Academic Program Description Form

University Name: Al-Nahrain university Faculty/Institute: Faculty of pharmacy Scientific Department: Pharmaceutics department Academic or Professional Program Name: Bachelor Final Certificate Name: Bacheloria degree Academic System: semesters Description Preparation Date: 28/02/2024 File Completion Date: 25/04/2024

Signature:

Signature:

Date: 25/04/2024 Julie State S Scientific Associate Name:

The file is checked by: Department of Quality Assurance and University Performance Director of the Quality Assurance and University Performance Department Alood Date: 25/04/2024 Signature:





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



Academic Program and Course Description Guide

Introduction:

The educational program is a well–planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

<u>Academic Program Description</u>: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

<u>Program Vision</u>: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

<u>Program Objectives</u>: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

<u>Curriculum Structure</u>: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

1. Program Vision

The vision of pharmaceutics department is to be focus on innovative work in research and education that related to pharmaceutics and drug delivery to achieve superiority in this respect

2. Program Mission

The mission of pharmaceutics department involve two target one related to education and training mission and other related to research and innovation mission, the first target attained by offering undergraduate and postgraduate student with essential knowledge for understanding the physicochemical and biopharmaceutics aspect of dosage form design , evaluation and manufacturing whereas the second target accomplished by performing and directing new knowledge to external partner to amend drug delivery and patient care.

3. Program Objectives

1/ submit education and training on scientific coarse that organized by the department

2/ impart professional skill on drug preparation, synthesis and evaluations

3/ offer scientific concept essential for lifelong learning and valuable knowledge for rational, effectiveness and safety of the drugs

4/ create synchronized between coarse learning outcome and graduate attribute properties

5/ activate the role of department in high quality research and innovation

4. Program Accreditation

Do not have program accreditation? And from

5. Other external influences

Is there a sponsor for the program?

6. Program Structure								
Program Structure	Number of	Credit hours	Percentage	Reviews*				
	Courses							
Institution	10	43	20%	basic				
Requirements								
College	10	43	20%	basic				
Requirements								
Department	10	43	20%	basic				
Requirements								
Summer Training	2	_	-	-				
Other								

* This can include notes whether the course is basic or optional.

7. Program Description						
Year/Level	Course Code	Course Name	Credit Hours			
			theoretical	practical		
First	10301102	Principle of pharmacy practice	2	-		
	10301109	pharmaceutical calculation	2	2		
Second	10301218	Physical pharmacy I	3	2		
	10301225	Physical pharmacy II	3	2		
Third	10301334	Pharmaceutical technology I	3	2		
	10301339	Pharmaceutical technology II	3	2		

Forth	10301447	Industrial pharmacy I	2	2
	10301454	Industrial	3	2
Fifth	10301557	Industrial	3	2
	10301568	Dosage form	2	_
	10301569	Pharmaceutical biotechnology	1	-

8. Expected learning	outcomes of the prog	gram
Knowledge		
 Identify the types and Methods for preparing substances in the form of Studying the stability ovarious forms. 	4. Studying the pharmacological effect, its effectiveness, and its mechanism of action inside the body.	
Skills		I
 1/The skills goals special 2/Acquisition of skill in in preparation methods 3/ Acquiring the skill of I maintain stability for as I 	4/ Acquisition of skill in diagnosing separated compounds	
Ethics		
Methods for preparing the active substances in the form of full drug doses		gical effect, its effectiveness, and its de the body.
Studying the stability of doses prepared in various forms.		

9. Teaching and Learning Strategies

Power Point Presentation, Tutorials (Pen and Whiteboard), Problem Solving, Practicalities Scientific researchs Laboratory teaching

10. Evaluation methods

Quizzes reports Mid term Exam Final Exam

11. Faculty

Faculty Members							
Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff		
	General	Special			Staff	Lecturer	
	pharmacist	pharmaceutics	-	_	3	4	

Professional Development

Mentoring new faculty members

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

Professional development of faculty members

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

12. Acceptance Criterion

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

13. The most important sources of information about the program

British Pharmacopeia United state pharmacopeia European pharmacopeia Applied Bio pharmaceutics and pharmacokinetics Shargel and yus Pharmaceutical Calculation by Stoklosa Physical Pharmacy by Alfred Martin et al. Pharmaceutical Dosage forms and Drug Delivery Systems By Haward A. Ansel; latest edition. And Sprowel's American Pharmacy. Shargel L, Yu AB, (Eds.), Applied Biopharmaceutics and Pharmacokinetics. The Theory and Practice of Industrial Pharmacy by Leon Lachman et al.

14. Program Development Plan

Personal development - increasing knowledge - scientific discussions - cultural events

			Pro	gram	Skills	outl	ine								
				Required program Learning outcomes											
Year/Level Course Code	Course Name	Basic or	Knowledge		Skills			Ethics							
			optional	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First	10301102	Principle of pharmacy practice	Basic	V	\checkmark	\checkmark	V	\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	\checkmark
	10301109	pharmaceutical calculation	Basic	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark		\checkmark			\checkmark
Second	10301218	Physical pharmacy I	Basic	\checkmark						\checkmark			\checkmark	\checkmark	
	10301225	Physical pharmacy II	Basic	\checkmark									\checkmark		\checkmark
Third	10301334	Pharmaceutical technology I	Basic	\checkmark											
	10301339	Pharmaceutical technology II	Basic	\checkmark		\checkmark		\checkmark	\checkmark			\checkmark			\checkmark
Fourth	10301447	Biopharmaceutic	Basic												
	10301454	Industrial pharmacy I	Basic	\checkmark		\checkmark		\checkmark	\checkmark			\checkmark			\checkmark

Fifth	10301557	Industrial pharmacy II	Basic	\checkmark	\checkmark	 		 		 \checkmark	\checkmark
	10301568	Dosage form	Basic	\checkmark		 		 \checkmark		 	\checkmark
	10301569	Pharmaceutical biotechnology	Basic	\checkmark	\checkmark	 	\checkmark	 		 \checkmark	\checkmark

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

1. Course Name:										
Principles of Pharmacy Pra	actice									
2. Course Code:										
10301102										
3. Semester / Year:										
1 st semester/ 1 st year										
4. Description Prepara	ation	Date:								
18/2/2024										
5. Available Attendanc	e Forr	ns:								
Theory/ attendance										
6. Number of Credit Ho	ours (T	Total) / Number of Uni	ts (Total)							
30										
7. Course administrat	tor's r	ame (mention all, if r	nore than or	ne name)						
Name: Dr rawaa		· · ·								
Email:										
8. Course Objectives										
Course Objectives	1/ Lea	rn the rules of mathematic	calculations.							
	2/ Learn the rules of measurement systems and the relation betw									
	them.									
	3/ Lea	rn the rules of components	and types of p	rescriptions.						
	4/ Lea	rn the rules of calculating	g doses and re	ducing or enlarg						
	formul	as.								
	5/ Lea	arn the rules of values d	escription in p	ercentage and ra						
	streng	th.								
	6/ Lea	rn the rules of calculating	density and spe	cific gravity.						
9. Teaching and Learn	ing Sti	rategies								
Strategy Power Point Pr	esenta	tion, Tutorials (Pen and	Whiteboard),							
Problem	Solvii	ng, Practicalities								
10. Course Structure										
Week Hours Required	Unit or subject name Learning Evaluation									
			method	method						
Quiteomee				inotitou						
Outcomes				Outcomes						

