

Republic of Yemen
Ministry of Higher Education & Scientific Research
21 September University for Medicals and Applied Sciences



Faculty of Clinical Pharmacy

Bachelor of Pharm. D.

Bachelor of Clinical Pharmacy & Pharm. D.

Course Specification of

Pharmaceutics (3)

Course Code. (02.02.234)

2022



T4: This Template is Developed and Approved by CAQA-Yemen, 2024

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Dr. Mohammed Addoais	Dr. Hamoud Al-bayley	Dr. -----	Dr. Abdulelah Thabet	Dr. Ali Alyahawi



I. General Information:

1.	Course Title:	Pharmaceutics (3)			
2.	Course Code:	02.02.234			
3.	Credit Hours:	Credit Hours	Theory Contact Hours		Practical Contact Hours
			Lecture	Tutorial/Seminar	Lab Clinical
		3	2		1 -
4.	Level/ Semester at which this Course is offered:	3 rd Level / 2 nd Semester			
5.	Pre –Requisite (if any):	Physical pharmacy –Pharmaceutics (1&2)			
6.	Co –Requisite (if any):	-			
7.	Program (s) in which the Course is Offered:	Bachelor of Clinical Pharmacy & Pharm. D.			
8.	Language of Teaching the Course:	English			
9.	Location of Teaching the Course:	Faculty of Clinical Pharmacy			
10.	Prepared by:	Mohammed Addoais			
11.	Date and Number of Approval by Council:	2022			

II. Course Description:

This course provide students with the definition and classification of different pharmaceutical solid dosage forms such powders, granules. capsules, and tablets. It gives the theoretical basis for the technology of preparing different solid dosage forms with respect to their raw materials, compositions, methods of preparations , stability and uses. It also covers the quality control of finished products.



II. Course Intended Learning Outcomes (CILOs) : Upon successful completion of the course, students will be able to:		Referenced PILOs	
A. Knowledge and Understanding:		I, P or M/A	
a1	Define different solid dosage forms, their advantages and disadvantages and recognize different methods of their manufacture.		A3
a2	List the excipients used in formulation of solid dosage forms and the function of each excipient.		A1, A2
B. Intellectual Skills:			
b1	Demonstrate solving problems encountered in the formulation of different solid dosage forms		B4
b2	Compare between different techniques used in the production of solid dosage forms.		B1, B3
C. Professional and Practical Skills:			
c1	Prepare different types of solid dosage forms.		C2
c2	Perform quality control tests for solid dosage forms.		C2, C3
D. Transferable Skills:			
d1	Demonstrate self-learning tools required for continuing professional development.		D2
d2	Use internet in pharmaceutical research.		D3
I= Introduced, P=Practiced or M/A= Mastered/Advanced			

(A) Alignment of Course Intended Learning Outcomes (Knowledge and Understanding) to Teaching Strategies and Assessment Methods:			
Course Intended Learning Outcomes		Teaching Strategies	Assessment Strategies
a1	Define different solid dosage forms, their advantages and disadvantages and recognize different methods of their manufacture.	- Lecture - Instructor – student Interactive - Office hour	- Exam - Assignment - Quiz
a2	List the excipients used in formulation of solid dosage forms and the function	- Lecture - Instructor – student Interactive	- Exam - Assignment



	of each excipient.	Office hour	Quiz
(B) Alignment of Course Intended Learning Outcomes (Intellectual Skills) to Teaching Strategies and Assessment Methods:			
	Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies
b1	Demonstrate solving problems encountered in the formulation of different solid dosage forms	- Lecture - Instructor – student Interactive - Exercises - Solving Problem Methods	- Problem-Solving Exercises. - Assignment - Quiz
b2	Compare between different techniques used in the production of solid dosage forms.	- Lecture - Instructor – student Interactive - Exercises - Solving Problem Methods	- Problem-Solving Exercises. - Assignment - Quiz
(C) Alignment of Course Intended Learning Outcomes (Professional and Practical Skills) to Teaching Strategies and Assessment Methods:			
	Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies
c1	Prepare different types of solid dosage forms.	- Lecture - Instructor – student Interactive - Self-Learning	- Exam - Assignment - Quiz
c2	Perform quality control tests for solid dosage forms.	- Lecture - Instructor – student Interactive - Self-Learning	- Exam - Assignment - Quiz
(D) Alignment of Course Intended Learning Outcomes (Transferable Skills) to Teaching Strategies and Assessment Methods:			
	Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies
d1	Demonstrate self-learning tools required for continuing professional development.	- Self-Learning - Seminar - Exercises	- Presentation - Assignment - Quiz
d2	Use internet in pharmaceutical research.	- Seminar - Instructor–student Interactive - Exercises	Presentation

