

Course Description Form /Stage 5

✓ Course Name:	
Dosage form design	
✓ Course Code:	
569 PDf	
✓ Semester / Year:	
2 nd	2023–2024
✓ Description Preparation Date:	
2024	
✓ Available Attendance Forms:	
yes	
✓ Number of Credit Hours (Total) / Number of Units (Total)	
2 Units	
✓ Course administrator's name (mention all, if more than one name)	
<p>Name: Prof. Dr. Shaimaa Nazar Abdalhammid Email: Shaimaa.Abd@copharm.uobaghdad.edu.iq</p> <p style="text-align: center;">Assist. Prof. Dr. Lubna Abdalkarim Sabri Lobna.sabri@copharm.uobaghdad.edu.iq</p>	
✓ Course Objectives	
<p>Course Objectives</p>	<p>The student will be able to:</p> <ul style="list-style-type: none"> – understanding the regulatory process by which manufactured pharmaceuticals are approved for marketing by the federal Food and Drug Administration. – Study the historical development of drugs and pharmacy, role of the pharmacist in contemporary practice, standards of United States Pharmacopeia–National Formulary, – Compare and contrast an Investigational New Drug (IND) Application from a New Drug Application (NDA) – Differentiate between Phase 1, Phase 2, Phase 3, and Phase 4 clinical trials

- Differentiate between the various methods of drug discovery
- Delineate the circumstances whereby an old drug could be classified as “new”
- Define pharmacology, drug metabolism, and toxicology
- List common terms used in the Current Good Manufacturing Practice (cGMP) for finished pharmaceuticals
- Outline Code of Federal Regulation (CFR) such as the organization and personnel required, the intent and importance of written procedures within the various components of cGMP
- Describe the various types of tamper-evident packaging, and provide a product example of each type
- Differentiate between pharmaceutical manufacturing and extemporaneous compounding
- Compare and contrast the advantages/disadvantages of various drug dosage forms
- Describe the information needed in preformulation studies to characterize a drug substance for possible inclusion into a dosage form
- Describe the mechanisms of drug degradation and provide examples of each
- Describe the purpose and general protocol for accelerated stability studies
- Categorize various pharmaceutical ingredients and excipients
- Differentiate between different routes for active drug transport
- Discuss key data points in a blood plasma concentration-time curve following the oral administration of a drug
- Differentiate between the terms biopharmaceutics, bioavailability, and bioequivalence

	<ul style="list-style-type: none"> - Discuss the importance of a drug's dissolution rate following the oral administration of a solid dosage form - Describe the sequence of events and the processes that occur to a drug during its course of bodily transit, from the time of its oral administration and absorption through its excretion - Perform various basic pharmacokinetic calculations
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✓ Teaching and Learning Strategies

Strategy	<p>Lectures and Presentation, Interactive discussions related photos and videos, brainstorm, and Inverted classrooms with learning strategies:</p> <ol style="list-style-type: none"> 1. Tuning in ...can be used to determine students' current knowledge and skills. 2. Finding out ... encourage investigation and independent learning. 3- Sorting out ... encourage the analysis. 4- Developing values ... allow students to identify, 5- Speaking out ... provide opportunities for students to develop speaking. 6-Reflecting ... allow students to identify, discuss and consider the changes in their understandings.
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✓ Course Structure

✓ 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

✓ Learning and Teaching Resources

Required textbooks (curricular books, if any)	Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems by Loyd Allen 11 th ed. 2017
Main references (sources)	Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems by Loyd Allen 11 th ed. 2017
Recommended books and references (scientific journals, reports...)	Aulton's pharmaceuticals: The design and manufacture of medicines. By Aulton M E and Taylor K G. 5 th edition. 2018
Electronic References, Websites	https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/cfrch.cfm?fr=155.194

Week	hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	2	-Introduction	Section 1 Chapter 1	Presentation of lecture Interactive discussions	Discussion
2.	2	Introduction to drugs and pharmacy; pharmaceutical consideration: the need for the dosage form.	Section 1 Chapter 1	Presentation of lecture Interactive discussions	Discussion Daily exam
3.	2	New Drug Development and Approval Process	Section 1 Chapter 2	Presentation of lecture Interactive discussions	Discussion Daily exam
4.	2	Methods of drug discovery, lead compound and goal drug	Section 1 Chapter 2	Presentation of lecture Interactive discussions	Discussion Daily exam
5.	2	Prodrugs	Section 1 Chapter 2	Presentation of lecture Interactive discussions	Discussion Daily exam
6.	2	Pharmacology, and Toxicology	Section 1 Chapter 2	Presentation of lecture Interactive discussions	Discussion Daily exam
7.	2	Acute or Short-Term Toxicity Studies	Section 1 Chapter 2	Presentation of lecture Interactive discussions	Discussion Questions and answers Quiz
8.	2	Carcinogenicity Studies, Reproduction Studies, Genotoxicity or Mutagenicity Studies	Section 1 Chapter 2	Presentation of lecture and Related Photos and Videos	Discussion Quiz
9.	2	Current Good Manufacturing Practices	Section 1 Chapter 3	Presentation of lecture Interactive discussions	Discussion Questions and answer Brainstorming Quiz
10.	2	Good Compounding Practices	Section 1 Chapter 3	Presentation of lecture Interactive discussions	Discussion Questions and answer Brainstorming Quiz

✓ Course Name:

11.	2	Packing, Labeling and Storage of Pharmaceuticals	Section 1 Chapter 3	Presentation of lecture Interactive discussions	Discussion Questions and answer Brainstorming Quiz
12.	2	Dosage Form Design: Pharmaceutical and Formulation Considerations and Preformulation study	Section 2 Chapter 4	Presentation of lecture Interactive discussions Related photos and videos	Discussion Quiz Question and answer
13.	2	Drug Stability: Mechanisms of degradation	Section 2 Chapter 4	Presentation of lecture Interactive discussions Related photos and videos	Discussion Quiz Question and answer
14.	2	Drug excipients: Flavoring Pharmaceuticals Sweetening Colorants and preservative	Section 2 Chapter 4	Interactive discussions	Questions and answer Brainstorming
15.	2	Biopharmaceutical and pharmacokinetic considerations: Dissolution and drug absorption	Section 2 Chapter 5	Interactive discussions	Questions and answer Brainstorming
16.	2	Bioavailability and bioequivalence Routes of administration Pharmacokinetic principles	Section 2 Chapter 5	Interactive discussions	Questions and answer Brainstorming
17.	2	Review			

Applied Therapeutics I

✓ Course Code:

559 CpAt1

✓ Semester / Year:

First semester/ Fifth

✓ Description Preparation Date:

02/2024

✓ Available Attendance Forms:

On campus

✓ Number of Credit Hours (Total) / Number of Units (Total)

3 Hours /3 Units

✓ Course administrator's name (mention all, if/ more than one name)

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Name: **Dr. Basma Zuheir Muhammed Najj**

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✓ Course Objectives

Course Objectives

- The course provides students with the basic knowledge about pathophysiology, symptoms and aims of treatment.
- In addition to the basic knowledge on the drug's use, kinetics, drug interactions, dose calculations, side effects, treatment algorithms and patient awareness are provided.

✓ Teaching and Learning Strategies

Strategy

Lectures
 Seminars
 Simple quizzes
 Brainstorming questions

✓ Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1. Differentiate between Sensitivity and Specificity of lab tests. 2. Identify reference ranges of lab tests. 3. Identify normal and abnormal liver function tests. 4. Identify normal and abnormal renal function tests. 5. Interpretation of complete blood count test results. 6. Interpretation of urinalysis main findings. 7. Interpretation of hematological lab investigations	Interpretation of clinical laboratory data	Lectures. Discussions.	Simple quizzes.
2	2	1. Identify the common types of lipid disorders. 2. Identify the statin-benefit groups and intensity of statin therapy. 3. Recommend appropriate therapeutic lifestyle changes (TLC) and	Dyslipidemia.	Lectures. Simple discussions.	Simple quizzes.