1	2	mathematic process	Review on some mathematic process	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
2	2	types measurement systems	Explicit the types measurement Systems	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
3	2	Give practice Solving the proble	Solving the problems	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
4	2	components and types of prescript	Explain the components and types of prescription	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
5	2	Give practice Solving the proble	Solving the problems	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
6	2	ratio, proportion and percentage	Describe the ratio, proportion and percentage	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
7	2	Give practice Solving the proble	Solving the problems	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
8			Mid term Exam		
9	2	Give information Density, specific gravity	Estimate the Density, specific gravity.	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
10	2	Give practice Solving the proble	Solving the problems	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
11	2	Compute the dose of the drug	Compute the doses of the drug	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
12	2	Give practice Solving the proble	Solving the problems	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
13	2	reduce or enlarge the formula	Explicit how can reduce or enlarge the formula	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
14			Final Exam		
11	Course	Evaluation			
Quizze Report Mid te Final F	es 5% ts 5% rm Exam Exam 70%	20% 6			
			14		

11. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Pharmaceutical Calculation by Stoklosa
Main references (sources)	Pharmaceutical Calculation by Stoklosa
Recommended books and references	Pharmacy practice by Jason hall
(scientific journals, reports)	
Electronic References, Websites	Oxford university press

12. Pharmac	Course Name: eutical Calculation			
		15		

13.	С	ourse Code:					
10301	109						
14.	S	emester / Year:					
2 nd sen	nester/ 1	l st year					
15.	D	escription Prepara	ation Date:				
18/2/2	024						
16.	Availab	le Attendance Form	18:				
,	Theory	laboratory/ attendar	nce				
17.	Number	r of Credit Hours (T	'otal) / Number of Uni	ts (Total)			
	60						
18.	C name)	Course administrat	or's name (mention	all, if more th	an one		
	Name:	dr rawaa					
	Email:						
19.	C	Course Objectives					
Course	Objective	es	1/ Learn the rules of mat	hematic calculation	ons.		
			2/ Learn the rules of com	ponents and type	es of prescripti		
			3/ Learn the rules of 6	calculating dose	s and reducir		
			enlarging formulas.				
			4/ Learn the rules of value	es description in p	percentage and		
			strength.				
20.	Т	eaching and Learni	ng Strategies				
Strategy	/ P	ower Point Presen	tation, Tutorials (Per	n and Whitebo	oard),		
	P	roblem Solving, Pr	acticalities				
	S	cientific researchs					
		aboratory teaching	5				
21 C	ourse S	tructure					
Week	Hours	Required Learning	Unit or subject	Learning	Evaluation		
		Outcomes	name	method	method		
1-5	10	pharmaceutical	Dilution	Power Point.	Formative		
10		preparations.	and concentration	Problem Solvi	summative.		
			pharmaceutical preparations.	Practicalities	quize, exan		
	6	Information	Isotonic solutions.	Power Point, Formative,			
6-8	-	• 4		Problem Solvi	summative		
6-8		Isotonic solutions.		Practicalities			
6-8		Isotonic solutions.	Mid town Ever	Practicalities	quize, exan		

9-11	6	Information	Electro	olyte	Power Point,	Formative,
		Electrolyte	solutio	ons	Problem Solvi	summative.
		solutions	(millie	quivalents,	Practicalities	quize exam
			millim	oles		quize, exuiii
			and m	illiosmoles).		
12-15	8	Information	Consti	tuted solutions,	Power Point,	Formative,
		Constituted solutions	admix	tures and flow	Problem Solvi	summative,
			rate c	alculations.	Practicalities	quize, exam
			Final	Exam		
22. Course Evaluation						
Quizzes 5%						
Reports 5%						
Mid ter	m Exam	30%				
Final E	xam 60%	0				
23. L	23. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			any)	Pharmaceutical Calculation by Stoklosa		
Main references (sources)				Pharmaceutical Calculation by Stoklosa		
Recommended books and references			rences	Maths skills for pharmacy by chris Lang		
(scientifi	c journals	s, reports)				
Electron	ic Refere	nces, Websites		Oxford university press		

24. Course Name:

Physical pharmacy I						
25.	(Course Code:				
103012	218					
26.	(Semester / Year	•			
1 st sem	ester/	2 nd year				
27.]	Description Prep	paration Date:			
18/2/2024						
28.Available Attendance Forms:						
Theory and practical/ attendance						
29.Number of Credit Hours (Total) / Number of Units (Total)						
-	39					
30. Course administrator's name (mention all, if more than one						
name)						
]	Name:	dr amera				
Email:						
31. Course Objectives						
Course	Objectiv	ves 1. Recogi	nize the perception of state of	of matter including	l gases,	
		liquids	s, solid, liquid crystalline and	d condense syster	n.	
		2 Bacamiza (the nervention of two compo	nent evetem		
		2. Recognize i	the perception of two compo			
		3. Recognize i	ne perception of solutions c	ontaining		
		4 Recognize f	the perception of thermodyn	amics laws		
		5. Recognize f	the perception of ionic stren	ath and ionic equi	librium	
		6. Recognize f	the perception of PH, buffer	and free energy.		
20	-		arning Stratogios			
52.	1	Derven Deint Dress	untation Tutorials (Don as	nd Whitch cand)	Duchlom Colu	
Strategy	נ י [Practicalities	intation, rutoriais (Pen a	nu winteboaru),	, Problem Solv	
33. Co	ourse	Structure				
Week	Hours	Required	Unit or subject name	Learning	Evaluation	
		Learning		method	method	
		Outcomes				
1	3	States of matter	States of matter, bind	Power Point,	Formative,	
			forces	Problem Solvi	summative,	
			between molecules,	Practicalities	auiza avom	

		1			
2	3	phase equilibria and phase rule; thermal analysis	State of gases, liquids, solid and crystalline matters; phase equilibria and phase rule; thermal analysis.	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
3	3	Give information liquid phase	Liquid crystalline state, liquid equilibrium, condense system	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
4	3	Give information Two componen System	Two component system, (solid and liquid), solid dispersion,phase equilibrium	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
5	3	electrolytes, properties.	Solutions non/electrolytes, properties.	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
6	3	properties, molecular weight determination	ideal and real colligative properties,molecular weight determination.	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
7	3	Review and Solving problems	Review and Solving problems	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
8			Mid term Exam		
9	3	free energy function and application	Thermodynamics, First law, thermochemistry, second law, third law, free energy function and application	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
10	3	Arrhenius theory dissociation, theory	Solution of electroly properties, Arrhenius theory dissociation, theory strong electrolytes,	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
11	3	Debye/Huchle theory,	Ionic strength, Debye/Huchle theory, coefficients expressing colligative properties	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
12	3	modern theor of acids, bases	Ionic equilibrium, modern theories of acids, bases and salts, acid/base equilibrium,	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam

