



The University of Jordan

Accreditation & Quality Assurance Center

COURSE Syllabus

1	Course title	Biopharmaceutics
2	Course number	1203471
3	Credit hours (theory, practical)	2 (theory)
	Contact hours (theory, practical)	2 (theory)
4	Prerequisites/corequisites	1202235
5	Program title	BSc in Pharmacy and PharmD
6	Program code	
7	Awarding institution	The University of Jordan
8	Faculty	Pharmacy
9	Department	Biopharmaceutics & Clinical Pharmacy
10	Level of course	4 th year undergraduate
11	Year of study and semester (s)	Fall 2015-16
12	Final Qualification	-
13	Other department (s) involved in teaching the course	-
14	Language of Instruction	English
15	Date of production/revision	17 February 2016

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.

Dr Mohammad Saleh, PhD.

<http://eacademic.ju.edu.jo/moh.saleh/default.aspx>

Office 130

Phone 5 355 000, Ext. 23347.

E-mail: moh.saleh@ju.edu.jo

Office hours: Sunday: 1:00-2:00 PM and Monday: 12:00-1:00 PM

17. Other instructors:

Prof. Rana Abu Dahab, PhD.

Office 132.

Phone 5 355 000, Ext. 23553.

E-mail: abudahab@ju.edu.jo

Office hours to be announced

Dr Mariam AbdEljalil

Office 103.

Phone 5 355 000, Ext. 23304.

E-mail: m.abdeljalil01@ju.edu.jo

Office hours to be announced

18. Course Description:

This course provides students with in-depth knowledge about the interrelationship of the physicochemical properties of the drug, the dosage form in which the drug is given, and the route of administration on the rate and extent of drug absorption

19. Course aims and outcomes:

A- Aims:

1. The biopharmaceutics course provides opportunities for students to develop and demonstrate knowledge and understanding of the factors affecting drug bioavailability including physiological factors and factors related to physiochemical properties of the drug in addition to factors related to the dosage form
2. The student is also introduced to various drug administration routes with a special focus on novel drug delivery systems.

B- Course Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to ...

- A. Explain the concepts of bioavailability, bioequivalence
- B. Discuss various physiological factors that could influence drug absorption
- C. Explain how physiochemical properties of the drug, the dosage forms and site of administration may affect the delivery of drug substances to various parts of the body
- D. Describe the features of various delivery routes and explain the design and mechanisms of drug delivery via various drug delivery systems.

Program Competencies Achieved:

- 3.1 Identify physiochemical properties of drug substances
- 3.2 Recognize the role of pharmaceutical excipients and their uses in drug formulations
- 3.3 Characterize various pharmaceutical dosage forms

Teaching Methods

- ✓ Lectures
- ✓ Assignments.
- ✓ Quizzes

Course Material and Announcements

Students need to use the faculty member website (<http://eacademic.ju.edu.jo/moh.saleh/default.aspx>) in order to get all lecture handouts and related announcements.

Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
1. Introduction to Biopharmaceutics and Definitions 2. Bioavailability	1-2	Dr Mohammad	1	Exams, Quizzes	Specified in each lecture. General references provided below
3. Drug Absorption a. Physiologic factors related to drug absorption: cell membrane, mechanisms of drug transport across membranes b. Oral drug absorption: anatomic and physiologic consideration, gastric emptying time, effect of food and disease on gastric emptying c. Physicochemical factors that influence drug absorption: pH partition hypothesis	3-4	Dr Mohammad	2-3	Exams, Quizzes	Specified in each lecture. General references provided below
4. Biopharmaceutic consideration in drug product design a. Rate limiting steps in drug absorption: disintegration, dissolution,	5-9	Dr Mohammad	2-3	Exams, Quizzes	Specified in each lecture. General references provided below

solubility, pH, particle size, polymorphism b. Formulation factors influencing drug absorption c. Dissolution and drug release testing					
5. In vitro methods for testing drug transport	10	Dr Rana	3	Exams, Quizzes	Specified in each lecture. General references provided below
6. Biopharmaceutic drug classification system	10	Dr Rana	2-3	Exams, Quizzes	Specified in each lecture. General references provided below
7. Controlled and targeted drug delivery systems	11	Dr Rana	3-4	Exams, Quizzes	Specified in each lecture. General references provided below
8. Other routes for drug administration a. Parenteral drug administration b. Inhalation drug delivery c. Nasal drug delivery d. Topical drug delivery e. Buccal drug delivery f. Rectal drug delivery: self reading	12-15	Dr Mariam	4	Exams, Quizzes, Assignment	Specified in each lecture. General references provided below
Final exam	16				

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following <u>teaching and learning methods</u>:		
ILO/s	Learning Methods	Evaluation Methods
1-4	Lectures	Exams, Quizzes
1-4	Assignment	Exams, Quizzes

Learning skills:
Critical thinking
Problem-solving skills
Scientific reasoning
Communication skills

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following <u>assessment methods and requirements</u>:
Exams Quizzes Assignments

23. Course Policies:

<p>A- Attendance policies:</p> <p>Attendance: Mandatory. First warning – with 3 absences Last warning – with 4 absences Failing in the subject – with 5 absences</p> <p>B- Absences from exams and handing in assignments on time: Will result in zero achievement unless health report or other significant excuse is documented.</p> <p>C- Health and safety procedures: NA</p> <p>D- Honesty policy regarding cheating, plagiarism, misbehavior: The participation, the commitment of cheating will lead to applying all following penalties together</p>

- 1) Failing the subject he/she cheated at
- 2) Failing the other subjects taken in the same course
- 3) Not allowed to register for the next semester. The summer semester is not considered as a semester

E- Grading policy:

Exams and Quizzes.

Mid Exam:	40 points
Quizzes and assignments	10 points
Final Exam:	50 points
Total	100 points

F- Available university services that support achievement in the course:

Classrooms, internet classes

24. Required equipment:

Datashow and internet connection

25. References:

- 1) Applied biopharmaceutics and pharmacokinetics, Shargel and Yu, 6th edition, 2012, McGraw-Hill Medical, **ISBN-13: 978-0071603935**
- 2) Physiological Pharmaceutics: Barriers to Drug Absorption, Neena Washington, Clive Washington, Clive Wilson, 2nd edition, Taylor and Francis, 2001. **ISBN: 0-748-40610-7**
- 3) Biopharmaceutics and Clinical Pharmacokinetics: An Introduction, Robert E. Notari, 4th edition, 1987, Marcel Dekker, **ISBN: 0-8247-7523-6**
- 4) Essentials of Biopharmaceutics and Pharmacokinetics, Ashutosh Kar, 2011, Elsevier. **ISBN: 978-81-312-2639-1**
- 5) Principles and applications of biopharmaceutics and pharmacokinetic, Tipnis & Bajaj, 2008. Career Publications, **ISBN: 9788188739141.**

26. Additional information:

Name of Course Coordinator: Mohammad Saleh -Signature: ----- Date:Feb, 17, 2016

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: Nailya Bulatova Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----

Copy to:

Head of Department
Assistant Dean for Quality Assurance
Course File