		<p>pharmacotherapy interventions for dyslipidemia.</p> <ol style="list-style-type: none"> 4. Determine a patient's atherosclerotic cardiovascular disease risk and corresponding treatment goals. 5. Identify patients who are indicated for non-statin therapy. 6. Describe components of a monitoring plan to assess effectiveness and adverse effects of pharmacotherapy for dyslipidemias. 7. Educate patients about the disease state, appropriate TLC, and drug therapy required for effective treatment. 			
3	1	<ol style="list-style-type: none"> 1. Differentiate types of cerebrovascular disease including transient ischemic attack (TIA), ischemic stroke (cerebral infarction), and hemorrhagic stroke. 2. Identify modifiable and nonmodifiable risk factors associated with ischemic stroke and hemorrhagic stroke. 3. Explain the pathophysiology of ischemic stroke and hemorrhagic stroke. 4. Describe the clinical presentation of TIA, ischemic stroke, and hemorrhagic stroke. 5. Formulate strategies for primary prevention of acute ischemic stroke. 6. Evaluate treatment options for acute ischemic stroke. 	Stroke.	Lectures. Simple discussions.	Simple quizzes.

		<ol style="list-style-type: none"> 7. Determine whether fibrinolytic therapy is indicated in a patient with acute ischemic stroke. 8. Evaluate the role of endovascular therapy in a patient with acute ischemic stroke. 9. Formulate strategies for secondary prevention of acute ischemic stroke. 10. Evaluate treatment options for acute hemorrhagic stroke. 			
4	1	<ol style="list-style-type: none"> 1. Assess a patient's kidney function based on clinical presentation, laboratory results, and urinary indices. 2. Identify pharmacotherapeutic outcomes and endpoints of therapy in patients with acute kidney injury (AKI). 3. Apply knowledge of the pathophysiology of AKI to develop a treatment plan. 4. Develop strategies to minimize the occurrence of drug-induced AKI. 5. Monitor and evaluate the safety and effectiveness of the treatment plan. 	Acute kidney injury	Lectures. Simple discussions.	Simple quizzes.
5	2	<ol style="list-style-type: none"> 1. List the risk factors that increase susceptibility for chronic kidney disease (CKD) . 2. Explain the mechanisms associated with progression of CKD . 3. Outline the desired outcomes for treatment of CKD . 4. Develop a therapeutic approach to slow progression of CKD including lifestyle 	Chronic and end-stage kidney disease.	Lectures. Simple discussions.	Simple quizzes.

		<p>modifications and pharmacologic therapies .</p> <ol style="list-style-type: none"> Identify specific consequences associated with CKD . Design an appropriate therapeutic approach for specific consequences associated with CKD. 			
6	1	<ol style="list-style-type: none"> Identify indications for dialysis. List advantages and disadvantages of hemodialysis and peritoneal dialysis. Describe the principles and procedures of hemodialysis and peritoneal dialysis. Identify complications of hemodialysis and peritoneal dialysis and their management. 	Hemodialysis and peritoneal dialysis.	Lectures. Simple discussions.	Simple quizzes.
7	1	<ol style="list-style-type: none"> Definition of pharmacovigilance . Recognize who should report the pharmacovigilance reports . Describe the importance of pharmacovigilance. Historical events reported ADRs. Describe Causality Assessment. Identify terms used in pharmacovigilance. Identify the importance of pharmacovigilance. 	Pharmacovigilance.	Lectures. Simple discussions.	Simple quizzes.
8	2	<ol style="list-style-type: none"> Explain the pathophysiology of cirrhosis and portal hypertension. Identify signs and symptoms of cirrhosis. Identify laboratory abnormalities that result from liver disease and describe the associated pathophysiology. 	Cirrhosis and portal hypertension.	Lectures. Simple discussions.	Simple quizzes.

		<ol style="list-style-type: none"> 4. Describe the consequences associated with decreased hepatic function. 5. Identify treatment goals for a patient with complications of cirrhosis. 6. Recommend a specific treatment regimen for a patient with cirrhosis that includes lifestyle changes, nonpharmacologic measures, and pharmacologic therapy. 			
9	1	<ol style="list-style-type: none"> 1. Differentiate the five types of viral hepatitis by epidemiology, etiology, and clinical presentation. 2. Identify modes of transmission and risk factors among the major types of viral hepatitis. 3. Evaluate hepatic serologies to understand how the type of hepatitis is diagnosed. 4. Create treatment goals for a patient infected with viral hepatitis. 5. Recommend appropriate pharmacotherapy for prevention of viral hepatitis. 6. Develop a care plan for treatment of chronic viral hepatitis. 	Viral hepatitis.	Lectures. Simple discussions.	Simple quizzes.
10	1	<ol style="list-style-type: none"> 1. Characterize the pathophysiologic mechanisms underlying inflammatory bowel disease (IBD). 2. Recognize the signs and symptoms of IBD, including major differences between ulcerative colitis (UC) and Crohn disease (CD). 3. Identify appropriate therapeutic outcomes for patients with IBD. 	Inflammatory bowel disease.	Lectures. Simple discussions.	Simple quizzes.

		<ol style="list-style-type: none"> 4. Describe pharmacologic treatment options for patients with acute or chronic symptoms of UC and CD. 5. Create a patient-specific drug treatment plan based on symptoms, severity, and location of UC or CD. 6. Recommend appropriate monitoring parameters for drug treatments for IBD. 			
11	1	<ol style="list-style-type: none"> 1. List the types and etiologies of shock syndromes. 2. Describe the major hemodynamic abnormalities that occur in patients with shock. 3. Describe the clinical presentation including signs, symptoms, and laboratory test measurements for the typical shock patient. 4. Prepare a treatment plan with clearly defined outcome criteria for a shock patient that includes both fluid management and pharmacologic therapy. 5. Compare and contrast relative advantages and disadvantages of crystalloids, colloids, and blood products in the treatment of shock. 	Shock syndromes.	Lectures. Simple discussions.	Simple quizzes.
12	2	<ol style="list-style-type: none"> 1. Estimate the volumes of various body fluid compartments. 2. Identify the electrolytes primarily found in the extracellular and intracellular fluid compartments. 3. Describe the unique relationship between serum sodium concentration and total body water (TBW). 4. Review the etiology, clinical presentation, and 	Disorders of fluids and electrolytes.	Lectures. Simple discussions.	Simple quizzes.

		management for disorders of sodium, potassium, calcium, phosphorus, and magnesium.			
13	1	<ol style="list-style-type: none"> 1. Describe the epidemiology and social impact of epilepsy. 2. Define terminology related to epilepsy, including seizure, convulsion, and epilepsy. 3. Describe the basic pathophysiology of seizures and epilepsy. 4. Differentiate and classify seizure types given a description of the clinical presentation of the seizure and electroencephalogram. 5. Identify key therapeutic decision points and therapeutic goals in the treatment of epilepsy. 6. Discuss nonpharmacologic treatments for epilepsy. 7. Recommend an appropriate pharmacotherapeutic regimen with monitoring parameters for the treatment of epilepsy. 8. Devise a plan for switching a patient from one antiepileptic regimen to a different regimen. 9. Manage potential drug interactions with antiepileptic drugs (AEDs). 10. Determine when and how to discontinue AED therapy. 	Epilepsy.	Lectures. Simple discussions.	Simple quizzes.
14	1	<ol style="list-style-type: none"> 1. Identify risk factors for multiple sclerosis (MS). 2. Distinguish between forms of MS based on patient presentation and disease course. 3. Compare and contrast MS disease-modifying treatment choices for a given patient. 	Multiple sclerosis.	Lectures. Simple discussions.	Simple quizzes.

