Jordan University of Science and Technology
Faculty of Pharmacy
Pharmacy Department

PHAR555 Drug Delivery Systems - JNQF Level: 7

First Semester 2024-2025

Course Catalog
3 Credit Hours. This course is designed to provide the students with an insight to the recent advances in the art and science of drug delivery and to assess the prospects and directions of future developments. The course will cover the fundamentals and principles of drug delivery, the strategies and materials used in controlled drug delivery, and the evaluation and characterization of such delivery systems. The strategies and design of controlled delivery systems for various administration routes will also be discussed.
Teaching Method: On Campus

Text Book	
Title	Drug Delivery and Targeting for pharmacists and pharmaceutical scientists
Author(s)	Anya M. Hillery, Andrew W. Lloyd; and James Swarbric
Edition	1st Edition
Short Name	1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
2	Pharmaceutical Dosage Forms and Drug Delivery Systems	Loyd V. Allen, Jr. and Howard C. Ansel	10th Edition	
3	Martin's Physical Pharmacy and Pharmaceutical Sciences	Patrick J. Sinko and Yashveer Singh	6th Edition	
4	Drug Delivery Systems	Rakesh K. Tekade	1st Edition	

Instructor	
Name	**Prof. Shereen Assaf**
Office Location	P2 L1
Office Hours	Sun : 11:30 - 12:30 Mon : 10:30 - 11:30 Mon : 13:00 - 13:30 Tue : 11:30 - 13:30 Wed : 10:30 - 11:30 Wed : 13:00 - 13:30
Email	sheassaf@just.edu.jo

Class Schedule & Room
Section 2: Lecture Time: Sun, Tue, Thu : 10:30 - 11:30 Room: D4202 Section 3: Lecture Time: Mon, Wed : 11:30 - 13:00 Room: M3303

Tentative List of Topics Covered

Weeks	Topic	References
Weeks 1, 2, 3	Fundamentals of controlled delivery systems: a) Introduction b) Rational of controlled delivery dosage forms c) Advantages & limitations of controlled delivery dosage forms d) Technologies of controlled delivery dosage forms e) Potential applications of controlled dosage forms	**chapter 3** From **1**, **chapter 9** From **2**
Week 4	Factors influencing the design and performance of controlled delivery systems: a) Physicochemical and biological properties of drugs b) Routes of administration	**chapter 3** From **1**, **chapter 23** From **3**
Week 5	Approaches to controlled delivery dosage forms: a) The chemical approach (prodrugs) b) The biological approach	**chapter 23** From **3**

Weeks 6, 7	c) The polymeric approach: 1) Introduction to polymers used in drug delivery 2) Diffusion controlled delivery systems 3) Solvent controlled delivery systems 4) Chemically controlled delivery systems	**chapter 3** From **1**, **chapters 13 and 20** From **3**
Weeks 8, 9	Parenteral drug delivery: a) Introduction b) Microparticles/ Nanoparticles c) Liposomes	**chapter 5** From **1**, **chapter 20** From **2**, **chapter 23** From **3**
Weeks 10, 11	The oral route of administration: a) Oral drug delivery b) Oral transmucosal drug delivery (Buccal and sublingual)	**chapters 6 and 7** From **1**, **chapters 9 and 20** From **2**, **chapter 22** From **3**
Weeks 11, 12, 13, 14, 15	Alternative routes for drug delivery: a) Transdermal drug delivery b) Ophthalmic drug delivery c) Lower respiratory tract drug delivery d) Nasal drug delivery	**chapters 3, 8, 9 and 12** From **1**, **chapters 11 and 20** From **2**, **chapter 23** From **3**

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Illustrate the fundamentals and principles of drug delivery and the applications of these fundamentals to building of controlled drug delivery systems. [1PLO1.1] [1L7K1]	25%	First exam
Explain the various technologies and strategies used in drug delivery. [1PLO1.1] [1L7K1, 1L7S2]	20%	First exam
Assess the different materials and approaches used in the design and fabrication of such delivery systems. [1PLO3.1] [1L7S2, 1L7S3]	25%	
Utilize the strategies and considerations in the design of different drug delivery systems that will optimize drug delivery to the body from different routes of administration. [1PLO4.3] [1L7C2, 1L7C4]	30%	

PLO1.1	PLO2.1	PLO3.2	PLO3.3	PLO2.2	PLO2.3	PLO2.4	PLO3.1	PLO3.4	PLO3.5	PLO3.6	PLO4.1	PLO4.2	PLO4.3	PLO4.4	PLO5.1	PLO-PT1.1	PLO-PT2.1	PLO-PT2.2	PLO-PT3.1
45							25						30						

Relationship to NQF Outcomes (Out of 100%)				
L7K1	L7S2	L7S3	L7C2	L7C4
35	22.5	12.5	15	15

Evaluation	
Assessment Tool	**Weight**
First exam	25%
Second exam	25%
Activities and quizzes	10%
Final exam	40%

Policy	
Exams	- All exams are closed books and notes. - The format for the exams is generally MCQ, and sometimes short answer questions and essay questions. - Grades will be posted within one week or immediately in case of online exams. - The final exam is comprehensive (covers all the material). - All incomplete exams need approval from the department's head.
Cheating	Prohibited; The commitment of the acts of cheating and deceit such as copying during examinations, altering examinations for re-grade, plagiarism of homework assignments, and in any way representing the work of others as your own is dishonest and will not be tolerated. The standard JUST policy will be applied. المادة 7: إذا ضُبط الطالب أثناء الامتحان أو الاختبار متلبساً بالغش فتوقع عليه العقوبات التالية مجتمعة: أ- اعتباره راسباً في ذلك الامتحان أو الاختبار. ب- الغاء تسجيله في بقية المساقات المسجل لها في ذلك الفصل. جـ- فصله من الجامعة لمدة فصل دراسي واحد، و هو الفصل التالي للفصل الذي ضبط فيه
Attendance	- Attendance is mandatory and will be recorded regularly. - Excellent attendance is expected. - Students who miss more than 20% of the classes will be dropped from the course as per JUST policy. - If you miss class, it is your responsibility to find out about any announcements or assignments you may have missed.
Active learning and student participation	- The students are expected to actively participate in class discussions and do as much literature research as needed. The average work-load student should expect to spend is 6 hours/week.
Withdraw	- The last day of course withdrawal (without reimbursement of tuition fees) is on Friday 3/1/2025.