

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.	0201370	Course Name	Pharmaceutical Dosage Forms (2)
Credit Hours	2	Prerequisite *Co-requisite	Pharmaceutical Dosage Forms (1)
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	☐ 2 Synchronous: 1 Asynchronous	☒ 1 Face to Face: 1 Asynchronous	☐ 3 Traditional

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

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 examines dosage form design for skin, eye, rectal, and parenteral drug delivery, in a biopharmaceutics and pharmacokinetics context. Throughout the course, these dosage-form topics are linked to biopharmaceutic and pharmacokinetic principles.

Learning Resources

Course Book Information (Title, author, date of issue, publisher ... etc)	Aulton, M. E. & Taylor, K. M. G., <i>Pharmaceutics: The Design and Manufacture of Medicines</i>, 6th edition, Elsevier, 2022. Allen, L. V. & Ansel, H. C., <i>Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems</i>, 10th edition, Wolters Kluwer, 2014.
Supportive Learning Resources (Books, databases, periodicals, software, applications, others)	- British Pharmacopoeia (BP), (2022). - Remington: <i>The Science and Practice of Pharmacy</i>, 23rd edition, 2020 (Adeboye Adejare, ed.). - Martin, P. J., <i>Martin's Physical Pharmacy and Pharmaceutical Sciences: Physical, Chemical and Biopharmaceutical Principles in the Pharmaceutical Sciences</i>, 8th edition, Wolters Kluwer, 2023. - Banker, G. S. & Rhodes, C. T. (eds.), <i>Modern Pharmaceutics</i>, 5th edition, CRC Press, 2012. - U.S. FDA (Food and Drug Administration) website – www.fda.gov (for regulations and drug delivery guidelines).
Supporting Websites	https://www.fda.gov/

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

The Physical Environment for Teaching	☒ Classroom	☐ Labs	☒ Virtual Educational Platform	☐ Others
Necessary Equipment and Software	- Moodle.			
Supporting People with Special Needs				
For Technical Support	E-Learning & Open Educational Resources Center. Email: clearning@zu.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	Explain the barrier properties of human skin relevant to drug delivery	MK2
K2	Differentiate between topical and transdermal dosage forms such as ointments, creams, gels, pastes, and patches	MK2
K3	Compare the characteristics of rectal, ophthalmic, and parenteral administration routes.	MK2
K4	Identify critical formulation and sterility requirements essential for parenteral preparations	MK2
Skills		
The student should be able to:		
S1	Design appropriate dosage forms based on biopharmaceutical properties of drugs and specific patient conditions	MS4
S2	Evaluate the suitability of specific quality control tests for different dosage forms based on formulation and route of administration.	MS4
Competencies		
The student should be able to:		

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%	30%	60%
Asynchronous Interactive Activities	30%	30%	0%	0%
Final Exam	40%	40%	40%	40%

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

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 topical and transdermal drug delivery	Problem solving discussion Lecture	Aulton Ch. 43 "Topical and transdermal drug delivery", pp. 713–734.
2	Topical and transdermal preparations (formulation principles and options)	Flipped Learning and Lecture	Aulton Ch. 43 "Topical and transdermal drug delivery", pp. 713–734; Ansel Ch. 10 "Ointments, creams, and gels", pp. 316–341.
3	Ointments	Lecture	Ansel Ch. 10 "Ointments, creams, and gels", pp. 316–341.
4	Creams, pastes	Lecture	Ansel Ch. 10 "Ointments, creams, and gels", pp. 316–341.
5	Gels (as semisolid dosage forms).	Lecture learning through problem solving	Ansel Ch. 10 "Ointments, creams, and gels", pp. 316–341.
6	Percutaneous absorption and transdermal system design	Participating and Lecture	Aulton Ch. 43 "Topical and transdermal drug delivery", pp. 713–734; Ansel Ch. 11 "Transdermal drug delivery systems", pp. 342–363.
7	Rectal and vaginal dosage forms, Part I (suppositories).	Lecture	Aulton Ch. 44 "Rectal and vaginal drug delivery", pp. 735–751; Ansel Ch. 12 "Suppositories, inserts, and sticks", pp. 364–374.
8	Rectal and vaginal dosage forms, Part II (suppositories, rectal enemas) Midterm Exam	Lecture	Aulton Ch. 44 "Rectal and vaginal drug delivery", pp. 735–751; Ansel Ch. 12 "Suppositories, inserts, and sticks", pp. 375–388.
9	Ophthalmic preparations, Part I (formulation principles and requirements).	Lecture	Aulton Ch. 41 "Ocular drug delivery", pp. 677–699; Ansel Ch. 17 "Special solutions and suspensions", pp. 606–617.
10	Ophthalmic preparations, Part II (containers, packaging, infections, ocular injections/implants); Parenteral preparations (introduction).	Lecture	Aulton Ch. 41 "Ocular drug delivery", pp. 677–699; Ansel Ch. 17 "Special solutions and suspensions", pp. 618–624.

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

11	Parenteral preparations: Routes of administration and formulation considerations	Lecture	Aulton Ch. 38 "Parenteral drug delivery", pp. 626–639
12	Small- and large-volume parenterals Special considerations associated with parenteral therapy	Lecture	Aulton Ch. 38 "Parenteral drug delivery; Containers", pp. 636–639
14	Biopharmaceutical principles of drug delivery	Problem solving and Lecture	Aulton Ch. 45 "Preparation and delivery of biopharmaceuticals", pp. 752–767
15	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			
3	Ointments: Commercial medicated ointment Recorded Lecture	Ansel's	List of commercially available bases and their types
4			
5			
6	Transdermal Delivery Recorded lecture	Ansel's	Answering questions
7			
8			
9	Preparations of suppositories (Recorded Lecture).	Ansel's	Answering assigned questions
10			
11		Ansel's	Answering assignment questions
12	Ophthalmic preparations: Packaging and administration Ophthalmic ointments and gels; contact lenses	Ansel's	
13			
14			
15	Biopharmaceutics	Ansel's	Answering questions
16			