		<ol style="list-style-type: none"> 4. Determine appropriate symptomatic treatment choices for a given patient. 5. Develop a monitoring plan for a patient placed on specific medications. 			
15	1	<ol style="list-style-type: none"> 1. Evaluate patient-specific parameters to determine whether EN is appropriate. 2. Compare clinical efficacy, complications, and costs of EN versus parenteral nutrition (PN). 3. Describe the components of EN and their role in nutrition support therapy. 4. Develop a plan to design, initiate, and adjust an EN formulation for an adult patient based on patient-specific factors. 5. Describe the etiology and risk factors for EN-associated complications in adult patients receiving EN. 6. Select appropriate medication administration techniques for an EN patient. 	Enteral nutrition.	Lectures. Simple discussions.	Simple quizzes.
16	1	<ol style="list-style-type: none"> 1. List appropriate indications for parenteral nutrition (PN) in adult patients. 2. Describe the components of PN and their role in nutrition support therapy. 3. Develop a plan to design, initiate, and adjust a PN formulation for an adult patient based on patient-specific factors. 4. Describe the etiology and risk factors for PN macronutrient-associated complications in adult patients receiving PN. 5. Describe the etiology and risk factors for refeeding 	Parenteral nutrition.	Lectures. Simple discussions.	Simple quizzes.

		syndrome, as well as measures to prevent refeeding syndrome.			
17	1	<ol style="list-style-type: none"> 1. Identify risk factors and signs and symptoms of deep vein thrombosis (DVT) and pulmonary embolism (PE). 2. Describe the processes of hemostasis and thrombosis. 3. Determine a patient's relative risk of developing venous thrombosis. 4. Formulate an appropriate prevention strategy for a patient at risk for DVT. 5. Select and interpret laboratory test(s) to monitor antithrombotic drugs. 6. Identify factors that place a patient at high risk of bleeding while receiving antithrombotic drugs. 7. State at least two potential advantages of newer anticoagulants (ie, low molecular weight heparins [LMWHs], fondaparinux, oral direct thrombin inhibitors [DTIs], and oral direct factor Xa inhibitors) over traditional anticoagulants (ie, unfractionated heparin and warfarin). 8. Manage a patient with toxicity secondary to warfarin (elevated international normalized ratio [INR] with or without bleeding). 9. Identify anticoagulant drug–drug and drug–food interactions. 10. Formulate an appropriate treatment plan for a patient who develops a DVT or PE. 	Deep venous thrombosis.	Lectures. Simple discussions.	Simple quizzes.

18	2	<ol style="list-style-type: none"> 1. Describe the phases of cardiac action potential. 2. Describe the modified Vaughan Williams classification of antiarrhythmic drugs. 3. Compare and contrast risk factors for and features, mechanisms, etiologies, symptoms, and goals of therapy of (a) sinus bradycardia, (b) atrioventricular (AV) block, (c) atrial fibrillation (AF), (d) paroxysmal supraventricular tachycardia (PSVT), (e) premature ventricular complexes (PVCs), (f) ventricular tachycardia (VT, including torsades de pointes [TdP]), and (g) ventricular fibrillation (VF). 4. Compare and contrast appropriate treatment options for sinus bradycardia and AV block. 5. Compare and contrast mechanisms of action of drugs used for ventricular rate control, conversion to sinus rhythm and maintenance of sinus rhythm in patients with AF. 6. Compare and contrast the advantages and disadvantages of warfarin and the non-vitamin K antagonist oral anticoagulants (NOACs) for prevention of stroke and systemic embolism in patients with AF. 7. Discuss nonpharmacologic methods for termination of PSVT, compare and contrast mechanisms of action of 	Arrhythmias.	Lectures. Simple discussions.	Simple quizzes.
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		<p>drugs used for acute termination of PSVT, and compare and contrast appropriate treatment options for long-term prevention of PSVT recurrence.</p> <p>8. Compare and contrast mechanisms of action of drugs used for treatment of acute episodes of VT, and describe options and indications for nonpharmacologic treatment of VT and VF.</p> <p>9. Design individualized drug therapy treatment plans for patients with (a) sinus bradycardia, (b) AV block, (c) AF, (d) PSVT, (e) PVCs, (f) VT (including TdP), and (g) VF.</p>			
19	2	<ol style="list-style-type: none"> 1. Identify characteristics of the types of pain: nociceptive, inflammatory, neuropathic, and functional. 2. Explain the mechanisms involved in pain transmission. 3. Select an appropriate method of pain assessment. 4. Recommend an appropriate choice of analgesic, dose, and monitoring plan for a patient based on type and severity of pain and other patient-specific parameters. 5. Perform calculations involving equianalgesic doses, conversion of one opioid to another, rescue doses, and conversion to a continuous infusion. 6. Educate patients and caregivers about effective pain management, dealing with chronic pain, and the use 	Pain management.	Lectures. Simple discussions.	Simple quizzes.

		of nonpharmacologic measures.			
20	1	<ol style="list-style-type: none"> 1. Differentiate types of headache syndromes based on clinical features. 2. Recommend nonpharmacologic measures for headache treatment and prevention. 3. Determine when the pharmacologic treatment of headache is indicated. 4. Construct individualized treatment regimens for the acute and chronic management of headache syndromes. 5. Monitor headache treatment to ensure its safety, tolerability, and efficacy. 	Headache.	Lectures. Simple discussions.	Simple quizzes.
21	2	<ol style="list-style-type: none"> 1. Describe the pathophysiology of Parkinson disease (PD) related to neurotransmitter involvement and targets for drug therapy. 2. Recognize the cardinal motor symptoms of PD and determine a patient's clinical status and disease progression. 3. For a patient initiating therapy for PD, recommend appropriate drug therapy and construct patient-specific treatment goals. 4. Recognize and recommend appropriate treatment for nonmotor symptoms. 5. Formulate a plan to minimize patient "off-time" and maximize "on-time" including timing, dosage, and frequency of medications. 6. Recognize and treat various motor complications in PD. 	Parkinson's disease.	Lectures. Simple discussions.	Simple quizzes.

		<ol style="list-style-type: none"> 7. Construct appropriate patient counseling regarding medications and lifestyle modifications for PD. 8. Develop a monitoring plan to assess effectiveness and adverse effects of treatment. 			
22	1	<ol style="list-style-type: none"> 1. Explain the pathophysiology of benign prostatic hypertrophy (BPH). 2. Recognize the symptoms and signs of BPH. 3. List the desired treatment outcomes for BPH. 4. Identify factors that guide selection of a particular α1-adrenergic antagonist for an individual patient. 5. Compare and contrast α1-adrenergic antagonists versus 5α-reductase inhibitors in terms of mechanism of action, treatment outcomes, adverse effects, and interactions. 6. Describe the indications, advantages, and disadvantages of various combination drug regimens that include an α1-adrenergic antagonist, 5α-reductase inhibitor, anticholinergic agent, tadalafil, or mirabegron. 7. Describe the indications for surgical intervention. 8. Apply the patient care process to develop an individualized treatment plan. 	Benign prostatic hyperplasia.	Lectures. Simple discussions.	Simple quizzes.
23	1	<ol style="list-style-type: none"> 1. Identify risk factors for the development of primary open-angle glaucoma (POAG) and acute angle-closure glaucoma. 	Glaucoma.	Lectures. Simple discussions.	Simple quizzes.