12	2				D	
13	5	calculation of p		ion of pH,	Problem Solvi	Formative,
			actuity (ionio strongth	Problem Solvi	summative,
			and free	energy	Fracticanties	quize, exam
14	3	Buffer	Buffered	l and	Power Point.	Formative
	-	equation;	isotonic	solutions:	Problem Solvi	summative,
		l ,	Buffer e	quation;	Practicalities	summative,
			buffer ca	apacity		quize, exam
15	3	buffer and	methods	s of	Power Point,	Formative,
		biological	adjustin	g tonicity and	Problem	summative,
		system	pH; buf	fer and	Solving,	quize, exam
			biologic	al system	Practicalities	·1·····
			Final Ex	am		
24	34. Course Evaluation					
54.	Course	Evaluation				
Quizzes	s 5%					
reports	5%	a a 0/				
midter	m Exam	30%				
		100%	_			
35.	Learning	g and Teaching	Resourc	es		
Require	Required textbooks (curricular books, if any)			Physical Pha	rmacy by Alfr	ed Martin
Main re	ferences	(sources)		Phusical Pharmacu bu Alfred Martin		
Main IC		(3001003)		et al.		
Recom	nended	books and re	ferences	Theory and Practice of Physical		
(scientific journals, reports,)			Pharmacy			
			by Gaurav Jain, Roop Krishen Khar. Farh			
				J. Ahmad		
Electron	nic Refere	ences, Websites		https://www.kobo.com/us/en/ebook/theory-		
				and-practice-of-physical-pharmacy-e-book		

36. Course Name: Physical pharmacy II 37. 37. Course Code: 10301225 38. 38. Semester / Year: 2 nd semester/ 2 nd year 39. 39. Description Preparation Date: 18/2/2024 40. Available Attendance Forms: Theory and practical/ attendance 41. Number of Credit Hours (Total) / Number of Units (Total) 45 42. Course administrator's name (mention all, if more than one name) Name: dr amera Email: 43. Course Objectives Course Objectives 1. Recognize the perception of state of matter including gases, liquids, solid, liquid crystalline and condense system. 2. Recognize the perception of solutions containing electrolytes and non/electrolytes materials. 4. Recognize the perception of of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy.					
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37. Course Code: 10301225 38. Semester / Year: 2 nd semester/ 2 nd year 39. Description Preparation Date: 18/2/2024 40. Available Attendance Forms: Theory and practical/ attendance 41. Number of Credit Hours (Total) / Number of Units (Total) 45 42. Course administrator's name (mention all, if more than one name) Name: dr amera Email: 43. Course Objectives Course Objectives 1. Recognize the perception of state of matter including gases,liquids, solid, liquid crystalline and condense system. 2. Recognize the perception of solutions containing electrolytes and non/electrolytes materials. 4. Recognize the perception of thermodynamics laws. 5. Recognize the perception of PH, buffer and free energy.	Physical pharmacy	/			
10301225 38. Semester / Year: 2 nd semester/ 2 nd year 39. Description Preparation Date: 18/2/2024 40.Available Attendance Forms: Theory and practical/ attendance 41.Number of Credit Hours (Total) / Number of Units (Total) 45 42. Course administrator's name (mention all, if more than one name) Name: dr amera Email: 43. Course Objectives Course Objectives 1. Recognize the perception of state of matter including gases,liquids, solid, liquid crystalline and condense system. 2. Recognize the perception of solutions containing electrolytes and non/electrolytes materials. 4. Recognize the perception of thermodynamics laws. 5. Recognize the perception of PH, buffer and free energy.	37. Cours	e Code:			
38. Semester / Year: 2 nd semester/ 2 nd year 39. Description Preparation Date: 18/2/2024 40.Available Attendance Forms: Theory and practical/ attendance 41.Number of Credit Hours (Total) / Number of Units (Total) 45 42. Course administrator's name (mention all, if more than one name) Name: dr amera Email: 43. Course Objectives Course Objectives 1. Recognize the perception of state of matter including gases,liquids, solid, liquid crystalline and condense system. 2. Recognize the perception of two component system 3. Recognize the perception of thermodynamics laws. 5. Recognize the perception of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy.	10301225				
2 nd semester/ 2 nd year 39. Description Preparation Date: 18/2/2024 40.Available Attendance Forms: Theory and practical/ attendance 41.Number of Credit Hours (Total) / Number of Units (Total) 45 42. Course administrator's name (mention all, if more than one name) Name: dr amera Email: 43. Course Objectives Course Objectives 1. Recognize the perception of state of matter including gases,liquids, solid, liquid crystalline and condense system. 2. Recognize the perception of solutions containing electrolytes and non/electrolytes materials. 4. Recognize the perception of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy.	38. Semes	ster / Year:			
39. Description Preparation Date: 18/2/2024 40. Available Attendance Forms: Theory and practical/ attendance 41. Number of Credit Hours (Total) / Number of Units (Total) 45 42. Course administrator's name (mention all, if more than one name) Name: dr amera Email: 43. Course Objectives Course Objectives 1. Recognize the perception of state of matter including gases,liquids, solid, liquid crystalline and condense system. 2. Recognize the perception of solutions containing electrolytes and non/electrolytes materials. 4. Recognize the perception of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy.	2 nd semester/ 2 nd ye	ear			
18/2/2024 40. Available Attendance Forms: Theory and practical/ attendance 41. Number of Credit Hours (Total) / Number of Units (Total) 45 42. Course administrator's name (mention all, if more than one name) Name: dr amera Email: 43. Course Objectives Course Objectives 1. Recognize the perception of state of matter including gases,liquids, solid, liquid crystalline and condense system. 2. Recognize the perception of two component system 3. Recognize the perception of solutions containing electrolytes and non/electrolytes materials. 4. Recognize the perception of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy.	39. Descr	iption Preparation Date:			
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45 42. Course administrator's name (mention all, if more than one name) Name: dr amera Email: 43. Course Objectives Course Objectives 1. Recognize the perception of state of matter including gases,liquids, solid, liquid crystalline and condense system. 2. Recognize the perception of two component system 3. Recognize the perception of solutions containing electrolytes and non/electrolytes materials. 4. Recognize the perception of thermodynamics laws. 5. Recognize the perception of PH, buffer and free energy.	41.Number of C	Credit Hours (Total) / Number of Units (Total)			
42. Course administrator's name (mention all, if more than one name) Name: dr amera Email: Name: dr amera Email: 43. Course Objectives Course Objectives 1. Recognize the perception of state of matter including gases,liquids, solid, liquid crystalline and condense system. 2. Recognize the perception of two component system 3. Recognize the perception of solutions containing electrolytes and non/electrolytes materials. 4. Recognize the perception of thermodynamics laws. 5. Recognize the perception of of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy.	45				
Name: dr amera Email: 43. Course Objectives Course Objectives 1. Recognize the perception of state of matter including gases,liquids, solid, liquid crystalline and condense system. 2. Recognize the perception of two component system 3. Recognize the perception of solutions containing electrolytes and non/electrolytes materials. 4. Recognize the perception of thermodynamics laws. 5. Recognize the perception of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy.	42. Cours	se administrator's name (mention all, if more than one			
Email: 43. Course Objectives Course Objectives 1. Recognize the perception of state of matter including gases,liquids, solid, liquid crystalline and condense system. 2. Recognize the perception of two component system 3. Recognize the perception of solutions containing electrolytes and non/electrolytes materials. 4. Recognize the perception of thermodynamics laws. 5. Recognize the perception of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy.	Name: dr amera				
43. Course Objectives Course Objectives 1. Recognize the perception of state of matter including gases, liquids, solid, liquid crystalline and condense system. 2. Recognize the perception of two component system 3. Recognize the perception of solutions containing electrolytes and non/electrolytes materials. 4. Recognize the perception of thermodynamics laws. 5. Recognize the perception of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy.	Email:				
Course Objectives 1. Recognize the perception of state of matter including gases,liquids, solid, liquid crystalline and condense system. 2. Recognize the perception of two component system 3. Recognize the perception of solutions containing electrolytes and non/electrolytes materials. 4. Recognize the perception of thermodynamics laws. 5. Recognize the perception of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy.	43. Cours	e Objectives			
 including gases,liquids, solid, liquid crystalline and condense system. 2. Recognize the perception of two component system 3. Recognize the perception of solutions containing electrolytes and non/electrolytes materials. 4. Recognize the perception of thermodynamics laws. 5. Recognize the perception of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy. 	Course Objectives	1. Recognize the perception of state of matter			
condense system. 2. Recognize the perception of two component system 3. Recognize the perception of solutions containing electrolytes and non/electrolytes materials. 4. Recognize the perception of thermodynamics laws. 5. Recognize the perception of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy.		including gases, liquids, solid, liquid crystalline and			
 Recognize the perception of two component system Recognize the perception of solutions containing electrolytes and non/electrolytes materials. Recognize the perception of thermodynamics laws. Recognize the perception of ionic strength and ionic equilibrium. Recognize the perception of PH, buffer and free energy. 		condense system.			
 Recognize the perception of solutions containing electrolytes and non/electrolytes materials. Recognize the perception of thermodynamics laws. Recognize the perception of ionic strength and ionic equilibrium. Recognize the perception of PH, buffer and free energy. 		2. Recognize the perception of two component system			
 and non/electrolytes materials. 4. Recognize the perception of thermodynamics laws. 5. Recognize the perception of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy. 		3. Recognize the perception of solutions containing electrolytes			
 4. Recognize the perception of thermodynamics laws. 5. Recognize the perception of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy. 		and non/electrolytes materials.			
5. Recognize the perception of ionic strength and ionic equilibrium. 6. Recognize the perception of PH, buffer and free energy.		4. Recognize the perception of thermodynamics laws.			
6. Recognize the perception of PH, buffer and free energy.		5. Recognize the perception of ionic strength and ionic equilibrium.			
14 Toophing and Loorning Strategies		6. Recognize the perception of PH, buffer and free energy.			
44 Toophing and Loorning Strategies					
14 Toophing and Loorning Strategies					
44. Teaching and Learning Strategies	44. Teach	ing and Learning Strategies			
Strategy Power Point Presentation, Tutorials (Pen and Whiteboard), Problem Solving, Practicalities	Strategy Power Solving	Point Presentation, Tutorials (Pen and Whiteboard), Problem g, Practicalities			
45. Course Structure	45. Course Structu	Jre			

