



كلية الصيدلة جامعة الزيتونة الأردنية
Faculty of Pharmacy
Al-Zaytoonah University of Jordan

" نحو تعليم صيدلاني متميز "
Toward Excellence in Pharmaceutical
Education

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Al-Zaytoonah University of Jordan
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" Tradition and Quality "

Detailed Course Description - Course Plan Development and Updating Procedures/ Pharmacy Department	QF02/0408-3.0E
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Faculty	Pharmacy	Department	Pharmacy
Course number	201218	Course title	Instrumental Analysis Lab
Number of credit hours	1	Pre-requisite/co-requisite	Pharmaceutical Analytical Chemistry

Brief course description

This course aim to cover different instrumental techniques used in pharmaceutical analysis.

Course goals and learning outcomes	
Goal 1	Learn and understand the principles of pharmaceutical industry.
Learning outcomes	1.1 At the end of this course the student is expected to have acquired basic knowledge and skills that are essential for performing a piece of analytical work in the appropriate settings e.g. pharmaceutical industry.
Goal 2	To introduce and discuss in details the main conventional methods used in pharmaceutical assays.
Learning outcomes	2.1 Enhance the ability of the student to employ the knowledge and skills he would acquire to design, develop and criticize analytical methods that are based on the principles taught in accompanying theoretical course.
Goal 3	To understand some of electrochemical and spectroscopic technique used in pharmaceutical analytical methods
Learning outcomes	3.1 Methods of analysis covered including electrochemical (potentiometry and conductimetry). 3.2 Methods of analysis covered including spectroscopic (UV/ Vis., fluorometry, atomic spectroscopy, IR and NMR) and chromatographic methods (HPLC and GC).
Textbook	1- European Pharmacopeia, 7th edition 2- Accompanying laboratory manual.
Supplementary references	1- Pharmaceutical Analysis: A Textbook for Pharmacy Students and Pharmaceutical Chemists, 3rd edition, David Watson, Elsevier/ Churchill Livingstone, 2012. 2- Spectroscopic Methods in Organic Chemistry, 6th edition, Dudley Williams, Ian Fleming, McGraw-Hill book company, 1995 3- Organic Structures from Spectra, 3 rd edition, L. D. Field, S. Sternhell and J. R. Kalman, John Wiley & Sons, 2002. 4- Spectrometric Identification of Organic Compounds, 7 th edition, Robert M. Silverstein, Francis X. Webster and David Kiemle, John Wiley & Sons, 2005. 5- Principles of Instrumental Analysis, 6 th edition, Skoog, D. A., Brooks/ Cole Thomson Learning, 2007.



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Course timeline				
Week	Number of hours	Course topics	Pages (textbook)	Notes
01	3	Check in Introduction to laboratory and safety rules.	-	
02	3	-pH meter calibration -Assay of acetyl salicylic acid using potentiometric titration	Electrochemistry	
03	3	Conductimetric titration for the determination of a mixture of a strong acid and a weak acid.	Electrochemistry	
04	3	- Determination of unknown concentration of glucose using polarimetry -Determination of unknown concentration of glycerin using a refractometer	Polarimetry and Refractometry	
05	3	Determination of the purity of paracetamol raw material -Assay of paracetamol tablet. Effect of pH on phenol red spectrum (isosbestic point). - Effect of solvents on the absorption of phenol red.	Ultraviolet Spectroscopy	
06	3	Determination of benzene and toluene mixture using U.V. spectroscopy	Ultraviolet Spectroscopy	
07	3	-Determination of the purity of quinine sulfate using fluorescence spectroscopy. -determination of potassium iodine using fluorescence quenching of quinine sulfate	Spectrofluorometry	
08	3	Assay of sodium and potassium ions in an IV infusion using flame photometry.	Flame Emission and Atomic Absorption	
09	3	Work shop with worked examples on the interpretation of IR spectra. Workshop with worked examples on the interpretation of ¹ H NMR spectra Workshop with worked examples on the interpretation of ¹³ C NMR spectroscopy	Infra Red Spectroscopy (IR)	
10	3	- Demonstrating HPLC and GC. - Determination of paracetamol in suspension using HPLC based on B.P. monograph.	Chromatographic Techniques	
11	3	Check out	-	
12	-	Final exam	-	



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Theoretical course evaluation methods and weight	First exam 25% Second exam 25% Final exam 50%	Practical (clinical) course evaluation methods	Semester students' work = 50% (Reports, research, quizzes, etc.) Final exam = 50%
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Approved by head of department		Date of approval	
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Extra information (to be updated every semester by corresponding faculty member)

Name of teacher	Dr. Mohammad Harb	Office Number	413
Phone number (extension)	293	Email	mohammad.harb@zug.edu.jo
Office hours	Announced at office door.		