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

Course Information

Course No.	Course Title	Prerequisite	
0520303	Pharmaceutics (I)	Physical Pharmacy (0520224)	
Course Type		Class Time	Room No.
☐ University Requirement ☐ Faculty Requirement ■ Major Requirement ☐ Elective ■ Compulsory		12:45-14:15 Sun, Tue	6610
		9:45-11:15 Sun, Tue	6610
		8:15-9:45 Mon, Wed	6611
		11:15-12:45 Mon , Wed	6611

Instructure Information

Name	Office No.	Phone No.	Office Hours	E-mail
Dr Mohammad Bayan	5532	+9622637444 Ext.: 2227	11:15-12:15 Sun, Tue 9:45-10:45 Mon, Wed	mbayan@philadelphia.edu.jo
Ms. Alaa Adnan	5601/2	9622637444 Ext.: 2451	Sun-Tue 11:30-12:30 Mon-Wed 10:45-11:15	aadnan@philadelphia.edu.jo

Course Delivery Method

☐ Blended	☐ Online	■ 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	Corresponding Competencies
Knowledge			
K1	Defining and understanding the concepts of different types of liquid dosage forms (solution, suspensions, and emulsions).	K_P1, K_P6	C1, C6
K2	Discussing the different types of dosage forms and administration routes in relation with therapeutic outcomes.	K_P1, K_P6	C1, C6
K3	Explaining the physicochemical principles relevant to liquid pharmaceutical dosage forms.	K_P1, K_P6	C1, C6
K4	Understanding the concepts of Rheology and its application in pharmaceutical preparations.	K_P1	C1
Skills			
S1	Compare various liquid preparations used in pharmaceutical dosage forms and assess their advantages and disadvantages.	S_P1	C7
S2	Demonstrate capability of choosing the appropriate preparation method for a particular pharmaceutical product prescription compounding.	S_P1, Sp2, Sp9	C7, C8, C15
S3	Demonstrate and apply physicochemical and biopharmaceutical concepts to interpret dosage form design.	S_P2	C8
S4	Evaluate and solve incompatibility problems encountered in the preparation of liquid dosage form.	S_P2, Sp9	C8, C15

Learning Resources

Course Textbook	**1. Pharmaceutical Dosage Forms and Drug Delivery Systems by Loyd V. Allen, Jr ,Wolters Kluwer ,11th Edition ,2018** **2. Aulton's Pharmaceutics, The Design and Manufacture of Medicines, Edit.: Michael E. Aulton, Kevin M. G. Taylor Pub.: Churchill Livingstone, 5thedition, 2018.**

Supporting References	1.Martin's physical pharmacy and pharmaceutical sciences: physical chemical and biopharmaceutical principles in the pharmaceutical sciences ,By : Patrick J. Sinko**,** Lippincott Williams & Wilkins , 2017, 7th Edition 2. Modern Pharmaceutics by Gilbert S. Banker (Editor), Christopher T. Rhodes (Editor) 4th edition (June 15, 2002), Marcel Dekker; ISBN: ISBN: 0824706749 3. Merck Index: An Encyclopedia of Chemicals, Drugs, & Biologicals by Merck, Co, Maryadele J. Oneil (Editor), Ann Smith(Editor) 13th edition (October 2001), Merck & Co; ISBN: 0911910131 4. Lachman/Lieberman's The theory and practice of industrial pharmacy, khar, Roop K. ... [et al], New Delhi: CBS Publishers & Distributors ,2014 5.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 & Febiger; ISBN: 0812114388 6. 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 7. Remington: The Science and Practice of Pharmacy by Alfonso R. Gennaro (Editor) 20th edition (December 15, 2000), Lippincott, Williams & Wilkins; ISBN: 0683306472
Supporting Websites	http://library.philadelphia.edu.jo/st_en.htm
Teaching Environment	☒ **Classroom** ☐ **laboratory** ☐ **Learning Platform** ☐ **Other**

