

**Philadelphia University  
Faculty of Pharmacy  
Department of Pharmaceutical Sciences  
Second Semester, 2017/2018**

**Course Syllabus**

<b>Course Title:</b> Industrial pharmacy Practical	<b>Course code:</b> 0510427
<b>Course Level:</b> 4 <sup>th</sup> year	<b>Course prerequisite (s) and/or corequisite (s):</b> Industrial pharmacy (0510426)
<b>Lectures Time:</b> Sunday 8:10-10, 13:10-3 Monday 8:15-10, 2:15- 4 Tuesday 11:10-1, 1:10-3 Wednesday 11:15- 1	<b>Credit hours:</b> 1 hour

**Academic Staff**

**Specifics**

Name	Rank	Office Number and Location	Office Hours		E-mail Address
Yasmeen Darwish	Lab. instructor	615	Sunday	11	<a href="mailto:ydarwish@philadelphia.edu.jo">ydarwish@philadelphia.edu.jo</a>
			Monday		
			Tuesday	10	
			Wednesday		

**Course module description:**

This course is complementary part to the theoretical lectures provided by the co-requisite course Industrial pharmacy. This course is designed to give the student a detailed knowledge concerning powders used in pharmaceutical formulations including: powder mixing, milling, characterization of flowability, compressibility and particle size analysis.

**Course module objectives:**

At the end of this module, student will be able to:

- 1- Characterize powder flowability and compressibility.
- 2- Perform different methods used for granulation of powders including dry and wet granulation using granulation equipments models utilized for academic purpose.
- 3- Evaluate different tablet additives and their effect on formulation procedure.

- 4- Handle other industrial equipments including different types of mixers and mills
- 5- Perform particle size analysis of powders using sieve analysis

### **Course/ module components**

- **Books (title , author (s), publisher, year of publication)**

Pharmaceutics: The Science of Dosage Form Design  
by Michael E. Aulton (Editor) 2nd edition (December 15, 2001), Churchill Livingstone; ISBN: 044305517

- **Support material (s) (vcs, acs, etc).**

Each student has to obtain his/her Manual of Pharmaceutical Technology from the University Bookshop.

- **Study guide (s) (if applicable)**

See references at the end.

- **Homework and laboratory guide (s) if (applicable).**

Each student has to obtain his/her own results and follow the instructions at the manual. Each student is expected to submit his own report on the provided sheets at every coming laboratory.

### **Teaching methods:**

Tutorials, discussion groups, problem solving, debates, etc.

### **Learning outcomes:**

- **Knowledge and understanding**

Students will understand and see the machines that are used in formulation.

- **Cognitive skills (thinking and analysis).**

Upon acquisition of the different related data, students will analyze the data they acquired in the right manner using the appropriate analysis.

- **Communication skills (personal and academic).**

Students will work in groups in this module, therefore they have to joint their efforts and data and produce a qualified report to the tutor.

- **Practical and subject specific skills (Transferable Skills).**

Students will use their theoretical knowledge and will apply this knowledge into practical work under the supervision of the tutor.

## Assessment instruments

- Short reports and/ or presentations, and/ or Short research projects
- Quizzes.
- Home works
- Final examination

<b><u>Allocation of Marks</u></b>	
<b>Assessment Instruments</b>	<b>Mark</b>
Reports and evaluation	<b>30</b>
Quizzes	<b>20</b>
Home works, Projects	<b>10</b>
Final examination:	<b>40</b>
Total	<b>100</b>

## Documentation and academic honesty

- Documentation style (with illustrative examples)

Documentation will be done on every experiment the student does.

- Protection by copyright.

Coursework, laboratory exercises, reports, and essays submitted for assessment must be your own work, unless in the case of group projects a joint effort is expected and is indicated as such.

- Avoiding plagiarism.
1. Unacknowledged direct copying from the work of another person, or the close paraphrasing of somebody else's work, is called plagiarism and is a serious offence, equated with cheating in examinations. This applies to copying both from other students' work and from published sources such as books, reports or journal articles.
  2. Plagiarism is a serious offence and will always result in imposition of a penalty. In deciding upon the penalty the Department will take into account factors such as the year of study, the extent and proportion of the work that has been plagiarized, and the apparent intent of the student. The penalties that can be imposed range from a minimum of a zero mark for the work (without allowing resubmission) through caution to disciplinary measures (such as suspension or expulsion).

## Course/module academic calendar

<b>week</b>	<b>Basic and support material to be covered</b>	<b>Homework/reports and their due dates</b>
(1) 4-8 /3/2018	Introduction and safety rules	<b>Every week the student has to submit a report about his previous experiment</b>
(2) 11-15/3/2018	Particle size analysis	
(3) 18-22/3/2018	Size reduction part 1	
(4) 25-29/3/2018	Size reduction part 2	
1/4-5/4/2018	First exam	
(5) 8-12/4/2018	Solid- solid mixing	
(6) 15-19/4/2018	Characterization of flow properties of powders	
(7) 22-26/4/2018	Improvement of powder flowability	
(8) 29/4-3/5/2018	Granulation	
6-10/5/2018	Second exam	
(9) 13-17/5/2018	Characterization of granules.	
(10) 20-24/5/2018	Effect of additives on properties of granules	
(11) 27-31/5/2018	Revision	
(12) 3-7/6/2018	Practical Final Examination	
(13) 6-14/6/2018	Final Examination	

**Expected workload:**

On average students need to spend 1 hours of study and preparation for each 2 hours laboratory

**Attendance policy:**

Absence from labs shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college/faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

**Module references**

1. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems (Paperback) by Loyd V., Jr. Allen, Nicholas G. Popovich, Howard C. Ansel, Loyd V. Allen, Publisher: Lippincott Williams & Wilkins; 8th edition (August 3, 2004) ISBN: 0781746124

2. Modern Pharmaceutics

by Gilbert S. Banker (Editor), Christopher T. Rhodes (Editor) 4th edition (June 15, 2002), Marcel Dekker; 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. The Theory and Practice of Industrial Pharmacy  
by Leon Lachman, Herbert A. Lieberman, Joseph L. Kanig. 3rd edition (August  
1986), Lea & Febiger; ISBN: 0812109775

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 David B. Troy (Editor),  
Publisher: Lippincott Williams & Wilkins; 21st edition (May 28, 2005) ISBN:  
078174673