



Department	Pharmacy
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<b>Course Name</b>	Pharmaceutical Analytical Chemistry Lab	<b>Course No.</b>	0201214
Prerequisite	General Chemistry Lab.	Credit Hours	1
Number & date of course plan approval	2016-2017	Brief Description	See form QF02/0409

<b>Course Objectives</b>	This course aim to cover different titrimetric procedures that are employed in quantitative pharmaceutical analysis		
<b>Intended Learning Outcomes</b>	<ol style="list-style-type: none"> <li>1- The student is expected to achieve the basic skills in classical pharmaceutical analysis.</li> <li>2- To allow the students to practice accurate and precise measurements in pharmaceutical analysis.</li> <li>3- To allow the students to practice different volumetric and gravimetric analytical techniques and to employ them in real life problems.</li> </ol>		
<b>Course Topics</b>	<ol style="list-style-type: none"> <li>1- Neutralization titrations</li> <li>2- Precipitation titrations</li> <li>3- Complexometric titrations</li> <li>4- Oxidation Reduction titrations</li> <li>5- Gravimetric Analysis</li> </ol>		
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1- Practical Pharmaceutical Analytical Chemistry</li> <li>2- European Pharmacopeia, 7<sup>th</sup> edition</li> </ol>		
<b>References</b>	<ol style="list-style-type: none"> <li>1- Fundamentals of Analytical Chemistry (Brooks/Cole – Thomson Learning), 9<sup>th</sup> edition. Author: Donald West, F. James Holler, Douglas A. Skoog &amp; Stanley R. Crouch, 2014.</li> <li>2- Quantitative Chemical Analysis, 7<sup>th</sup> edition (2007), (W. H. Freeman and Company). Author: Daniel C. Harris</li> <li>3- Analytical Chemistry: An Introduction, 7<sup>th</sup> edition (2000), (Saunders Golden Sunburst series). Author: Douglas A. Skoog, Donald M. West, F. James Holler and Stanely R. Crouch.</li> </ol>		
<b>Grade Determination</b>	<input type="checkbox"/> 1 <sup>st</sup> Exam = 25% <input type="checkbox"/> 2 <sup>nd</sup> Exam = 25% <input type="checkbox"/> Final Exam = 50%	<input type="checkbox"/> Practical Course Grade Determination	<input type="checkbox"/> Course Work = 50% (Reports, Term Papers, Quizes) <input type="checkbox"/> Final Exam = 50%



Course Outline				
Week	Hours	Subjects	Chapters in Textbook	Notes
1	3	Introduction , laboratory safety and orientation		
2	3	Preparation of solutions: Handling of balances and volumetric glassware (preparation of 0.1 M NaCl and 0.1 M HCl)		
3	3	Standardization of 0.1N HCl Determination of carbonate and bicarbonate in a mixture.	Neutralization methods, Exp.1,2	
4	3	Determination of purity of zinc oxide powder	Neutralization methods, Exp.3	
5	3	Determination of aspirin.		
6	3	Non aqueous titrations: - Standardization of 0.1M perchloric acid - Determination of metronidazole by non aqueous titration.	Non aqueous titration, Exp. 1,2	
7	3	Precipitation Titrations: - Determination of sodium chloride (Mohr's method) - Determination of bromide (Volhard's method) - Determination of a mixture of chloride and iodide (Fajan's method).	Precipitation titration, Exp. 1,2,3	
8	3	Determination of an unknown by acid base titration.		
9	3	Complexometric titrations with EDTA: - Determination of magnesium sulfate - Determination of calcium chloride - Determination of calcium and magnesium in a mixture	Complexometric titrations, Exp.1,2,3	
10	3	Redox titrations: - Standardization of potassium permanganate - Determination of ferrous sulfate - Determination of the volume strength of hydrogen peroxide solution	Redox titrations, Exp.1,2,3	



Course Outline				
Week	Hours	Subjects	Chapters in Textbook	Notes
11	3	<ul style="list-style-type: none"> <li>- Standardization of 0.1M iodine</li> <li>- Determination of mixture of iodine and potassium iodide</li> <li>- Determination of ascorbic acid</li> </ul>	Redox titrations, Exp.4,5,6	
12	3	Gravimetric analysis: <ul style="list-style-type: none"> <li>- Determination of calcium as calcium oxalate monohydrate</li> </ul>	Gravimetric analysis	
13	3	Calculation workshop: Exposing students to different analytical chemistry problems with focus on calculation.		
14	3	Determination of an unknown		
15	3	Final Exam		
16				

Approved by Dept. Chair		Date of Approval	
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**Extra Information:** (Updated every semester and filled by course instructor)

Course Instructor	
Office No.	
Extension Email	
Office hours	