



Philadelphia University
Faculty of Pharmacy
Department of Pharmaceutical Sciences
Second semester, 2016/2017

Course Syllabus	
Course title: Instrumental Analysis Lab	Course code: 0510213
Course level: Second year	Course co-requisite: 0510212
Lecture time:	Credit hours: 1 hour
	Contact hours: 2 hours
Location: Instrumental Lab. - Pharmacy building	

Academic Staff Specifics				
Name	Rank	Office number and location	Office hours	E-mail address
Reem Abu Hashhash	Lab Supervisor	403 Pharmacy building	daily 11-12	rabuhashhash@philadelphia.edu.jo

Course description (According to the University Catalogue)

This course provides practical assessment of the instrumental methods used in pharmaceutical analysis; including Spectroscopic methods (UV-Visible, IR, and NMR), Chromatographic methods (HPLC and GC, TLC) and Electroanalytical methods.

Course objectives:

- Provide the student with practical experience in the techniques of experimental, instrument-oriented, analytic chemistry.
- To deepen the student understands of the underlying principles of the measurement by various laboratory instruments.
- Identify appropriate instrumental methods that fit certain chemical analysis of a certain pharmaceutical product.
- Process and analyze the data and, effectively, communicate results both in writing and in speech.

Course/ resources

- **Text book/ books (title , author (s), publisher, year of publication):** None
- **Support material (s) (vcs, acs, etc). :** None
- **Study guide (s) (when applicable):** None
- **Laboratory Handbook/ books (when applicable)**
 Manual of Pharmaceutical Instrumental Analysis / Faculty of Pharmacy / Philadelphia University

Teaching methods(Lectures, discussion groups, tutorials, problem solving, debates, etc)

Practical experiments will be done to evaluate both chromatographic and spectrophotometric methods applied in pharmaceutical analysis. Experimental demonstration also could be done if necessary.

Learning outcomes:

- Knowledge and understanding
 - Demonstrate the knowledge of data acquisition and analysis for various techniques.
 - Interpret the Uv-visible, infrared and NMR spectra for structure identification of some pharmaceutical compounds.
 - Implement suitable methods of sampling and analysis.
- Cognitive skills (thinking and analysis).
 - Demonstrate the differences between various types of instruments in terms of parts and functions.
 - Work on different instruments critical for pharmaceutical analysis.
 - Apply critical thinking and hypothesis-driven methods of scientific inquiry.
- Communication skills (personal and academic).
 - Demonstrate effective written and oral communication skills, especially the ability to transmit complex technical information in a clear and concise manner.
- Transferable Skills.
 - Use pharmaceutical analysis techniques to identify simple organic and pharmaceutical molecules.
 - Read, evaluate, and interpret numerical, chemical and general scientific information.
 - Acquire a working knowledge of basic research methodologies, data analysis and interpretation of data relevant to pharmaceutical analysis.
- Psychomotor Skills (When applicable)
NA

Assessment instruments

- Quizzes.
- Reports
- Homework assignments
- Exams

<u>Allocation of Marks</u>	
Assessment Instruments	Mark
Reports, research projects, quizzes, homework, Projects	50
Final practical examination	10
Final examination	40
Total	100

Documentation and academic honesty

- Documentation style (with illustrative examples)
Whenever applicable, students should conduct their assignments themselves whether individually or in a group work referencing all information, data, figures and diagrams taken from the lab.
- Protection by copyright
Whenever applicable, students should conduct their assignments themselves whether individually or in a group work referencing all information, data, figures and diagrams taken from literature. The references should be given according to the acceptable format.
- Avoiding plagiarism.
Plagiarism is the unauthorized use or close imitation of the language and thoughts of another author and the representation of them as one's own original work, without proper acknowledgment of the author or the source. Students must pursue their studies honestly and ethically in accordance with the academic regulations. Cheating in exams and plagiarism are totally unacceptable and those who, intentionally, commit such acts would be subjected for penalties according to the University regulations.

Course/ academic calendar

week	Basic and support material to be covered	Homework/reports and their due dates
(1)	Introduction	
(2)	Refractometry	
(3)	Thin layer chromatography	
(4)	Flash chromatography	
(5)	Ion exchange chromatography	
(6)	Gas chromatography	
(7)	High performance liquid chromatography	
(8)	Uv –visible spectroscopy (1)	
(9)	Uv –visible spectroscopy (2)	
(10)	Infrared spectroscopy	
(11)	NMR	
(12)	Practical Exam	
(13)	Final Examination	

Expected workload:

On average students need to spend 2 hours of study and preparation for each experiment.

Attendance policy:

Absence from lectures and/or tutorials 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.

Other Education Resources

None