3	Peptide bond, backbone torsion angles, nomenclature of peptides, structure and function of some important peptides in human.	Peptides	=	=
5	3	Order of protein structure, bonds in proteins of different order of structure,	Proteins	=	=

		classification of proteins based on the function, chemical nature, and nutritional value.			
6	3	Determination of the amino acids sequence in primary order proteins, determination of the N and C termini.	Proteins	=	=
7	Mid-tem examination				
8	3	Chemistry, classification of carbohydrates, stereochemistry of monosaccharides, physiological importance.	Carbohydrates	=	=
9	3	Clinical importance and classification, saturated and unsaturated fatty acids nomenclature, physical properties, the effects of free radicals on body tissues, the effects of free radical scavengers in protection of lipids.	Lipids	=	=
10	3	Enzymes structure, nomenclature, and classification, how enzymes work, models of enzyme-substrate interaction, clinical applications of enzymes.	Enzymes	=	=

11	3	General principles, factors affecting the rate of enzyme catalyzed reaction (substrate concentration, temperature, and pH), Michaelis-Menten equation and Lineweaver-Burk plot, Michaelis constant.	Enzymes kinetics	=	=
12	3	The competitive and noncompetitive inhibitors, irreversible inhibition, the kinetic effects of inhibitors and how to determine the mechanism of inhibition.	Enzyme inhibitors	=	=
13	3	The effect of substrate concentration on regulation, the effect of compartmentation in facilitating the regulation, the ideal enzyme-catalyzed step for regulation of a metabolic pathway, regulation of enzyme amount, regulation of enzyme efficiency via reversible and irreversible covalent modifications.	Enzymes regulation	=	=
14	3	The basic principles of endocrine hormone action, the broad diversity and mechanisms of action of endocrine	The diversity of endocrine system	=	=

		hormones, the complex steps involved in the production, transport, and storage of hormones.			
15	3	The roles of stimulus, hormone release, signal generation, and effector response in hormone-regulated physiologic processes, the role of receptors and guanosine nucleotide-binding G-proteins in hormone signal transduction, coordinating the work of hormones and their effect on physiological outcomes, the mechanism of the hormone's effect on cells	Hormone action	=	=

23. Course Evaluation

Mid-term examination (15 marks)

Quiz and homework (5 marks)

Practical work (20 marks)

Final examination (60 marks)

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Harper's Illustrated Biochemistry, 32 ed.

Main references (sources)

Lippincott Illustrated Reviews: Biochemistry
Lehninger Principles of Biochemistry, 8th ed.

Recommended books and references (scientific journals, reports...)

Electronic References, Websites

25.Course Name:	
Biochemistry II	
26.Course Code:	
٤٥٣ PtGt	
27.Semester / Year:	
Second /Third	
28.Description Preparation Date:	
29/2/2024	
29.Available Attendance Forms:	
In-person attendance	
30.Number of Credit Hours (Total) / Number of Units (Total)	
5/4	
31.Course administrator's name (mention all, if more than one name)	
Dr. Ali A. Kasim	ali.qasem@copharm.uobaghdad.edu.iq
Dr. Senaa S. Amin	senaa.khedr@copharm.uobaghdad.edu.iq
Dr. Zahraa M.A. Naji	zahraa.naji@copharm.uobaghdad.edu.iq
Dr. Amnah A. Abd	amna.a@copharm.uobaghdad.edu.iq
Najwan Kaisar Fakree	najwankaisar@copharm.uobaghdad.edu.iq
32.Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • Learning of the fundamentals of cellular metabolism of carbohydrates, lipids, and amino acids and their association with various metabolic diseases. • Providing students with the necessary technical skills in the field of biochemistry.
33.Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> • Presentation and recitation • Interactive discussions • Brainstorming • Research and induction
34. Course Structure	