			onit of subject hame	Leanning	Lvaluation
		Learning		method	method
		Outcomes			
1-3	9	Solubility and distribution phenomena, solvent-solute	Solubility and distribution phenomena, solvent-solute interactions, solubility of gases in liquids, solubility of liquids in liquids, solubility of non-ionic solids in liquids, distribution of solutes between immiscible solvents.	Power Point, Problem Solving, Practicalities	Formative, summative, quize, exam
4,5	6	classification complexes,	Complexation, classification of complexes, methods of analysis thermodynamic treatment of stability constants.	Power Point, Problem Solving, Practicalities	Formative, summative, quize, exam
6-8	9	Kinetics, rate orders of reaction	Kinetics, rate and orders reactions, influence of temperature and other factors on reactions rate, decomposition of medicinal agents and accelerated stability analysis	Power Point, Problem Solving, Practicalities	Formative, summative, quize, exam
0.10	6	Interfacial	Mid term exam	Derver Deint	<u> </u>
9,10	0	Phenomena	liquid interfaces, surface free energy, measurement of interfacial tension, spreading coefficient, surface active agents and wet phenomena.	Problem Solving, Practicalities	Formative, summative, quize, exam
11	3	pharmaceutical application, types of colloidal systems	Colloids, dispersed system and pharmaceutical application, types of colloidal systems, kinetic properties, diffusion, potential, solubilization	Power Point, Problem Solving, Practicalities	Formative, summative, quize, exam
12	3	methods determining particle size	Micrometrics, particle size, methods of determining particle size, particle shape and surface area, porosity, den	Power Point, Problem Solving, Practicalities	Formative, summative, quize, exam
13,14	6	Rheology, Newton systems,	Rheology, Newtonian systems, thixotropy measurement, negative thixotropy, determination of thixotropy.	Power Point, Problem Solving, Practicalities	Formative, summative, quize, exam
15	3	pharmaceutical applications, molecular we averages	Polymer science, definitions pharmaceutical applications, molecular weight averages.	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
			Final Exam		
46. 0	Course	Evaluation			

reports , 5% Midterm Exam , 30% and Final Exam 60%	
47. Learning and Teaching Resour	ces
Required textbooks (curricular books, if any	Physical Pharmacy by Alfred Martin et al.
Main references (sources)	Physical Pharmacy by Alfred Martin et al.
Recommended books and references (scientific journals, reports)	Theory and Practice of Physical Pharmacy by <u>Gaurav Jain</u> , <u>Roop Krishen Khar</u> , <u>Farhan</u> <u>Ahmad</u>
Electronic References, Websites	https://www.kobo.com/us/en/ebook/theory-an practice-of-physical-pharmacy-e-book

48.	Co	ourse Name:			
Pharmace	utical	l technology I			
49.	Сс	ourse Code:			
10301334					
50.	Se	emester / Year:			
3 rd stage/	'1 st se	emester			
51.	De	escription Prepa	aration Date:		
18/2/202	4				
52.Av	ailabl	e Attendance Fo	rms:		
The 52 Nu	eory a	and practical/ atte	(Total) / Number of Units (
	mber	of Clean Hours	(Total) / Inumber of Office (rotar)	
54	C	ourse administr	ator's name (mention all	if more th	an one
name)					
Name: DR ali kassim					
Em	ail:				
~ ~	•				
55.	C	ourse Objectives			
Course Objectives The aim of pharmaceutical technology is to develop , manufacture s					
effective, and quality					
		pharma	ceutical products. It encompass	es various a	aspects such as
		design,			
		formula	tion, manufacturing, packagi	ng, and o	quality control
		pnarma	ceutical drugs.		
56.	le	eaching and Lear	rning Strategies		
Strategy	1.	Theoretical lectu	res		
	2.	Blackboard Projector device			
	$\begin{array}{c} 5.\\ 4\end{array}$	PowerPoint pres	entation		
	5	Educational labo	oratories		
6. Electronic lectures					
7. Scientific and practical research					
8. Office Research					
57. Course Structure					
Week	Hou	Required	Unit or subject name	Learning	Evaluation
	15	Learning		method	method
		Outcomes			
			7 <i>1</i>		
24					

