


Philadelphia University	 <b>PHILADELPHIA UNIVERSITY</b> THE WAY TO THE FUTURE	Approved Date: 10/2022
Faculty: Pharmacy		Issue: 1
Department: -		Credit Hours: 3
Academic Year:2023/2024		<b>Course Syllabus</b>

### Course Information

Course No.	Course Title	Prerequisite	
0520303	Pharmaceutics (I)	Physical Pharmacy (0520224)	
Course Type		Class Time	Room No.
<input type="checkbox"/> University Requirement <input type="checkbox"/> Faculty Requirement <input type="checkbox"/> Major Requirement <input type="checkbox"/> Elective <input checked="" type="checkbox"/> Compulsory		9:45-11:00 Sat, Mon	6602
		11:15-12:30 Sun, Tue	6602
Course Level*			
Hours			
4 <sup>th</sup> <input type="checkbox"/>	5 <sup>th</sup> <input type="checkbox"/>	6 <sup>th</sup> <input checked="" type="checkbox"/>	7 <sup>th</sup> <input type="checkbox"/>
Contact		Independent Learning	Assessment
45		42	3
Total: 90			

\*According to JNQF standards

### Instructure Information

Name	Office No.	Phone No.	Office Hours	Email
Dr. Mohammad Bayan	5532	+9622637444 Ext.: 2227	8:00-9:30 Sat, Mon 8:30-10:30 Sun, Tue	mbayan@philadelphia.edu.jo

### Course Delivery Method

<input type="checkbox"/> Blended	<input type="checkbox"/> Online	<input checked="" type="checkbox"/> Physical	
Learning Model			
Percentage	Synchronous	Asynchronous	Physical
	0	0	100%

## Course Description

At this level, the student will be familiar with the basics of solutions dosage form, Students apply that knowledge to the pharmaceutical dosage forms and will be introduced to coarse dispersions (suspension and emulsion) , additionally this course provide the student with basic knowledge and understanding of the different types of interfaces, the term surface tension and interfacial tension and the mechanism of adsorption at interfaces, classifying the surface active agents and appreciating their application in pharmacy along with the basic knowledge of Rheology.

## Course Learning Outcomes

Number	Outcome	Corresponding Program Outcomes
<b>Knowledge</b>		
<b>K1</b>	Define different types of liquid dosage forms (solution, suspensions, and emulsions), their physicochemical principles and the concept of rheology.	K <sub>P</sub> 1
<b>K2</b>	Discuss the different types of dosage forms and administration routes in relation with therapeutic outcomes.	K <sub>P</sub> 1
<b>K3</b>	Recognize basis of formulation of liquid dosage forms.	K <sub>P</sub> 3
<b>Skills</b>		
<b>S1</b>	Solve problems in compounding and despising.	S <sub>P</sub> 2

## Learning Resources

<b>Course Textbook</b>	<ol style="list-style-type: none"> <li>1. <b>Pharmaceutical Dosage Forms and Drug Delivery Systems</b> by Loyd V. Allen, Jr, Wolters Kluwer ,11<sup>th</sup> Edition ,2018</li> <li>2. <b>Aulton’s Pharmaceutics, The Design and Manufacture of Medicines</b>, Edit.: Michael E. Aulton, Kevin M. G. Taylor Pub.: Elsevier Limited, 6<sup>th</sup>edition, 2022.</li> </ol>
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<b>Electronic Materials</b>	Illustrative videos for the concepts of different types of liquid dosage forms (solution, suspensions, and emulsions).
<b>Supporting References</b>	<p>1. Martin's physical pharmacy and pharmaceutical sciences: physical chemical and biopharmaceutical principles in the pharmaceutical science by Patrick J. Sinko, Lippincott Williams &amp; Wilkins, 2017, 7<sup>th</sup> Edition</p> <p>2. Modern Pharmaceutics by Gilbert S. Banker (Editor), Christopher T. Rhodes (Editor) 4th edition (June 15, 2002), Marcel Dekker; ISBN: ISBN: 0824706749</p> <p>3. Merck Index: An Encyclopedia of Chemicals, Drugs, &amp; Biologicals by Merck, Co, Maryadele J. Oneil (Editor), Ann Smith (Editor) 13th edition (October 2001), Merck &amp; Co; ISBN: 0911910131</p> <p>4. Physical Pharmacy: Physical Chemical Principles in the Pharmaceutical Sciences by Alfred Martin, Pilar Bustamante, A.H.C. Chun (Illustrator) 622 pages 4th edition (January 15, 1993), Lea &amp; Febiger; ISBN: 0812114388</p> <p>5. Handbook of Pharmaceutical Excipients by Arthur H. Kibbe (Editor), Ainley Wade, Paul J. Weller 665 pages 3rd edition Vol 3 (January 15, 2000), Amer. Pharmaceutical Assoc.; ISBN: 091733096X</p> <p>6. Remington: The Science and Practice of Pharmacy by Alfonso R. Gennaro (Editor) 20th edition (December 15, 2000), Lippincott, Williams &amp; Wilkins; ISBN: 0683306472</p>
<b>Supporting Websites</b>	<a href="http://library.philadelphia.edu.jo/st_en.htm">http://library.philadelphia.edu.jo/st_en.htm</a>
<b>Teaching Environment</b>	<b>Classroom</b>