Meetings and Subjects Timetable

Week	Topic	Learning Method*	Task	Learning Material
1	**Course Syllabus** 1. Pharmaceutical dosage form: ▪ Introduction dosage form and excipient ▪ Classification (physical form) ▪ Classification (route of administration)	Lecture Flipped learning		Course Syllabus Textbooks
2	2. Pharmaceutical solutions ▪ Introduction ▪ Solvents and vehicles ▪ Preparation of solutions ▪ Formulation considerations	Lecture Problem solving based learning		Textbooks
3	▪ Oral solutions ▪ Syrups ▪ Elixirs ▪ Tinctures	Lecture		Textbooks
4	▪ Topical solutions ▪ Vaginal & Rectal ▪ Miscellaneous: ▪ Aromatic waters ▪ Spirits ▪ Colloidons	Lecture Collaborati ve learning	Case study	Textbooks
5	3. Dispersed systems: Suspension: ▪ Surface tension phenomena and surfactants	Lecture		Textbooks
6	▪ The mechanism of adsorption at interfaces	Lecture	Homework	
7	▪ Suspensions Sedimentation rate ▪ Preparation of flocculated suspensions	Lecture Problem solving based learning	Homework	
8	▪ Wetting, flocculating, and suspending agents.	Lecture		Textbooks
9	▪ Sustained release suspensions ▪ Packaging and storage	Lecture		
10	▪ Pharmaceutical applications	Lecture Collabo-rative learning	Case study	
11	Midterm Exam ▪ Rheology of suspensions	Lecture		Textbooks
12	4. Dispersed systems: Emulsions:	Lecture		

	▪ Types ▪ Tests for identification ▪ Purpose ▪ Preparation ▪ Emulsifiers and stabilizers			
13	▪ HLB method	Lecture		
14	▪ Microemulsions ▪ Methods of emulsion preparation	Lecture		
15	▪ Stability of emulsions	Lecture		Textbooks
16	**Final Exam Week**			

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

Course Contributing to Learner Skill Development

Using Technology
• Use pharmaceutical techniques to calculate and find correct answers to solve simple problems in compounding and despising. • Use pharmacopeia and references guidelines to develop processes, procedures, to produce pharmaceuticals of appropriate quality and quality assures them. • Read, evaluate, and interpret numerical, chemical and general scientific information. • Formulate significant research questions, design experiments, use appropriate chemical instrumentation, and analyze and interpret data. • Search and use the chemical literature in both printed and electronic formats.
Communication Skills
• Demonstrate ability to prepare relevant reports in a clear systematic way. • Be able to adapt and accommodate team working. • Access resources related to the description and application of the methods used for various unit operations.
Application of Concept Learnt
• Practical application of liquid dosage forms preparations and characterization in the corresponding practical course.

Assessment Methods and Grade Distribution

Assessment Methods	Grade	Assessment Time (Week No.)	Course Outcomes to be Assessed
Mid Term Exam	**% 30**	**11th week**	**K1-K3, S1-S4**
Term Works*	**% 30**	**Continuous**	**S1-S4**
Final Exam	**% 40**	**16th week**	**K1-K4 S1- S4**
Total	**%100**		

* Include: quizzes, in-class and out of class assignment, 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**
Knowledge				
K1	Defining and understanding the concepts of different types of liquid dosage forms (solution, suspensions, and emulsions).	C1, C6	Lecture Problem solving based learning	Exam/Quiz questions in-class and out of class case study

K2	Discussing the different types of dosage forms and administration routes in relation with therapeutic outcomes.	C1, C2	Lecture Flipped learning	Exam/Quiz questions
K3	Explaining the physicochemical principles relevant to liquid pharmaceutical dosage forms.	C1, C6	Lecture	Exam/Quiz questions Homework
K4	Understanding the concepts of Rheology and its application in pharmaceutical preparations.	C1	Lecture Problem solving based learning	Exam/Quiz questions
Skills				
S1	Compare various liquid preparations used in pharmaceutical dosage forms and assess their advantages and disadvantages.	C7	Problem solving based learning Project-based learning Flipped learning	Exam/Quiz questions Case study
S2	Demonstrate capability of choosing the appropriate preparation method for a particular pharmaceutical product prescription compounding.	C7, C8, C15	Problem solving based learning Project based learning	Exam/Quiz questions in-class and out of class case study
S3	Demonstrate and apply physicochemical and biopharmaceutical concepts to interpret dosage form design.	C8	Problem solving based learning Collaborative learning	Exam/Quiz questions
S4	Evaluate and solve incompatibility problems encountered in the preparation of liquid dosage form.	C8, C15	Problem solving based learning	Exam/Quiz questions in-class and out of class assignments

*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
Passing Grade	The minimum pass for the course is (50%) and the minimum final mark is (35%).
Missing Exams	• 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. • Anyone absent from a declared semester exam with a sick or

	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 subjectteacher must hold a compensation exam for the student. • 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.
Attendance	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.
Academic Integrity	Philadelphia University pays special attention to the issue of academic integrity, and the penalties stipulated in the university's instructions areapplied to those who are proven to have committed an act that violates academic integrity, such as cheating, plagiarism (academic theft), collusion, intellectual property rights.

Program Learning Outcomes to be Assessed in this Course

Number	Learning Outcome	Course Title	Assessment Method	Targeted Performance level

Description of Program learning Outcomes Assessment Method

Number	Detailed Description of Assessment

Assessment Rubric of the Program Learning Outcomes