IV. Course Contents:



A. Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact Hours
1	Powder	a1, a2, b1, b2, c1, c2, d1, d2	- Types of powders - Advantages and disadvantages of powders, - Classification of powder - Mixing of powders - Preparation of different types of powders encountered in prescriptions. - Packaging - labeling	2	4
2	Granules	a1, a2, b1, b2, c1, c2, d1, d2	- Definition and importance - Classification - Methods of granulation - Effervescent granules - Formulation - Preparation	2	4
	Capsule dosage forms	a1, a2, b1, b2, c1, c2, d1, d2	- Introduction - Types of capsules - Hard gelatin capsules - Advantages and disadvantages - Composition of capsule shell - Selection of capsule size. - Excipients used in hard gelatin capsule formulation. - Enteric coating of capsules. - Capsule filling process. - Storage of hard gelatin capsules. - Soft gelatin capsules - Advantage and disadvantages. - Capsule shell composition. - Shapes and sizes. - Soft gelatin capsule formulation. - Soft gelatin capsule filling process.	4	8
3	Mid-term Exam			1	2
4	Tablet dosage form	a1, a2, b1, b2, c1, c2, d1, d2	- Introduction - Advantages and disadvantages. - Types of tablets. - Tableting methods - Direct compression - Dry granulation	6	12



			- Wet granulation - Tablet excipients - Tablet press machines - Problems encountered during tablet formulation. - Standards quality control tests for tablets. - Tablet coating - Tablet packaging		
	Final exam	a1, a2, b1, b2, c1, c2,	-	1	2
Number of Weeks /and Units Per Semester				16	32

B. Practical Aspect (Lab/Clinical) (if any):

No.	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1.	Study of physical properties of powder (flow , size, density)	2	4	c1, c2, d1, d2
2.	Preparation of Magnesium trisilicate powder.	1	2	c1, c2, d1, d2
3.	Preparation of Oral rehydration powder.	1	2	c1, c2, d1, d2
4.	Preparation of Dusting powder.	1	2	c1, c2, d1, d2
5.	Preparation of Effervescent granule base by wet method	1	2	c1, c2, d1, d2
6.	Preparation of Effervescent granule base by dry method	1	2	c1, c2, d1, d2
7.	Midterm practical exam	1	2	c1, c2, d1
8.	Determination of capsule size	1	2	c1, c2, d1, d2
9.	Filling of hard gelatin capsules (punch method).	1	2	c1, c2, d1, d2
10.	Preparation of tablets by Direct compression for (dry method)	1	2	c1, c2, d1, d2
11.	Preparation of tablets by Dry granulation method (slugging method)	1	2	c1, c2, d1, d2
12.	Preparation of tablets by Wet granulation method	1	2	c1, c2, d1, d2
13.	Quality control of solid dosage forms	1	2	c1, c2, d1, d2
14.	Final exam	1	2	c1, c2
Number of Weeks /and Units Per Semester		16	32	

VII. Assignments:



No.	Assignments	Week Due	Mark	Aligned CILOs (symbols)
1	Assignment 1	6th	5	a1, a2, b1, b2, c1, c2, d1, d2
Total				5

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments	6th	5	5%	a1, a2, b1, b2, c1, c2, d1, d2
2	Practical Reports	2 nd -13 th	5	5%	a1, a2, b1, b2, c1, c2, d1, d2
3	Midterm Exam (Theory)	Week 7	15	15%	a1, a2, b1, b2, c1, c2
4	Midterm Exam (Practical)	Week 7	10	10%	a1, a2, b1, b2, c1, c2, d1
5	Final Practical Exam	14 th	15	15%	a1, a2, b1, b2, c1, c2
6	Final Exam (Theory)	Week 16	50	50%	a1, a2, b1, b2, c1, c2

VII. Learning Resources:

1- Required Textbook(s):

- 1- Michael E. Aulton Kevin G Taylor. (2013). Pharmaceutics, the design and manufacture of medicines, 4th edition, Churchill Livingstone.
- 2- H.C. Ansel (2011). Pharmaceutical Dosage Forms and drug Delivery Systems, 9th ed. Philadelphia; London. Lea & Febiger.
- 3- E.A. Rawlins (2010) . Bentley's textbook of pharmaceutics. 8th ed. India, Elsevier.
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2- Essential References.

- 1- Loyd v.allen (2015). Remington : The science of practice of pharmacy. 22nd ed. Pharmaceutical press.
- 2- Alison Bradfield (2017). Martindale the complete drug reference. 39th ed. Pharmace press.

3- Electronic Materials and Web Sites etc.

