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.	**0201450**		**Course Name**		**Selected Topics in Pharmaceutics**	
Credit Hours	**3**		**Prerequisite *Co-requisite**		**Pharmaceutical Dosage Forms (2)**	
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**
				Blended Learning	**1 Face to Face: 1 Asynchronous**

Brief Description

This course aims to provide students with advanced knowledge in pharmaceutics and dosage form design by revisiting fundamental topics such as biopharmaceutics and rheology of disperse systems, and introducing new applications such as radiopharmacy, biopharmaceuticals, and novel dosage forms. Being a blended course, these topics will be introduced via a mix of face-to-face and recorded lectures and asynchronous group activities.

Learning Resources

Course Book Information (Title, author, date of issue, publisher ... etc)	1. Martin's Physical Pharmacy and Pharmaceutical Sciences, P.J. Sinko, 6th Edition, 2016, Lippincott Williams & Wilkins. 2. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems, L.V. Allen and H.C. Ansel, 10th Edition, 2014, Wolters Kluwer.			
Supportive Learning Resources (Books, databases, periodicals, software, applications, others)	- Selected review articles from the literature.			
Supporting Websites				
The Physical Environment for Teaching	☑ **Classroom**	☐ Labs	☑ **Virtual Educational Platform**	☐ Others
Necessary Equipment and Software	- PC/laptop with headphones and camera. - Microsoft Office. - Moodle.			

Supporting People with Special Needs	Students with special needs should contact the course instructor at the beginning of the semester to accommodate their 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	Outline the various processes in biopharmaceutics (ADME) and the associated molecular, cellular, and tissue barriers.	**MK2**
K2	Explain the rheological properties of different disperse systems.	**MK2**
K3	Compare and contrast the use of radiopharmaceuticals in diagnostics and therapeutics.	**MK2**
K4	Identify currently available biopharmaceuticals and their attributes.	**MK2**
K5	Discuss the recent trends in dosage form design.	**MK2**
Skills **The student should be able to:**		
S1	Design the appropriate dosage form based on knowledge of the ADME processes.	**MS4**
S2	Apply the fundamentals of rheology in the formulation of disperse systems.	**MS4**
S3	Determine the preformulation and formulation requirements for biopharmaceuticals.	**MS4**
Competencies **The student should be able to:**		
C1	Educate audiences through a multimedia presentation about a current topic in pharmaceutics.	**MC2, MC3**
C2	Assume responsibility for his/her own learning by keeping up with the course material and actively participating in asynchronous activities.	**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	**Introduction to the course**	Lecture	-
2	**Biopharmaceutics:** - Fundamentals: ADME - Drug transporters, cells, and transport pathways	Lecture Participatory learning	Ref. 1, pp. 259-271
3	**Biopharmaceutics (cont'd):** - Drug metabolism - Organ-specific barriers (brain, GIT, kidney, and liver	Lecture Participatory learning Problem-based learning	Ref. 1, pp. 271-294
4	**Complexation and Protein Binding:** - Drug and polymer complexes - Inclusion compounds - Methods of analysis	Lecture Participatory learning	Ref. 1, pp. 200-215
5	**Complexation and Protein Binding (cont'd):** - Protein binding equilibria - Factors affecting complexation and protein binding	Lecture Participatory learning Problem-based learning	Ref. 1, pp. 215-221
6	**Rheology of disperse systems:** - Newtonian and non-Newtonian systems - Thixotropy	Lecture Participatory learning Problem-based learning	Ref. 1, pp. 469-477
7	**Rheology of disperse systems:** - Determination of rheologic properties - Viscoelasticity	Lecture Participatory learning Problem-based learning	Ref. 1, pp. 477-487
8	**Radiopharmaceuticals**	Lecture Participatory learning	Ref. 2, pp. 638-660
9	**Midterm Exam**		
10	**Biopharmaceuticals:** - Types of biotechnology-derived products - Characterization techniques	Lecture Participatory learning Problem-based learning	Ref. 1, pp. 517-542
11	**Biopharmaceuticals:** - Preformulation studies - Formulation	Lecture Participatory learning Problem-based learning	Ref. 1, pp. 542-558

12	**Novel and advanced dosage forms**	Lecture Participatory learning	Ref. 2, 726-750
13	**Student presentations**	Flipped learning	Selected review articles
14	**Student presentations**	Flipped learning	Selected review articles
15	**Student presentations**	Flipped learning	Selected review articles
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
1	-	-	-
2	- Watch a recorded lecture	Video on the E-learning platform	- Answer questions embedded in the video
3	- Watch a recorded lecture - Assigning groups and topics for the multimedia presentation	Video on the E-learning platform	- Students will be divided into groups and each group will work on a topic for the presentation
4	- Watch a recorded lecture	Video on the E-learning platform	- Answer questions embedded in the video
5	- Watch a recorded lecture - Online meeting for student groups to work on the presentation	Video on the E-learning platform	- A group representative will report progress to the instructor
6	- Watch a recorded lecture	Video on the E-learning platform	- Answer questions embedded in the video
7	- Watch a recorded lecture - Online meeting for student groups to work on the presentation	Video on the E-learning platform	- A group representative will report progress to the instructor
8	Watch a recorded lecture	Video on the E-learning platform	Answer questions embedded in the video
9	**Midterm Exam**		
10	- Watch a recorded lecture Online meeting for student groups to work on the presentation	Video on the E-learning platform	- A group representative will report progress to the instructor

11	- Watch a recorded lecture	Video on the E-learning platform	- Answer questions embedded in the video
12	- Watch a recorded lecture - Online meeting for student groups to work on the presentation	Video on the E-learning platform	- A group representative will report progress to the instructor
13	- Student presentations	-	- Presentations marked out of 20
14	- Student presentations	-	- Presentations marked out of 20
15	- Student presentations	-	- Presentations marked out of 20
16	**Final Exam**		