		<ol style="list-style-type: none"> 2. Recommend a frequency for glaucoma screening based on patient-specific risk factors. 3. Compare and contrast the pathophysiologic mechanisms responsible for open-angle glaucoma and acute angle-closure glaucoma. 4. Outline the clinical presentation of chronic open-angle glaucoma and acute angle-closure glaucoma. 5. List the goals of managing patients with POAG suspect, POAG, and acute angle-closure glaucoma. 6. Choose the most appropriate therapy based on patient-specific data for open-angle glaucoma, glaucoma suspect, and acute angle-closure glaucoma. 7. Develop a monitoring plan for patients on specific pharmacologic regimens. 8. Counsel patients about glaucoma, drug therapy options, ophthalmic administration techniques, and the importance of adherence to the prescribed regimen. 			
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✓ Course Evaluation

Midterm exam 25 marks, Quizzes and attendance 5 marks, Final exam 70 marks

✓ Learning and Teaching Resources

Required textbooks (curricular books, if any)

Pharmacotherapy: A pathophysiologic approach.
 Pharmacotherapy: principles and practice.
 Applied therapeutics.
 Clinical pharmacy and therapeutics.
 Pharmacotherapy handbook.
 ACCP updates in therapeutics.

Main references (sources)

Pharmacotherapy: A pathophysiologic approach.

	Pharmacotherapy: principles and practice. Applied therapeutics. ACCP updates in therapeutics.
Recommended books and references (scientific journals, reports...)	Pharmacotherapy: A pathophysiologic approach. Pharmacotherapy: principles and practice.
Electronic References, Websites	Electronic books and review articles.

Course Description Form

✓ Course Name:					
Applied Therapeutics II					
✓ Course Code:					
565 CpAt2					
✓ Semester / Year:					
Second semester/ Fifth					
✓ Description Preparation Date:					
17 – 02 - 2024					
✓ Available Attendance Forms:					
On campus					
✓ Number of Credit Hours (Total) / Number of Units (Total)					
2 Hours /2 Units					
✓ Course administrator's name (mention all, if more than one name)					
Name: Ehab Mudher Mikhael and Samer Imad Mohammed Email: ihab.maddr@copharm.uobaghdad.edu.iq & samer.jameel@copharm.uobaghdad.edu.iq					
✓ Course Objectives					
Course Objectives			<ul style="list-style-type: none"> • It provides students with the basic knowledge about pathophysiology, symptoms and aims of treatment for some cancers, endocrine, gynecological, psychiatric, and neurological disorders • It provides students with the basic knowledge about medications use, dose considerations, side effects, treatment algorithms and evaluation of therapeutic outcomes for the aforementioned disorders 		
✓ Teaching and Learning Strategies					
Strategy		Lectures Seminars Simple quizzes Brainstorming questions			
✓ Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	1	<ol style="list-style-type: none"> 1. Explain the regulation and physiologic roles of hormones produced by the adrenal glands. 2. Recognize the clinical presentation of adrenal insufficiency. 3. Describe the pharmacologic management of acute and chronic adrenal insufficiency. 4. Recommend therapy monitoring parameters for adrenal insufficiency. 5. Recognize the clinical presentation of Cushing syndrome and the physiologic consequences of cortisol excess. 6. Describe the pharmacologic and nonpharmacologic management of Cushing syndrome. 7. Recommend strategies to prevent the development of hypercortisolism and hypocortisolism. 8. Recommend therapy monitoring parameters for Cushing syndrome. 	Adrenal gland disorders	Lectures and Discussions	Simple quizzes
2	2	<ol style="list-style-type: none"> 1. Explain the major components of the hypothalamic–pituitary–thyroid axis and interaction among these components. 2. Discuss the relationship between serum thyroid-stimulating hormone (TSH) levels and primary thyroid disease, and advantages for the use of TSH levels over other tests such as serum T4 	Thyroid gland disorders	Lectures and Discussions	Simple quizzes

		<p>(thyroxine) and T3 (triiodothyronine) levels.</p> <ol style="list-style-type: none"> 3. Identify typical signs and symptoms of hypothyroidism and consequences of suboptimal treatment. 4. Describe clinical use of levothyroxine (LT4) in the treatment of hypothyroidism. 5. Discuss issues regarding LT4 product bioequivalence and reasons for maintaining patients on the same product. 6. Describe the management of hypothyroidism and hyperthyroidism in special populations, including pregnant women. 7. Identify typical signs and symptoms of hyperthyroidism and consequences of inadequate treatment. 8. Discuss the pharmacotherapy of hyperthyroidism, including advantages and disadvantages of antithyroid drugs versus radioactive iodine, adverse effects, and patient monitoring. 			
3	1	<ol style="list-style-type: none"> 1. Describe the pathophysiology, including genetic and environmental factors that may be associated with AD. 2. Detail the clinical presentation of the typical patient with AD. 	Alzheimer disease	Lectures and Discussions	Simple quizzes

		<ol style="list-style-type: none"> 3. Explain how nonpharmacologic therapy is combined with pharmacologic therapy for patients with AD. 4. Recognize and recommend treatment options for disease-specific symptoms as well as behavioral/noncognitive symptoms associated with AD. 5. Educate patients and/or caregivers about the expected outcomes for patients with AD and provide contact information for support/advocacy agencies. 			
4	2	<ol style="list-style-type: none"> 1. Recognize signs and symptoms of schizophrenia 2. Explain potential pathophysiologic mechanisms that are thought to underlie schizophrenia. 3. Identify treatment goals for a patient with schizophrenia. 4. Recommend appropriate antipsychotic medications based on patient-specific data. 5. Compare side effect profiles of individual antipsychotics. 6. Educate patients and families about schizophrenia, treatments, and the importance of adherence to antipsychotic treatment. 	Schizophrenia	Lectures and Discussions	Simple quizzes

5	2	<ol style="list-style-type: none"> 1. Explain the etiology and pathophysiology of major depressive disorder (MDD). 2. Identify the signs and symptoms of MDD. 3. Outline the treatment goals for a patient with MDD. 4. Recommend pharmacotherapy given a specific patient with MDD. 5. Develop a monitoring plan for a specific patient with MDD that includes the assessment of efficacy as well as adverse effects. 6. Educate patients and caregivers on the proper use of antidepressant therapy. 	Depressive disorders	Lectures and Discussions	Simple quizzes
6	1	<ol style="list-style-type: none"> 1. Explain the pathophysiologic mechanisms underlying anxiety disorders. 2. Recognize common presenting symptoms of generalized anxiety disorder (GAD) 3. List treatment goals for patients with GAD. 4. Identify appropriate lifestyle modifications and over-the-counter medication use in these patients. 6. Design a patient-specific pharmacotherapy treatment plan for patients. 7. Develop a monitoring plan for patients with anxiety disorders. 	Anxiety	Lectures and Discussions	Simple quizzes
7	1	1. Describe the pathophysiology and characteristic features of the insomnia.	Sleep disorders (insomnia)	Lectures and Discussions	Simple quizzes

		<p>2. Recommend and optimize appropriate sleep hygiene and nonpharmacologic therapies for the management and prevention of sleep disorders.</p> <p>3. Recommend and optimize appropriate pharmacotherapy for insomnia.</p> <p>4. Describe the components of the patient care process to implement and assess safety and efficacy of pharmacotherapy for insomnia.</p>			
8	1	<ol style="list-style-type: none"> 1. Discuss the physiology of the female reproductive system. 2. Compare the efficacy of oral contraceptives with that of other methods of contraception. 3. State the mechanism of action of hormonal contraceptives. 4. Discuss adverse effects, risks, and contraindications associated with the use of contraceptives and recommend strategies for minimizing or eliminating such risks. 5. Describe advantages and disadvantages of various contraceptives, including oral and nonoral formulations. 6. Cite important drug interactions that may occur with oral contraceptives. 7. Provide appropriate patient education regarding the use of oral 	Contraception	Lectures and Discussions	Simple quizzes

