Philadelphia University
Faculty of Science
Department of Basic Science and Mathmatics
Second Semester, (2014/2015)

Course syllabus

Course Title:AanalyticalChemistry Laboratory	**Course code:0212242**
Course level:2nd Year	**Course prerequisite (s) and/or corequisite (s):0212241**
Lecturetime:	**Credit hours:1**
Tue (13:10-16:00)	**Contact hours:**
Location: Green House	

Academic Staff Specifics

Name	Rank	Office number and location	Office hours	E-mail address
Lana Al-Qadumi	lecturer	Green House Unit	10-12 Wed, Thu	Lana_qadumii@philadelphia.edu.j

Course description (According to the University Catalogue)
This course is an introduction to principles of analytical qualitative and quantitative analysis, methods expressing of the concentrations, principles of volumetric analysis, acid-base Equilibria in aqueous and in nonaqueous solutions, acid-base titration and their applications in both solutions. Also topics to be covered include different kinds of titrations such as redox, and precipitation titration, in addition, it examines some basic chromatographic separation techniques and spectrophotometric analysis.

Course module objectives :
Develop the statistical and analytical skills of the students.
Prepare the students to distinguish between qualitative and quantitative analysis.
Provide a practical experience in the use of routine analytical equipment.
Prepare students to quantitatively perform and interpret results from volumetric and gravimetric analysis.
Improve the student's skills in the preparation of analytical solutions for quantitative analysis.
Improve the written communication skills of students, by means of written reports and promote team skills through team group working.

Course/ module components

Analytical Chemistry manual.

Chem 332L Experimental Analytical Chemistry Fall 2010 manual.

Teaching methods :
Lectures, practical work, discussion groups, tutorials, problem solving, debates, etc.

Learning outcomes :
Knowledge and understanding
At the end of this module, student will be able to:

prepare analytical solutions with precision, accuracy and express its concentration in different units, as used in analytical laboratory.
Explain standardization procedures employed in volumetric analysis.
Communicate the analytical results in appropriate fashion.

Cognitive skills (thinking and analysis.(
Through this practical course the students will be able to analyze the data they obtained, understanding the results and apply the techniques they have learned into different aspects.

Communication skills (personal and academic.(
Through team work, pre and post laboratory questions, and working sheets the students will be able to improve their communication skills through searching and discussing.

Practical and subject specific skills (Transferable Skills.(
All the techniques that the students have been learned during this practical course, can be used and applied in other courses, in their graduation projects, and also their practical working field.

- **Laboratory Handbook/ books (when applicable)**

Analytical chemistry (an introduction) by Skoog /West /Holler (Editors) 7th edition (1999),Saunders Golden SunBurst series,ISBN;0-03-022930.

.2Chem 332L Experimental Analytical Chemistry Fall 2010 manual.

<u>Teaching methods(</u>Lectures, discussion groups, tutorials, problem solving, debates, etc)

Working groups, each group consist of two studesnts, they must work together the practical work, answer the report and working sheets, and finally do the practical exam.
<u>Learning outcomes:</u>
Knowledge and understanding
At the end of this module, student will be able to:
The general procedures for conducting various elementary qualitative and quantitative experiments.
How to collect and organize experimental data.
The identity of typical chemistry equipment.

The procedures for operating common laboratory equipment.
The importance of safety precautions that should be practiced in the laboratory.

Assessment instruments

.Quizzes
Major and final exams
Home works
Reports

Allocation of Marks	
Assessment Instruments	**Mark**
Mid Term examination	**30**
Final examination	**40**
Reports, research projects, quizzes, homework, Projects	**30**
Total	**100**

Evaluation:

Evaluation will occur through the administration of assessment modes including: weekly quizzes, assessing overall preparation, midterm and final exams. Evaluation modes include the graded laboratory notebook, reports and technique performance. Technique performance includes assessment of safety practice.

Course/ academic calendar

week	Basic and support material to be covered	Homework/reports and their due dates
(1)	Volumetric Glassware and Balances	Solving working sheets and reports
(2)	Neutralizatiion Titration in Aqueous Medium	Solving working sheets and reports
(3)	Determination of Acid Mixture. Determination of Carbonate and Bicarbonate Mixture	Solving working sheets and reports
(4)	Back Titration	Solving working sheets and reports
(5)	Neutrilization Titration in non-Aqueous Medium	Solving working sheets and reports
(6) Mid term examination		
(7)	Precipitation Titration (Agentometry(General Method. Determination of a mixture of Halides.	Solving working sheets and reports
(8)	Redox Titration Iodine Titration. Dichromate titration	Solving working sheets and reports
(9)	Ionization- Acids, Bases, and Salts.Redox Titration Ascorbic Acid in Vitamin C tablet: By Cerium (IV(By Potassium Permanganate.	Solving working sheets and reports
(10)	Determination of PKa Value for Indicator.	Solving working sheets and reports
(11)	Determination of Caffeine. Determination of Fe.	Solving working sheets and reports
(12)	Chromotography Paper Chromotography	Solving working sheets and reports
(13)	Chromotography Column Chromotography Size Exclusion, and ion Exchange.	
(14) Final Exam		

Expected workload:

On average students need to spend 3hours of study and preparation for each lab.

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.