XX 7 1 4	^		D ' 1	Deriver	
Weekl	2	comparisons	Dispersed systems: their	rower Point	Formative,
		between	classification;	Problem	summative,
		different	comparisons between	Solving,	quize, exam
		systems	different	Practicalit	
			Systems		
Week1-2	2	types of solutions	Solutions and types of solutions	Power	Formative,
				Poliiit, Problem	summative,
				Solving	quize, exam
				Practicalit	
Week2-3	4	Solubility: Fact	Solubility: Factors affecting	Power	Formative,
		affecting solubility	solubility; expression of	Point,	summative.
			dissolution; dissolution	Problem	guize, exam
			rate versus solubility;	Solving,	1 ,
			preparation of solutions	Practicalit	
			materials		
Week3-4	4	Official solutions	Official solutions; classification	Power	Formative.
			official solutions; preparation	Point,	summative.
			uses.	Problem	quize exam
				Solving,	quize, enum
XV 145	4	· · 1	A 1	Practicalit	F
week4-5	4	principles;	Aqueous solutions	Power	Formative,
		aromatic	containing aromatic	Problem	summative,
		waters, methods	principles, aromatic waters,	Solving,	quize, exam
		of preparations	of preparations: stability	Practicalit	
Week5-6	4	Syrups: sugar ba	Syrups: sugar based syrups:	Power	Formative
		syrups	artificial and sorbitol based	Point,	summative,
			syrups; stability of	Problem	quize exem
			Syrups	Solving,	quize, exam
W 167	2			Practicalit	
Week6-7	3	Definition a	Definition and methods	Power	Formative,
		clarification: fi	clarification, inter aids	Problem	summative,
		aids in clarification	charmouton	Solving.	quize, exam
				Practicalit	
Week7-8	3	Preparation	Preparation of solutions us	Power	Formative,
		solutions	mixed solvent systems; spirits,	Point,	summative,
			elixirs.	Problem	quize, exam
				Practicalit	
Week8-9	3	Extraction;	Extraction; maceration	Power	Formative.
		maceration	percolation	Point,	summative.
		percolation		Problem	quize exam
				Solving,	Yuize, exuili
				Practicalit	

Week9-104Tinctures;Tinctures; fluid extracts; extra of resins and oleoresins.Power Point, Problem Solving, PracticalitFormative summati quize, extra Problem Solving, PracticalitWeek10-116Colloidal dispersions; lyophilic; lyophobColloidal dispersions; lyophobicColloidal dispersions; lyophi Power Problem Solving, PracticalitFormative summati quize, extra Point, Problem Solving, PracticalitWeek13-146Coarse dispersion Coarse dispersion; suspensionsPower Power Point, Problem Solving, PracticalitFormative summati quize, extra Problem Solving, Practicalit58.Course EvaluationCourse Evaluation
Week10-116Colloidal dispersions; lyophilic; lyophobColloidal dispersions; lyophobicPower Point, Problem Solving, PracticalitFormative summati quize, ex Point, Point, Problem Solving, PracticalitFormative summati quize, ex Point, Point, Problem Solving, PracticalitWeek13-146Coarse dispersion Coarse dispersion; suspensionsPower Power Point, Problem Solving, PracticalitFormative summati quize, ex Point, Problem Solving, Practicalit58.Course Evaluation
Week13-14 6 Coarse dispersion Coarse dispersion; suspensions Power Point, Point, Point, Point, Problem Solving, Practicalit Formative 58. Course Evaluation Ouizzes 5% 5% Formative Formative
58. Course Evaluation
Quizzes 5%
reports , 5% Midterm Exam , 30% and Final Exam 60%
59. Learning and Teaching Resources
 Required textbooks (curricular books, if any) Pharmaceutical Calculation by Stokle Physical Pharmacy by Alfred Martin et al. Pharmaceutical Dosage forms Drug Delivery Systems By Haward A
 Ansel; latest edition. And Sprowel's American Pharmacy. Shargel L, Yu AB, (Eds.), Applied Biopharmaceutics and Pharmacokinetics. The Theory and Prace Industrial Pharmacy by Lachman et al.
Ansel; latest edition. And Sprowel's American Pharmacy.• Shargel L, Yu AB, (Eds.), Applied Biopharmaceutics and Pharmacokinetics.• The Theory and Prace Industrial Pharmacy by Lachman et al.Main references (sources)Encyclopedia of Pharmaceutical Technology
Ansel; latest edition. And Sprowel's American Pharmacy.•Shargel L, Yu AB, (Eds.), Applied Biopharmaceutics and Pharmacokinetics.•The Theory and Prace Industrial Pharmacy by Lachman et al.Main references (sources)Encyclopedia of Pharmaceutical TechnologyRecommended books and references (scientific journals, reports)British Pharmacopeia United state pharmacopeia European pharmacopeia

60. Course Name:	
Pharmaceutical technology II	Ι
61. Course Code:	
10301339	
62. Semester / Yea	ir:
3 rd stage/ 2 nd semester	
63. Description Pre	eparation Date:
18/2/2024	
64. Available Attendance	Forms:
Theory and practical/ a	attendance
65.Number of Credit Hou	rrs (Total) / Number of Units (Total)
45	
66. Course admini	istrator's name (mention all, if more than one
name)	
Name: dr ali kassim	
Email:	
67. Course Objectiv	/es
Course Objectives	The aim of pharmaceutical technology is to create high-quality, s
	products.
	It encompasses various aspects such as the design, formulati
	manufacturing, packaging, and quality control of pharmaceut
	drugs.
68. Teaching and Le	earning Strategies
Strategy 1. Theoretical le	ectures
2. Blackboard	
3. Projector dev	vice
4. PowerPoint p	presentation
5. Educational l	laboratories
6. Electronic lea	ctures
7. Scientific and	d practical research
8. Office Resear	rch
69. Course Structure	

Week	Hou	Required	Unit or su	ibject name	Learning	Evaluation
	rs	Learning			method	method
		Outcomes				
Week1-4	10	Emulsions; purpose emulsification;	Emulsior emulsific of emulsi emulsifyi HLB sy emulsion	ns; purpose of eation; methods ification; ing agents; stem; stability s.	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week4-5	5	Information Lotions; linime and collodions.	Lotions; collodions	liniments :	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week-6-7	6	Inromation Suppositories.	Suppositor	ries.	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week8-11	10	Powdered dos forms.	Powdered	dosage forms.	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week11-14	10	Semisolid dosa forms.	Semisolid	dosage forms.	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week15-16	4	Incompatibilities pharmaceutical dosage forms	Incompatil pharmaceu	bilities itical dosage forms.	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
70. Cou	irse I	Evaluation				
Quizzes ,5% reports , 5% Midterm E and Final F	% % xam Exam	, 30% 60%				
71. Lea	rning	and Teaching R	Resources	DI 1 1	0.1.1.1	1 0 11
Required te	xtboo	ks (curricular books	, if any)	PharmaceuticalPhysical I Martin et al.	Calculation Pharmacy b	by Stoklosa y Alfred
				Pharmace Drug Delivery S	eutical Dosa Systems By	ge forms and Haward A.