		<p>and barrier methods of contraception.</p> <p>8. Discuss how emergency contraception may be employed to prevent unintended pregnancy.</p>			
9	2	<ol style="list-style-type: none"> 1. Explain the physiologic changes associated with menopause. 2. Identify the signs and symptoms associated with menopause. 3. Determine the desired therapeutic outcomes for patients taking menopausal hormone replacement therapy (MHRT). 4. Explain how to evaluate a patient for the appropriate use of MHRT. 5. Recommend appropriate nonpharmacologic and pharmacologic interventions for menopausal symptoms. 6. Design a monitoring plan to assess the safety and effectiveness of pharmacotherapy 	Hormone replacement therapy in post menopausal women	Lectures and Discussions	Simple quizzes
10	1	<ol style="list-style-type: none"> 1. Describe the underlying etiology of dysmenorrhea, amenorrhea, and anovulatory bleeding. 2. Explain the physiologic changes associated with dysmenorrhea, amenorrhea, and anovulatory bleeding. 3. Identify the signs and symptoms associated with dysmenorrhea, amenorrhea, and anovulatory bleeding. 	Menstruation related disorders	Lectures and Discussions	Simple quizzes

		<ol style="list-style-type: none"> 4. Determine the desired therapeutic outcomes for patients with dysmenorrhea, amenorrhea, and anovulatory bleeding. 5. Recommend appropriate nonpharmacologic and pharmacologic interventions for dysmenorrhea, amenorrhea, and anovulatory bleeding. 6. Design a monitoring plan to assess the safety and effectiveness of pharmacotherapy. 			
11	2	<ol style="list-style-type: none"> 1. Describe the pathophysiology of cancer. 2. Define the tumor, nodes, metastases (TNM) system of cancer staging. 3. Define prevention and treatment strategies of cancer. 4. Outline actions for all healthcare professionals to prevent medication errors with cancer treatments. 	Cancer chemotherapy and treatment	Lectures and Discussions	Simple quizzes
12	2	<ol style="list-style-type: none"> 1. Explain the pathophysiology of certain types of leukemia. 2. Explain the signs/symptoms and laboratory disorders associated with leukemias. 3. Identify underlying considerations that would determine the most appropriate chemotherapeutic regimens for patients having leukemia. 	Leukemias	Lectures and Discussions	Simple quizzes

		<ol style="list-style-type: none"> 4. Describe the available treatment options of certain types of leukemias 5. Recognize the treatment complications associated with the therapy of leukemias. 			
13	1	<ol style="list-style-type: none"> 1. Explain the risk factors associated with developing breast cancer. 2. Recognize signs and symptoms related to early and late stages of the disease. 3. Distinguish between good and poor prognostic factors. 4. Determine treatment goals for early-stage, locally advanced, and metastatic breast cancers. 5. Explain the available treatment options of breast cancer. 6. Describe the relevance of hormone, HER2, and PD-1 receptors. 7. Discuss the benefits and risks associated with various therapies. 	Breast cancer	Lectures and Discussions	Simple quizzes
14	1	<ol style="list-style-type: none"> 1. Identify risk factors associated with prostate cancer development. 2. Appraise the prognostic- and patient-specific data needed to determine appropriate treatment options. 3. Evaluate pharmacotherapeutic treatment options for different types of prostate cancer. 4. Recognize common adverse effects and 	Prostate cancer	Lectures and Discussions	Simple quizzes

		<p>formulate a monitoring plan for patients receiving androgen deprivation therapy for prostate cancer based on patient-specific factors and the prescribed regimen.</p> <p>5. Recognize the common adverse effects and formulate a monitoring plan for patients receiving treatment for metastatic prostate cancer.</p> <p>6. Provide recommendations for bone health for patients undergoing treatment for prostate cancer.</p>			
15	1	<ol style="list-style-type: none"> 1. Introduction about common and problematic adverse effect of chemotherapy 2. Recognizing the clinically significant adverse effects 3. Explaining the preventive measures of certain adverse effects 4. Discussing the available therapeutic options of some adverse effects. 	Adverse effects of chemotherapy	Lectures and Discussions	Simple quizzes
16	2	<ol style="list-style-type: none"> 1. Explain the pathophysiologic mechanisms underlying bipolar disorder. 2. Recognize the symptoms of a manic episode in patients with bipolar disorder. 3. Identify common psychiatric comorbidities of bipolar disorder. 	Bipolar disorders	Lectures and Discussions	Simple quizzes

		<ol style="list-style-type: none"> 4. List the desired therapeutic outcomes for patients with bipolar disorder. 5. Identify the optimal use of medications as first-line therapy in bipolar disorder, including appropriate dosing. 6. Recommend drug therapy for acute treatment of mania and depressive episodes. 7. Recommend baseline and routine monitoring for assessment of adverse effects of medications used in the treatment of bipolar disorder. 8. Identify general treatment differences for agents used to treat bipolar disorder in the pediatric population. 			
17	1	<ol style="list-style-type: none"> 1. Identify the risk factors for colorectal cancer. 2. Outline preventive and screening strategies for individuals at average and high risk for colorectal cancer. 3. Recognize the signs and symptoms of colorectal cancer. 4. Describe the treatment options for colorectal cancer based on patient-specific factors, such as stage of disease, age of patient, genetic mutations, and previous treatment received. 	Colorectal cancer	Lectures and Discussions	Simple quizzes

		<ol style="list-style-type: none"> 5. Outline the pharmacologic principles for agents used to treat colorectal cancer. 6. Develop a monitoring plan to assess the efficacy and toxicity of agents used in colorectal cancer. 7. Educate patients about the adverse effects of chemotherapy that require specific patient counseling. 			
18	2	<ol style="list-style-type: none"> 1. Explain the routes of transmission for human immunodeficiency virus (HIV) and its natural disease progression. 2. Identify typical and atypical signs and symptoms of acute and chronic HIV infection. 3. Identify the desired therapeutic outcomes for patients living with HIV. 4. Recommend appropriate first-line pharmacotherapy interventions for patients with HIV infection. 5. Describe the components of a monitoring plan to assess effectiveness and adverse effects of pharmacotherapy for HIV infection. 6. Educate patients about the disease state, appropriate lifestyle modifications, and drug therapy required for effective treatment. 	Human immunodeficiency virus	Lectures and Discussions	Simple quizzes
19	2	<ol style="list-style-type: none"> 1. Discuss the underlying pathophysiologic mechanisms of the lymphomas and how they 	Lymphoma and multiple myeloma	Lectures and Discussions	Simple quizzes

		<p>relate to presenting symptoms of the disease.</p> <ol style="list-style-type: none">2. Differentiate the pathologic findings of Hodgkin lymphoma (HL), follicular indolent non-Hodgkin lymphoma (NHL), and diffuse aggressive NHL and how this information yields a specific diagnosis.3. Describe the general staging criteria for the lymphomas and how it relates to prognosis; evaluate the role of the prognostic systems such as the International Prognostic Score for HL, the Follicular Lymphoma International Prognostic Index (IPI), and the IPI for diffuse, aggressive NHL.4. Compare and contrast the treatment algorithms for early and advanced stage disease for HL.5. Assess the role of autologous hematopoietic stem-cell transplantation for relapsed lymphomas.6. Delineate the clinical course of follicular indolent and diffuse aggressive NHL and the implications for disease classification schemes and treatment goals.7. Outline the general treatment approach to follicular indolent and diffuse aggressive NHL for localized and advanced disease.			
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		8. Interpret the current role for monoclonal antibody therapy in NHL.			
20	1	1- Explain the pathophysiology of Endometriosis. 2- Explain the signs/symptoms of Endometriosis. 3- Outline the general treatment approach	Endometriosis	Lectures and Discussions	Simple quizzes
✓ Course Evaluation					
Midterm exam 25 marks, Quizzes and attendance 5 marks, Final exam 70 marks					
✓ Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Pharmacotherapy Handbook		
Main references (sources)			1- ACCP Updates in Therapeutics 2- Applied therapeutics		
Recommended books and references (scientific journals, reports...)			Review articles		
Electronic References, Websites			Medscape		

