COURSE DESCRIPTIONS

faculty	**Pharmacy**				
Department	**Pharmacy**			**NQF level**	
Course Title	**Pharmaceutical Technology**	**Code**	**901446**	**Prerequisite**	**PHC 443**
Credit Hours	**3**	**Theory**	**3**	**Practical**	**-**
Course Leader	**Dr Nadia Ghazal**	**email**	**n.ghazal@jadara.edu.jo**		
Lecturers	**Dr Nadia Ghazal**	**emails**	**n.ghazal@jadara.edu.jo**		
Lecture time	**Section 1: Monday-Wednesday Section1- 7:30-9:00 pm** **Section2: Sunday-Tuesday Section1- 7:30-9:00 pm**	**Classroom**	**Online**	**Attendance**	**Obligatory**
Semester	**First 2023-2024**	**Production**		**Updated**	**Oct 2023**
Type of teaching	☐ Face to Face ☐ Blended ☐ Online				

Short Description

This course deals with applications of physico-chemical principles in the design of solid dosage forms (powders and granules, tablets, coated tablets, and capsules), that is covered under the pre-formulation studies conducted during product development.
On the completion of this course ,the student will be able also to discuss the principles of the equipment used in different pharmaceutical unit operations for each process , and the effect of the processes on the quality of the manufactured products using these equipment.

Course Objectives

This course aims to familiarize the students with pre-formulation studies, and manufacturing of solid dosage forms. It aims to develop students knowledge of the fundamental physicochemical properties of drugs and asses their role and applications in solid dosage forms.
At the end of the course ; students shall be able to categorize solid dosage forms and solve problems encountered during their development and manufacturing.

Learning Outcomes
A. Knowledge - Theoretical Understanding
a1. Discuss basic principles of Pre-formulation studies including physicochemical properties that affects materials behavior during product development and manufacturing a2. Discuss concepts, mechanisms, methods of mixing, granulation, milling, compression, drying, encapsulation, and coating . a3.Investigate the different properties such as particle size, surface area, flow properties, solubility, and stability of an active drug substance to show no barrier to product formulation
B. Knowledge - Practical Application
b1. Discuss equipment of mixing, granulation, milling, compression, encapsulation, and coating .Define design and mechanism of action of these equipment as unite operation in pharmaceutical practice. b2. Correlate equipment design with drug product characteristics
C. Skills - Generic Problem Solving and Analytical Skills
c1. Evaluate different properties of solid dosage forms such as hardness, friability, content uniformity, dissolution, disintegration, and weight variation c2. Identify and solve problems faced during manufacturing of solid dosage forms
D. Skills - Communication, ICT, and Numeracy
B4. To work in groups and teams B5. To use computer and internet to extract information and knowledge
E. Competence: Autonomy, Responsibility, and Context
C1. use information technology tools .
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, case studies, Mid and Final exam

Course Contents					
Week	**Hours**	**CLOs**	**Topics**	**Teaching & Learning Methods**	**Assessment Methods**
1.	3	A1, A3	Pre-formulation studies	Lectures, discussion during lectures and tutorial self-learning	Assignments , Mid and final exams
2.	3	A2, b1, b2	Mixing	Lectures, discussion during lectures and tutorial self-learning	Assignments , Mid and final exams
3.	3	A2, b1, b2	Mixing	Lectures, discussion during lectures and tutorial self-learning	Assignments , Mid and final exams
4.	3	A2, b1, b2, c1,c2	Granulation	Lectures, discussion during lectures and tutorial self-learning	Assignments , Mid and final exams
5.	3	A2, b1, b2, c1,c2	Granulation	Lectures, discussion during lectures and tutorial self-learning	Assignments , Mid and final exams
6.	3	A2, b1, b2, c1,c2	Milling	Lectures, discussion during lectures and tutorial self-learning	Assignments , Mid and final exams
Mid Term Exam					
7.	3	A2, b1, b2, c1,c2	Milling	Lectures, discussion during lectures and tutorial self-learning	Assignments , Mid and final exams
8.	3	A2, b1, b2, c1,c2	Drying	Lectures, discussion during lectures and tutorial self-learning	Assignments , Mid and final exams
9.	3	A2, b1, b2, c1,c2	Powder Flow and Compression	Lectures, discussion during lectures and tutorial self-learning	Assignments , Mid and final exams
10.	3	A2, b1, b2, c1,c2	Capsules	Lectures, discussion during lectures and tutorial self-learning	Assignments , Mid and final exams
11.	3	A2, b1, b2, c1,c2	Coating	Lectures, discussion during lectures and tutorial self-learning	Assignments , Mid and final exams

Assessment Method	Grade	*CILOs						
		a.1	a.2	a.3	b.1	b.2	c.1	c.2
First (or Midterm) Exam	30	5	5	5	5	5	2.5	2.5
Final Exam	40	2.5	2.5	2.5	7.5	5	10	10
Coursework Assessment methods	30	5		5		5	5	10
Assignments		1		1				2
Case study								2
Discussion and interaction								1
Group work activities		2		2				
Lab tests and assignments								
Presentations		2				3		
Quizzes				2		2		5
Total	100	45				55		

***CILOs stands for the "course intended learning outcomes", which are intended to feed-up to the PILOS, the "program intended learning outcomes"**

Textbook & References	
Text Book	Aulton's Pharmaceutics The Design and Manufacture of Medicines 6th Edition - 2021 Editors: Kevin Taylor, Michael Aulton ISBN :9780702081545
References	**1-** **Title: Martin's Physical Pharmacy and Pharmaceutical Sciences** Author: Patrick J. Sinko Publisher: Wolters Kluwer Year: 2023 ISBN/ISSN: 9781975174811 Edition:8th Edition **2-** **Title: Pharmaceutical Dosage Forms and Drug Delivery Systems** Author(s): Loyd V. Allen, Jr., Nicolas G. Popovich & Howard C. Ansel Publisher: Wolters Kluwer Year:2021 ISBN/ISSN :978-1975171773 Edition: 12th Edition **3-** **Title: Lachman/ Lieberman's The Theory and Practice of Industrial Pharmacy** By R K Khar; S P Vyas; Farhan J Ahmed; Gauravk Jalin. Publisher: New Delhi CBS Year:2015 ISBN/ISSN :978-8123922898 Edition:4th edition

Plagiarism

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).

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.