Course Plan for Bachelor Program - Study Plan Development and Updating Procedures/ Pharmacy Department	QF02/0408-4.0E

Study Plan No.	**2021/2022**		**University Specialization**		**Bachelor of Pharmacy**	
Course No.	**0201220**		**Course Name**		**Pharmaceutics**	
Credit Hours	**3**		**Prerequisite *Co-requisite**		**Analytical Chemistry**	
Course Type	☐ Mandatory University Requirement	☐ University Elective Requirement	☐ Faculty Mandatory Requirement	☐ Support course family requirements	☑ Mandatory Requirement	☐ Elective Requirement
Teaching Style	☐ Full Online Learning		☐ Blended Learning		☑ Traditional Learning	
Teaching Model	☐ 1 Synchronous: 1 Asynchronous		☐ 1 Face to Face: 1 Asynchronous		☑ 2 Traditional	

Faculty Member and Study Divisions Information *(to be filled in each semester by the subject instructor)*

Name	Academic rank	Office No.	Phone No.	E-mail	
Office Hours (Days/Time)	**Sunday, Tuesday, Thursday ()**		**Monday, Wednesday ()**		
Division number	**Time**	**Place**	**Number of Students**	**Teaching Style**	**Approved Model**
				Traditional Learning	**2 Traditional**

Brief Description

This course is designed to introduce the students to the physicochemical principles behind the design and formulation of different pharmaceutical preparations, such as solubility, diffusion, dissolution, kinetics of reactions, colloidal systems, interfacial phenomena, and rheology. These principles will lay the foundation for dosage form design and manufacture, as well as biopharmaceutics and pharmacokinetics.

Learning Resources

Course Book Information (Title, author, date of issue, publisher ... etc)	P.J. Sinko, Martin's Physical Pharmacy and Pharmaceutical Sciences, 7th Edition, 2016, Lippincott Williams & Wilkins.			
Supportive Learning Resources (Books, databases, periodicals, software, applications, others)	1. Jens T. Carstensen, Advanced Pharmaceutical Solids, Marcel Dekker, 2001. 2. Jens T. Carstensen, C. T. Rhodes, Drug Stability: Principles and Practices, third edition, Marcel Dekker, 2000. 3. A. T. Florence, Physicochemical Principles of Pharmacy, second edition, 1988. 4. E. L. Cussler, Diffusion Mass Transfer in Fluid Systems, Cambridge University Press, 2009.			
Supporting Websites				
The Physical Environment for Teaching	☑ **Classroom**	☐ Labs	☑ **Virtual Educational Platform**	☐ Others
Necessary Equipment and	- Moodle.			

Software	
Supporting People with Special Needs	
For Technical Support	E-Learning & Open Educational Resources Center. Email: elearning@zuj.edu.jo; Phone: +962 6 429 1511 ext. 425/362.

Course learning outcomes *(K= Knowledge, S= Skills, C= Competencies)*

No.	Course Learning Outcomes	The Associated Program Learning Output Code
Knowledge **The student should be able to:**		
K1	Define buffers, tonicity, solubility, distribution, interfacial tension, colloidal dispersions, and rheology.	**MK2**
K2	Identify the different orders of chemical reactions.	**MK2**
K3	Recognize the relationship between diffusion, dissolution, drug release, and absorption.	**MK2**
Skills **The student should be able to:**		
S1	Perform the calculations needed to prepare buffered isotonic solutions.	**MS4**
S2	Determine the shelf-life of pharmaceutical dosage forms based on reaction kinetics.	**MS4**
S3	Apply the relevant equations to predict drug release and transport across biological barriers.	**MS4**
Competencies **The student should be able to:**		
C1	Assume responsibility for his/her own learning by following up with the course material and submitting assignments on time.	**MC3**

Mechanisms for Direct Evaluation of Learning Outcomes

Type of Assessment / Learning Style	Fully Electronic Learning	Blended Learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
Midterm Exam	30%	30%	**30%**	0%
Participation / Practical Applications	0%	0%	**20%**	50%
Asynchronous Interactive Activities	20%	20%	**0%**	0%
Final Exam	50%	50%	**50%**	50%

Note 1: *Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, and work within student groups ... etc, which the student carries out on his own, through the virtual platform without a direct encounter with the subject teacher.*

Note 2: *According to the Regulations of granting Master's degree at Al-Zaytoonah University of Jordan, 40% of final evaluation goes for the final exam, and 60% for the semester work (examinations, reports, research or any scientific activity assigned to the student).*

Schedule of Simultaneous / Face-to-Face Encounters and their Topics

Week	Subject	Learning Style*	Reference **
1	Buffered and isotonic solutions	Lecture	Ch. 8, pp 163-181
2	Buffered and isotonic solutions	Lecture Problem-based learning	Ch. 8, pp. 163-181
3	Solubility and distribution phenomena	Lecture	Ch. 9, pp. 182-139
4	Solubility and distribution phenomena	Lecture Problem-based learning	Ch. 9, pp. 182-139
5	Chemical kinetics and stability	Lecture	Ch. 14, pp. 318-354
6	Chemical kinetics and stability	Lecture Problem-based learning	Ch. 14, pp. 318-354
7	Diffusion	Lecture	Ch. 11, pp. 223-257
8	Diffusion	Lecture Problem-based learning	Ch. 11, pp. 223-257
9	Drug release and dissolution **Midterm Exam**	Lecture	Ch. 13, pp. 300-317
10	Drug release and dissolution	Lecture Problem-based learning	Ch. 13, pp. 300-317
11	Interfacial phenomena	Lecture	Ch. 15, pp. 355-385
12	Interfacial phenomena	Lecture Problem-based learning	Ch. 15, pp. 355-385
13	Colloidal dispersions	Lecture	Ch. 16, pp. 386-409
14	Colloidal dispersions	Lecture	Ch. 16, pp. 386-409
15	Rheology	Lecture	Ch. 19, pp. 469-491
16	**Final Exam**		

** Learning styles: Lecture, flipped learning, learning through projects, learning through problem solving, participatory learning ... etc.*

*** Reference: Pages in a book, database, recorded lecture, content on the e-learning platform, video, website ... etc.*

Schedule of Asynchronous Interactive Activities *(in the case of e-learning and blended learning)*

Week	Task / Activity	Reference	Expected Results
-	-	-	-