Course Description Form

✓ Course Name:
Pharmacoeconomics
✓ Course Code:
563 GP
✓ Semester / Year:
2 nd semester/ 5 th year students
✓ Description Preparation Date:
Feb 19, 2024
✓ Available Attendance Forms:
Class attendance (on-campus)
✓ Number of Credit Hours (Total) / Number of Units (Total)
2 hours/2 Units
✓ Course administrator's name (mention all, if more than one name)
Name of the First instructor of the Course: Dr. Ali Azeez Al-Jumaili Academic Rank: Associate Professor Degree: PhD E-mail: ali.baraak@copharm.uobaghdad.edu.iq
Name of the second instructor of the Course: Dr. Mohammed Yawuz Jamal Academic Rank: Lecturer Degree: Board in Clinical Pharmacy

E-mail: mohammed.ahmed@copharm.uobaghdad.edu.iq

Name of the third: Ali Lateef Jasim

Academic Rank: Lecturer

Degree: PhD

E-mail: ali.jassem@copharm.uobaghdad.edu.iq

✓ Course Objectives

Course Objectives

Course Objectives

✓ Teaching and Learning Strategies

Strategy

Strategy

✓ Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	<ol style="list-style-type: none"> 1. Introduce Pharmacoeconomic principles. 2. Demonstrate types of healthcare costs with examples 3. Learn about ECHO model for the 3 patient outcome types. 4. Explain and differentiate among the 4 methods of Pharmacoeconomic analyses. 	Basic principle of Pharmacoeconomics	Interactive lectures and related articles	Simple quizzes
2	4	<ol style="list-style-type: none"> 1. Identifying costs 2. Types of costs (Direct Medical Costs, Direct Nonmedical Costs, Indirect costs, Intangible costs) 3. Incremental costs and marginal costs 4. Opportunity costs 5. How are costs valued? Timing Adjustments for Costs	Cost analysis	Interactive lectures and related articles	Simple quizzes
3	4	<ol style="list-style-type: none"> 1. Understand the Cost-effectiveness analysis 2. Outcome measures in cost-effectiveness analysis 	Cost-minimizing analysis and Cost effectiveness analyses (CEA).	Interactive lectures and related articles	Simple quizzes

		3. Knowing how to calculate Cost-effectiveness Ratios			
4	4	<ol style="list-style-type: none"> 1. Understand the Cost-Benefit Analysis method. 2. Knowing how to calculate the indirect cost of the disease and indirect benefit of the intervention/program using Human Capital Method (HCM). 3. Using HCM to calculate Daily wage rate and Missed days to find out the indirect benefit of the intervention/management. 4. Describe in details Willingness-to-Pay Method (WTP): Hypothetical Scenario & Bidding Vehicles 5. Formats for presenting Cost-Benefit Analysis (CBA) <p>When should we select Cost-Benefit or Cost-Effectiveness Analysis?</p>	Cost-benefit analysis (CBA)	Interactive lectures and related articles	Simple quizzes
5	4	<ol style="list-style-type: none"> 1. Use of decision analysis to design economic evaluations 2. Decision Analysis Structure or tree 	Critical assessment of economic evaluation	Interactive lectures and related articles	Simple quizzes
6	4	<ol style="list-style-type: none"> 1. Define Cost of illness 2. Knowing how to calculate Cost of illness 3. Understand the difference between healthcare costs and Cost of illness 	Drug-focused versus disease-focused frame work for conducting Pharmacoeconomic analyses.	Interactive lectures and related articles	Simple quizzes
7	4	the students should be able to:	Introduction to epidemiology.	Interactive lectures	Simple quizzes

		<ol style="list-style-type: none"> 1. define epidemiology, describe basic terminology and concepts of epidemiology. 2. identify types of data sources. 3. identify basic methods of data collection and interpretation. 		and related articles	
8	2	Cost-Effectiveness project can be assigned to teach students how to understand the terminologies used in published Pharmacoeconomic studies.	Project presentation.		Presentation skills
✓ Course Evaluation					
5 points for quizzes, 5 points for assignments, 20 points for midterm exam and 70 points for the final exam					
✓ Learning and Teaching Resources					
Required textbooks (curricular books, if any)		Bootman JL, Townsend RJ, McGhan WF, (Eds.), Principles Pharmacoeconomics, 2nd ed., Harvey Whitney Books Comp Cincinnati, Oh, latest edition Renée J.G. Arnold. Pharmacoeconomics From Theory to Practice. Second Edition, 2021. CRC Press, Boca Raton, FL, USA			
Main references (sources)		Hasan Raid, Ali Azeez Al-Jumaili , Nizar Abdulateef Al Ani. Refere Infiximab (Remicade) compared to its biosimilar (Remsima) in patie with Ankylosing spondylitis: A Field-based Pharmacoeconomic study. Kindy College Medical Journal. April 30, 2023:19 https://doi.org/10.47723/kcmj.v19i1.908 Hasan Raid Fadhil, Ali Azeez Al-Jumaili , and Nizar Abdulateef Al A Cost-effectiveness Analysis of Reference Infiximab (Remica Compared to its Biosimilar (Remsima) in Iraqi Patients with Rheumat Arthritis. Iraqi J Pharm Sci, Vol.31(Suppl.) 20 https://doi.org/10.31351/vol31issSuppl.pp100-110			
Recommended books and references (scientific journals, reports...)		Value in Health Journal Value in Health Journal ScienceDirect.com by Elsevier Value in Health Journal Regional Issues https://www.valuehealthregionalissues.com/			

Electronic Websites	References,	Value in Health Journal and Value in Health Journal Regional Issue
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Course Description Form

✓ Course Name:					
Therapeutic drug monitoring					
✓ Course Code:					
566 CpTd					
✓ Semester / Year:					
Second semester/ Fifth					
✓ Description Preparation Date:					
16-2-2024					
✓ Available Attendance Forms:					
On campus					
✓ Number of Credit Hours (Total) / Number of Units (Total)					
4Hours /3Units					
✓ Course administrator's name (mention all, if more than one name)					
Name: Assistant Professor Dr. Samer Imad Mohammed Email: samer.jameel@copharm.uobaghdad.edu.iq Name: Lecturer Dr. Basma Zuheir Muhammed Najj Email: basma.naji@copharm.uobaghdad.edu.iq					
✓ Course Objectives					
Course Objectives			At the end of this unit, the student should be able to: recognize characteristics of drugs that make them good candidates for TDM, describe appropriate indications for TDM, understand the factors that may affect the measured concentrations list, and discuss the importance of information needed when requesting drug concentration interpret measured drug concentrations adjust dose based on TDM.....		
✓ Teaching and Learning Strategies					
Strategy		Lectures Seminars Simple quizzes Brainstorming questions			
✓ Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	4	<p>1 .Discuss the goal of therapeutic drug monitoring.</p> <p>2 .Discuss the need for therapeutic drugs.</p> <p>3 .Identify the four principle biological events associated with pharmacokinetics.</p> <p>4 .Identify route(s) that drugs can be eliminated.</p> <p>5 .Define the following:</p> <p>a. TDM</p> <p>b. linear and nonlinear pharmacokinetics</p> <p>c. Pharmacokinetics parameters</p> <p>d. Half-life</p> <p>e. volume of distribution</p> <p>f. clearance</p>	Chapter one: (Clinical Pharmacokinetic and Pharmacodynamic Concepts)	Lectures, Discussions	Simple quizzes
	4	<p>Discuss the applied equations that used to measure the drug concentration</p> <p>Discuss the applied equations that used to measure the individualized pharmacokinetic parameters</p> <p>Discuss the equations that used to measure the dose and loading dose</p>	Chapter two: Clinical Pharmacokinetic Equations and Calculations	Lectures, Discussions	Simple quizzes
	4	<p>Discuss the effect of kidney, liver disease, and heart disease on the drug's pharmacokinetics.</p> <p>Discuss the effect of obesity on the pharmacokinetics of the drug</p>	Chapter Three: Drug dosing in special population	Lectures, Discussions	Simple quizzes
	4	<ul style="list-style-type: none"> • Identify why we need to monitor drug concentration for aminoglycoside • Determine the applied pharmacokinetics methods and equations to calculate the initial dose • Determine the applied pharmacokinetics 	Chapter four: Aminoglycoside	Lectures, Discussions	Simple quizzes