Week	Hours	Required Learning Outcomes	Unit	Learning method	Evaluation method
1	1	The application of the laws of thermodynamics in biological systems, the relationship between endothermic and exothermic reactions, the function of adenosine triphosphate as the “energy currency” for cells.	Bioenergetics: The Role of ATP	Lectures, Discussions, and Reports	Exam and classroom activities
1	2	Explain what is meant by anabolic, catabolic and combined metabolic pathways; A description of the metabolic process at the tissue, organ, and subcellular levels; Methods of regulating of the flow of metabolites through metabolic pathways; How to provide metabolic fuel supply in both the fed and the fasting states.	Overview of metabolism and the provision of metabolic fuels	=	=
2	3	Description of the pathway of glycolysis, its regulation, and the possibility of its occurrence under anaerobic conditions. The differences between the roles of glucokinase and	Glycolysis and the oxidation of pyruvate	=	=

		hexokinase in glycolysis; Description of the pyruvate dehydrogenase reaction and its regulation.			
3	3	Description of the citric acid cycle reactions, its regulation, and emphasizing the reactions that lead to the production of reducing equivalents; Explain the importance of vitamins in citric acid cycle; Explain how the cycle provides a pathway for amino acid catabolism and a pathway for their synthesis.	The citric acid cycle	=	=
4	3	Description of the four protein complexes involved in the transfer of electrons through the respiratory chain; How electron transfer through the respiratory chain generates ATP through the process of oxidative phosphorylation; List examples of the common toxins that interfere with electron	The respiratory chain and oxidative phosphorylation	=	=

		transport or oxidative phosphorylation and identify their sites of action.			
5	3	Description of the structure of glycogen and its importance as a carbohydrate store; The synthesis and catabolism of glycogen and how the two processes are regulated; Description of the different types of glycogen storage diseases.	Metabolism of glycogen	=	=
6	3	The importance of gluconeogenesis in glucose homeostasis; the pathway of gluconeogenesis, and how glycolysis and gluconeogenesis are mutually regulated; how plasma glucose concentration is maintained within certain limits in the fed and the fasting states.	Gluconeogenesis and the control of blood glucose	=	=
7	Mid-term examination				
8	3	The pentose phosphate pathway and its importance; the uronic acid pathway and its importance; the consequences of	The Pentose Phosphate Pathway and other pathways of hexose metabolism	=	=

		<p>consuming large amounts of fructose; the structure and physiological importance of galactose; the consequences of genetic defects of glucose-6-phosphate dehydrogenase deficiency, the uronic acid pathway, and fructose and galactose metabolism.</p>			
9	1	<p>Indicate the intermediate compounds of the citric acid cycle and glycolysis that are precursors of certain amino acids; the key role of transaminases in amino acid metabolism; Explain the process by which 4-hydroxyproline, 5-hydroxylysine and selenocysteine are formed in some proteins; the synthesis of some amino acids through the assimilation of free</p>	<p>Biosynthesis of the nutritionally nonessential amino acids</p>	=	=

		ammonia; the synthesis of some amino acids using other amino acids.			
9	2	Description of protein metabolism, its functions, its speed determinants, and cellular protein catabolism pathways; the central roles of transaminases, glutamate dehydrogenase, and glutaminase in nitrogen metabolism; description of the cycle of urea synthesis, its regulation, and its metabolic defects.	Catabolism of proteins and of amino acid nitrogen	=	=
10	1	Illustration of the catabolic pathways of amino acids' carbon skeletons and their major metabolic fates; the clinically important metabolic disorders in this regard.	Catabolism of the carbon skeletons of amino acids	=	=
10	1	The involvement of amino acids as precursors in the biosynthesis variety of biological molecule other than proteins.	Conversion of amino acids to specialized products	=	=

10	1	The structure and nomenclature of porphyrins; the pathway of heme synthesis and its catabolism; the causes and general clinical features of different porphyrias.	Porphyrins and bile pigments	=	=
11	3	Fatty acids transportation in the blood; activation of fatty acids and their transportation into mitochondria for oxidation; the beta oxidation pathway; ketone bodies formation and the pathological conditions that accompany their excessive formation.	Oxidation of fatty acids	=	=
12	3	Description of the acetyl-CoA acetylase reaction and the mechanisms of regulating its activity to control the rate of fatty acid synthesis; the synthesis of long-chain fatty acids and required cofactors;	Biosynthesis of fatty acids and eicosanoids	=	=

		the synthesis of polyunsaturated fatty acids.			
13	3	The catabolism of triacylglycerols and the fate of the resulting metabolites; the synthesis of triacylglycerols, inositol phosphoglycerols, cardiolipin, triacylglycerols, plasmogens, and platelet-activating factor; the role of different phospholipases in the degradation and remodeling of phospholipids; the synthesis of sphingolipids.	Metabolism of acylglycerols and sphingolipids	=	=
14	3	Description of the four main plasma lipoproteins and their structure; the transport of lipoproteins to and from the liver and the role of the liver in their metabolism; the metabolism of lipoproteins in the blood and the delivery of cholesterol from the liver to extrahepatic tissues;	Lipid transport and storage	=	=

