

**COURSE DESCRIPTIONS**

<b>Faculty</b>	Pharmacy				
<b>Department</b>	Pharmacy			<b>NQF level</b>	
<b>Course Title</b>	Drug Delivery Systems	<b>Code</b>	PHC 548	<b>Prerequisite</b>	PHC 444
<b>Credit Hours</b>	3	<b>Theory</b>	3	<b>Practical</b>	-
<b>Course Leader</b>	Assoc.Professor. Dr. Ahmed Rifaat	<b>email</b>	Ahmed.ga@jadara.edu.jo		
<b>Lecturers</b>	Assoc.Professor. Dr. Ahmed Rifaat	<b>emails</b>	Ahmed.ga@jadara.edu.jo		
<b>Lecture time</b>		<b>Classroom</b>			
<b>Semester</b>		<b>Production</b>		<b>Updated</b>	
<b>Awards</b>				<b>Attendance</b>	Fulltime

**Short Description**

- On completion of the course, students will be able to know the principles and types of controlled release and to have a good knowledge on the most common mechanisms in rate controlled release pharmaceutical products .

**Course Objectives**

- Describe the basic principles of drug delivery systems.
- Define various aspects concerning controlled, sustained and extended release DDS.
- Illustrate the theoretical design of each system.
- To provide targeting systems.

**Learning Outcomes**

**A. Knowledge - Theoretical Understanding**

- a1. Describe basics and concepts of controlled drug delivery systems Explain the types of controlled release dosage forms, advantages, and limitation for each system.  
A2. Discuss diffusion and dissolution-controlled drug delivery systems.

**B. Knowledge - Practical Application**

- A3. Illustrate the different types of controlled release products

**C. Skills - Generic Problem Solving and Analytical Skills**

- B1. Analyze novel problems and plan strategies for their solution

**D. Skills - Communication, ICT, and Numeracy**

- B2. Correlate patient` medical conditions with his medications based on used DDS.

**E. Competence: Autonomy, Responsibility, and Context**

- C1. Tailoring patient`s medications, dose, and route of administration

**Teaching and Learning Methods**

- Lectures.
- Research projects and information collection.
- discussion during lectures and tutorial
- self-learning (presenting scientific proposal )

### Assessment Methods

(presentations, research, quizzes) Final exam

### Course Contents

Week	Hours	CLOs	Topics	Teaching & Learning Methods	Assessment Methods
.1	3	A1,b1,	Introduction to the course	Lectures, Research projects and information collection. discussion during lectures and tutorial self-learning (presenting scientific proposal )	Assignments , Mid and final exams
.2	3	A2,b1,	Biological and physicochemical factor affecting the design of SR	Lectures, Research projects and information collection.	Assignments , Mid and final exams
.3	3	A2,b1,c1	Oral controlled deliver systems	discussion during lectures and tutorial self-learning (presenting scientific proposal )	Assignments , Mid and final exams
.4	3	A2,b2,c1	Oral controlled deliver systems (cont.)	Lectures, Research projects and information collection.	Assignments , Mid and final exams
.5	3	A3,b2,c1	Oral controlled deliver systems (cont.)	discussion during lectures and tutorial self-learning (presenting scientific proposal )	Assignments , Mid and final exams
.6	3	A2, b1, c1	Parenteral drug delivery systems	Lectures, Research projects and information collection.	Assignments , Mid and final exams
.7	3	A1,B2	Intra-ocular DDS	discussion during lectures and tutorial self-learning (presenting scientific proposal )	Assignments , Mid and final exams
.8	3	A3,b2,c1	Rectal and Intra-vaginal drug delivery systems	Lectures, Research projects and information collection.	Assignments , Mid and final exams
.9	3	A1, b2,c1	Intra-nasal DDS	discussion during lectures and tutorial self-learning (presenting scientific proposal )	Assignments , Mid and final exams
.10	3	A2,b1,c1	Buccal DDS	Lectures, Research projects and information collection.	Assignments , Mid and final exams
.11	3	A1, b2,c1	Nanodrug delivery systems	discussion during lectures and tutorial self-learning (presenting scientific proposal )	Assignments , Mid and final exams

### Infrastructure

<b>Textbook</b>	a) Textbook of Pharmaceutical Dispensing, Goyal and Amit, 2012. b) Ansel's pharmaceutical dosage forms and drug delivery systems, Allen and Loyd, 2008. c) A. Martin. Physical Pharmacy. Forth edition. Lea & Febiger, Philadelphia, London, 1993.
<b>References</b>	a) M.E. Aulton. Pharmaceutics: The science of dosage form design. Churchill Living Stone, 1996. b) Bentley's textbook of pharmaceutics.
<b>Required reading</b>	

<b>Electronic materials</b>	<b>lectures</b>
<b>Other</b>	

<b>Course Assessment Plan</b>								
	<b>Assessment Method</b>	<b>Grade</b>	<b>CLOs</b>					
			<b>A1</b>	<b>A2</b>	<b>A3</b>	<b>B1</b>	<b>B2</b>	<b>C1</b>
	<b>First (Midterm)</b>	30	10	5		10	5	
	<b>Second (if applicable)</b>							
	<b>Final Exam</b>	50	5	10	15	5	5	10
	<b>Coursework</b>							
<b>Coursework assessment methods</b>	Assignments							
	Case study							
	Discussion and interaction							
	Group work activities							
	Lab tests and assignments							
	Presentations							
	Quizzes	20		5	5		5	5
	<b>Total</b>	100	15	20	20	15	15	15

<b>Plagiarism</b>
<p>Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code).</p> <p>Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.</p>