		methods and equations to calculate the individualized dose			
	4	<p>Identify why we need to monitor drug concentration for vancomycin</p> <ul style="list-style-type: none"> Determine the applied pharmacokinetics methods and equations to calculate the initial dose Determine the applied pharmacokinetics methods and equations to calculate the individualized dose 	<p>Chapter five: vancomycin</p> <ul style="list-style-type: none"> 	Lectures, Discussions	Simple quizzes
	3	<ul style="list-style-type: none"> Identify why we need to monitor drug concentration for digoxin Determine the applied pharmacokinetics methods and equations to calculate the initial dose Determine the applied pharmacokinetics methods and equations to calculate the individualized dose 	Chapter six: Digoxin	Lectures, Discussions	Simple quizzes
	3	<ul style="list-style-type: none"> Identify why we need to monitor drug concentration for phenytoin Determine the applied pharmacokinetics methods and equations to calculate the initial dose Determine the applied pharmacokinetics methods and equations to calculate the individualized dose 	Chapter seven: phenytoin	Lectures, Discussions	Simple quizzes

	3	<ul style="list-style-type: none"> Identify why we need to monitor drug concentration for valproic acid Determine the applied pharmacokinetics methods and equations to calculate the initial dose Determine the applied pharmacokinetics methods and equations to calculate the individualized dose 	Chapter eight: valproic acid		
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✓ Course Evaluation	
20 midterm exam + 20 Laboratory + 60 Final exam	
✓ Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Applied Clinical Pharmacokinetics by Larry
Main references (sources)	Applied Clinical Pharmacokinetics by Larry
Recommended books and references (scientific journals, reports...)	Applied therapeutics
Electronic References, Websites	Review articles

Course Description Form

✓ Course Name:
Organic pharmaceutical chemistry IV
✓ Course Code:
557 PcOp4
✓ Semester / Year:
First Semester / 2023-2024
✓ Description Preparation Date:
March 2024
✓ Available Attendance Forms:
On campus
✓ Number of Credit Hours (Total) / Number of Units (Total)
30 / 2
✓ Course administrator's name (mention all, if more than one name)

Name: Mohammed Hassan Mohammed
 Email: dr.mohammedhassan@copharm.uobaghdad.edu.iq
 Name: Duraïd Hamid Mohammad
 Email: colrelated@copharm.uobaghdad.edu.iq

✓ Course Objectives

Course Objectives

- a. **Knowledge** 1.
1. Studying recent advanced drug design strategies.
 2. Obtaining knowledge on current strategies which are followed to improve the pharmacological activity of available drugs through modifying them into prodrugs that will be activated inside the body.
 3. Getting knowledge on computer software applied for drug design and improvement of drug properties.
- b. **Skills**
1. Practicing in silico drug design
 2. Educating students on how to benefit from acquired skills by developing the scientific and academic aspects.
- Learning and teaching methods**
1. Lectures
 2. Interactive open discussion
 3. Homework
 4. Exams
- c. **Attitude**
1. Experiencing drug design techniques
 2. Getting benefits from chemical modifications of drugs to improve their properties
- d. **Other skills acquired through the course (related to personal development and employment)**
1. Using computer software in drug design
 2. Students will be confident of being a qualified pharmacy personnel
 3. Students will depend on themselves to face issues they may face

✓ Teaching and Learning Strategies

Strategy

1. Daily oral evaluation
2. Written exams
3. Student's scientific research

✓ Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-3	6		Basic principles Prodrugs	Lectures	oral and written exams
4-6	6		Polymeric prodrug	Lectures	oral and written exams
7-8	4		Targeting drugs	Lectures	oral and written exams
9-11	6		Combinatorial chemistry	Lectures	oral and written exams
12-15	8		Computer-based design	Lectures	oral and written exams

✓ 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

30 marks for mid-term exam and quizzes and oral discussions

70 marks for final term exam

✓ Learning and Teaching Resources

Required textbooks (curricular books any)	Wilson and Gisvold Textbook of Organic medicinal Pharmaceutical chemistry, Block JH, Beale JM, Jr.; 12th ed, 2004
Main references (sources)	Wilson and Gisvold Textbook of Organic medicinal a Pharmaceutical chemistry, Block JH, Beale JM, Jr.; 12th ed, 20 Fundamentals in Medicinal Chemistry, Gareth Thom Combinatorial Chemistry, Chapter 6.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Pubmed, Google scholar

Course Description Form

✓ Course Name:	Hospital training
✓ Course Code:	568 CpHt
✓ Semester / Year:	Second semester/ Fifth
✓ Description Preparation Date:	17/2/2024
✓ Available Attendance Forms:	

On campus					
✓ Number of Credit Hours (Total) / Number of Units (Total)					
4 hours / 2 Units					
✓ Course administrator's name (mention all, if more than one name)					
Name: Assistant lecturer Abeer Kadhim Email: abeer.jomaa@copharm.uobaghdad.edu.iq Name: Thulfiqar Nidhal Email: thulfekarnkazam@copharm.uobaghdad.edu.iq Name: Nisreen Jumaa jabr Email: nesreen.jabr@copharm.uobaghdad.edu.iq Name: Angham Ahmed Email: angham.ali@copharm.uobaghdad.edu.iq Name: Ahmed hussein Email: Ahmed.hussein@copharm.uobaghdad.edu.iq Name: Ahmed Majid Email: ahmed.shehab@copharm.uobaghdad.edu.iq					
✓ Course Objectives					
Course Objectives		To teach students the application of pharmacy practice in different hospital wards; it includes Training on case evaluation and follow up Evaluation of therapeutic regimens and registration of errors related to drug therapy and presenting ideas to solve problems			
✓ Teaching and Learning Strategies					
Strategy	Explaining cases of patients in different hospital wards Discussions with board students in hospital Brainstorming questions				
✓ Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-4	4	To provide the students the essential clinical pharmacy skills with emphasis on dealing with patients, medical charts, laboratory information, and clinical monitoring. The following topics will be covered: (Cardiology, Nephrology, Gastroenterology, Pulmonology, and Endocrinology)	Internal medicine	Explanation of patients cases and discussion with Board students	Quizzes and case presentation
5-8	4	To provide the students the essential clinical pharmacy			

		skills with emphasis on dealing with patients, medical charts, laboratory information, and clinical monitoring. The following topics will be covered: Pediatric Neonatology, Pediatric Nephrology, Pediatric Infections, Pediatric Neurology, Pediatric Cardiology, Pediatric Gastroenterology, Pediatric Respiratory Disorders, and pediatric endocrinology	pediatrics	Explanation of patients cases and discussion with Board students	Quizzes and case presentation
9-12	4	To provide the students the essential clinical pharmacy skills with emphasis on dealing with patients, medical charts, laboratory information, and clinical monitoring. The following topics will be covered: Surgical Prophylaxis, Types of Surgical Operations, Preoperative bowel preparation, Intravenous fluid therapy, Blood transfusion and blood products, Perioperative care and diabetes, Perioperative medication management, Acute appendicitis, Gallstones, Common bile duct stones, Thyroidectomy, Bowel Obstruction, Pancreatitis, Hernia, Guidelines on Parenteral Nutrition in Surgery.	surgery	Explanation of patients cases and discussion with Board students	Quizzes and case presentation
13-16	4	To provide the students the essential clinical pharmacy skills with emphasis on dealing with patients, medical charts, laboratory information, and clinical monitoring. The following topics will be covered:		Explanation of patients	

