Faculty: Pharmacy	
Department: Pharmaceutical sciences	**Program: Pharmacy**
Semester: first	**Academic year: 2023/2024**

Course Plan

First: Course Information

Course Name:	***Drug Delivery***			***Course No 1101539.***	
Credit Hours:	***3 hrs***	***Theoretical***	***3 hrs***	***Practical***	***-***
Prerequisite:	***Class Number: 1***			***Lecture Time: 4:30-7:30***	
Level in JNQF	***9***				
Course Nature:	☐ ***Mandatory Faculty Requirement*** ☐***ptional University Requirement*** ☐ ***Mandatory University Requirement*** ☐ ***FacultyRequirement*** ☐***illary Course*** ☐ ***Optional SpecialtyRequirement*** ■***tory Specialization requirement***				
Type of Education:	☐ **Fully Direct (Fully Face-to-Face Education)** ■ **Integrated Education(2 Face-to-Face + 1Asynchronous)** ☐ **Electronic EducationFully (1Asynchronous + 2 Synchronous)**				

Second: Instructor's Information

Course coordinator Dr. Samer Adwan		
Name Dr. Samer Adwan	***Office Number 210 D***	***Email: sadwan@zu.edu.jo***
Instructor Dr. Samer Adwan		
Name:	***Office Number 210 D***	***Email: sadwan@zu.edu.jo***
Office Hours:	***To be announced***	

Third:Short Descriptionof the Course

This course covers the fundamentals of drug delivery systems and novel dosage form design. It starts by providing the students with the basic knowledge of drug delivery in addition to technologies, different approaches and factors affecting the design of novel delivery systems. The course also emphasizes the diverse dosage form designs intended for different routes of administration as oral, transdermal, ophthalmic, and nasal routes. The use of different drug carriers (as liposomes, and micro-&nano- carriers) for drug targeting will be illustrated.

Fourth: Course objectives

- The objectives of the course are to:

- ✓ Understand the importance of novel drug delivery
- ✓ Define different routes of drug delivery
- ✓ Understand the influence of physiological factors on drug absorption
- ✓ Understand the influence of the physicochemical properties of the drug and dosage form on drug absorption

Fifth: Learning Outcomes

Level descriptor according to (JNQF)	*CILOs Code*	*CILOs* If any CILO will not be assessed in the course, mark NA.	*Associated PILOs Code* *Choose one PILO for each CILO*	*Assessment method* *Choose at least two methods*	*Scores out of 100* State the total score identified for each CILO	*Minimum acceptable Score/percentage (%)* *The percentage should not be less than 50% ****
Knowledge	**K1**	Recognize the scientific advancements in drug delivery system and strategies utilized in the pharmaceutical technology.	P. K	Midterm exam Final exam	30	21 (70%)
	K2		P. K	Midterm exam Final exam	30	21 (70%)
Skills	**S1**	Solve problems encountered in pharmaceutical technology such as drug development, drug interaction, or formulation techniques.	P. S1	Final exam	10	7 (70%)
			P. S1	NA		
			P. S2	Final exam	5	3.5 (70%)
	S2	Apply research methodologies and suitable statistical analysis techniques for planning, executing, and evaluating pharmaceutical research studies.	P. S3	Seminar	10	7 (70%)
			P. S3	Assignment	5	3.5 (70%)
Competencies	**C1**	Manage complex scientific issues within the realm of pharmaceutical technology.	P. C1	Seminar	5	3.5 (70%)

	C2	Assess own learning strengths and weaknesses, assuming responsibility for self-directed learning.	P. C3	Presentation	5	3.5 (70%)

****80% of the students** must achieve the minimum acceptable percentage or higher for each CILO

Sixth: Learning Source

Designated Book1:	Drug Delivery and Targeting: For Pharmacists and Pharmaceutical Scientist	
Author: Anya M. Hillery. Andrew W. Lloyd. James Swarbrick	***Edition:*** 1st edition	***Year:****2001*
Additional Sources: ***Website:***	**Textbook 2:** Aulton's Pharmaceutics . Michael E.Aulton . 4th edition. 2013	
Teaching Type:	☑***Classroom*** ☐ ***Laboratory*** ☐***Workshop*** ☐**MS Teams** ☑**Moodle**	

Seventh: Course Structure

Lecture Date	**Topics**	Teaching Procedures*	**Teaching Methods*****	**Covered CILOs**
15/10/2023	Outline/ Introduction	Direct	Direct teaching	K1, K2
22/10/2023	Oral drug delivery	Direct	Direct teaching Teaching through Discussion	K1, K2
29/10/2023	Assignment 1	Asynchronous	Assignment	K1, K2, S1,S2, S3,S4, S5
5/11/2023	Oral transmucosal drug delivery	Direct	Direct teaching Teaching through Discussion	K1, K2
12/11/2023	Assignment 2	Asynchronous	Assignment	K1, K2, S1,S2, S3,S4, S5
19/11/2023	Transdermal drug delivery	Direct	Direct teaching	K1, K2

			Teaching through Discussion	
26/11/2023	Assignment 3	Asynchronous	Assignment	K1, K2, S1,S2, S3,S4, S5
3/12/2023	Midterm exam	-	-	–
10/12/2023	Ocular drug delivery	Direct	Direct teaching Teaching through Discussion	K1, K2
17/12/2023	Assignment 4	Asynchronous	Assignment	K1, K2, S1,S2, S3,S4, S5
24/12/2023	Nasal drug delivery	Direct	Direct teaching Teaching through Discussion	K1, K2 S1,S2, S3,S4,S5 C1,C4
31/12/2023	Seminars	Asynchronous	Teaching through Discussion	K1, K2, S1,S2, S3,S4, S5
7/1/2023	Seminars	Direct	Teaching through Discussion	K1, K2 S1,S2, S3,S4,S5 C1,C4
14/1/2023	Seminars	Asynchronous	Teaching through Discussion	K1, K2 S1,S2, S3,S4,S5 C1,C4

Eighth: Assessment methods

Methods	Fully Electronic Education	Integrated Teaching	Direct Teaching	Specific Course Output to be measured *State the score identified for each CILO for each method of assessment out of 100 **If any CILO will not be assessed in the course, mark NA.							
				K1	K2	S1	S3	S4	S5	C1	C4
Mid-term Exam			30	**10**	**20**						
Final Exam			40	**10**	**20**	**5**	**5**				
Seminar			10					**5**		**5**	
Power Point Presentation			10			**5**					**5**
Assignment (homework)			10					**5**	**5**		
Total out of 100				**30**	**30**	**10**	**5**	**10**	**5**	**5**	**5**

Ninth: Course Policies

- Meeting the deadline for the lecture.
- Commitment to interaction and participation.
- Interactive lectures will be given through a platform (MS Teams).
- Duties and tests will be given through a platform(Moodle).
- Commitment to the right appearancewith the proper background in front of the camera.
- University regulations for attendance and absence from lectures and examinations are in force.
- Academic Integrity: According to university regulations and instructions, fraud or moral impersonation is unacceptable and punishable.

Approval	Name	Date	Signature
Head of Department			
Faculty Dean			