	 American Pharmacy. Shargel L, Yu AB, (Eds.), Applied Biopharmaceutics and Pharmacokinetics.
	• The Theory and Practice Industrial Pharmacy by Le Lachman et al.
Main references (sources)	Encyclopedia of Pharmaceutical Technology
Recommended books and references (scientific journals, reports)	British Pharmacopeia United state pharmacopeia European pharmacopeia
Electronic References, Websites	Slide share

72.	Co	ourse Name:			
Industrial	pnari				
/5.	LC	ourse Code:			
74	50	mester / Yea	r		
/+·	2^{nd} s	emester			
	<u> </u>				
10/0/000	De 1	escription Pre	paration Date:		
18/2/2024	+	A., 1 1			
/6.AVa	ailabl	e Attendance I	torms:		
77 Nut	nher	of Credit Hou	rs (Total) / Number of Units	(Total)	
45	noer			(Iotal)	
78.	С	ourse admini	strator's name (mention a	ll, if more th	nan one
nar	ne)				
Nar	ne: d	r ali kassim			
Em	ail:				
79.	Сс	ourse Objectiv	es		
Course Objectives Industrial pharmacy's mission where the student studies					
Course Obje	ectives	s In	dustrial pharmacy's mission	where the s	tudent studies
Course Obje	ectives	s In ec	dustrial pharmacy's mission quipment used in pharmaceutical	where the s manufacturing	tudent studies g facilities, includ
Course Obje	ectives	s In ec m	dustrial pharmacy's mission quipment used in pharmaceutical ixing, packaging, and mixing.	where the s manufacturing	tudent studies g facilities, includ
Course Obje	ectives Te	s In ec m eaching and Le	dustrial pharmacy's mission quipment used in pharmaceutical ixing, packaging, and mixing. earning Strategies	where the s manufacturing	student studies g facilities, includ
Course Obje	Te	s In ec m eaching and Le Theoretical le	dustrial pharmacy's mission juipment used in pharmaceutical ixing, packaging, and mixing. earning Strategies ectures	where the s manufacturing	student studies g facilities, includ
Course Obje	Te	s In ec m eaching and Le Theoretical le Blackboard	dustrial pharmacy's mission quipment used in pharmaceutical ixing, packaging, and mixing. earning Strategies ectures	where the s manufacturing	tudent studies g facilities, includ
Course Obje	Te	s In ec m eaching and Le Theoretical le Blackboard Projector dev	dustrial pharmacy's mission quipment used in pharmaceutical ixing, packaging, and mixing. earning Strategies ectures	where the s manufacturing	student studies g facilities, includ
Course Obje	Te 1. 2. 3. 4.	s In ec m eaching and Le Blackboard Projector dev PowerPoint p	dustrial pharmacy's mission quipment used in pharmaceutical ixing, packaging, and mixing. earning Strategies ectures vice presentation aboratories	where the s	student studies g facilities, includ
Course Obje	Te 1. 2. 3. 4. 5. 6	s In ec m eaching and Le Theoretical le Blackboard Projector dev PowerPoint p Educational l	dustrial pharmacy's mission guipment used in pharmaceutical ixing, packaging, and mixing. earning Strategies ectures vice presentation aboratories	where the s	student studies g facilities, includ
Course Obje	Te 1. 2. 3. 4. 5. 6. 7.	aching and Le meaching and Le Theoretical le Blackboard Projector dev PowerPoint p Educational l Electronic leo Scientific and	dustrial pharmacy's mission quipment used in pharmaceutical ixing, packaging, and mixing. earning Strategies ectures vice presentation aboratories ctures practical research	where the s	student studies g facilities, includ
Course Obje	Te 1. 2. 3. 4. 5. 6. 7. 8.	s In ec m eaching and Le Theoretical le Blackboard Projector dev PowerPoint p Educational l Electronic leo Scientific and Office Resear	dustrial pharmacy's mission quipment used in pharmaceutical ixing, packaging, and mixing. earning Strategies ectures vice presentation aboratories ctures l practical research ch	where the s	student studies g facilities, includ
80. Strategy	Te 1. 2. 3. 4. 5. 6. 7. 8. 8. 8.	s In ec m eaching and Le Theoretical le Blackboard Projector dev PowerPoint p Educational l Electronic leo Scientific and Office Resear	dustrial pharmacy's mission quipment used in pharmaceutical ixing, packaging, and mixing. earning Strategies ectures vice presentation aboratories ctures l practical research ch	where the s	student studies g facilities, includ
Course Obje 80. Strategy 81. Course Week	Te 1. 2. 3. 4. 5. 6. 7. 8. 8. se Str Hou	s In ec m eaching and Le Theoretical le Blackboard Projector dev PowerPoint p Educational l Electronic leo Scientific and Office Resear ructure Required	dustrial pharmacy's mission quipment used in pharmaceutical ixing, packaging, and mixing. earning Strategies ectures vice presentation aboratories ctures l practical research ch Unit or subject name	where the s manufacturing	tudent studies g facilities, includ
80. Strategy 81. Cours Week	Te 1. 2. 3. 4. 5. 6. 7. 8. 8. se Str	s In ec m eaching and Le Theoretical le Blackboard Projector dev PowerPoint p Educational l Electronic leo Scientific and Office Resear ructure Required Learning	dustrial pharmacy's mission quipment used in pharmaceutical ixing, packaging, and mixing. earning Strategies ectures vice presentation aboratories ctures l practical research ch Unit or subject name	where the s manufacturing	Evaluation method
80. Strategy 81. Cours Week	Te 1. 2. 3. 4. 5. 6. 7. 8. 8. se Str ^{Hou}	s In ec m eaching and Le Theoretical le Blackboard Projector dev PowerPoint p Educational l Electronic leo Scientific and Office Resear ructure Required Learning Outcomes	dustrial pharmacy's mission quipment used in pharmaceutical ixing, packaging, and mixing. earning Strategies ectures rice presentation aboratories ctures l practical research rch Unit or subject name	where the s manufacturing Learning method	Evaluation method
80. Strategy 81. Cours Week	Te 1. 2. 3. 4. 5. 6. 7. 8. 8. 8. 8. 8. 100 100 100 100	s In ec m eaching and Le Theoretical le Blackboard Projector dev PowerPoint p Educational l Electronic leo Scientific and Office Resear ructure Required Learning Outcomes	dustrial pharmacy's mission quipment used in pharmaceutical ixing, packaging, and mixing. earning Strategies ectures rice oresentation aboratories ctures l practical research ch Unit or subject name	where the s manufacturing Learning method	Evaluation method
80. Strategy 81. Course Week	Te 1. 2. 3. 4. 5. 6. 7. 8. se Str	s In ec m eaching and Le Theoretical le Blackboard Projector dev PowerPoint p Educational l Electronic leo Scientific and Office Resear ructure Required Learning Outcomes	dustrial pharmacy's mission quipment used in pharmaceutical ixing, packaging, and mixing. earning Strategies ectures vice oresentation aboratories ctures l practical research ch Unit or subject name 30	where the s manufacturing Learning method	Evaluation method

Week 1-2	7	The principles pharmaceutical processing	The princi processing; characteristic mixing ec	ples of pharmaceur mixing; fluid mixing; f cs; mechanisms of mix quipments; batch	Power Point, Problem	Formative, summative, quize. exam
			continuous solid mixing variables; fo	mixing; mixer select theory and particulate s rces and mechanisms	Solving, Practicalitie	<i>,</i> ,
Week 3-4	7	pharmaceutical application; measurement methods	Milling; ph size measure energy of co factors influe mill technic methods	narmaceutical applicat ement methods; theory mmenution; types of m encing milling; selectio ques; specialized dr	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week 5-6	7	Drying: definit purpose; humi measurement	Drying: defi measuremen of solids, an specialized of	inition; purpose; humi t; theory of drying; dry nd classification of dr lrying methods.	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week 7-8	7	Clarification filtration	Clarification and filtration: The filter media; filter aids; selection drying method; non-sterile and ste operations; integrity test equipments and systems (commen- and laboratory)		Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week 9-10	7	Sterilization; valida of methods; micro death kinetics	Sterilization; validation of methemicrobial death kinetics; methods sterilization (thermal and non-thern mechanisms; evaluation.		Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week 11	3	Pharmaceutical dos form design	Pharmaceutical dosage form des pre-formulation; prelimin evaluation; bulk characterizat solubility and stability analysis.		Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week 12-13	7	Pharmaceutical dos forms	Pharmaceuti products; d production; j	cal dosage forms; ste evelopment; formulat processing; quality cont	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
82. Cou	rse E	Evaluation				
Quizzes ,5% reports , 5% Midterm E and Final F	6 6 xam , Exam	, 30% 60%				
83. Lea	rning	and Teaching R	lesources			
Required tex	ktbool	ks (curricular books	, if any)	Pharmace Stoklosa	eutical Calcu	alation by
				Martin et al.	eutical Dosa	ge forms and
				Drug Delivery S Ansel; latest edi	Systems By tion. And S	Haward A. prowel's
			2	1		