	Abortion, Common Complications Of Pregnancy, Induction and Augmentation of labour, Obstetric hemorrhage, Caesarean section, Ectopic Pregnancy, Heavy and irregular Menstruation, Polycystic Ovarian Syndrome, Molar Pregnancy, some drugs that are used in obstetrics and gynecology	Obstetrics gynecology	cases and discussion with Board students	Quizzes and case presentation
✓ Course Evaluation				
34 quizzes, 6 case presentation, 60 final exam.				
✓ Learning and Teaching Resources				
Required textbooks (curricular books, if any)		Manuals for Clinical Training Adopted by the		
Main references (sources)		Manuals for Clinical Training Adopted by Department		
Recommended books and references (scientific journals, reports...)		Pharmacy times (journal) Us pharmacist (journal)		
Electronic References, Websites		Uptodate resource, Medscape		

Course Description Form

✓ Course Name:	
Industrial Pharmacy I	
✓ Course Code:	
454PI p1	
✓ Semester / Year:	
First and Second Semester	
✓ Description Preparation Date:	
2/2024	
✓ Available Attendance Forms:	
On campus	
✓ Number of Credit Hours (Total) / Number of Units (Total):	
3 hours/week (Theory) , 2hours/ week (Practical), Total units=4	
✓ Course administrator's name (mention all, if more than one name)	
<ul style="list-style-type: none"> ▪ Name: Prof. Dr. Nawal Ayash Rajab /(First and Second semester) E-mail: : dr.nawalayash@copharm.uobaghdad.edu.iq ▪ Name: Lec. Dr. Nawar Michael/(second Semester) E-mail: nawwar.elias@copharm.uobaghdad.edu.iq ▪ Name : Assist Lec. Amani Shakir Email amani.hadi1201@copharm.uobaghdad.edu.iq ▪ 	
✓ Course Objectives	
Course Objectives	The subject aim to teach pharmacy students the steps and lines

	Upon which the Formulation processing of pharmaceutical dosage forms. This fundamental course provides the required principles to integrate knowledge of Pharmaceutical Technology in Formulation of perfect dosage form. It includes: milling, mixing, drying and filtration, besides sterilization to achieve a proper processing of dosage form
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✓ **Teaching and Learning Strategies**

Strategy	1-Lectures and Presentation 2-Discussions 3- Laboratory experiments 4- Inverted classrooms
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✓ **Course Structure**

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
2nd Semester					
1	3	Understand the Principles of pharmaceutical processing; mixing	fluid mixing; Flow characteristics; mechanisms of mixing; mixing equipment's; batch and continuous mixing	- Lectures -White board -Data show -Power point -Explanatory diagrams -Scientific YouTube videos -laboratory experiments	-Written exams - Oral exams -Laboratory reports
2	3	Knowledge of the mixer and best selection of mixer	batch and continuous mixing; mixer selection.		
3	3	Describe the Milling	pharmaceutical application of milling; size distribution and measurement; Theory of comminution		
4	3	Understand types of mills	types of mills; factors influencing milling; selection of mill techniques and techniques of milling		

5	3	Understand Drying industrial process	Definition of drying; purpose; Psychrometry (humidity measurement); theory of drying; drying of solids,		
6	3	Define drying equipment's	classification of dryer; specialized drying methods		
7	3	Understand process of Clarification and filtration	Theory; filter media; filter aids; selection of drying method; non-sterile and sterile operations; integrity testing		
8	3	Understand the equipment's and systems (commercial and laboratory) of filtration.	equipment's and systems (commercial and laboratory) of filtration		
9	3	Describe Sterilization; validation of methods; microbial death kinetics	Sterilization; validation of methods; microbial death kinetics		
10	3	To understand Methods of sterilization	Methods of sterilization (thermal and non-thermal); mechanisms; evaluation.		
11	3	Describe Pharmaceutical dosage forms; sterile products	development; formulation		

12	3	Learn production; processing of sterile product	production; processing; quality control.		
✓ 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					
✓ Learning and Teaching Resources					
Required textbooks (curricular books, if any)			The Theory and Practice of Industrial Pharmacy by Leon Lachman et al.		
Main references (sources)			Pharmaceutics: The Science of Dosage Form Design, by Michael E. Aulton		
Recommended books and references (scientific journals, reports...)			Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems by Loyd Allen		
Electronic References, Websites					

Course Description Form

✓ Course Name:
Clinical Chemistry
✓ Course Code:
560 CICc
✓ Semester / Year:
First/ Fifth
✓ Description Preparation Date:
29/2/2024
✓ Available Attendance Forms:
In-person attendance
✓ Number of Credit Hours (Total) / Number of Units (Total)
5/4
✓ Course administrator's name (mention all, if more than one name)
Prof. Dr. Shatha Hussein Ali shathahali@copharm.uobaghdad.edu.iq Prof. Dr. Eman Saadi Saleh emansaadi@copharm.uobaghdad.edu.iq

Dr. Zahraa Mohammed Ali

zahraa.naji@copharm.uobaghdad.edu.iq

✓ Course Objectives

Course Objectives

- Providing students with the necessary theoretical knowledge and technical skills in the field of clinical chemistry.
- Understanding the role of clinical chemistry in health and disease in various body systems.
- Discuss the alteration in the normal metabolic pathways and the causes of these alterations that underlie various diseases.
- Interpreting the results of biochemistry analyses that augment the clinical examination to achieve definite diagnosis of the disease.

✓ Teaching and Learning Strategies

Strategy

- Presentation and recitation
- Reading & research
- Interactive discussions
- Brainstorming

✓ Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 and 2	6	Understanding the abnormalities in the metabolism of glucose and related disorders and the laboratory assessment	Carbohydrates disorders	Lectures, discussions, and reports	Theoretical exam, and classroom activities
3	3	Understanding the abnormalities in the metabolism of lipids and the laboratory assessment	Lipids disorders	=	=
4	3	Understanding of the metabolic, synthetic and excretory functions of the liver and the related disorders; and the laboratory assessment of liver functions	Liver function tests	=	=
5	3	Understanding of the excretory functions of the	Kidney function tests	=	=

		kidney and its role in maintaining blood hemostasis and elimination of waste products			
6	3	Study of the acute and chronic kidney diseases and the laboratory tests of kidney functions; and types of kidney stones	Kidney function tests	=	=
7	Midterm Examinations				
8 and 9	6	Study of different diseases associated with change in enzymatic activity in blood	Clinical Enzymology	=	=
10	3	Study of different tumor markers in blood that can be used for detection and monitoring tumors	Tumor markers	=	=
11	3	Understand of hormones types, functions and regulation, with special emphasis on the hypothalamic hormones	Introduction to hormones and the Hypothalamic hormones	=	=
12	3	The pituitary gland hormones actions and disorders; and the laboratory analyses of pituitary gland disorders	Pituitary gland hormones and diseases	=	=
13	3	The adrenal gland hormones actions and disorders; and the laboratory analyses of adrenal gland disorders	Adrenal gland hormones and diseases	=	=
14	3	The thyroid gland hormones actions and disorders; and the laboratory analyses of thyroid gland disorders	Thyroid gland hormones and diseases	=	=
15	3	The male and female reproductive glands hormones and the physiologic and pathologic alterations in their levels	Reproductive glands hormones and diseases	=	=

✓ Course Evaluation

Midterm examination 15 marks

Quiz and classroom activities 5 marks

Practical part 20 marks

Final examination 60 marks

✓ Learning and Teaching Resources

Required textbooks (curricular books, if any)	Clinical Biochemistry & Metabolic Medicine, Crook 8th edition 2012
Main references (sources)	Tietz Clinical chemistry& Molecular Diagnostics 7th edition; 2015.
Recommended books and references (scientific journals, reports...)	Clinical Chemistry, Kaplan 2012
Electronic References, Websites	