1. <http://www.pharmatutor.org>
2. <http://www.uspbpep.com>
3. <http://www.usp.org>

VIII. Course Policies: (Based on the Uniform Students' By law (2007))

1	Class Attendance: Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	Tardiness: A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
3	Exam Attendance/Punctuality: No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed.
4	Assignments & Projects: Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	Cheating: Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
6	Forgery and Impersonation: Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
7	Other policies: The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration.

Faculty of Clinical Pharmacy

Bachelor of Clinical Pharmacy & Pharm. D.

Course Plan (Syllabus) of **Pharmaceutics (3)**

Course Code. 02.02.234

I. Information about Faculty Member Responsible for the Course:									
Name of Faculty Member:	Mohammed addoais			Office Hours					
Location& Telephone No.:	776440327								
E-mail:	Addoais1@gmail.com			SAT	SUN	MON	TUE	WED	THU

2022- 2023

II. Course Identification and General Information:

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2.	Course Code:	02.02.234			
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6.	Co –Requisite (if any):	-			
7.	Program (s) in which the Course is Offered:	Bachelor of Clinical Pharmacy & Pharm. D.			
8.	Language of Teaching the Course:	English			
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III. Course Description:

This course provide students with the definition and classification of different pharmaceutical solid dosage forms such powders, granules. capsules, and tablets. It gives the theoretical basis for the technology of preparing different solid dosage forms with respect to their raw materials, compositions, methods of preparations, stability and uses. It also covers the quality control of finished products.

IV. Course Intended Learning Outcomes (CILOs) :

Upon successful completion of the Course, student will be able to:

A. Knowledge and Understanding:

- | | |
|----|---|
| a1 | Define different solid dosage forms, their advantages and disadvantages and recognize different methods of their manufacture. |
| a2 | List the excipients used in formulation of solid dosage forms. |

B. Intellectual Skills:

- | | |
|----|---|
| b1 | Demonstrate solving problems encountered in the formulation of different solid dosage forms |
| b2 | Compare between different techniques used in the production of solid dosage forms. |

C. Professional and Practical Skills:

- | | |
|----|---|
| c1 | Prepare different types of solid dosage forms. |
| c2 | Perform quality control tests for solid dosage forms. |

D. Transferable Skills:

- | | |
|----|--|
| d1 | Implement writing and presentation skills |
| d2 | Work independently or collaboratively to prepare seminars/ presentations or write reports. |

V. Course Contents:

A. Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact Hours
1	Powder	a1, a2, b1, b2, c1, c2, d1, d2	- Types of powders - Advantages and disadvantages of powders, - Classification of powder - Mixing of powders - Preparation of different types of powders encountered in prescriptions. - Packaging - Labelling	2	4
2	Granules	a1, a2, b1, b2, c1, c2, d1, d2	- Definition and importance - Classification - Methods of granulation	2	4



			- Effervescent granules - Formulation - Preparation		
	Capsule dosage forms	a1, a2, b1, b2, c1, c2, d1, d2	- Introduction - Types of capsules - Hard gelatin capsules - Advantages and disadvantages - Composition of capsule shell - Selection of capsule size. - Excipients used in hard gelatin capsule formulation. - Enteric coating of capsules. - Capsule filling process. - Storage of hard gelatin capsules. - Soft gelatin capsules - Advantage and disadvantages. - Capsule shell composition. - Shapes and sizes. - Soft gelatin capsule formulation. - Soft gelatin capsule filling process.	4	8
3	Mid-term Exam			1	2
4	Tablet dosage form	a1, a2, b1, b2, c1, c2, d1, d2	- Introduction - Advantages and disadvantages. - Types of tablets. - Tableting methods - Direct compression - Dry granulation - Wet granulation - Tablet excipients - Tablet press machines - Problems encountered during tablet formulation. - Standards quality control tests for tablets. - Tablet coating - Tablet packaging	6	12
	Final exam	a1, a2, b1, b2, c1, c2	-	1	2
Number of Weeks /and Units Per Semester				16	32

B. Practical Aspect (Lab/Clinical) (if any):

No.	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
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19.	Preparation of Effervescent granule base by wet method	1	2	c1, c2, d1, d2
20.	Preparation of Effervescent granule base by dry method	1	2	c1, c2, d1, d2
21.	Midterm practical exam	1	2	c1, c2, d1
22.	Determination of capsule size	1	2	c1, c2, d1, d2
23.	Filling of hard gelatin capsules (punch method).	1	2	c1, c2, d1, d2
24.	Preparation of tablets by Direct compression for (dry method)	1	2	c1, c2, d1, d2
25.	Preparation of tablets by Dry granulation method (slugging method)	1	2	c1, c2, d1, d2
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27.	Quality control of solid dosage forms	1	2	c1, c2, d1, d2
28.	Final exam	1	2	c1, c2
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VI. Assignments:

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