## Meetings and Subjects Timetable

Week	Topic	Learning Method*	Task	Learning Material
1	<b>Course Syllabus</b>  1. Pharmaceutical dosage form: <ul style="list-style-type: none"> <li>▪ Introduction dosage form and excipient</li> <li>▪ Classification (physical form)</li> <li>▪ Classification (route of administration)</li> </ul>	Lecture  Flipped learning		Course Syllabus  Textbooks
2	2. Pharmaceutical solutions <ul style="list-style-type: none"> <li>▪ Introduction</li> <li>▪ Solvents and vehicles</li> <li>▪ Preparation of solutions</li> <li>▪ Formulation considerations</li> </ul>	Lecture  Problem solving based learning		Textbooks
3	<ul style="list-style-type: none"> <li>▪ Oral solutions</li> <li>▪ Syrups</li> <li>▪ Elixirs</li> <li>▪ Tinctures</li> </ul>	Lecture	Quiz	Textbooks
4	<ul style="list-style-type: none"> <li>▪ Topical solutions</li> <li>▪ Vaginal &amp; Rectal</li> <li>▪ Miscellaneous:</li> <li>▪ Aromatic waters</li> <li>▪ Spirits</li> <li>▪ Colloidons</li> </ul>	Lecture  Collaborative learning		Textbooks
5	3. Dispersed systems: Suspension: <ul style="list-style-type: none"> <li>▪ Surface tension phenomena and surfactants</li> </ul>	Lecture	Homework/ Short report	Textbooks
6	<ul style="list-style-type: none"> <li>▪ The mechanism of adsorption at interfaces</li> </ul>	Lecture		
7	Midterm Exam <ul style="list-style-type: none"> <li>▪ Suspensions Sedimentation rate</li> <li>▪ Preparation of flocculated suspensions</li> </ul>	Lecture  Problem solving based learning		
8	<ul style="list-style-type: none"> <li>▪ Wetting, flocculating, and suspending agents.</li> </ul>	Lecture		Textbooks
9	<ul style="list-style-type: none"> <li>▪ Sustained release suspensions</li> <li>▪ Packaging and storage</li> </ul>	Lecture		
10	<ul style="list-style-type: none"> <li>▪ Pharmaceutical applications</li> </ul>	Lecture  Collaborative learning	Case study	
11	<ul style="list-style-type: none"> <li>▪ Rheology of suspensions</li> </ul>	Lecture		Textbooks
12	4. Dispersed systems: Emulsions:	Lecture		

	<ul style="list-style-type: none"> <li>▪ Types</li> <li>▪ Tests for identification</li> <li>▪ Purpose</li> <li>▪ Preparation</li> <li>▪ Emulsifiers and stabilizers</li> </ul>			
13	<ul style="list-style-type: none"> <li>▪ HLB method</li> </ul>	Lecture		
14	<ul style="list-style-type: none"> <li>▪ Microemulsions</li> <li>▪ Methods of emulsion preparation</li> </ul>	Lecture		
15	<ul style="list-style-type: none"> <li>▪ Stability of emulsions</li> </ul>	Lecture		Textbooks
16	<b>Final Exam Week</b>			

\*Includes: lecture, flipped Class, project-based learning, problem solving based learning, collaboration learning

### Course Contributing to Learner Skill Development

<b>Using Technology</b>
<ul style="list-style-type: none"> <li>• Use pharmaceutical techniques to calculate and find correct answers to solve simple problems in compounding and dispensing.</li> <li>• Use pharmacopeia and references guidelines to develop processes, procedures, to produce pharmaceuticals of appropriate quality and quality assures them.</li> <li>• Read, evaluate, and interpret numerical, chemical, and general scientific information.</li> <li>• Formulate significant research questions, design experiments, use appropriate chemical instrumentation, and analyze and interpret data.</li> <li>• Search and use the chemical literature in both printed and electronic formats.</li> </ul>
<b>Communication Skills</b>
<ul style="list-style-type: none"> <li>• Demonstrate ability to prepare relevant reports in a clear systematic way.</li> <li>• Be able to adapt and accommodate teamwork.</li> <li>• Access resources related to the description and application of the methods used for various unit operations.</li> </ul>
<b>Application of Concept Learnt</b>
<ul style="list-style-type: none"> <li>• Practical application of liquid dosage forms preparations and characterization in the corresponding practical course.</li> </ul>

