Department	Pharmacy

Course Name	Instrumental Analysis Lab	**Course No.**	0201312
Prerequisite	Pharmaceutical Analytical Chemistry	Credit Hours	2
Number & date of course plan approval	2013-2014	Brief Description	See form QF02/0409

Intended Learning Outcomes	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. 2- The aims of this course include 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. 3- Methods of analysis covered including electrochemical (potentiometry and conductimetry), spectroscopic (UV/ Vis., fluorometry, atomic spectroscopy, IR and NMR) and chromatographic methods (HPLC and GC).		
Course Topics	1- Electrochemistry 2- Spectroscopic techniques 3- Structural Elucidation 4- Chromatography		
Text Books	1- European Pharmacopeia, 7th edition 2- Accompanying laboratory manual.		
References	1- Pharmaceutical Analysis: A Textbook for Pharmacy Students and Pharmaceutical Chemists, 3nd 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, 3rd edition, L. D. Field, S. Sternhell and J. R. Kalman, John Wiley & Sons, 2002. 4- Spectrometric Identification of Organic Compounds, 7th edition, Robert M. Silverstein, Francis X. Webster and David Kiemle, John Wiley & Sons, 2005. 5- Principles of Instrumental Analysis, 6th edition, Skoog, D. A., Brooks/ Cole Thomson Learning, 2007.		
□ **Grade Determination**	Quizzes= 20% Reports = 20% Evaluation = 10%	□ Practical Course Grade Determination	Course Work = 50% (Reports, Term Papers, Quizes) Final Exam = 50%

Course Outline

Week	Hours	Subjects	Chapters in Textbook	Notes
1	3	Check in	-	
2	3	Introduction to laboratory and safety rules.	Introduction	
3	3	-pH meter calibration -Assay of acetyl salycilic acid using potentiometric titration	Electrochemistry	
4	3	Conductimetric titration for the determination of a mixture of a strong acid and a weak acid.	Electrochemistry	
5	3	Determination of the purity of paracetamol raw material -Assay of paracetamol tablet.	Ultraviolet Spectroscopy	
6	3	Effect of pH on phenol red spectrum (isosbestic point). - Effect of solvents on the absorption of phenol red.	Ultraviolet Spectroscopy	
7	3	Assay of chlorpheniramine injection	Ultraviolet Spectroscopy	
8	3	-Determination of the purity of quinine sulfate using fluorescence spectroscopy. -determination of potassium iodine using fluorescence quenching of quinine sulfate	Spectrofluorometry	
9	3	Assay of sodium and potassium ions in an IV infusion using flame photometry.	Flame Emission and Atomic Absorption	
10	3	Work shop with worked examples on the interpretation of IR spectra.	Infra Red Spectroscopy (IR)	
11	3	Workshop with worked examples on the interpretation of 1H NMR spectra Workshop with worked examples on the interpretation of 13C NMR spectroscopy	NMR Spectroscopy	
12	3	- Demonstrating HPLC and GC. - Determination of paracetamol in suspension using HPLC based on B.P. monograph.	Chromatographic Techniques	
13	3	Check out	-	

14	-	Final exam		

Approved by Dept. Chair		Date of Approval	

Extra Information: (Updated every semester and filled by course instructor)

Course Instructor	
Office No.	
Extension **Email**	
Office hours	