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:

Head of Department Name:

الدكتور
فؤاد عبد الصاحب الساعدي
رئيس قسم الصيدلانيات

Date: 25/04/2024

Signature:

Scientific Associate Name:
Dr. Rafal Shakeeb

Date: 25/04/2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department
Dr. Noor Adil Abood

Date: 25/04/2024

Signature:

كلية الصيدلة
جامعة النهرين
مكتب العميد
COLLEGE OF PHARMACY
AL-NAHRAIN UNIVERSITY

Approval of the Dean

أ.د. حيدر [illegible]

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

2024

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:

Academic Program Description: 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.

Program Vision: 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.

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

Curriculum Structure: 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 Courses**	**Credit hours**	**Percentage**	**Reviews***
Institution Requirements	**10**	**43**	**20%**	**basic**
College Requirements	**10**	**43**	**20%**	**basic**
Department Requirements	**10**	**43**	**20%**	**basic**
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 pharmacy II	**3**	**2**
Fifth	10301557	Industrial pharmacy II	**3**	**2**
	10301568	Dosage form	**2**	–
	10301569	Pharmaceutical biotechnology	**1**	–

8. **Expected learning outcomes of the program**	
Knowledge	
1. Identify the types and forms of medicines. **2. Methods for preparing the active substances in the form of full drug doses** **3. Studying the stability of doses prepared in various forms.**	**4. Studying the pharmacological effect, its effectiveness, and its mechanism of action inside the body.**
Skills	
1/The skills goals special to the course. **2/Acquisition of skill in installation and preparation methods** **3/ Acquiring the skill of knowing how to maintain stability for as long as possible**	**4/ Acquisition of skill in diagnosing separated compounds**
Ethics	
Methods for preparing the active substances in the form of full drug doses	Studying the pharmacological effect, its effectiveness, and its mechanism of action inside 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

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

Fifth	10301557	Industrial pharmacy II	**Basic**	√	√	√	√	√	√	√		√	√	√	√
	10301568	Dosage form	**Basic**	√	√	√	√	√	√	√		√	√	√	√
	10301569	Pharmaceutical biotechnology	**Basic**	√	√	√	√	√	√	√		√	√	√	√

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

Course Description Form

1. Course Name:
Principles of Pharmacy Practice
2. Course Code:
10301102
3. Semester / Year:
1st semester/ 1st year
4. Description Preparation Date:
18/2/2024
5. Available Attendance Forms:
Theory/ attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
30
7. Course administrator's name (mention all, if more than one name)
Name: Dr rawaa Email:

8. Course Objectives	
Course Objectives	**1/ Learn the rules of mathematic calculations.** **2/ Learn the rules of measurement systems and the relation betw them.** **3/ Learn the rules of components and types of prescriptions.** **4/ Learn the rules of calculating doses and reducing or enlarg formulas.** **5/ Learn the rules of values description in percentage and ra strength.** **6/ Learn the rules of calculating density and specific gravity.**

9. Teaching and Learning Strategies	
Strategy	Power Point Presentation, Tutorials (Pen and Whiteboard), Problem Solving, Practicalities

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

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					
Quizzes 5% Reports 5% Mid term Exam 20% Final Exam 70%					

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 (scientific journals, reports…)	Pharmacy practice by Jason hall
Electronic References, Websites	Oxford university press

Course Description Form

12. Course Name:
Pharmaceutical Calculation

13. Course Code:
10301109
14. Semester / Year:
2nd semester/ 1st year
15. Description Preparation Date:
18/2/2024
16. Available Attendance Forms:
Theory-laboratory/ attendance
17. Number of Credit Hours (Total) / Number of Units (Total)
60
18. Course administrator's name (mention all, if more than one name)
Name: dr rawaa Email:
19. Course Objectives

Course Objectives	**1/ Learn the rules of mathematic calculations.** **2/ Learn the rules of components and types of prescriptior** **3/ Learn the rules of calculating doses and reducing enlarging formulas.** **4/ Learn the rules of values description in percentage and ra strength.**

