



**The University of Jordan**

**Accreditation & Quality Assurance Center**

**COURSE Syllabus**

1	Course title	Physicochemical Principles of Pharmacy.
2	Course number	1202134
3	Credit hours (theory, practical)	2 (theory)
	Contact hours (theory, practical)	2 (theory)
4	Prerequisites/corequisites	Prerequisite: 0303101 (General Chemistry I)
5	Program title	Pharmacy/PharmD
6	Program code	
7	Awarding institution	The University of Jordan
8	Faculty	Pharmacy
9	Department	Pharmaceutics and Pharmaceutical Technology
10	Level of course	Undergraduate
11	Year of study and semester (s)	Second semester of the 1 <sup>st</sup> year
12	Final Qualification	Pharmacy/PharmD
13	Other department (s) involved in teaching the course	
14	Language of Instruction	English
15	Date of production/revision	February 18, 2016

**16. Course Coordinator:**

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

**Dr. Lorina Bisharat, PhD.**

Office 110

Phone 5 355 000, Ext. 23377.

E-mail: l.bisharat@ju.edu.jo

Office hours to be announced

**17. Other instructors:**

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

**Dr. Lara Tutunji, PhD.**

Office 235

Phone 5 355 000, Ext.23382.

E-mail: l.tutunji@ju.edu.jo

Office hours to be announced

**18. Course Description:**

The course will cover types of intermolecular forces, different states of matter and their related properties, phase equilibria and phase rule of liquid-liquid binary and ternary mixtures, physical properties of drug molecules including polarization, dielectric constant and refractive index, solutions of nonelectrolytes; including concentration expressions and colligative properties; solutions of electrolytes including electrical conductance, equivalent conductance, colligative properties of electrolytes and Arrhenius theory of electrolytic dissociation and solubility and distribution.

**19. Course aims and outcomes:****A- Aims:**

This module aims to provide the students with an understanding of the physicochemical principles that influence the formulation and stability of drug delivery systems, some mathematical, critical thinking and problem-solving skills needed throughout the program and necessary to interpret and understand scientific concepts.

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

**A. Knowledge and understanding:**

1. To provide students with basic knowledge, rationale and theories used to describe physical processes relevant to pharmaceuticals and pharmaceutical dosage forms.
2. To discuss principles of intermolecular forces, states of matter, phase equilibria and phase rule, physical properties of drug molecules, solutions of nonelectrolytes and electrolytes and their colligative properties and concept of solubility and distribution.

**B. Intellectual skills:**

1. To analyse and interpret data from physicochemical experiments and perform calculations using suitable units.

**C. Subject-specific skills:**

1. To provide students with the skills required to explain physicochemical principles.
2. To apply physicochemical principles to extemporaneous processes and pharmaceutical dosage forms.

**D. Transferable skills:**

1. To effectively understand concepts introduced later in the curriculum.
2. To develop critical thinking and structured problem solving skills.

**C- Program Competencies Achieved:**

- ✓ Identify physicochemical properties of drug substances
- ✓ Demonstrate the ability to perform pharmaceutical calculations
- ✓ Understand basic concepts of physicochemical principles.
- ✓ Apply physicochemical principles to simple pharmaceutical systems and dosage forms.
- ✓ Analyse and interpret a given set of data.
- ✓ Develop critical thinking and structured problem solving skills.

**20. Topic Outline and Schedule:**

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
<b>1. Intermolecular forces.</b>	1,2		A1-3, B1, C1	Exams, Quizzes	General reference provided below
<b>2. States of matter.</b> Midterm Exam	3-6		A1-3, B1, C1	Exams, Quizzes	General reference provided below
<b>3. Phase equilibria and phase rule.</b>	7-9		A1-3, B1, C1	Exams, Quizzes	General reference provided below
<b>4. Physical properties of drug molecules.</b>	10		A1-3, B1, C1	Exams, Quizzes	General reference provided below
<b>5. Solutions of nonelectrolytes.</b> Quiz	11, 12		A1-3, B1, C1	Exams, Quizzes	General reference provided below
<b>6. Solutions of electrolytes.</b>	13		A1-3, B1, C1	Exams, Quizzes	General reference provided below
<b>7. Solubility and Distribution.</b>	14		A1-3, B1, C1	Exams, Quizzes	General reference provided below
Final Exam	15				

**21. Teaching Methods and Assignments:**

<p><b>Development of ILOs is promoted through the following <u>teaching and learning methods</u>:</b></p> <p><b><u>Teaching Methods</u></b></p> <ul style="list-style-type: none"> <li>✓ Lectures.</li> <li>✓ Assignments and homework.</li> <li>✓ Discussions and brainstorming.</li> </ul> <p><b>Learning skills:</b></p> <ol style="list-style-type: none"> <li>1. Critical thinking</li> <li>2. Scientific reasoning</li> <li>3. Problem-solving skills</li> <li>4. Communication skills</li> </ol>
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**22. Evaluation Methods and Course Requirements:**

<p><b>Opportunities to demonstrate achievement of the ILOs are provided through the following <u>assessment methods and requirements</u>:</b></p> <ol style="list-style-type: none"> <li>1. Exams</li> <li>2. Quizzes</li> <li>3. Assignments</li> </ol>
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**23. Course Policies:****A- Attendance policies:*****Attendance: Mandatory.******First warning*** – with 4 absences***Last warning*** – with 5 absences***Failing in the subject*** – with 6 absences**B- Absences from exams and handing in assignments on time:**

Will result in zero achievement unless health report or other significant excuse is documented.

**C- Health and safety procedures:**

NA

**D- Honesty policy regarding cheating, plagiarism, misbehavior:**

The participation, the commitment of cheating will lead to applying all following penalties together

- 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
Quiz:	10 points
Final Exam:	50 points
Total	100 points

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

Classrooms, internet classes, library.

**24. Required equipment:**

Data show and internet connection

**25. References:****A- Required book (s), assigned reading and audio-visuals:**

- Martin's Physical Pharmacy and Pharmaceutical Sciences. 6th Edition. 2011.  
Published by Lippincott Williams & Wilkins, USA.
- Martin's Physical Pharmacy and Pharmaceutical Sciences. 5th Edition. 2006.  
Published by Lippincott Williams & Wilkins, USA.
- Physical Pharmacy, Physical Chemical Sciences, A.Martin et al., 4th Edition. 1993.  
Published by Lea and Febiger, USA.

**B- Recommended books, materials, and media:****26. Additional information:**

Name of Course Coordinator: **Lorina Bisharat** -Signature: ----- Date: February 8, 2016

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

Head of Department: Dr. Amal Al-Bakri Signature: -----

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

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

Copy to:

Head of Department  
Assistant Dean for Quality Assurance  
Course File