		<p>the mechanisms by which cholesterol is delivered from extrahepatic tissues and returned to the liver by the reverse cholesterol transport;</p> <p>the processes by which fatty acids are released from triacylglycerol stored in adipose tissue and the role of brown adipose tissue in generating body heat.</p>			
15	3	<p>The importance of cholesterol as a basic structural component in the body, and its pathological role;</p> <p>the pathway of cholesterol biosynthesis and its regulation;</p> <p>the role of plasma lipoproteins in transporting cholesterol among tissues.</p>	Cholesterol synthesis, transport, and excretion	=	=

35.Course Evaluation

Mid-term examination (15 marks)

Quiz and homework (5 marks)

Practical work (20 marks)

Final examination (60 marks)

36. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Harper's Illustrated Biochemistry, 32 ed.
Main references (sources)	Lippincott Illustrated Reviews: Biochemistry, 7 th ed. Lehninger Principles of Biochemistry, 8 th ed.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

37. Course Name:	
Pathophysiology	
38. Course Code:	
335 CIEy	
39. Semester / Year	
First / Third	
40. Description Preparation Date:	
29/2/2024	
41. Available Attendance Forms:	
In-person attendance	
42. Number of Credit Hours (Total) / Number of Units (Total)	
5/4	
43. Course administrator's name (mention all, if more than one name)	
Name: Assist. Prof. Suhair Hassan Ali Email: sohayrmohammed@copharm.uobaghdad.edu.iq Name: Lec. Dr. Khalid Abdul Hussein Email: khaled.abd@copharm.uobaghdad.edu.iq Name: Instructor Eman Sadiq Email: Iyman.hussein@copharm.uobaghdad.edu.iq	
44. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> Providing students with the theoretical and practical knowledge and technical skills

	necessary in the field of studying and understanding pathophysiology.
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45. Teaching and Learning Strategies	
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Strategy	<ul style="list-style-type: none"> • Presentation and recitation • Interactive discussions • Brainstorming • Research and induction
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46. Course Structure					
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Week	Hours	Required Learning Outcomes	Unit	Learning method	Evaluation method
1	3	Introducing pathophysiology and its relationship to related sciences such as immunity and histology; and presenting some terms used in describing pathological cellular changes In the practical part, identifying the histopathological changes in cell necrosis	Introduction to pathophysiology	Lectures; Discussions and Reports	Exam and classroom activities
2	3	Disturbances of electrolytes and water distribution, alkalosis and acidosis	Electrolytes and water	=	=
3	3	Pathophysiology of the heart and vascular system disorders In the practical part, identifying the histopathological changes in some	The circulatory system diseases	=	=

		cardiovascular diseases In the practical part, identifying the histopathological changes in some cardiovascular diseases			
4	3	Pathophysiology of the respiratory system diseases. In the practical part, identifying the histopathological changes in some respiratory diseases	The respiratory system diseases	=	=
5	3	Pathophysiology of the urinary system diseases In the practical part, identifying the histopathological changes in some urinary diseases	The urinary system diseases	=	=
6	3	Pathophysiology of digestive system diseases In the practical part, identifying the histopathological changes in the gastrointestinal tract	The digestive system diseases	=	=
7	Mid-tem examination				
8	3	Disorder of the liver, pancreas, gall	Diseases of organs and glands	=	=

		bladder, and salivary glands In the practical part, identifying the histopathological lesions in some liver and pancreatic diseases	associated with the digestive system		
9	3	Endocrine disorders and autoimmune diseases: thyroid disorder, diabetes mellitus, and metabolic syndrome In the practical part, identifying the histopathological lesions in some endocrine glands	Autoimmune and glandular disorder	=	=
10	3	Pathophysiology of some neurological disorders In the practical part, identifying the histopathological lesions in neuro-endocrine tissue	Disease of the nervous system	=	=
11	3	Pathophysiology of some male and female reproductive system diseases	Disease of the reproductive system	=	=
12	3	Pathophysiology of blood disease In the practical part, identifying the histopathological lesions in blood cells	Blood diseases	=	=
13	3	Pathophysiology of some skin and	Disease of skin and musculo-skeletal system	=	=