20. Teaching and Learning Strategies	
Strategy	Power Point Presentation, Tutorials (Pen and Whiteboard), Problem Solving, Practicalities Scientific researchs Laboratory teaching

21. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-5	10	pharmaceutical preparations.	Dilution and concentration pharmaceutical preparations.	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
6-8	6	Information Isotonic solutions.	Isotonic solutions.	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
			Mid term Exam		

9-11	6	Information Electrolyte solutions	Electrolyte solutions (milliequivalents, millimoles and milliosmoles).	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
12-15	8	Information Constituted solutions	Constituted solutions, admixtures and flow rate calculations.	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
			Final Exam		

22. Course Evaluation
Quizzes 5% Reports 5% Mid term Exam 30% Final Exam 60%

23. 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 (scientific journals, reports…)	Maths skills for pharmacy by chris Langl
Electronic References, Websites	Oxford university press

Course Description Form

24. Course Name:

Physical pharmacy I					
25. Course Code:					
10301218					
26. Semester / Year:					
1st semester/ 2nd year					
27. Description Preparation 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 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.**				
32. Teaching and Learning Strategies					
Strategy	Power Point Presentation, Tutorials (Pen and Whiteboard), Problem Solvi Practicalities				
33. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	3	States of matter	States of matter, bind forces between molecules,	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam

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 electrolyt 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

13	3	calculation of p	calculation of pH, acidity constants, the effect of ionic strength and free energy	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
14	3	Buffer equation;	Buffered and isotonic solutions: Buffer equation; buffer capacity	Power Point, Problem Solvi Practicalities	Formative, summative, quize, exam
15	3	buffer and biological system	methods of adjusting tonicity and pH; buffer and biological system	Power Point, Problem Solving, Practicalities	Formative, summative, quize, exam
			Final Exam		

34. Course Evaluation

Quizzes 5%
reports 5%
Midterm Exam 30%
and Final Exam 60%

35. Learning and Teaching Resources

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* ***Gaurav Jain, Roop Krishen Khar, Farh J. Ahmad***
Electronic References, Websites	https://www.kobo.com/us/en/ebook/theory-and-practice-of-physical-pharmacy-e-book

Course Description Form

36. Course Name:	
Physical pharmacy II	
37. Course Code:	
10301225	
38. Semester / Year:	
2nd semester/ 2nd 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 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.**
44. Teaching and Learning Strategies	
Strategy	Power Point Presentation, Tutorials (Pen and Whiteboard), Problem Solving, Practicalities
45. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
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
			Mid term exam		
9,10	6	Interfacial Phenomena	Interfacial phenomena, liquid interfaces, surface free energy, measurement of interfacial tension, spreading coefficient, surface active agents and wet phenomena.	Power Point, 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. Course Evaluation					
Quizzes ,5%					

reports , 5% Midterm Exam , 30% and Final Exam 60%	
47. Learning and Teaching Resources	
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* ***Gaurav Jain***, ***Roop Krishen Khar***, ***Farhan Ahmad***
Electronic References, Websites	https://www.kobo.com/us/en/ebook/theory-an practice-of-physical-pharmacy-e-book

Course Description Form

48. Course Name:
Pharmaceutical technology I
49. Course Code:
10301334
50. Semester / Year:
3rd stage/1st semester
51. Description Preparation Date:
18/2/2024
52.Available Attendance Forms:
Theory and practical/ attendance
53.Number of Credit Hours (Total) / Number of Units (Total)
45
54. Course administrator's name (mention all, if more than one name)
Name: DR ali kassim Email:
55. Course Objectives

Course Objectives	**The aim of pharmaceutical technology is to develop , manufacture sa effective, and quality pharmaceutical products. It encompasses various aspects such as design, formulation, manufacturing, packaging, and quality control pharmaceutical drugs.**
56. Teaching and Learning Strategies	
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

57. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

Week1	2	comparisons between different systems	Dispersed systems: their classification; comparisons between different Systems	Power Point, Problem Solving, Practicalit	Formative, summative, quize, exam
Week1-2	2	types of solutions	Solutions and types of solutions	Power Point, Problem Solving, Practicalit	Formative, summative, quize, exam
Week2-3	4	Solubility: Fact affecting solubility	Solubility: Factors affecting solubility; expression of dissolution; dissolution rate versus solubility; preparation of solutions containing non-volatile materials	Power Point, Problem Solving, Practicalit	Formative, summative, quize, exam
Week3-4	4	Official solutions	Official solutions; classificatio official solutions; preparation uses.	Power Point, Problem Solving, Practicalit	Formative, summative, quize, exam
Week4-5	4	principles; aromatic waters; methods of preparations	Aqueous solutions containing aromatic principles; aromatic waters; methods of preparations; stability.	Power Point, Problem Solving, Practicalit	Formative, summative, quize, exam
Week5-6	4	Syrups: sugar ba syrups	Syrups: sugar based syrups; artificial and sorbitol based syrups; stability of Syrups	Power Point, Problem Solving, Practicalit	Formative, summative, quize, exam
Week6-7	3	Definition methods clarification; fi aids in clarificatio	Definition and methods clarification; filter aids clarification	Power Point, Problem Solving, Practicalit	Formative, summative, quize, exam
Week7-8	3	Preparation solutions	Preparation of solutions us mixed solvent systems; spirits, elixirs.	Power Point, Problem Solving, Practicalit	Formative, summative, quize, exam
Week8-9	3	Extraction; maceration percolation	Extraction; maceration percolation	Power Point, Problem Solving, Practicalit	Formative, summative, quize, exam

Week9-10	4	Tinctures;	Tinctures; fluid extracts; extra of resins and oleoresins.	Power Point, Problem Solving, Practicalit	Formative, summative, quize, exam
Week10-11	6	Colloidal dispersions; lyophilic; lyophob	Colloidal dispersions; lyophi lyophobic	Power Point, Problem Solving, Practicalit	Formative, summative, quize, exam
Week13-14	6	Coarse dispersion	Coarse dispersion; suspensions	Power Point, Problem Solving, Practicalit	Formative, summative, quize, exam

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 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 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

Course Description Form

60. Course Name:	
Pharmaceutical technology II	
61. Course Code:	
10301339	
62. Semester / Year:	
3rd stage/ 2nd semester	
63. Description Preparation Date:	
18/2/2024	
64.Available Attendance Forms:	
Theory and practical/ attendance	
65.Number of Credit Hours (Total) / Number of Units (Total)	
45	
66. Course administrator's name (mention all, if more than one name)	
Name: dr ali kassim Email:	
67. Course Objectives	
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 Learning Strategies	
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
69. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week1-4	10	Emulsions; purpose emulsification;	Emulsions; purpose of emulsification; methods of emulsification; emulsifying agents; HLB system; stability emulsions.	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week4-5	5	Information Lotions; linime and collodions.	Lotions; liniments collodions.	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week-6-7	6	Inromation Suppositories.	Suppositories.	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	Incompatibilities pharmaceutical dosage forms.	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam

70. Course Evaluation

Quizzes ,5%
reports , 5%
Midterm Exam , 30%
and Final Exam 60%

71. Learning and Teaching Resources

Required textbooks (curricular books, if any)	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 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

Course Description Form

72. Course Name:	
Industrial pharmacy I	
73. Course Code:	
10301447	
74. Semester / Year:	
4th years/ 2nd semester	
75. Description Preparation Date:	
18/2/2024	
76.Available Attendance Forms:	
Theory and practical/ attendance	
77.Number of Credit Hours (Total) / Number of Units (Total)	
45	
78. Course administrator's name (mention all, if more than one name)	
Name: dr ali kassim Email:	
79. Course Objectives	
Course Objectives	**Industrial pharmacy's mission where the student studies equipment used in pharmaceutical manufacturing facilities, includ mixing, packaging, and mixing.**
80. Teaching and Learning Strategies	
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

81. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

Week 1-2	7	The principles pharmaceutical processing	The principles of pharmaceut processing; mixing; fluid mixing; f characteristics; mechanisms of mix mixing equipments; batch continuous mixing; mixer select solid mixing theory and particulate s variables; forces and mechanisms	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week 3-4	7	pharmaceutical application; measurement methods	Milling; pharmaceutical applicat size measurement methods; theory energy of commenution; types of m factors influencing milling; selectio mill techniques; specialized dry methods	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week 5-6	7	Drying: definit purpose; humi measurement	Drying: definition; purpose; humi measurement; theory of drying; dry of solids, and classification of dr specialized drying 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 (commer 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 meth microbial death kinetics; methods sterilization (thermal and non-therm mechanisms; evaluation.	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week 11	3	Pharmaceutical dos form design	Pharmaceutical dosage form des pre-formulation; prelimi evaluation; bulk characterizat solubility and stability analysis.	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam
Week 12-13	7	Pharmaceutical dos forms	Pharmaceutical dosage forms; ste products; development; formulat production; processing; quality cont	Power Point, Problem Solving, Practicalitie	Formative, summative, quize, exam

82. Course Evaluation

Quizzes ,5%
reports , 5%
Midterm Exam , 30%
and Final Exam 60%

83. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• 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 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

Course Description Form

84. Course Name:
Industrial pharmacy II
85. Course Code:
10301557
86. Semester / Year:
1st semester/5th year
87. Description Preparation Date:
18/2/2024
88. Available Attendance Forms:
Theory and practical/ attendance
89. Number of Credit Hours (Total) / Number of Units (Total)
45
90. Course administrator's name (mention all, if more than one name)
Name: dr ali kassim Email:

91. Course Objectives	
Course Objectives	**Industrial pharmacy's mission where the student studies the equipmen used pharmaceutical manufacturing facilities, including mixing, blendi g, a Packaging.**

92. Teaching and Learning Strategies	
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

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	10	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; excipien and types of tablets	Power Point, Problem Solving, Practicalities	Formative summative, quize, exa n
2	4	Tablet coati principles; properti	Tablet coating; principles; properties; equipments; processing; types of coating (sugar and fil quality control, and problem	Power Point, Problem Solving, Practicalities	Formative summative, quize, exa n
3	3	Capsules: Hard gela capsules	Capsules: Hard gelatin capsules; materials; production; filling equipments; formulation; spe 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, Practicalities	Formative summative, quize, exa n
5	2	Micro-encapsulation;	Micro-encapsulation; core and coating materials; stability; equipments and methodology.	Power Point, Problem Solving, Practicalities	Formative summative, quize, exa n
6	3	Modified (sustai release) dosage for	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, Practicalities	Formative summative, quize, exa n

11-12	3	Emulsions: The and application	Emulsions: Theory and application; types; formulation; equipments and quality control	Power Point, Problem Solving, Practicalities	Formative summative, quize, exam
13-14	3	Semisolids	Semisolids: Percutaneouse absorption; formulation; types of bases (vehicles)	Power Point, Problem Solving, Practicalities	Formative summative, quize, exam

94. Course Evaluation

Quizzes ,5%
reports , 5%
Midterm Exam , 30%
and Final Exam 60%

95. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• 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 Industri Pharmacy by Leon 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

Course Description Form

96. Course Name:	
Dosage form design	
97. Course Code:	
10301568	
98. Semester / Year:	
2nd semester/5th 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 Objectives	**1/ To help students understand the principles and factors t 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 requiremer** **7/ Learn the Pharmacokinetic principles**
104. Teaching and Learning Strategies	
Strategy	Power Point Presentation, Tutorials (Pen and Whiteboard), Probl Solving

105. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
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; polymorphi 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 selecti	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)	1- 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.