## Assessment Methods and Grade Distribution

Assessment Methods	Grade	Assessment Time (Week No.)	Course Outcomes to be Assessed
Mid Term Exam	% 30	11 <sup>th</sup> week	K1-K3, S1
Term Works*	% 30	Continuous	K1-K3, S1
Quiz	%10	3 <sup>rd</sup> week	K1, K3
Homework/Short report	%10	5 <sup>th</sup> week	K2
Case study	%10	10 <sup>th</sup> week	S1
Final Exam	% 40	16 <sup>th</sup> week	K1-K3, S1
<b>Total</b>	<b>%100</b>		

\* Include: quizzes, in-class and out of class assignments, presentations, reports, videotaped assignment, group, or individual project.

## Alignment of Course Outcomes with Learning and Assessment Methods

Number	Learning Outcomes	Corresponding Competencies	Learning Method*	Assessment Method**
<b>Knowledge</b>				
<b>K1</b>	Define different types of liquid dosage forms (solution, suspensions, and emulsions), their physicochemical principles and the concept of rheology.	K <sub>p1</sub>	Lecture  Collaborative learning	Exam/Quiz questions
<b>K2</b>	Discuss the different types of dosage forms and administration routes in relation with therapeutic outcomes.	K <sub>p1</sub>	Lecture  Flipped learning	Exam questions  Homework/ Short report
<b>K3</b>	Recognize basis of formulation of liquid dosage forms.	K <sub>p3</sub>	Lecture	Exam/Quiz questions
<b>Skills</b>				
<b>S1</b>	Solve problems in compounding and dispensing.	S <sub>p2</sub>	Problem solving based learning  Lectures	Exam questions  Case study

\*Include: lecture, flipped class, project-based learning, problem solving based learning, collaboration learning.

\*\* Include: quizzes, in-class and out of class assignments, presentations, reports, videotaped assignments, group or individual projects.

## Course Polices

Policy	Policy Requirements
<b>Passing Grade</b>	The minimum pass for the course is (50%) and the minimum final mark is (35%).
<b>Missing Exams</b>	<ul style="list-style-type: none"> <li>• Anyone absent from a declared semester exam without a sick or compulsive excuse accepted by the dean of the college that proposes the course, a zero mark shall be placed on that exam and calculated in his final mark.</li> <li>• Anyone absent from a declared semester exam with a sick or</li> </ul>
	<p>compulsive excuse accepted by the dean of the college that proposes the course must submit proof of his excuse within a week from the date of the excuse's disappearance, and in this case, the subject teacher must hold a compensation exam for the student.</p> <ul style="list-style-type: none"> <li>• Anyone absent from a final exam with a sick excuse or a compulsive excuse accepted by the dean of the college that proposes the material must submit proof of his excuse within three days from the date of holding that exam.</li> </ul>
<b>Attendance</b>	<p>The student is not allowed to be absent more than (15%) of the total hours prescribed for the course, which equates to six lecture days (n t) and seven lectures (days). If the student misses more than (15%) of the total hours prescribed for the course without a satisfactory or compulsive excuse accepted by the dean of the faculty, he is prohibited from taking the final exam and his result in that subject is considered (zero), but if the absence is due to illness or a compulsive excuse accepted by the dean of the college that The article is introduced, it is considered withdrawn from that article, and the provisions of withdrawal shall apply to it.</p>
<b>Academic Integrity</b>	<p>Philadelphia University pays special attention to the issue of academic integrity, and the penalties stipulated in the university's instructions are applied to those who are proven to have committed an act that violates academic integrity, such as cheating, plagiarism (academic theft), collusion, intellectual property rights.</p>

**Program Learning Outcomes to be Assessed in this Course**

<b>Number</b>	<b>Learning Outcome</b>	<b>Course Title</b>	<b>Assessment Method</b>	<b>Targeted Performance level</b>

**Description of Program learning Outcomes Assessment Method**

<b>Number</b>	<b>Detailed Description of Assessment</b>

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**Assessment Rubric of the Program Learning Outcome**