		<p>musculoskeletal system diseases</p> <p>In the practical part, identifying the histopathological lesions in muscles, ligaments, tendons, and bone</p>			
14	3	<p>Theories and pathophysiology of cancer</p> <p>In the practical part, identifying the histopathological lesions in some tumor tissues</p>	Cancerous diseases	=	=
15	3	<p>Pathophysiology of cellular changes</p> <p>In the practical part, identifying the histological changes in apoptosis, necrosis, hyperplasia, atrophy, and metaplasia</p>	Cellular changes	=	=
47.Course Evaluation					
Mid-term examination 20 marks					
Practical work 20 marks					
Final examination 60 marks					
48.Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)			<p>-Study Guide for Understanding Pathophysiology 7th Ed; 2021</p> <p>-Pathophysiology of Disease, An Introduction to Clinical Medicine, 6th Ed;2010</p>		

Recommended books and references (scientific journals, reports...)	McCance & Huethers Pathophysiology ,9th Ed 2022
Electronic References, Websites	

1. Course Name:	
Inorganic Pharmaceutical Chemistry	
2. Course Code:	
103013313	
3. Semester / Year:	
First Semester /2023-2024	
4. Description Preparation Date:	
March 2024	
5. Available Attendance Forms:	
On campus	
6. Number of Credit Hours (Total) / Number of Units (Total)	
۳۰ Hours / 3 Units	
7. Course administrator's name (mention all, if more than one name)	
<p>Name: Muthanna Saadi Farhan</p> <p>Email: mothana.farhan@copharm.uobaghdad.edu.iq</p> <p>Name: Sarah sattar jabbar</p> <p>Email: Sarra.ali@copharm.uobaghdad.edu.iq</p> <p>Lab instructors</p> <p>Name: Shayma L. Abdulhadi Email:</p> <p>Email: shaimaa.loaiy@copharm.uobaghdad.edu.iq</p> <p>Name: Anwar A. Tamer</p> <p>Email: Anwar.adnan@copharm.uobaghdad.edu.iq</p> <p>Name: Mayada Riadh Tawfik</p> <p>Email: Maiada.mousa@copharm.uobaghdad.edu.iq</p>	
8. Course Objectives	
Course Objectives	<p>1-Shedding light on the biological role of elements, ions, and inorganic compounds.</p> <p>2- Studying the biological and pathological effects of essential elements for the body, as well as investigating the toxic and therapeutic effects of non-essential elements.</p> <p>3-Investigating the atomic structure of radioactive isotopes, along with their biological, therapeutic, and medical effects, and the different types of atomic radiation.</p> <p>4-Exploring the biological and therapeutic impact of inorganic compounds in treating gastrointestinal diseases and their various pharmaceutical applications.</p>

9. Teaching and Learning Strategies

Strategy	<ol style="list-style-type: none">1-Theoretical Lectures2-Conducting Scientific Experiments3-Study Circles/Seminars4-Daily Assignments5-Written Examinations6-Methodological and Supplementary Books7-Illustrative Videos
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-3	6	Understand how molecular and structural formulas represent chemical compounds. Comprehend the concept of chemical complexes and their importance in inorganic chemistry.	Molecular and Structural Formulas / Complexes	Lectures	Oral and Written Exam
2-5	5	Differentiate between essential and non-essential elements in biological systems. Recognize the significance of elements present in low concentrations for biological functions.	Essential and Non-Essential Elements with Low Concentrations	Lectures	Oral and Written Exam
6-7	4	Identify key inorganic compounds utilized in the treatment of gastrointestinal disorders. Understand the mechanisms of action and potential side effects associated with these compounds.	Inorganic Compounds Used in Treating Gastrointestinal Disorders	Lectures	Oral and Written Exam
8	2	Explore the inorganic compounds commonly employed in topical treatments. Evaluate the effectiveness and safety considerations of these compounds in dermatological applications.	Inorganic Compounds Used in Topical Treatment	Lectures	Oral and Written Exam
9	1	Familiarize with inorganic compounds utilized in dental treatments and restorative materials. Understand their roles in preventing and treating dental conditions.	Inorganic Compounds Used in Dental Treatment	Lectures	Oral and Written Exam
10-12	6	Define radiopharmaceuticals and their application in nuclear medicine.	Radiopharmaceuticals	Lectures	Oral and Written Exam

