



Philadelphia University
Faculty of Science
Department of Basic Sciences
Spring semester, 2008/2009

Course Syllabus

Course Title: Analytical Chemistry	Course code: 240241
Course Level: 2	Course prerequisite (s) and/or corequisite (s):212101
Lecture Time: 11:15-12:45	Credit hours: 3

Academic Staff

Specifics

Name	Rank	Office Number and Location	Office Hours	E-mail Address
Dr. Safwan Obeidat	Assistant Prof.	Faculty of Science (1018)	11-12 S, Tu, Th 10-11 M, W	Sobidat@Philadelphia.edu.jo

Course module description:

Introduces the fundamentals of analytical chemistry, such as the concentration expressions and calculations based on chemical stoichiometry. Titrations and electrophoresis besides chromatography and spectrophotometry and equilibrium principles.

Course module objectives:

This course is devoted to the exploration of principles of qualitative and quantitative analysis, Gravimetric 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.

Course/ module components

- **Books (title , author (s), publisher, year of publication)**

Text book:

Analytical chemistry (an introduction)
 by Skoog /West /Holler (Editors) 7th edition (2000),Saunders Golden SunBurst series,
 ISBN;0-03-097285.

- **Support material (s) (Handouts, models).**

Teaching methods:

Lectures, discussion groups, tutorials, problem solving, debates, etc.

Learning outcomes:

- Knowledge and understanding
 - Have an understanding of chemical calculations (aspects of stoichiometry using the mole unit).
 - Understand the different types of titrations and the calculations based on these types.
 - Understand the principles of spectrophotometry, chromatography, electrochemistry and their applications.
- Cognitive skills (thinking and analysis).
To identify and solve problems. work with given information and handle analytical calculations based on chemical equations. And ability to differentiate between acids and bases and identify their strengths.
- Communication skills (personal and academic).
Encourage the students to be self starters (creativity, decisiveness, initiative) and to finish the chemical problems properly (flexibility, adaptability). Also to improve general performance of students through the interaction with each other in solving different chemical problems.
- Practical and subject specific skills (Transferable Skills).
Gaining knowledge and experience of working with relevant modern laboratory equipment.

Assessment instruments

- Short reports and/ or presentations, and/ or Short research projects
- Quizzes.
- Home works
- Final examination: 50 marks

<u>Allocation of Marks</u>	
Assessment Instruments	Mark
First examination	20
Second examination	20
Final examination: 50 marks	50
Quizzes, Home works	10
Total	100

Documentation and academic honesty

- Documentation style (with illustrative examples)

APA Style.

Example: Natarajan, R., & Chaturvedi, R. (2003). *Geology of the Indian Ocean Floor*. Hartford, CT: Merganser University Press

- Protection by copyright
- Avoiding plagiarism.

Course/module academic calendar

Week	Basic and support material to be covered
(1)	Course introduction; An introduction to the analytical chemistry, Language of analytical chemistry.
(2)	Methods of expressing the concentrations
(3)	Applications involving molarity, normality and weight percent calculations
(4)	Calibration methods
(5)	Principle of and application of equilibria: Equilibria, Acid-base Equilibria in aqueous solution.
(6) First examination	Titration volumetric calculations. Standard solution titration curves
(7)	Acid base Titrations : Strong acid Vs strong base, weak acid Vs strong base, weak base Vs strong acid.
(8)	pH calculations (Curves and pH electrode) and some applications
(9)	Buffer solutions and physiological buffers
(10)	EDTA and redox Titrations
(11) Second examination	Electrochemistry
(12)	Fundamentals of spectrophotometry
(13)	Applications of spectrophotometry
(14)	Analytical Separation
(15)	Gas Chromatography (GC), HPLC
(16) Final Examination	Electrophoresis

Expected workload:

On average students need to spend 2 hours of study and preparation for each 50-minute lecture/tutorial.

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.

Module references

Books

1. Analytical Chemistry: Principles and Techniques.
By Larry G. Hargis.(editors) (December 17, 1996),Publisher: Pearson Education
POD; Facsimile edition ISBN: 013033507X
2. Quantitative Chemical Analysis
By Daniel C. Harris, 7th edition 2007, W. H. Freeman and Company.
ISBN 0716728818.

Journals

Journal of analytical chemistry

Websites

<http://101science.com/>