	 American Pharmacy. Shargel L, Yu AB, (Eds.), Applied Biopharmaceutics and Pharmacokinetics.
	• The Theory and Practice Industrial Pharmacy by Le Lachman et al.
Main references (sources)	Encyclopedia of Pharmaceutical Technology
Recommended books and references (scientific journals, reports)	British Pharmacopeia United state pharmacopeia European pharmacopia
Electronic References, Websites	Slide share

84. Course Name: Industrial pharmacy II							
Industrial pharmacy II 85. Course Code: 10301557 86. Semester / Year: 1 1 st semester/5 th year 87. Description Preparation Date: 18/2/2024 88. Available Attendance Forms: 1 Theory and practical/ attendance 89. Number of Credit Hours (Total) / Number of Units (Total) 4 90. Course administrator's name (mention all, if more than one name) Name: dr all kassim Email: 91. Course Objectives 1 Course Objectives 1 Industrial pharmacy's mission where the student studies the equipmen pharmaceutical manufacturing facilities, including mixing, blend g, Packaging. g, Packaging. 92. Teaching and Learning Strategies 1 Strategy 1. Theoretical lectures 2. Blackboard 3. Projector device 4. PowerPoint presentation 5. Educational laboratories 6. Electronic lectures 7. Scientific and practical research 8. Office Research 93. Course Structure 1 1 1 Week Hours Required Unit or subject name Learning method Evaluation 93. Course Structure 33 3 1 1 1 <td>84.</td> <td>C</td> <td colspan="5">Course Name:</td>	84.	C	Course Name:				
85. Course Code: 10301557 Image: Code in the im	Industr	ial phar	macy II				
10301557 86. Semester / Year: I 1st semester/5th year I 87. Description Preparation Date: I 18/2/2024 I 88. Available Attendance Forms: Theory and practical/ attendance I 89. Number of Credit Hours (Total) / Number of Units (Total) I 45 I 90. Course administrator's name (mention all, if more than one name) Name: dr ali kassim Email: Industrial pharmacy's mission where the student studies the equipmen use pharmaceutical manufacturing facilities, including mixing, blendig, Packaging. 91. Course Objectives Industrial pharmacy's mission where the student studies the equipmen use pharmaceutical manufacturing facilities, including mixing, blendig, Packaging. 92. Teaching and Learning Strategies I Strategy 1. Theoretical lectures 2. Blackboard 3. Projector device 4. PowerPoint presentation 5. Educational laboratories 6. Electronic lectures 7. Scientific and practical research 8. Office Research I 93. Course Structure Init or subject name Learning method Evaluation method Week Hours Required Unit or subject name Learning method Evaluation	85.	С	ourse Code:				
86. Semester / Year: It is semester/5 th year 1st semester/5 th year It is semester/5 th year 87. Description Preparation Date: 18/2/2024 It is semester/5 th year 88. Available Attendance Forms: It is semester/5 th year Theory and practical/ attendance It is semester/5 th year 89. Number of Credit Hours (Total) / Number of Units (Total) It is semester/5 th year 90. Course administrator's name (mention all, if more than one name) Name: dr ali kassim It is semail: 91. Course Objectives Industrial pharmacy's mission where the student studies the equipmen used pharmaceutical manufacturing facilities, including mixing, blend g, Packaging. 92. Teaching and Learning Strategies It Theoretical lectures 2. Blackboard 3. Projector device 4. PowerPoint presentation 5. Educational laboratories 6. Electronic lectures 6. Electronic lectures 93. Course Structure Week Hours Required Unit or subject name Learning method Evaluation method 93. Outcomes 33	1030155	57					
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6. Electronic lectures 7. Scientific and practical research 8. Office Research 93. Course Structure Week Hours Required Unit or subject name Learning method Evaluation method Outcomes Outcomes 33		5.	Educational lab	oratories			
7. Scientific and practical research 8. Office Research 93. Course Structure 93. Course Structure Week Hours Required Unit or subject name Learning method Evaluation method Outcomes 0utcomes 33 33		6.	Electronic lectur	res			
8. Office Research 93. Course Structure Week Hours Required Unit or subject name Learning method Evaluation method Learning Outcomes 33 33		7.	Scientific and pr	actical research			
93. Course Structure Week Hours Required Unit or subject name Learning method Evaluation method Learning Outcomes 33 33		8.	Office Research				
Week Hours Required Unit or subject name Learning method Evaluation method Learning Outcomes 33 33 33 33	93. Co	ourse St	ructure				
Learning Outcomes method	Week	Hours	Required	Unit or subject name	Learning method	Evaluation	
Outcomes 33			Learning			method	
33			Outcomes				
33							
				33			

r	1	1				
1		Tablets; role in therapy; advantages and disadvantages	Pharmaceutical dosage forms: Tablets; role in therapy; advantages and disadvantages; formulation; properties; evaluation; machines used in tableting; quality control; problems; granulation, and methods of production; excipier and types of tablets	Power Point, Problem Solving, Practicalitie	Formative summative quize, exa	, n
2	4	Tablet coati principles; propertio	Tablet coating; principles; properties; equipments; processing; types of coating (sugar and fil quality control, and problem	Power Point, Problem Solving, Practicalitie	Formative summative quize, exa	, n
3	3	Capsules: Hard gela capsules	Capsules: Hard gelatin capsules; materials; production; filling equipments; formulation; spec techniques.	Power Point, Problem Solving, Practicalities	Formative summative quize, exa	, n
4	2	Soft gelatin capsule	Soft gelatin capsules: Manufacturing methods; nature of capsule shell and content; processing control; stability	Power Point, Problem Solving, Practicalitie	Formative summative quize, exa	, n
5	2	Micro- encapsulation;	Micro-encapsulation; core and coating materials; stability; equipments and methodology.	Power Point, Problem Solving, Practicalitie	Formative summative quize, exa	, n
6	3	Modified (sustain release) dosage form	Modified (sustained release) dosage forms; theory and concepts; evaluation and testi formulation.	Power Point, Problem Solving, Practicalities	Formative summative quize, exa	, n
7-7	3	Liquids: Formulati stability equipments	Liquids: Formulation; stabi and equipments.	Power Point, Problem Solving, Practicalities	Formative summative quize, exa	, n
8-9	3	Suspensions:	Suspensions: Theo formulation and evaluation	Power Point, Problem Solving, Practicalitie	Formative summative quize, exa	, n