		Learn about the production, labeling, and clinical use of radiopharmaceuticals.			
13-15	6	Explore specific inorganic compounds employed in the formulation of radiopharmaceuticals. Understand their properties, stability, and relevance in diagnostic and therapeutic procedures.	Inorganic Compounds Used in Radiopharmaceuticals	Lectures	Oral and Written Exam

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc
 20 marks for practical work in the lab and quizzes
 20 marks for mid-term exam and quizzes and oral discussions
 60 marks for final term exam

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Required Textbooks: Inorganic Medicinal and Pharmaceutical Chemistry by Block, Roche Soine and Wilson, latest edition Wilson and Gisvold; Textbook of Organic medicinal and pharmaceutical chemistry; Delgado JN, Remers WA, (eds); latest edition
Main references (sources)	Primary References (Sources): Inorganic Medicinal and Pharmaceutical Chemistry by Block, Roche Soine and Wilson, latest edition Wilson and Gisvold; Textbook of Organic medicinal and pharmaceutical chemistry; Delgado JN, Remers WA, (eds); latest edition
Recommended books and references (scientific journals, reports...)	Recommended Books and References (Scientific Journals, Reports, etc.):
Electronic References, Websites	Electronic References, Websites, etc.:

49.	Course Name:
	Organic Pharmaceutical Chemistry I
50.	Course Code:
	1030211210
51.	Semester / Year:

Second Semester 2023-2024	
52. Description Preparation Date:	
March 2024	
53. Available Attendance Forms:	
On campus	
54. Number of Credit Hours (Total) / Number of Units (Total)	
30 hours/ 4 units	
55. Course administrator's name (mention all, if more than one name)	
Name: Duraid Hamid Email: colrelated@copharm.uobaghdad.edu.iq Name: Mohammed Abdulameer Oleiwi Email: mohammed.abolAmer@copharm.uobaghdad.edu.iq Name: Azhar Mahdi Jasim Email: azharmjk@copharm.uobaghdad.edu.iq Name: Shayma L. Abdulhadi Email: Email: shaimaa.loaiy@copharm.uobaghdad.edu.iq Name: Anwar A. Tamer Email: Anwar.adnan@copharm.uobaghdad.edu.iq Name: Mayada Riyadh Tawfik Email: Maia.mousa@copharm.uobaghdad.edu.iq	
56. Course Objectives	
Course Objectives	1. Highlighting the concept of drug journey inside the body (ADME) 2. Studying drug and chemical metabolism 3. Studying factors affecting drug metabolism 4. Studying Stereochemical Aspects of Drug Metabolism.
57. Teaching and Learning Strategies	
Strategy	a. Knowledge 1. Studying the physicochemical and biological factors affecting the drug inside the body. 2. Studying classical and recent strategies of drug design. 3. Studying the different types of biotransformation of drugs inside the body. 4. Studying factors affecting drug metabolism. Learning and teaching methods 1- Theoretical lectures covering all the aspects 2 -Conducting reports and research

- 3 -Presentation of practical videos
- 4 - Use of supporting books
- 5- Seminars

b. Skills

1. Obtaining skills of dealing with the chemical structure of drugs and its effect on drug behavior inside the body
2. Obtaining skills to modify the chemical structure of drugs to enhance the action and overcome weak points in the drug properties
3. Obtaining skills of writing scientific reports

Learning and teaching methods

1. Lectures
2. Interactive open discussion
3. Demonstrating videos
4. Lab. Experiments and research
5. Supporting references
6. Homework
7. Exams

c. Attitude

1. Knowledge-based expectation of drug action and inactivation inside the body
2. Enhancing the ability to think and analyze
3. Working as a research team

d. Other skills acquired through the course (related to personal development and employment)

1. Experiencing the making of scientific reports
2. Experiencing literature reading and recent learning methods
3. Experiencing the art of analysis and discussion of results of experiment

Learning and teaching method

- 1- Theoretical lectures
- 2 -Practical experiences
- 3-Explanatory videos
- 4-Scientific discussions through seminars or asking questions

Assessments methods

- 1-Conducting mid-term and final exams
- 2--Daily oral and written exams
- 3-Practical laboratory exams (practical - practical and theoretical - practical)
- 4 -Laboratory reports
- 5- Conducting seminars

58. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	2	Introducing the drug journey inside the body	Drug distribution.	Lectures	oral and written exams
3	4	Demonstrating the effect of pKa of drugs vs. the pH of the environment	Acid-base properties of drugs	Lectures	oral and written exams
4	2	Basic knowledge of in silico drug design	Computer-aided drug design	Lectures	oral and written exams
5	3	The effect of forces and bonds and drug response	Forces involved with drug-receptor interactions.	Lectures	oral and written exams
6	4	Stereochemical aspects of drug molecules vs. the receptor	Steric features of drugs	Lectures	oral and written exams
7	4	Effect of isosteric replacements of atoms within drug molecules	Isosterism	Lectures	oral and written exams
8-15	1	Types of metabolism. Site of metabolism	General pathways of drug metabolism: Sites of drug biotransformation.	Lectures	oral and written exams
	1	Role of cytochrome P450 mono-oxygenases			
	9	Studying the -Oxidation of Aromatic Moieties Oxidation of Olefins -Oxidation at Benzylic Carbon Atoms --Oxidation at Allylic Carbon Atoms	Role of cytochrome P450 mono-oxygenases	Lectures	oral and written exams

	2	<ul style="list-style-type: none"> -Oxidation at Carbon Atoms α to Carbonyls and Imines -Oxidation at Aliphatic and Alicyclic Carbon Atoms -Oxidation involving Carbon-Heteroatom Systems -Oxidation of carbon-nitrogen system -Oxidation of carbon-oxygen system -Oxidation of carbon-sulfur system -Oxidation of Alcohols and Aldehydes -Other Oxidative Biotransformation Pathways 	<p>in oxidative biotransformation</p> <p>Oxidative reactions</p> <p>Reductive reactions</p>	<p>Lectures</p> <p>Lectures</p>	<p>oral and written exams</p> <p>oral and written exams</p>
	2	<p>Studying the</p> <ul style="list-style-type: none"> -Reduction of Aldehyde and Ketone Carbonyls -Reduction of Nitro and Azo Compounds -Miscellaneous Reductions 	Hydrolytic reactions	Lectures	oral and written exams
	6	<p>Studying the</p> <ul style="list-style-type: none"> -Hydrolysis of Esters and Amides -Miscellaneous Hydrolytic Reactions -Miscellaneous Bioactivation of prodrug 	Phase II reactions	Lectures	oral and written exams
	2	<p>Studying the</p> <ul style="list-style-type: none"> -Glucuronic Acid Conjugation -Sulfate Conjugation -Conjugation with Glycine, Glutamine, and Other Amino Acids -GSH or Mercapturic Acid Conjugates -Acetylation -Methylation 			
	2	Studying the factors affecting drug metabolism	Factors affecting drug metabolism.	Lectures	oral and written exams
	1	Studying the of stereochemistry on metabolism	Stereochemical Aspects of Drug Metabolism	Lectures	oral and written exams
	1	Studying the metabolism of pharmacologically active drug			oral and written exams

			Pharmacologically Active Metabolites	lectures	oral and written exams
59. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
20 marks for practical work in the lab and quizzes					
20 marks for mid-term exam and quizzes and oral discussions					
60 marks for final term exam					
60. Learning and Teaching Resources					
Required textbooks (curricular books any)		Wilson and Gisvold Textbook of Organic medicinal and Pharmaceu chemistry, Delgado JN, Remers WA, (Eds); 12th ed, 2011			
Main references (sources)		Wilson and Gisvold Textbook of Organic medicinal and Pharmaceu chemistry, Delgado JN, Remers WA, (Eds); 12th ed, 2011			
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites		https://www.sciencedirect.com/book/9780128128381/organic-chemistry			