11-12 3 Emulsions: The and application application; types; formulation; equipments and quality control Power Point, Problem Solving, Practicalities Formative summative, quize, exa n 13-14 3 Semisolids Semisolids: Percutaneouse absorption; formulation; types of bases (vehicles) Power Point, Problem Solving, Practicalitie Formative summative, quize, exa n 94. Course Evaluation Vehicles) Power Point, Problem Solving, Practicalitie Formative summative, quize, exa n 95. Learning and Teaching Resources Power Point, Stokes, if any) Pharmaceutical Calculation by Stoklosa Physical Pharmacy by Alfred Martin et a . 95. Learning and Teaching Resources Pharmaceutical Dosage forms and Drug Delivery Systems By Haward A. Ansel; latest edition. And Sprowel's American Pharmacy. Shargel L, Yu AB, (Eds.), Applied Biopharmaceutics and Pharmacokinetics. Main references (sources) Encyclopedia of Pharmacopeia United state pharmacopeia United state pharmacopeia United state pharmacopeia Main references, Websites Shide share Shide share Shide share							
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94. Course Evaluation Image: Course Evaluation Quizzes ,5% reports , 5% Midterm Exam , 30% and Final Exam 60% 95. Learning and Teaching Resources Image: Course Evaluation by Stoklosa and Final Exam 60% 95. Learning and Teaching Resources Image: Course Evaluation by Stoklosa and Final Exam 60% 95. Learning and Teaching Resources Image: Course Evaluation by Stoklosa and Final Exam 60% 95. Learning and Teaching Resources Image: Course Evaluation by Stoklosa and Pharmaceutical Dosage forms and Drug Delivery Systems By Haward A. Ansel; latest edition. And Sprowel's American Pharmacy. Image: Course Structure Biopharmaceutics and Pharmacokinetics. Image: Course (sources) Image: Course Encyclopedia of Pharmaceutical Technology Recommended books and references (sources) British Pharmacopeia Recommended books and references (scientific journals, reports) British Pharmacopeia Electronic References, Websites Slide share	13-14	3	Semisolids	Semisolids: Percutaneouse absorption; formulation; types of bases (vehicles)		Power Point, Problem Solving, Practicalities	Formative summative, quize, exa n
Quizzes ,5% reports , 5% Midterm Exam , 30% and Final Exam 60% Image: style="text-align: center;">95. Learning and Teaching Resources Image: style="text-align: center;">9 Required textbooks (curricular books, if any) • Pharmaceutical Calculation by Stoklosa • Physical Pharmacy by Alfred Martin et a • Pharmaceutical Dosage forms and Drug Delivery Systems By Haward A. Ansel; latest edition. And Sprowel's American Pharmacy. • Shargel L, Yu AB, (Eds.), Applied Biopharmaceutics and Pharmacokinetics. • The Theory and Practice of Image: Start	94.	Course	Evaluation				
95. Learning and Teaching Resources•Pharmaceutical Calculation by Stoklosa ••Required textbooks (curricular books, if any)•Pharmaceutical Calculation by Stoklosa •••Physical Pharmacy by Alfred Martin et a ••Pharmaceutical Dosage forms and Drug Delivery Systems By Haward A. Ansel; latest edition. And Sprowel's American Pharmacy. ••Shargel L, Yu AB, (Eds.), Applied Biopharmaceutics and Pharmacokinetics. •••Main references (sources)Encyclopedia of Pharmacoutical Technology United state pharmacopeia European pharmacopiaBritish Pharmacopeia European pharmacopia•	Quizzes reports Midterr and Fir	s ,5% , 5% m Exam nal Exam	, 30% 60%				
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Electronic References, Websites Slide share	Recommended books and references (scientific journals, reports)			 British Pharmacopeia United state pharmacopeia European pharmacopia 			
	Electronic References, Websites				Slide sh	are	

96. Course Name:

Dosage form design

97. Course Code:

10301568

98. Semester / Year:

 2^{nd} semester/ 5^{th} year

99. Description Preparation Date:

18/2/2024

100. Available Attendance Forms:

Theory and practical/ attendance

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

30

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

Name: dr amera Email:

103. Course Objectives

Course Object	tives	1/ To help students understand the principles and factors		
		influence the designing of dosage forms		
		2/ Learn the applications of these principles to the practice		
		pharmaceutical industry		
		3/ Learn the Pre–formulation studies ; physical descripti		
		microscopic examination, Melting point; phase rule; part		
	size; polymorphism; solubility.			
		4/ Learn the Formulation consideration: Excipients; definit		
		and types.		
		5/ Learn the Biopharmaceutical considerations.		
		6/ Learn Bioavailability and bioequivalancy; FDA requirement		
		7/ Learn the Pharmacokinetic principles		
104.	Teaching and Lear	rning Strategies		
Strategy	Power Point Pres	sentation, Tutorials (Pen and Whiteboard), Problem		
	Solving			

105.	105. Course Structure					
Week	Hours	Required	Unit or subject name	Learning	Evaluation	
		Learning		method	method	
		Outcomes				
1	2		Pharmaceutical consideration: The need for the dosage form.	Power po Problem solving	Formative, summative, quiz	
2	2		General consideration of the dosage form	Power po Problem solving	Formative, summative, qui	
3	2		Pre-formulation; physical description, microscopic examination.	Power po Problem solving	Formative, summative, qui	
4	2		Melting point; phase r particle size; polymorphis solubility.	Power po Problem solving	Formative, summative, qui	
5	2		Permeability; pH; partition coefficient; pka; stability; kinetics; shelf life	Power po Problem solving	Formative, summative, qui	
6	2		Rate reaction; enhanc stability.	Power po Problem solving	Formative, summative, qui	
7	2		Formulation consideration: Excipients; definition and types; appearance; palatability; flavoring	Power po Problem solving	Formative, summative, qui	
8			Mid-Term exam			
9	2		Sweetening; coloring pharmaceuticals; preservatives; sterilization; preservatives selection	Power po Problem solving	Formative, summative, qui	
10	2		Biopharmaceutical considerations: Principle drug absorption; dissolution the drugs.	Power po Problem solving	Formative, summative, qui	
11	2		Bioavailability and bioequivalancy; FDA requirements	Power po Problem solving	Formative, summative, qui	
12	2		Assessment of bioavailabil bioequivalence among d products.	Power po Problem solving	Formative, summative, qui	
13	2		Pharmacokinetic princip Half life; clearance; dos regimen considerations	Power po Problem solving	Formative, summative, qui	
14	2		Drug discovery and drug des	Power po Problem solving	Formative, summative, qui	
15			Final-term exam			

106.	
Quizzes 5% Reports 5% Mid term Exam 20% Final-term Exam 70% 107. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1- Pharmaceutical Dosage Forms and D Delivery Systems by Haward A. An Latest Edition.
Main references (sources)	 Pharmaceutical Dosage Forms and Drug Delivery Systems by Haward A. Ansel. Latest Edition. 2- Handbook of pharmaceutical excipie by Raymond C Rowe et al, Latest edition
Recommended books and references (scientific journals, reports)	1-Applied Biopharmaceutics & Pharmacokinetics, by leon shargel et al, seventh edition. 2- British pharmacopeia, latest edition.
Electronic References, Websites	1-https://www.fda.gov/industry/structured- product-labeling-resources/dosage-forms.